

THE RELATIONSHIP OF GRIT AND SOCIAL MEDIA ADDICTION FOR COLLEGE
STUDENTS

by

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Liberty University

A Dissertation Proposal Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

This quantitative study explored the relationship between grit and social media. Researchers have noted a significant increase in the use of social media among college students that often results in negative outcomes, both personally and academically. Previous studies have shown that grit is a trait that negatively relates to various types of addictive behavior. However, little is known about the correlation between grit and social media addiction specifically. The purpose of this study was to determine the relationship between grit and social media addiction. This study collected data from the student populations of three private colleges and followed a correlational design. The sample of 158 participants were enrolled in on-campus or online courses and responded to an online survey through Survey Monkey. Participants provided basic demographic information and completed the 8-item Grit-S scale and 6-item Bergen Social Media Addiction Scale. The researcher analyzed this data to determine the strength of the correlation between these variables using the Pearson correlation. The result of this study revealed a significant negative correlation between the variables. This research will benefit school administrators, parents, and policymakers seeking to be successful in their academic endeavors. Future researchers can expand on these findings by exploring this correlation among other populations as well as conducting longitudinal studies that could establish if those who are at risk of addictions develop them later in life.

Keywords: grit, social media addiction, quantitative analysis, mental health, student success

Dedication

To my wife, Brandy, whose support and sacrifice was essential for this to be a reality. Thank you for backing me up through this entire process. I could not have finished this without your support.

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I would like to express my gratitude several individuals and groups whose support has been essential throughout this process. My wife Brandy and children have supported and sacrificed for this endeavor for several years. Thank you for taking the long view and allowing me to spend evenings and weekends working on this research. To my parents, who have done more than anyone else to kindle my curiosity and love for learning, thank you for providing such a quality environment as a young person.

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Table of Contents

ABSTRACT.....	3
Dedication.....	4
Acknowledgments.....	5
List of Tables	9
List of Figures.....	10
List of Abbreviations	11
CHAPTER ONE: INTRODUCTION.....	12
Overview.....	12
Background.....	12
Historical Overview	13
Society-at-Large.....	15
Conceptual Background.....	16
Problem Statement	17
Purpose Statement.....	18
Significance of the Study	18
Research Question	20
Definitions.....	20
CHAPTER TWO: LITERATURE REVIEW.....	22
Theoretical Frameworks	22
Postpositive Epistemological Framework.....	23
Grit Theoretical Framework	24
Controversy over the Need for Grit Construct.....	28

Grit and the Big Five Personality Traits	31
Addiction Theoretical Frameworks	33
Related Literature.....	36
Addiction.....	36
Contributing Factors to Student GPA	37
Grit and Student Persistence	39
Grit and Lifelong Achievement	41
The Relationship Between Mental Health and Addiction	41
The Relationship Between Grit and Mental Health.....	43
How Grit is Developed	44
Grit and Addiction	47
Electronics Addiction and College Students.....	49
Social Media Addiction	50
Summary.....	52
CHAPTER THREE: METHODS	55
Overview.....	55
Design	55
Research Question	57
Hypothesis.....	57
Participants and Setting.....	57
Instrumentation	61
Procedures.....	64
Data Analysis	66

CHAPTER FOUR: FINDINGS	68
Overview	68
Research Question	68
Hypothesis.....	68
Descriptive Statistics.....	68
Results.....	69
Null Hypothesis	Error! Bookmark not defined.
Data Screening	69
Assumption Testing	69
Hypothesis Testing.....	71
CHAPTER FIVE: CONCLUSIONS	73
Overview.....	73
Discussion.....	73
Implications.....	75
Limitations	76
Recommendations for Future Research	77
REFERENCES	79
APPENDIX A: DIGITAL CONSENT FORM.....	79
APPENDIX B: GRIT SURVEY.....	111
APPENDIX C: BSMAS	115
APPENDIX D.....	117
APPENDIX E	120
APPENDIX F.....	122

List of Tables

Table	Page
Table 1 Student population demographics at College A	59
Table 2 Student population demographics at College B.....	59
Table 3 Student population demographics at College C	60
Table 4 Frequency Counts for Demographic Variables.....	60
Table 5 Psychometric Characteristics for the Primary Scales Scores.....	69
Table 6 Pearson Correlations for Social Media Addiction	72

List of Figures

Figure	Page
Figure 1 Scatterplot for Social Media Addiction and GRIT Scale.....	71

List of Abbreviations

Bergen Facebook Addiction Scale (BFAS)

Bergen Social Media Addiction Scale (BSMAS)

Big Five Inventory (BFI)

Facebook Addiction Disorder (FAD)

CHAPTER ONE: INTRODUCTION

Overview

This chapter will present a synopsis of the main constructs used in this study. Grit is understood as passion and perseverance for long-term goals and has been shown to positively correlate with many aspects of student success. Because institutions of higher learning are increasingly paying attention to noncognitive factors in an effort to enhance student success, grit has emerged as a central concept in the field of student success and has been shown to effectively predict many positive outcomes. Attention will also be given to the increase in social media addiction that can threaten college students' academic achievement and is associated with many of the negative results of traditional addictions. This chapter will also provide a description of the problem statement and significance of the current study. The research question and glossary of definitions used in this study are also present.

Background

The process of college admission is traditionally construed as a means to identify students with the greatest likelihood of success. Despite this outcome being a primary function of admission offices, standardized test scores often have a determinative role. A college applicant's SAT or ACT scores often form a barrier to college enrollment in spite the lack of data that these standardized tests scores accurately predict student success (Radasanu & Barker, 2021). High school GPA is a better predictor of college success than SAT or ACT scores (Bowen et al., 2009). Yet even when high school GPA is combined with standardized test scores, these combined factors only explain about 25% of the variation of college GPA in first-year college students (Akos & Kretchmar, 2017). While many studies have explored the relationship of

ethnicity, socioeconomic status, education level of parent, and gender with college success, noncognitive factors have been shown great predictive capacity (Farruggia et al., 2018). Grit is a construct that combines both passion and perseverance and has received substantial attention in recent literature. This research has shown that, among other things, grit can factor heavily into accurately predicting a student's GPA in college (Carp et al., 2020; Pate et al., 2017).

The study of grit's effect on student success has largely focused on desirable outcomes such as retention, GPA, and completion rates (Akos & Kretchmar, 2017; Cross, 2014; Danner et al., 2020; Hodge et al., 2018). Grit can also be used to predict other positive factors such as a student's sense of well-being (Arya & Lal, 2018). Conversely, grit has a negative correlation with depression rates in Asian students (Musumari et al., 2018). Borzikowsky and Bernhardt (2018) found that grit has a negative correlation with a person's risk of becoming addicted to online gaming. The more grit a person exhibits, the more likely it is that they will be able self-regulate their online gaming.

Historical Overview

Past research suggests that grit may function to decrease a college student's likelihood to become addicted to social media. The role of grit on various unhealthy habits has begun to emerge in recent research. While the correlation differed in strength with various addictive behaviors, a negative correlation was generally detected. Maddi et al. (2013) showed that grit had a negative correlation with internet addiction, though this correlation was much diminished when the researchers controlled for hardiness. Hardiness is present in an individual who demonstrates commitment, believes that they have control to influence outcomes, and sees stress and challenge as natural and potential growth opportunities (Maddi et al., 2013). This suggests a significant overlap in the measures of hardiness and grit. Yet while many of the outcomes

between these two constructs are similar, it is important to distinguish between them. One primary difference is that grit does not require hardship, while hardiness does (Georgoulas-Sherry & Kelly, 2019). Grit, therefore, can be studied in a wider variety of contexts.

Studies that relate grit to excessive or addictive behavior suggest that grit represents a higher capacity for self-regulation. This general tendency is captured by Wolters and Hussain (2015) who noted that “Our findings are also the first to show that grittier students may be less likely to procrastinate” (p. 304). If grit represents a higher capacity to self-regulate, then addictive and unproductive behavior in general should be affected by this factor as well.

One area that is often perceived as wasteful and potentially addictive is social media use among college-age individuals. In a meta-analysis that included a total of 27,867 participants, Marino et al. (2018) found that personal characteristics that pose a greater risk for problematic Facebook use (like neuroticism) are also associated with higher risk levels for substance addictions. Neuroticism, one of the Big Five personality traits, is a negative personality characteristic related to moodiness, anxiety, frustration, jealousy, and depression (Mousavi, 2017). Researchers have had a difficult time defining social media addiction due to various assumptions and unclear thresholds. This lack of consensus makes it difficult to build a unified body of literature exploring this phenomenon (Banyai et al., 2017). However, several themes are clear from the studies that have been conducted. Excessive social media use generally correlated to lower levels of academic achievement (AlFaris et al., 2018; Azizi et al., 2019). The use of social media outside of the classroom has been shown to decrease academic performance as well, but these findings are not without exception (Chiang & Sumell, 2019). Some research has found that students do not even have to use social media for it to distract them. Hollis and Was (2016) found that even thinking about social media can decrease academic performance. Grau et al.

(2019) found that nearly half of all millennial students report having been unsuccessful in trying to cut down on the amount of time they spend on social media. Many students are unaware of the amount of time they actually spend on social media and feel it consumes less of their day than it actually does. Students often report that they check social media in down times, like between classes or while waiting in line. However, deprivation studies show that this is not entirely true, and when denied access they realize that their habit of checking social media is much stronger than they had thought (Grau et al., 2019). Much of this is driven by their fear of missing out (Alt, 2018).

Society-at-Large

Research reveals that smartphone use has dramatically increased in recent years across all demographics of society (Rozgonjuk et al., 2018). The ubiquitous presence of smartphones and social media for college students creates both opportunities and challenges. One key capability that did not exist several decades ago is the ability to connect virtually with thousands of peers and strangers through social media networking. Myspace was the first significant social media platform and began in 2003. In fact, visits to www.myspace.com briefly exceeded visits to Google in 2006. The insignificance of social media prior to Myspace is seen by the fact that earlier research on the social impact of internet use did not always even mention social media (Gershuny, 2003). Myspace held a temporary monopoly within the social media world, but was quickly surpassed by a newcomer. Facebook began in 2006 and swiftly became the dominant social media platform around the world. Instagram is another social media platform that is more image-based and especially appeals to younger individuals (Yang & Lee, 2020). Many adolescents and young adults today have multiple social media accounts and spend a growing amount of time interacting with others through these forums (Grau et al., 2019; Yang & Lee,

2020). Little research has been conducted on the factors that predict the overuse of social media in general (Banyai et al., 2017).

Conceptual Background

The foundational theories underpinning this study are grit (Duckworth et al., 2007), the Big Five personal traits (Allport & Odbert, 1936), and a small constellation of addiction theories rooted in Problematic Internet Use (Griffiths, 2005; Young, 1998). Duckworth et al. (2007) described grit as perseverance and passion toward long-term goals posited that higher grit scores can predict how successful an individual will be in achieving long-term goals. Research has shown that grit is a strong predictor of academic performance (Suzuki et al., 2015). While self-regulation is high for individuals with high grit scores, people suffering from addiction often have poor self-regulation (Al-Samarraie et al., 2021). There is some conceptual overlap between grit and the Big Five personality traits as well, particularly conscientiousness (Crede et al., 2017). However, Grit has been shown to be distinct from the Big Five construct (Schmidt et al., 2020).

Within the context of addiction, problematic internet use has been identified as a growing issue that is influenced by genetics, personality, and environment (Spada, 2014). Various facets of digital addiction have been explored, including internet gambling, pornography, cyber shopping, and computer gaming. Social media addiction has emerged as one of the most ominous of this family of addictions due partially to the fact that it can go unnoticed in many young people (Banyai et al., 2017). Students experiencing social media addiction are aware of their poor self-regulation and the fact that their compulsive use of social media diminishes their productivity with both school tasks and traditional socialization (Grau et al., 2019). The theories of grit and addiction address similar facets of behavior and self-regulation.

Problem Statement

Social media is a prominent aspect of a college experience because it has achieved nearly universal saturation in American society (Banyai et al., 2017). College students attending four-year schools will likely be unaware of the full amount of time that they spend on social media and the time cost this creates in their schedule (Grau et al., 2019). Students who do not exercise restraint in their use of social media run the risk of experiencing a lower sense of well-being and diminished academic success (Alt, 2018; Arora et al., 2022; Lai et al., 2019; Zhao, 2023). Many students access social media during lectures, which correlated with lower levels of deep learning that requires more sustained focus (Rozgonjuk et al., 2018). Social media addiction and procrastination have a positive correlation with each other, and a negative correlation with effortful control (Lian et al., 2018). The Bergen Social Media Addiction Scale (BSMAS) utilized in this study to assess social media addiction was found by Azizi et al., (2019) to have a negative relationship with academic performance. Those findings augment previous studies that have shown excessive smartphone usage has a negative correlation with academic performance (Hawi & Samaha, 2017).

The literature on social media addiction and grit both reveal a need for more research in order to better understanding the relationship between these two variables. Multiple studies have observed the lack of research addressing the causes of social media addiction in current literature (Grau et al., 2019; Leung et al., 2020). Maddi et al. (2013) found the grit had a relation with internet addiction. Addiction to smartphones is a significant risk factor for college students (Arora et al., 2022; Kim et al., 2023). After studying the relationship between grit and addiction to online gaming, Borzikowsky and Bernhardt (2018) concluded that “more research in this field is needed to fully understand the relationship between grit and addictive behavior disorders” (p.

438). The problem is a lack of understanding regarding the effect that grit may have on social media addiction.

Purpose Statement

The purpose of this correlational study is to determine the relationship between grit scores (Duckworth et al., 2007) and social media addiction (Grau et al., 2019) among college students enrolled in undergraduate and graduate programs in three private colleges. Students from three faith-based colleges were invited to participate. A correlational research design is used to examine the relationship between these two factors. This study addresses the lack of understanding regarding the relationship between these two variable. The grit variable is a measure of an individual's passion and perseverance for long-term goals (Duckworth, 2019; Duckworth et al., 2007). Social media addiction is a variable that describes compulsive or excessive use of Snapchat, Facebook, Twitter, Instagram, TikTok, or other platforms to the point that it interferes with other aspects of an individual's life (Grau et al., 2019). This variable will be measured with the BSMAS instrument (Andreassen et al., 2012; Lin et al., 2017). Both of the variables in this study are independent and no causation will be determinable (Rovai et al., 2013).

Students were surveyed and reported demographic information, grit scores, and social media addiction scores. The population of these colleges tend to fit the traditional model for college students as most are between the ages of 18-22 years of age (Hsu, 2019). This population will include students who are on campus and online.

Significance of the Study

Despite the lack of literature on the relationship between grit and social media addiction, the interaction between these two variables could have a notable role for parents and college

administrators in the future. This study builds on current literature that explores the role of noncognitive factors and their relation to student success. Social media addiction and procrastination have a strong negative impact of a student's overall achievement while in college (Grau et al., 2019; Lian et al., 2018). The nature of technology guarantees that this issue will only increase for future generations of students, and it is imperative that data driven decisions and interventions be developed possible for leaders and policy makers. Research indicates that social media addiction negatively effects a college student's level of stress and anxiety, which results in a negative academic performance (Malak et al., 2021). Higher levels of social media addiction have also been observed to correlate with more social loafing among college students (Turan et al., 2021).

One of primary noncognitive factor being researched today in academic achievement is grit (Duckworth et al., 2007). Grit has been shown to correlate with lower levels of addiction in previous studies (Borzikowsky & Bernhardt, 2018; Griffin et al., 2016; Kim et al., 2023; Maddi et al., 2013). Grit is also positively correlated with a college student's self-regulation (Doo et al., 2021; Wolters & Hussain, 2015). This study provides empirical data to help researchers understand the relationship of grit with social media addiction drawn from a sample of enrolled students in a private four-year college. The vast majority of these students are taking or have recently taken classes online due to the COVID-19 restrictions on gatherings in place in Southern California prior to the semester of this study. This understanding helps students and those who influence them to achieve higher levels of attainment through interventions and an understanding of the role grit plays in these harmful tendencies.

A better understanding of the conditions in which addictions arise will enable practitioners to better identify individuals who are at risk (Di Lodovico et al., 2018). An

improved theoretical understanding of addictions and their related risk factors can not only help diagnose addiction earlier but also more accurately (Grodin et al., 2021). Internet and cyber addictions seem to be more prevalent in college students, not only due to their age but also the fact that they are online for both work and relaxation (Grau et al., 2019; Turan et al., 2021). Aksoy (2018) points out that, unlike traditional forms of addiction, social media addiction may to relatively unnoticed by students who suffer from it. Understanding the risk factors should lead to earlier and more accurate detection, which in turn will allow for more effective mitigation and treatment options.

Research Question

This study addressed the following research question:

RQ1: What is the relationship between grit and social media addiction for college students as shown by the Grit-S scale and BSMAS?

Definitions

In order to provide clarity related to various terms used frequently in this study, the following list of definitions is provided for the reader. These definitions are unique for this paper, but capture the terms as used by the researchers cited.

1. *Addiction* – Addiction is characterized as containing repetitions of behavior with disregard for consequences that is also characterized by a lack of self-regulation (Grau et al., 2019).
2. *Big Five Personality Traits* – This cluster of characteristics is comprised of openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (Allport & Odbert, 1936).

3. *Grit* – Grit is the combination of perseverance and passion in regards to long-term goals (Duckworth et al., 2007).
4. *Hardiness* – Hardiness is understood as the courage and motivation to adapt and work hard under stressful situations while remaining emotionally healthy (Georgoulas-Sherry & Kelly, 2019).
5. *Irrational procrastination* – This type of procrastination describes the delay of intended action despite knowledge of undesirable consequences of delay (Svartdal, 2017).
6. *Internet Addiction*- Internet addiction is the compulsive use of the internet, especially when combined with negative emotions and a sense of loneliness and depression (Awan & Khan, 2017; Chou et al., 2005).
7. *Self-regulation* – Self-regulation refers to an individual’s volitional capacity to control or adjust their behavior (Gong et al., 2020).
8. *Social media addiction* – Addiction to social media is the condition of spending excessive amounts of time using Instagram, Twitter, Pinterest, Facebook, or other social media platforms (Grau et al., 2019).

CHAPTER TWO: LITERATURE REVIEW

Overview

Chapter Two provides an overview of the current literature and seminal works that have informed this study. This chapter begins by articulating the researcher's theoretical framework and proceeds to examine the constructs that will be used in this study. Because the study is rooted in a postpositive epistemological framework and utilized various theories, these perspectives will be defined and explored. The development and use of Grit and Social Media Addiction in recent studies is also reviewed. This overview reviews and amalgamates several key theories necessary for this study and uses recent literature to construct a synthesized overview of the current state of research in related fields. Understanding current literature will help the reader better grasp the state of research in these fields and will also serve to highlight the gap in literature this study seeks to address. Foundational to this research is the theory that grit is central in understanding non-cognitive factors related to students' success. After a summary of relevant literature, this review synthesizes relevant research and reveals the gap in current knowledge that this study will address. Criticism regarding the Grit scale's social fairness and utility for research is also addressed. An overview of addiction research and application to social media is covered, as well as the need to understand noncognitive factors that impact student success.

Theoretical Frameworks

Clear theoretical frameworks are essential for quality research. The importance of clarity in this area was emphasized by Lederman and Lederman (2015) who wrote, "Theoretical frameworks are critically important to all of our work, quantitative, qualitative, or mixed methods" (p. 597). While researchers strive to objectively gather and analyze data, it is

impossible to be complete void of preconceptions. This study relies on a postpositive epistemological framework, along with theoretical frameworks related to grit and social media addiction.

Postpositive Epistemological Framework

This study employs a post-positive epistemological framework. This framework shares some common ground with an earlier model of positivism. Positivism is often adopted in physical sciences and assumes that tests and measurements accurately reflect the world as it genuinely exists. It is defined by Gall et al. (2007) as “the epistemological doctrine that physical and social reality is independent of those who observe it, and that observations of this reality, if unbiased, constitute scientific knowledge” (p. 16). This approach to research suffers from some serious shortfalls that can be especially problematic in the social sciences. The positivist approaches the quest for knowledge creation with an unfounded optimism that ignores the influence of bias and limitations that are ubiquitous in research. An overcorrection to these obvious errors is exemplified in a pragmatic theoretical framework. One premise of a pragmatic framework is that genuine truth cannot be attained through research or does not exist objectively. This view is internally inconsistent because the claim that no objective truth exists is in fact an objective proposition about truth. Yet it is important to remember that simply because truth cannot be known in a fully objective way does not mean that objective truth does not exist (Schaeffer, 2005).

The post-positive theoretical framework recognizes that external reality cannot be fully known objectively, but can be probed through quality research (Creswell, 2013). Creswell and Poth (2018) state that “postpositivist researchers view inquiry as a series of logically related steps, believe in multiple perspectives from participants rather than a single reality, and espouse

rigorous methods of qualitative data collection and analysis” (p. 23). This framework is used by both qualitative and quantitative researchers and is utilized in this work as well. The quantitative nature of this study assumes that one can examine the relationship between variables through statistical analysis (Creswell, 2015).

Grit Theoretical Framework

Duckworth et al. (2007) provided the seminal research for the modern understanding of grit. The amount of grit a person has is determined by combining scores from a self-reported measure. The two primary subsets that combine to form grit are passion (consistency of interest) and the perseverance to pursue long-term goals (Duckworth, 2016). Duckworth left her position at McKinsey & Company to teach math in a public school in New York. The observations that she made in the classroom led to the development of this theory, which she continues to pursue in her position at the University of Pennsylvania. Grit has been researched in many different demographic groups and has been shown to positively correlate with student success in many distinct areas (Beyhan, 2016; Disabato et al., 2019; Hodge et al., 2018; Lam & Zhou, 2019; Suzuki et al., 2015; Young-Brice & Dreifuerst, 2020). This will be explored later in the following literature review.

As is generally the case with effective theories, research on grit was grounded in prior studies that sought to understand aspects of student achievement. Duckworth et al. (2007) notes the contributions of earlier writers and their extensive influence on the theory as it currently exists. Galton (1892) argued passionately that while natural ability significantly affected a person’s accomplishments, hard work was a significant factor that should not be overlooked. In his study of hundreds of high achieving professionals in England, Galton found that natural ability and status were incapable of adequately predicting an individual’s achievements (Galton,

1892). Likewise, in her study of gifted children, Catherine Cox (1926) showed that while IQ and cognitive abilities were important, persistence and zeal were also critical in understanding high achievement. This insight was foundational to the current research on grit and the conclusion that consistency of interest and persistence of effort are critical for long-term achievement.

Grit is a construct that combines two separate subscales of Consistency of Interest and Perseverance of Effort (Duckworth & Quinn, 2009). These two subscales are further divided into four psychological characteristics. Those characteristics are interest, purpose, practice, and hope (Duckworth, 2016). The first two psychological characteristics of interest and purpose form the Consistency of Interest subscale while practice and hope combine to form the second Perseverance of Effort subscale. These four psychological characters are often sequential in development and build one on another as a person develops higher levels of grit (Duckworth, 2016).

Educators have long recognized the importance that passion learning can play in student success. Maiers and Sandvold (2017) argue that much of the achievement gap can be better understood and corrected by addressing the gap in student passion. Understanding the complex factors contributing to America's persistent achieve gap between demographic groups is critical if educators and policy makers aim to make meaningful progress in this area. Purpose is also an important component of the interest or passion subscale (Duckworth, 2016). Developing purpose is not something people are likely to fall into by default, and instead is itself a high level of intentionality (Little & Mitchell, 2018).

Practice and hope combine to form the perseverance of effort. It is possible to practice without much benefit. Grittier individuals are more likely to demonstrate a purposeful practice (Duckworth, 2016). Practice that yields significant outcomes is high in both quantity and quality.

The deliberate practice that grittier students are more capable of is the highest type of practice that yields the most benefit (Duckworth et al., 2011). These traits enable an individual to exhibit the perseverance of effort that leads to overcoming adversity in their lives (Crede et al., 2017; Young-Brice & Dreifuerst, 2020).

Hope closely tracks the trait of optimism and allows students who have negative events to experience and remember them different than others who are more pessimistic (Seligman, 2006). This allows gritty students to continue when others would be more likely to give up and stop progressing. This is perhaps why grit has been found to be an important characteristic in female university students who were also mothers (Braund et al., 2020) and minority students pursuing degrees in fields where they are likely to be underrepresented compared to the general population (Young-Brice & Dreifuerst, 2020). A lack of hope has been linked to shortened longevity in careers. Hancock (2018) found that teacher burnout was most likely after a teacher had hope replaced by exhaustion and cynicism.

The perseverance of effort subscale has been a key focus for many researchers. This subscale has been singled out as the most distinctive subscale of grit when compared to other constructs (Abuhassan & Bates, 2015). Lam and Zhou (2019) found that the perseverance of effort subscale was the most effective in predicting academic outcome in K-12 students. This pattern was also seen in identifying which Chinese students who were living without one parent due to separation or divorce were likely to express poor behavior (Lan & Wang, 2020). The dominance of the perseverance of effort subscale is not limited to a single region of the world. In a study including 7,617 participants spread across every continent except Antarctica, the perseverance of effort subscale was the only aspect of grit to have a strong correlation with subjective well-being, beliefs about well-being, and personality strengths (Disabato et al., 2019).

Wolters and Hussain (2015) found that perseverance of effort correlated with participants' ability to sustain time and energy to accomplish tasks. This was even true in light of possible distractions, which is a significant factor for college students in relation to their electronics (Maddi et al., 2013). It should come as no surprise that perseverance of effort has been shown to be more predictive of positive outcomes than consistency of interest (Bowman et al., 2019).

Persistence is a central ingredient in the grit construct (Duckworth et al., 2007). A positive relationship exists between participants' grit level and their likelihood to persist with difficult tasks. This was demonstrated in a study by Lucas et al., (2015) in an experiment involving 132 adults recruited from Craigslist who received a small payment for participating. Each participant took the Grit-S test, then played a competitive online game that involved effort. The results of this game were artificially manipulated, allowing the research to measure effort in gritty participants when they were failing compared to non-gritty participants when they were failing. Both groups continued playing so long as they were winning. However, the grittier participants increased their effort when failing much more than non-gritty participants. This study also included a second experiment involving 830 participants who were given math problems where the researchers again manipulated the results. After 6 rounds of questions, participants were guaranteed a \$2 reward. They could choose to exit the game and received a \$1 bonus, or continue. If they continued, they had a chance to earn a \$2 bonus, but if they lost they received no bonus at all. This experiment shows that winning participants were likely to continue the game irrespective of their grit score. However, non-gritty participants generally left the game if they were not winning, while grittier participants who had lost the earlier rounds were more likely to continue (Lucas et al., 2015). This study demonstrated that gritty individuals not only increase effort when faced with failure but are also more likely to persist after they have

experienced failure. This may be especially helpful in understanding why grit is such a significant factor in the success of minorities and single mothers in college (Young-Brice & Dreifuerst, 2020).

The correlation between grit and the ability to persist in difficult tasks was further illuminated by a recent study of university students who were also mothers. The challenges of motherhood, combined with the rigors of higher education, can produce a difficult obstacle to women who want to complete a college education. Braund et al. (2020) studied 284 students who were also mothers in a large university in Australia. They found that 70% of the participants recognized grit as something that enabled them to persist in their education, and an additional 23% indicated that it was sometimes an enabling factor. Only 7% of these students said that grit was not a characteristic that enabled them to achieve their educational goals. The small fraction of students who did not recognize grit as enabling their studies also shared other negative experiences and were more likely to say they were hindered by self-defeating behaviors, lacked drive and determination, and suffered from low self-esteem (Braund et al., 2020). The positive relationship between grit and endurance has also been noted in college students who are first in their family to attend university (Stewart et al., 2015).

Controversy over the Need for Grit Construct

This theory has not been without its detractors. Schreiner (2017) has argued that grit does not so much reflect a student's internal drive and determination as it simply mirrors the environment where they were raised. While it is true that gritty students have higher GPAs and standardized test scores, grittier students also tend to be from wealthier families that already have an advantage over marginalized segments of the population. Activities such as after school programs, swimming lessons, and focused guidance by coaches and parents can build a student's

level of grit, but these opportunities are more frequent among wealthy children than they are with poor children. Schreiner (2017) goes so far as to argue that focusing on grit may be dangerous in that it ignores implicit privilege, focuses on the individual, is founded in deficit ideology, and could become something that college admission offices factor into their acceptance process. Of course, these concerns could also be used to denigrate the importance of traditional college entrance exams as well. The concern is that grit could be used to ignore these important aspects of success, focusing exclusively on the individual and ignoring the power structures and inequalities and exist in a more systematic nature (Golden, 2017). However, this does not necessarily need to be the case. While some of these concerns may be well founded, an overreaction is not helpful either.

Socol (2014) shared many of these concerns, and even insinuated that Duckworth is too “white” and “Calvinistic” to be taken seriously, despite her Asian ethnicity. Herold (2015) opined that grit was racist and posed as a thinly veneered excuse of the wealthy to excuse their privilege. Gorski (2016) argued that the theory of grit is at odds with a full understanding of poverty and economic injustice and therefore should be rejected. However, because the research shows that grit does in fact positively correlate with desirable outcomes for students, remarking on the social inequality of America will do little to benefit the students who are most likely to lack grit. It is better to understand grit as part of a constellation of positive traits and seek to develop these in the lives of disadvantaged young people (Anderson et al., 2016; Hwang et al., 2018; Strayhorn, 2014).

It is unnecessary to despair that grit is merely a reflection of an individual’s socioeconomic background, however. Of the many characteristics that influence a person’s level of grit, economics is only part of the picture. Family characteristics are also significant. In one

study of 128 Latino college students, researchers discovered that family and the presence of meaning in life had a significant influence in their level of grit as young adults (Vela et al., 2015). When studying the effect of parenting styles on the academic achievement and grit levels of 383 university students, Howard et al. (2019) showed the grit was positively correlated with total academic success ($r = .423, p < .001$). This validates other research that has shown grit to be a significant factor in overall academic success (Hodge et al., 2018; Lan & Radin, 2020; Suzuki et al., 2015). The study by Howard et al. (2019) also revealed that an unhealthy overparenting style has a negative correlation with a young adult's level of grit ($r = -.20, p < .01$) while a person's grit scores were positively correlated with healthy parenting styles such as autonomy granting parenting behaviors ($r = .136, p < .05$) and acceptance and involvement parenting behaviors ($r = .123, p < .05$). In a longitudinal study, Park et al. (2020) found that with children from ages 4-14, a parent's level of education did not predict grit as a teenager, but a child's ability to delay gratification at age four did.

Recent researchers have argued that grit may in fact be especially important for minorities who are trying to overcome obstacles and achieve their goals. In a qualitative study involving semi-structured in-depth interviews with black prelicensure nursing students, Young-Brice and Dreifuerst (2020) found that effortful persistence was foundational to the success of these individuals in a field where they are typically underrepresented. In another recent study researchers studied 197 undergraduate students to see how grit influenced their fading effect bias (Walker et al., 2020). Fading effect bias is the tendency for the memory and effects of negative events to fade quicker than those associated with positive events (Walker et al., 2003). Higher grit scores were found to correlate with a stronger fading effect bias, indicating that individuals who score well on the grit scale will have less unwanted residual effects from negative events

(Walker et al., 2020). Lan and Wang (2020) studied urban Chinese children who had one parent leave and found that the perseverance of effort subscale of grit demonstrated that the higher a child's grit level was, the less problem behavior was exhibited.

Grit and the Big Five Personality Traits

The theory of grit does overlap with several other established non-cognitive constructs. Perhaps the dominant theory in this field is the Big Five personality traits of openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (Allport & Odbert, 1936). From these traits, many emanations have been identified and studied. Some of the common factors related to academic success include processing strategies, self-concept, academic motivation, and self-efficacy (Willems et al., 2018). One of the most fruitful factors for educational research has been self-efficacy. Usher et al. (2019) found that while grit and self-efficacy were both important for the motivation of 2,400 elementary and middle school students, the teacher's scoring of their students competency was mostly influence by their self-efficacy. From that study it seems that perceiving one's self a gritty is not effective for achievement if that is not also combined with a perception of being capable academically.

While the self-efficacy construct shares some conceptual space with grit but also diverges in important areas as well. Self-efficacy includes constructs such as motivation, resilience, social cognition, and internal versus external locus of control (Bandura, 1977). Grit is more narrowly construed and is a composite score that includes two primary subscales of passion, or stamina in interest, and perseverance, or stamina in effort (Duckworth & Quinn, 2009). Research has shown that the conceptual overlap between self-efficacy and grit is not complete, and that these two theories are indeed distinct from each other (Duckworth et al., 2007; Lechner et al., 2019; Wolters & Hussain, 2015).

One recent meta-analysis questioned the necessity of grit as a separate factor and suggested that the effect of grit may be overreported in some studies (Crede et al., 2017). However, this meta-analysis does show that grit has a positive correlation with students' GPA and college retention. While it is true that grit may be construed as a subfactor for conscientiousness, these two factors are not the same. Grit has been shown to be distinct from conscientiousness, as demonstrated by Abuhassàn and Bates (2015). This research included 494 adult participants who were recruited from Amazon's Mechanical Turk program to complete a battery of assessments. This study focused on the effortful persistence subscale of grit in relationship to conscientiousness, neuroticism, and IQ. This study found that grit added no real predictive value for a student's GPA in addition to what was already predicted by conscientiousness, neuroticism, and IQ. However, the perseverance subscale of Grit was necessary to predict reported achievement. The authors concluded that "the hypothesis that Grit would have incremental predictive validity for reported achievements was therefore supported" (Abuhassàn & Bates, 2015).

Additional researchers have agreed that there is a strong overlap between some aspects of grit with Big Five personality traits (Crede et al., 2017; Lechner et al., 2019; Steinmayr et al., 2018; Werner et al., 2019). However, while the overlap between grit and the Big Five personality traits are certainly recognized, it is far from clear that grit fails to add new insight. Schmidt, et al., (2020) investigated whether the subscales of grit showed different results when compared to facets of Conscientiousness, one of the Big Five traits. They analyzed 1,233 samples and showed that while the persistence of effort aligned very closely with the productiveness facet of conscientiousness, the consistency of interest subscale yielded unique insight (Schmidt et al., 2020). Another study of 4,685 students that compared both grit and conscientiousness to GPA

found that while grit initially had a smaller effect of the two for freshmen, it was more constant and eventually passed conscientiousness in explanatory power (Caviglia-Harris & Maier, 2020).

Dixson (2019) showed that while grit does predict student success, established psychological factors such as academic self-concept do so as well. He argued that grit adds little to what is already known about this field and may not be worth the research resources necessary to explore its full benefit. However, one key differentiator is that grit not only includes consistency of interest, but perseverance of effort. The latter factor is often cited as a more powerful predictor of student success than the previous (Abuhassan & Bates, 2015; Bowman et al., 2019; Lan & Radin, 2020; Lechner et al., 2019; Young-Brice & Dreifuerst, 2020). These studies collectively show the importance of grit as an individual theory that merits further use in the field of educational research.

Addiction Theoretical Frameworks

Multiple models exist for understanding the nature of addiction as well. Hyman (2007) focused on the release of the neurotransmitter dopamine as a cause for addiction. This neurotransmitter causes the addicted individual to feel good and experience a slight psychological high. Individuals can quickly learn to crave that feeling that they experience when their body has an elevated level of dopamine which in turn drives their addictive behaviors. While Hyman showed that dopamine levels significantly help researchers understand the nature of addiction, other facets of addiction go beyond the neurological and physical. Foddy (2011) focused on the psychiatric aspect of addiction and supported a theory that addiction can be thought of as a psychiatric disease. In this model, the psychiatric disease causes compulsive behavior on the part of the addicted individual.

A person struggling with addiction, from a psychiatric perspective, loses or partially loses their ability to control their actions and choose their responses. The conservation of resources theory proposes that when emotional energy is spent on creating and interacting with social media, a person will have less emotional resources for other important areas such as job performance (Zivnuska et al., 2019). Griffiths (2005) looked at the behaviors associated with addiction outlined the six central elements as salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse. Each of these research lenses provide important observations for understanding the nature of addiction. As is often the case, theories that focus various facets such as neurological (Hyman, 2007), psychiatric (Foddy, 2011), and behavioral (Griffiths, 2005) all capture an aspect of addiction and should be considered in tandem.

Traditional addiction theories are being modified and explored today in light of new types of addictive behaviors (Borzikowsky & Bernhardt, 2018). Standing models of addiction have shown applicable to newer behavioral addictions, including social media addiction (Wegmann et al., 2020). Addictions in general are excessive, harmful, and compulsive activities that in moderation may be harmless or even beneficial. An example of this can be seen in the CrossFit exercise community. While there are many positive outcomes from this approach to physical fitness, 5% of this community has been found to be addicted and be more likely to exercise while injured, taking medicine to enable them to exercise more, and feeling guilty if they miss exercise (Lichtenstein & Jensen, 2016).

This is true with online addictions as well. Griffiths (2010) notes that online gaming is an expanding challenge that may affect an increasing number of individuals, especially those who are college age. However, not everyone who plays online games are equally susceptible to becoming addicted to that behavior. The constellation of factors that put someone at risk of

addiction is vast and varied (Hawi & Samaha, 2019). While some differences exist between types of addiction, Jin Jeong, et al. (2019) found that there was significant overlap in risk factors between Internet Addiction and Smartphone Addiction. Depression and anxiety have been found to be predictive of smartphone addiction even after adjusting for other confounding factors (Matar Boumosleh & Jaalouk, 2017). Because online addictions can be so detrimental for college students, colleges and universities need to take steps to support vulnerable students (Grau et al., 2019).

Some types of addictions seem to be more common in one gender and not the other. Research has shown that male Iranian students are more likely than females to be addicted to social media (Azizi et al., 2019) and male European adolescents are more likely to be addicted to the internet than females (Lopez-Fernandez & Kuss, 2020). This is not unsurprising, as some studies have shown that males have a slight lead in areas of addiction (Azizi et al., 2019; Hawi & Samaha, 2019; Jin Jeong et al., 2019; Mahamid & Berte, 2019; Su et al., 2019). However, some types of addiction may skew in the other direction as well. In a study of 5,003 adults in Korea, Kim et al. (2016) found that females were 1.46 times more susceptible to smartphone addiction than their male counterparts.

This gender disparity does not hold for the other variable in this study. Grit does not have the same demographic correlations as addiction. Most studies of grit do not show a statistically significant difference between the grit levels of males and females (Borzikowsky & Bernhardt, 2018; Hodge et al., 2018; Lam & Zhou, 2019). A few studies suggest a slightly higher level of grit for females, though the differences are generally not significant (Dunn, 2018). Yet while males are frequently found using technology more consistently, this is not an adequate criterion on which to base addiction.

Addiction clearly goes beyond mere amount of use. As pointed out by Baer et al. (2012), significant lengths of time spent on online gaming does not necessary constitute an addiction to that activity. Some addiction can even be seen in activities that are generally healthy such as exercise (Gonzalez-Hernandez et al., 2021). Instead, addiction deals with a physical dependence of dopamine and psychiatric elements that go beyond the amount of time someone spends on an activity or number of times they may check their social media accounts (Foddy, 2011; Hyman, 2007). It is important to note that early intervention in addictions is critical. In researching heroin addiction, Din and Li (2020) found that the longer the addiction had been in place, the more massive the intervention had to be for the same effect.

Related Literature

Previous research on grit, addiction, and social media addiction form a foundation for the current study. This existing literature combines to reveal insights into factors that have a significant effect on the success of college students. Key aspects of each of these constructs are examined below in light of recent studies.

Addiction

Educators and administrators have long recognized that many factors that contribute to student success are outside of the classroom and not easily manipulated. A student's IQ, family background, motivation, test-taking skills, personal skills, and many other factors significantly affect his or her ability to earn good grades, complete a degree, and achieve gainful employment after graduation (Bowman et al., 2019; Crede et al., 2017; Willems et al., 2018). The overuse of high stakes testing has exasperated the problem of educators assessing student's abilities on a narrow field of data (Cerdeira et al., 2018). High stakes testing has been particularly problem for some minority communities (Altshuler & Schmutz, 2006). The commitment of educational

leaders to the success of their students has led to a push to better understand these factors and the role that they play in how well students do in school and beyond.

Contributing Factors to Student GPA

Student achievement is a broad concept used by higher educational professionals to describe the success they desire for their students. While in school, student achievement is typically measured by grades and successfully completing the required courses (Akos & Kretchmar, 2017). However, the end goal of quality colleges and universities is not students, but graduates who are prepared to use their skills and knowledge in their chosen field. Success in higher education does not merely mean earning good grades but completing a certificate or degree that results in the graduate being vocationally qualified (Scott, 2018).

College and universities have traditionally relied heavily on high school grades and standardized college entrance exams like the SAT and ACT (Cerdeira et al., 2018). The persistent use of standardized admission tests has occurred despite research showing that high school grades are far more predictive for undergraduate achievement (Bowen et al., 2009). Cerdeira et al., (2018) conducted a study that included 44,758 Portuguese undergraduate students and found that secondary school grades explained 14.7 percent of the student's undergraduate grades, whereas national admission exams explained only 7.9 percent. One solution to this data is to combine these two measures; a practice frequently used in the college admissions process. However, combining standardized test scores with high school GPA still accounts for only 25% of the variation in the college GPA for students in their freshman year (Akos & Kretchmar, 2017).

It is certain the many factors contribute to a student's success in college. Some of those factors can be located in the college or university itself. Roy (2015) found that colleges with

higher faculty retention also saw better student success. The link between college staff and retention does not stop at faculty. Students are more likely to persist in their program if the college they attend displays a professional staff in all areas of student life (Roberts, 2018). Other factors that contribute to student success include a student's family educational background, financial pressure, and a student's high school curriculum (Duta et al., 2018; Farruggia et al., 2018; Sanchez-Gelabert et al., 2017).

Noncognitive factors have been given an expanding role in studies seeking to more accurately predict student achievement in higher education. Farruggia et al. (2018) studied 1,603 first year students and found that non cognitive factors have a significant effect on academic performance and a moderate effect on student perseverance. Grit is an important part of this constellation of noncognitive factors and can be helpful to predict a college student's GPA (Carp et al., 2020; Pate et al., 2017).

In a study of 451 university students, Beyhan (2016) confirmed that there was a significant positive relationship between a student's level of grit and their academic achievement in terms of semester grades ($r = .42, p < .01$). Carp et al. (2020) found a positive linear relationship between Doctor of Physical Therapy students' grit score and their final program GPA ($r = .553, p < .01$). Minorities and single mothers are also more likely to succeed in college if they have a higher level of grit (Braund et al., 2020; Strayhorn, 2014; Young-Brice & Dreifuerst, 2020).

Among the non-cognitive factors that has general considerable interest over the past decade is the concept of grit originally developed by Duckworth et al. (2007). Grit is the capacity a person has to sustain interest and effort in goals over a long period of time. In seminal research at the United States Military Academy at West Point, grit was demonstrated to predict which

candidates would complete the grueling training program better than any other known trait (Duckworth et al., 2007). Prior to this measure, West Point leadership utilized a Whole Candidate Score. Surprisingly, later research revealed that grit does not even correlate with the Whole Candidate Score (Maddi et al., 2017). This metric was designed to capture the characteristics that were thought to be most necessary for successfully completing the program. The fact that grit outperformed the military's own custom measure is a notable example of the predictive power of grit. More recent research was able to repeat these findings. Maddi et al. (2017) demonstrated that a candidate's grit score positively correlated with their retention at West Point.

Subsequent studies have shown that national spelling bee champions could not be predicted by the student's IQ as traditionally assumed. However, the student's success could be predicted by their level of grit (Duckworth et al., 2007). This result was later shown to be explained by the capacity of grittier students to sustain massive amounts of deliberate practice (Duckworth et al., 2011).

Grit and Student Persistence

Student persistence is critical component to academic success (Scott, 2018). For most degree programs, and real-world benefit of higher education begins abruptly at the time a student completes their program. Students with high levels of grit are more likely to complete their program than students with low levels of grit (Hodge et al., 2018). Persistence is a key metric watched by academic leaders and is often poorly understood. Stewart et al. (2015) showed that while first-time students are at a high risk for dropping out of their program, students with high grit levels are more likely to persist. However, a study of 4,685 students by Caviglia-Harris and Maier (2020) found that grit had a small but not significant impact of undergraduate retention.

The impact of grit is not only true for students with a comfortable background or high socio-economic standing. Underrepresented segments of the population and non-traditional students also have a higher chance of persistence if they have high grit scores (Buskirk-Cohen & Plants, 2019; Cross, 2014; Young-Brice & Dreifuerst, 2020). With the crushing levels of student debt in the United States, it is important to realize that not all students benefit from their education. While one may safely assume that the intellectual development of a student occurs gradually throughout their program, the benefits in the job market are very abrupt (Selingo, 2013). Students with most of their program completed who drop out of school will likely receive little or no benefit from their work despite having completed much of their education (Scott, 2018; Selingo, 2013). Despite this lack of benefit, students who partially complete their program will undoubtedly rack up a significant amount of student debt and will be responsible for repaying the full amount. This reality underscores the importance of persistence in the modern higher educational setting (Hodge et al., 2018).

Not only does the amount of grit a student has predict whether or not they will complete their program, grit also correlates positively with a student's chance of success while they are in school. Students with higher levels of grit are more likely to success in a broad spectrum of positive outcomes (Howard et al., 2019; Hwang et al., 2018; Strayhorn, 2014). Colleges often rely on high school grades and standardized test scores to determine if a student would be successful in their program. Despite the popularity of these measures, these two factors combined only account for about 25% of the variation in GPA for first year college students (Akos & Kretchmar, 2017). Grit on the other hand has been shown to be an independent, significant factor in predicting student GPA performance in college (Pate et al., 2017). This demonstrates that a person's intelligence is only one factor in their academic performance.

Diligence and hard work are very necessary ingredients as well. Grit has been shown to have a strong relationship with both academic performance and degree completion for Ph. D. students (Palisoc et al., 2017).

Grit and Lifelong Achievement

The benefits of grit are not restricted to academic performance and degree completion. Grit also predicts many positive outcomes that require diligence and time to achieve. This includes after college is complete and individuals are active in the workplace. Suzuki et al. (2015) found that among Japanese employees, grit not only strongly correlates with academic success but to work engagement as well. This cross-sectional study of 1,134 adults found that grit was significantly related to work engagement ($r = .26, p < .001$). Another study of 2,246 professionals found that grit was incrementally associated with career success (Lechner et al., 2019). Another study revealed that grit had a statically significant correlation with income and entrepreneurship (Arco-Tirado et al., 2019).

As previously mentioned, grit has been shown to have a remarkable ability to predict which students will succeed at West Point (Duckworth et al., 2007). Subsequent research has shown that grit was the only factor capable of predicting which of 1,558 West Point candidates would complete the full 4-year program (Kelly et al., 2014). Grit scores are also higher in fully qualified doctors in the United Kingdom than physician trainees (Halliday et al., 2017).

The Relationship Between Mental Health and Addiction

College and university students today face a host of challenges that did not exist even a few years ago. Factors such as financial insecurity, political polarization, and threat of worldwide pandemics can significantly increase their level of stress. There is currently no clear link that demonstrates that grit attenuates a person's response to stress (Wong et al., 2020), though a high

level of stress may diminish an individual's level of grit (Lee, 2017). However, stress does directly exasperate mental health issues (Austin et al., 2018; Letiecq et al., 2019). The link between stress and mental health concerns includes an increased vulnerability to addiction (Gold, 2019). Mental health and addictions are often seen concurrently (Khan, 2017). However, observing that they often happen together is insufficient to establish a causal link.

Mental health is a significant factor in many forms of common addictions (Hall & Prochaska, 2009). In one study of 296 university students chosen at random, it was found that there was a statistically significant correlation between student's mental health and six types of addictive behaviors associate with cell phone use (Babadi-Akashe et al., 2014). Repeated studies have established the negative correlation between mental health and various types of addiction including mobile phone addiction (Mei et al., 2018), cannabis addiction (Van der Pol, et al., 2013), and tobacco addiction (Hall & Prochaska, 2009). Much of the traditional research on addiction focused on substance abuse. While this realm of addiction has certainly not diminished, new forms of addiction have developed over the past few decades.

While substance abuse focuses on the harmful use of tobacco, drugs, and alcohol, behavioral addictions focus on harmful habits that do not involve substances (Marmet et al., 2018). These types of addictions include eating, shopping, exercising, gambling, viewing pornography, online gaming, and social media addictions. Indications are that college students are increasingly struggling with many of these. Research on behavioral addictions are not as well established, leaving additional questions to be answered (Brailovskaia & Margraf, 2017). Studies on internet addiction among college students have revealed a significant and growing problem. In a study of 426 Korean university students, Awan and Khan (2017) found that 10% of them had experienced internet addiction, an increase over past studies. Another study of 688

undergraduate students revealed that 49% reported excessive smartphone use and 39% reported negative effects to their physical health (Matar Boumosleh & Jaalouk, 2017). Lopez-Fernandez and Kuss (2020) found that internet addiction was most common in Europe among educated adolescents and was often accompanied by comorbid disorders such as gaming addiction.

Depression has been linked to internet addiction in female college students, which often leads to other unhealthy habits like eating disorders (Yang et al., 2019). An increase in Facebook Addiction has also been linked to a decrease in physical health in German students, though the relationship is not well understood (Brailovskaia & Margraf, 2017). Social media addiction in general frequently results in college students not getting enough sleep (Abu-Snieneh et al., 2020; Rajamohan et al., 2019). Depression also corresponds positively with smartphone addiction in general (Matar Boumosleh & Jaalouk, 2017). One of the key ways in which social media addiction leads to stress and anxiety is through phubbing, the habit of ignoring in-person conversations in favor of a mobile phone (Ergun et al., 2023). The role of mental health is critical in understanding addiction and opens areas for investigating the role that grit may play in these maladies.

The Relationship Between Grit and Mental Health

Grit has been found to be positively correlated with both well-being and mental health (Arya & Lal, 2018; Disabato et al., 2019; Musumari et al., 2018; Vainio et al., 2016). In a study of 141 of doctoral residents across 9 surgical specialties, Salles et al. (2014) found that grit had a significant effect on both resident's Maslach Burnout Inventory ($B = -.20, P = .05$) and Psychological General Well-Being ($B = .27, P < .01$). An application of this can be demonstrated by observing that doctors in the United Kingdom with high levels of grit are significantly less likely to experience burnout (Halliday et al., 2017). Higher grit scores tend to correlate with

better mental health in medical professionals as a whole (Stoffel & Cain, 2018). The strong correlation between grit and mental health can be found in other demographics as well and has remained consistent over diverse field of studies. Moen and Olsen (2020) conducted a study of 107 Norwegian coaches found that grit was able to predict their positive well-being. A reasonable prediction is that grit will have a negative correlation with the dependent variable in this study as well.

Grit is also an important characteristic to study when trying to understand how people respond to trauma. Tragically, as many as 48% of college students experience trauma ranging from physical aggression, the death of a loved one, an accident, or sexual assault in any given 12-month period of time (Brogden & E. Gregory, 2019). Marie et al. (2019) found that a sample of 709 college students resulted in 14.8% who said they endorsed suicidal ideation.

Unsurprisingly, grit had no correlation with trauma. An individual's level of grit has no bearing on their likelihood of experiencing trauma. However, grit has negatively correlated with suicidal ideation ($r = -0.23, p < .001$) and PTSD symptoms ($r = -0.37, p < .001$). It is possible that the effects of grit are most pronounced when an individual lives with stresses and challenges. This effect was observed in a study conducted by Moore, et al. (2018) on people living with HIV.

This research revealed that higher grit scores, specifically perseverance of effort, was related to better neurocognitive performance on individuals living with HIV but not on adults without HIV (Moore, et al., 2018). These findings are in line with earlier studies (Disabato et al., 2019; Lan & Radin, 2020; McGinnis, 2018; Stoffel & Cain, 2018).

How Grit is Developed

Grit is not static. Unlike a person's stature or IQ, which remain relatively stable throughout their lifetime, grit can be developed (Fitzgerald, 2016; Rohne, 2015). In school, grit

seems to be developed in cultures that emphasize mastery of subject material as opposed to cultures that obsessively rank students between their classmates (Park et al., 2018). Cocurricular activities such as traditional Physical Education classes in high school also help foster grit in students (Cosgrove et al., 2016). Conversely, stress has a negative effect on a person's grit level (Lee, 2017). One study of 124 undergraduate Turkish students, researchers found that individuals who had adverse childhood experiences are more likely to demonstrate slightly lower levels of grit as a young adult (Pasha-Zaidi et al., 2020). Like many noncognitive constructs, the amount of grit a person has is determined by a combination of both nature and nurture (Duckworth et al., 2007). One of the keys for an individual to develop more grit is a growth mindset.

The role of a growth mindset in the development of grit was observed in some of the earliest research on the subject and subsequent studies (Bettinger et al., 2018; Duckworth et al., 2007). In a landmark study of 231 teenagers, structural magnetic resonance imaging revealed that regional gray matter in the right putamen correlated positively to the participant's grit level (Wang et al., 2018). However, that is not to suggest that grit is determined at birth. Wang et al. (2018) also found that the correlation between grit and growth mindset correlated significantly ($r = .22, p < .001$). It is clear from these studies that developing a growth mindset is an important part of enhancing an individual's grit level.

A growth mindset is understood as an individual's perception that their intelligence can be developed (Dweck, 2006). Having a growth mindset can be critical to student's progress in a wide range of subjects and can be increased through interventions (Klein et al.; Yeager et al., 2019). These interventions can be in person and are often be in the form of input from a teacher, parent, or other students. However, these interventions do not need to be one on one in-person meetings. Paunesku et al. (2015) demonstrated the effectiveness of online mindset training. The

1,594 high school students who received this intervention showed a statistically significant improvement in grades. This effect is most pronounced in students who were the most at risk of dropping out (Paunesku et al., 2015). In one study involving 7,686 undergraduate students, researchers found that students assigned to participate in a growth mindset intervention did far better than those who did not (Broda et al., 2018). The improved academic outcome was most pronounced among ethnic minorities. In fact, Latino/a students improved their semester grades by .40 points and reduced the achievement gap with white students by a remarkable 72% (Broda et al., 2018).

Since a growth mindset is important to developing grit, it is necessary to establish that a growth mindset itself can be cultivated (Fitzgerald, 2016). This can be seen through studies that show education in on this subject, even if delivered virtually, have an impact on student performance (Broda et al., 2018; Paunesku et al., 2015). A student can develop a growth mindset by learning that their intelligence can be changed and is not fixed. When teachers educate their students on how to persist, those students then grow in their growth mindset and improve their level of grit (Hochanadel & Finamore, 2015). Fitzgerald (2016) outlines three central steps to developing grit in students. First, the student should experience an environment that is safe, challenging, supportive, and where hard work leads to recognized successes. Secondly, teachers should guide students in identifying their passions and develop their interests. Finally, teachers should help students strive to develop in their areas of interest through deliberate practices that results in skill acquisition (Fitzgerald, 2016).

It is important to note that some students lack the social network to support them emotionally during the rigors of achieving a college education. Kundu (2019) found that low-income minorities with high levels of grit often achieve their goals but are at higher risk of

burnout in the future. This suggests that there may be a limit to the profitability of grit, and it may be possible to have too much of a good thing (Kundu, 2019). As a result, colleges and universities should pay attention to research being produced in this field and foster environments that are favorable to the development of grit, as this characteristic in turn will help their students succeed in academics and life (Hochanadel & Finamore, 2015).

Grit and Addiction

This study not only focuses on grit, but also on the effect that grit has on students' social media engagement and addiction. These behaviors can have a negative impact on a student's academic success and chance of graduating. Insufficient data is available concerning what contributes to a student's risk of spending unhealthy amounts of time on social media (Brailovskaia & Margraf, 2017). A lack of focused attention on completing assignments does have a negative correlation with grit. Wolters and Hussain (2015) noted that "Our findings are also the first to show that grittier students may be less likely to procrastinate" (p. 304). In an online study of German gamers, Borzikowsky and Bernhardt (2018) found a person's level of grit corresponded negatively with the likelihood that they would suffer from online gaming addiction. They also found that age had a similar negative correlation. In other words, someone is less likely to be addicted to online gaming if they have higher levels of grit and are older. Salvarli and Griffiths (2019) contend that the association between personality traits and online addictions is not adequately understood and merit additional study.

Only one study has been done on the relation between grit and substance addiction, and it revealed that lower grit scores were associated with recent heroin use (Griffin et al., 2016). While the current study does not address students' substance abuse, addictions of one type often indicate susceptibility to other types. Social media addiction is a more recent type of addiction.

However, social media addiction has been shown to relate to personality traits that also contribute to more traditional types of addiction (Kuss & Griffiths, 2011). Lee et al. (2013) showed that substance abuse and internet addiction were related in his study of Korean adolescents between the ages of 13-18 years old. This indicates the potential for better understanding the relationship between grit and other addictive or unhealthy characteristics. Other research has demonstrated that while grit had a negative correlation with addictive internet usage, this correlation was not as strong as hardiness or other factors (Lan & Radin, 2020; Maddi et al., 2013). Researchers must remember that grit is not static (Park et al., 2018).

The literature linking grit to smartphone addiction is scant, but growing (Yang et al., 2022). Recent studies have shown a definitive link between grit and smartphone addiction (Khoo & Yang, 2022; Yoo & Choi, 2019). In a study of 605 Korean high school students, Kim et al. (2023) demonstrated that an increase in stress can reduce a student's grit, which in turn leads to high smartphone addiction scores. These studies significantly added to the literature on the effect of grit on addictions in general and smartphone addiction in particular.

Addiction to the internet is growing among the population at large, and college students in particular (Grau et al., 2019). One study of over a thousand Chinese college students showed that internet addiction was found at a concerning level among university students, but meaning in life and self-esteem evidenced a mediating influence on it (Zhang et al., 2015). The role of grit was not researched in that study. However, after studying 241 amateur endurance athletes, one researcher suggested that "grit could act as a factor of balance in self-regulation" (Nogueira et al., 2019).

Electronics Addiction and College Students

The pervasive use of social media and internet by American college students is difficult to overlook. Not every aspect of this trend is negative. Social media engagement has been seen to benefit student engagement when properly deployed by teaching staff and professors (Dyson et al., 2015). Social media can be incorporated into traditional classes in a manner that benefits the student (Alshuaibi et al., 2018). Yet this benefit seems to be restricted to moderate use. Just like some coffee may enhance a person's ability to concentrate, but too much caffeine will make studying impossible, so the amount of social media use should be kept at moderate levels. Excessive amounts of social media are associated with lower achievement for college students (Abu-Snieneh et al., 2020; AlFaris et al., 2018).

Social media use can benefit individuals in several ways. Nisar et al. (2019) found that social media use in businesses can benefit the organization if it is imbedded properly and used to share knowledge. It is important to recognize that not all social media use is of equal merit. Wiederhold (2017) found that social media use can correlate with lower mortality rates, but that this only held true for people who received friend requests. Individuals who spend their social media time initiating online friendships did not have lower mortality rates. How social media is used is also an important factor for adolescents. Rajamohan et al. (2019) found that while positive reactions to social media can build a teenager's confidence, negative reactions have the opposite result. They also found that high amounts of social media use, as well as late night use, can lead to mental health risks and should generally be avoided. Depression, fear of missing out, and cyberbullying risks escalate with increased time spent on social media platforms (Uhls et al., 2017). This can become a vicious cycle as depression also correlated with levels of excessive smartphone use (Matar Boumosleh & Jaalouk, 2017). These negative results are not limited to

adolescents and college students. Zivnuska et al. (2019) found that social media addiction negatively correlates with work-family balance and job performance and has a positive correlation with job burnout in adults.

How much social media is too much? As indicated by the research above, that depends primarily on how it is used and what other factors are in play (Arora et al., 2022; Uhls et al., 2017; Wiederhold, 2017; Zhao, 2023). While any amount of social media use can have an effect on a person, this effect may be either positive or negative. When speaking of addiction, it is important to remember that one cannot merely assess addiction by measuring the amount of time a person spends on an activity (Baer et al., 2012; Borzиковsky & Bernhardt, 2018). True addiction will generally include compulsive behavior driven by a body's dependence on additional dopamine (Hyman, 2007).

Social Media Addiction

Social media addiction has a shorter history of research than some more traditional types of addiction. This obviously must be the case due to the relatively recent rise of the social media phenomenon in modern culture. However, addiction to and through electronic devices falls under behavioral addictions and traditional addiction theories may be applied in research (Wegmann et al., 2020). It is important to observe there is an emotional element to addiction which means simply measuring the amount of use is insufficient (Baxter et al., 2019).

When it comes to social media, there is a clear point at which excessive use is unhealthy, whether the behavior is classified as addictive or not. In fact, face-to-face social interaction is generally harmed as social media screen-time increases (Irwin-Rogers, 2019). The risk of addiction is known to increase with the amount of use in middle school students (Longobardi et

al., 2020). Social media addiction has been linked to increased amounts of anxiety and stress (Ergun et al., 2023).

Social media use is particularly concerning when compared to other types of smartphone content frequently consumed by college students. Lee et al. (2020) analyzed results from 62,276 Korean youth and found that depression and suicidal ideation correlate more significantly with use of social networking services than when a smartphone is used for study, gaming, or other entertainment. Sujarwoto et al. (2023) studied 709 university students in Indonesia and found that higher social media addiction scores correlated to a greater likelihood that the student would experience mild depression. However, this effect diminished in students who had strong family connections or religious beliefs.

The typical result of anything beyond moderate use correlates with a worse sense of well-being (Hunt et al., 2018). However, research is ambiguous on this point, and a few studies even show that some social media may contribute to perceived well-being for some adolescents (Lai et al., 2019). This is generally understood to occur when online interactions and reactions are positive as opposed to negative (Rajamohan et al., 2019). Social anxiety plays a part in this growing use of social media as well. Alt (2018) found that “fear of missing out” is one of the reasons for excessive social media use by college students. This same result was seen in German college students in relation to their Facebook addiction (Brailovskaia & Margraf, 2017). The good news for many students is that limiting one’s social media use can reverse negative effects and increase their well-being again (Hunt et al., 2018).

The unhealthy use of social media has captured the attention of many in the medical and educational world (Alt, 2018; Ergun et al., 2023; Rajamohan et al., 2019). Adolescents and young adults often engage in significant social media use without understanding the difference

between positive and negative outcomes that may result (Hunt et al., 2018). One dangerous outcome to excessive social media use is a loss of sleep. Many college students today are chronically sleep deprived (Gundogmus et al., 2020). It will come as no surprise to learn that overuse of social media and social media addiction correlates significantly with college students' sleep deprivation (Abu-Snieneh et al., 2020; Rajamohan et al., 2019).

The recent addition of this technology to contemporary society means that many long-term outcomes remain unknown. Still, some of the early indicators provide strong cause for concern. Adolescents who are addicted to online gaming have been shown to express a lower level of self-efficacy as well as less social activities with their family (Jeong & Kim, 2011). Among college students, smartphone use has a negative effect on a student's GPA (Sapci et al., 2021). This negative correlation was also seen when Zhao (2023) examined the effect of social media addiction with Chinese college students' academic performance. Social media addiction has been shown to have many of the negative effects on a person as traditional addictions (Arora et al., 2022). Addiction to social media, as with any other addiction, is a serious condition that merits informed intervention and prevention strategies.

Summary

The role of grit in higher education has been an expanding field of research for some time. Many of the traditional demographic factors that influence success such as IQ, wealth, and family of origin cannot predict achievement as accurately as this single factor (Bowman et al., 2019; Crede et al., 2017). The success of grit in predicting the chance of spelling bee champions or West Point cadets merits further research into how it may affect other important areas (Duckworth et al., 2007). The benefits of grit in an educational setting has received a lot of research attention (Akos & Kretchmar, 2017; Bowman et al., 2019; Crede, 2017; Duckworth et

al., 2007). Educational leaders need to understand the significance of this theory and account for it when designing academic programs.

Grit also seems to correlate with lower levels of addiction (Arora et al., 2022; Borzikowsky & Bernhardt, 2018; Griffin et al., 2016; Kim et al., 2023; Maddi et al., 2013). This is an important insight because of the expanding use of social media among college students and the potential that this opens up for addiction and wasted time. College students who spend an excessive amount of time on social media not only lose limited time that could be used for study, work, or socializing, but they also run the risk of experiencing a diminished sense of well-being as a result (Alt, 2018; Lai et al., 2019). The dopamine levels that social media engagement causes can lead to dependency on the part of the individual student. Over time this can cause a person to seek out activities that result in additional dopamine hits (Hyman, 2007). This type of dependency leads to compulsive behavior that can spiral into greater and greater levels of dependency. Additionally, there is a psychiatric aspect to this dependency can function in combination with the physical and habitual elements (Foddy, 2011). When these factors function in combination they can hamper a person's ability to control their own choices and decisions. Physical health can also suffer as students with social media addiction are less likely to get adequate levels of rest (Rajamohan et al., 2019). The impact of inadequate rest on college students effects their social and academic levels as well.

The limited research that has been conducted on grit and addiction already shows that it will likely have a moderating influence on a student's risk for excessive internet and social media use (Borzikowsky & Bernhardt, 2018; Kim et al., 2023; Maddi et al., 2013).

Understanding the relationship between these two constructs could help policy makers and administrator in higher education. However, no literature currently explores the effect of grit on

social media engagement and abuse among American college students. This study will seek to address this gap in the literature and provide student, practitioners, and policy makers with the tools necessary to enhance every student's chance to be successful in higher education.

CHAPTER THREE: METHODS

Overview

The purpose of this study was to determine whether a correlational relationship exists between college students' grit scores and their social media addiction. The previous chapter reviewed the need for this study and its relation to the existing research. In the following chapter, the author describes the methods used in this study. This chapter will review the research methods with specific information on the design, research question, hypothesis, participants and setting, instrumentation, procedure, and data analysis.

Design

This quantitative, correlational, non-experimental design examined the relationship between students' grit scores as measured by the Grit-S scale and social media addiction as measured by the BSMAS for undergraduate students at two private colleges. All three participating schools were private, non-profit colleges. Details are provided in the participants and setting sections below. The rationale for this design was rooted in the research question and type of analysis required to address it. Gall et al., (2007) noted that a correlational design can be used to “analyze the relationships among large numbers of variables in a single study” (p. 336). A correlational study is a non-experimental design that allows researchers to investigate the degree of relationship between two variables that are measured on a continuous scale (Creswell & Poth, 2018).

A correlational approach was chosen for this study because this design is used by researchers to examine relationships between two variables that are not manipulated and are drawn from a single population group (Creswell, 2018; Creswell & Poth, 2018; Rovai et al., 2013). Correlational research designs allow a researcher to analyze how a variable effects

behavior (Gall et al., 2007). Regression analysis revealed the explanatory capacity of independent variable grit with the dependent variable of social media addiction. However, because neither of these variables were manipulated in this study, a causal relationship cannot be established. While researchers cannot infer a causal relationship between factors with this study design, correlational studies can reveal relationships that exist between variables (Warner, 2013). Correlational studies of grit are common and have been used to explore its relationship with undergraduate retention, positive leadership capacity, and academic performance in multiple settings (Luthans et al., 2019; Murphy, 2019; Schimschal & Lomas, 2019).

The first variable in this study was the student's grit score. Duckworth et al. (2007) stated, "We define grit as perseverance and passion for long-term goals" (p. 1087). Grit has been used in many contexts but is exceptionally well suited for research in higher education (Lam & Zhou, 2019; Murphy, 2019; Wolters & Hussain, 2015). The construct of Grit is a composite score derived from two subscales of Consistency of Interest and Perseverance of Effort (Duckworth & Quinn, 2009). Consistency of Interest include the psychological characteristics of interest and purpose while Perseverance of Effort includes practice and hope. (Duckworth, 2016). Grit has been shown to have a negative correlation with both internet addiction and online gaming addiction (Borzikowsky & Bernhardt, 2018; Maddi et al., 2013).

The second variable was the measure of social media addiction. Someone is generally considered on the scale of addiction when they spend so much time on a social platform that it interferes with other aspects of their daily life (Grau et al., 2019). Choi (2018) states "addictive social media use is defined as being overly concerned about social media, driven by uncontrollable motivation to log on to or use social media, and devoting so much time and effort to social media that it impairs other important life areas" (p. 95). Social media addiction includes

all six traditional components of addiction, which are salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse (Griffiths, 2005).

Study of social media addiction is rooted in classical addiction models. The instrument utilized in this study began with the Facebook Addiction Scale, developed to score an individual's addiction to that specific platform (Andreassen et al., 2012). However, Facebook is not the only platform where this behavior manifests. Due to the proliferation of social media platforms, researchers have built on this tool to develop the Bergen Social Media Addiction Scale which has been utilized in a variety of contexts (Banyai et al., 2017).

Research Question

This study addresses the following research question:

RQ1: What is the relationship between grit and social media addiction for college students as shown by the Grit-S scale and BSMAS?

Hypothesis

The null hypothesis for this study is:

H₀1: There is no correlation between the grit score and social media addiction score for college students as shown by the Grit-S scale and BSMAS.

Participants and Setting

Participants for this study were drawn from the undergraduate and graduate population of three private colleges in the United States. These institutions grant associates, bachelor, and graduate degrees in both an on campus and online format. Due to the COVID-19 pandemic, the students who participated in this study were enrolled in a combination of online, blended, and on-campus delivery format. The first college has no denominational affiliation. This private college was a traditional liberal arts school with 8 distinct graduate degree programs and sits on a

campus that is nearly 50 acres. The demographics of this university are seen below (see Table 1).

Table 1

Student population demographics at College A

Population	Undergraduate	Graduate
Male	0	58
Female	0	24
White	0	51
Latino	0	14
Black	0	6
Asian	0	5
American Indian / Alaskan Native	0	0
Multiracial	0	6
Total Population	0	82

The second site was a school with a focus on vocational training for careers in Christian ministry both online and on campus. Despite this narrow focus, this school stills enrolls students from nearly every state and six foreign countries. Since the primary emphasis of this school is a Christian education, students tend to be devoted evangelicals. Factors such as grit and social media addiction are very present in this setting as well. However, there is a fairly even blend of male and female students with significant ethnic, cultural, and socioeconomic diversity in the student body. The specific demographic information for the population from the second site is provided in the table below (see Table 2).

Table 2

Student population demographics at College B

Population	Associate	Undergraduate	Graduate
Male	0	307	49

Female	6	266	18
White	1	252	29
Latino	2	101	6
Black	1	19	2
Asian	2	41	7
Not specified	0	160	23
Online	0	156	67
Resident	6	417	0
Total Population	6	573	67

The third college was an online school that offers degrees on the bachelor through doctoral level. This college initially focused on non-traditional students, but today has a broad spectrum of ages in its student population. The demographic information of their student body is listed below (see Table 3).

Table 3

Student population demographics at College C

Population	Undergraduate	Graduate
Male	91	39
Female	54	18
White	121	46
Latino	9	3
Black	6	5
Asian	7	2
Full-time	54	7
Part-time	91	50
Online	145	57
American Indian / Alaskan Native	00	1

Total Population

145

57

The entire student body from the three schools were invited to participate in this study. A response rate of 15% was targeted, with an actual response rate of 17% received. This selection process constitutes a convenience sample. Research is more generalizable if the sampling process is random instead of convenience, but limited access to the target populations often causes researchers to use a convenience sample instead (Gall et al., 2007). In light of this limitation, the research targeted more than one college student body which caused the sample to be both more diverse and larger in total participants.

Table 4 displays the frequency counts for the demographic variables of those who responded to the survey. Ages of the respondents ranged from 18 to 19 years (27.8%) to over 40 years old (9.5%) with the median age being $Mdn = 20.50$ years. Twenty-six percent were freshmen with similar amounts of students in each of the other four categories from sophomore to graduate student. As for gender, there were similar amounts of males (50.6%) and females (49.4%). Seventy-two percent were White/Caucasian (see Table 4).

Table 4*Frequency Counts for Demographic Variables*

Variable	Category	<i>n</i>	%
Age ^a	18-19 Years	44	27.8
	20-21 years	44	27.8
	22-24 years	21	13.3
	25-30 years	20	12.7
	31-40 years	14	8.9
	Over 40 years	15	9.5
School year	Freshman	41	25.9
	Sophomore	29	18.4

	Junior	31	19.6
	Senior	28	17.7
	Graduate	29	18.4
Gender	Male	80	50.6
	Female	78	49.4
Race/Ethnicity	White/Caucasian	113	71.5
	African-American	6	3.8
	Hispanic	19	12.0
	Asian/Pacific Islander	10	6.3
	Multicultural	10	6.3

Note. $N = 158$.

^a Age: *Mdn* = 20.50 years.

The minimum number of participants for this correlational research is 66 participants (Gall et al., 2007). However, this study included many more participants which served to achieve a higher level of statistical power. Such a low number of participants would represent an unacceptably low response rate. This research was conducted with data from 158 participants, which is more than adequate, assuming a medium effect size with a statistical power of .7 at the .05 alpha level (Gall et al., 2007, p. 145). When the responses from all three populations are combined, the total sample includes 80 males and 78 females. Demographic information also includes the race the participant identifies with, including 113 Caucasian, 6 African American, 19 Hispanic, 9 Asian, and 1 Pacific Islander, and 10 Multicultural. The participants span every year in college with 41 freshman, 29 sophomores, 31 juniors, 28 seniors, and 29 graduate students.

Instrumentation

The instruments that used in this study were developed by earlier researchers and have been used extensively in similar research. They have demonstrated strong internal reliability,

which is “the degree to which the items on the scale measure the same thing” (Warner, 2013, p. 931). This is often quantified using Cronbach’s alpha. The single composite questionnaire contained demographic information as well as the two instruments was be used in this study, as each variable was measured by individual scales. Both have adequate reliability and validity as can be seen in previous literature and demonstrated below.

The Short Grit Scale

The students’ level of grit was determined by the Short Grit Scale (Grit-S) developed by Duckworth et al. (2007). The purpose of this instrument was to assess how much grit the student has as a personality trait. The original Grit-O scale included 12 questions and was validated with a sample of adults who were 25 years old and above (Duckworth et al., 2007). When the Grit-S scale was created the instrument was shortened to 8 items and validated on adolescent individuals (Duckworth & Quinn, 2009). While this is a self-reported measure, this type of instrument is very common comparable research and can drive individuals to greater self-awareness (Duckworth, 2016). That study also showed that the reduction of questions from 12 on the original scale to 8 on the short scale did not produce any loss in predictive validity (Duckworth & Quinn, 2009). This instrument contains 8 questions split between two subscales of Consistency of Interest and Perseverance of Effort (Duckworth & Quinn, 2009). The first subscale is represented by questions like “New ideas and projects sometimes distract me from previous ones.” The Perseverance of Effort subscale includes questions such as “Setbacks (delays and obstacles) don’t discourage me.” This instrument has been used in numerous studies involving college-age participants (Akos & Kretchmar, 2017; Arora et al., 2022; Brozikowsky & Bernhardt, 2018; Braund et al., 2020; Hodge et al., 2018; Lee, 2017; Young-Brice & Dreifuerst, 2020). See Appendix B for the full instrument

The eight items on this scale ask Likert-type questions where the participants choose between 1(“not like me at all”), 2(“not much like me”), 3(“somewhat like me”), 4(“mostly like me”), or 5(“very much like me”). This instrument took participants about three minutes to complete and was scored by the researcher based on the cumulative total score. The results were recorded as an interval scale ranging from 8 (lowest grit) to 40 (highest grit) and was analyzed as a composite score. The Grit-S has good internal consistency. When family members, peers, and the individual scores for an individual, they reveal an α of .84, .83, and .83 respectively (Duckworth & Quinn, 2009). In a systematic review of 44 academic papers, Lam and Zhou (2019) found that grit has a positive correlation with academic success overall, and the correlation was slightly stronger in higher education than in K-12 levels.

This initial section of the survey contains both demographic information and the Short Grit scale. Those combined sections should take participants about six minutes to complete. Permission to use the Grit S scale is not required for academic research, as verified through personal correspondence with Dr. Duckworth (see Appendix D).

The Bergen Social Media Addiction Scale

The social media addiction of the students was measured using the Bergen Social Media Addiction Scale (Andreassen et al., 2016). See Appendix C for the full instrument. The purpose of this instrument was to assess the level of the student’s social media engagement and if that social media use quantifies as addictive or near-addictive behavior. The BSMAS is an adaptation of an earlier Bergen Facebook Addiction Scale (BFAS) but has been expanded to measure a more diverse spectrum of social media platforms including Twitter, Snapchat, Instagram, and others. Participants are asked to answer on a 5-point scale from “never” to “always” on 6 items. This instrument yields a continuous score, and a score of 24 out of a possible 30 indicates an

addiction that is at a clinical level (Shafi et al., 2021). The BSMAS should take about 2 minutes to complete and was scored by the researcher. This scale was validated by Lin et al. (2017) and was shown to have a satisfactory Cronbach's alpha of .86. Recent studies have utilized this scale in similar research. A study of Iranian college students used the BSMAS found that males had a slightly higher level of social media addiction than females, and that social media addiction as a whole negatively correlated with academic performance (Azizi et al., 2019). Another study of Hungarian teenagers used the BSMAS and found that adolescents who were most at risk for mental-health issues and low self-esteem also had the highest social media use on average (Banyai et al., 2017). A large study with 23,532 adult participants in Norway found a medium effect between social media addiction as measured by the BSMAS and low self-esteem (Andreassen et al., 2016). This instrument took participants about two minutes to complete and was scored by the researcher based on the cumulative total score. Permission to use this scale was granted by Dr. Pallesen of the Department of Psychosocial Science at the University of Bergen in personal correspondence (see Appendix E).

Both instruments were administered electronically. Students received a link to a Survey Monkey questionnaire that contained all pertinent demographic and general information, along with the two instruments. The approximate time to complete this questionnaire is 15 minutes, which includes both instruments as well as all demographic information. After all of the data are collected they were exported as a comma-separated value (CSV) list. This enabled automatic scoring in Excel and statistical analysis in SPSS. Permission to use both instruments was given from the respective authors.

Procedures

This study grew out of recent literature of research in the field of higher education.

Insufficient research has been done on the effect of grit on social media addiction in American college students. The population of college students is simultaneously the most accessible to this researcher and where the problem of inadequate literature was observed. This researcher collaborated with other colleagues and the administration of the institutions where the research took place. The proposal was first approved by the doctoral committee and the IRB at Liberty University on granted approval on April 17th. No research took place prior to the approval of this board. An IRB is tasked with ensuring ethical standards and research procedures follow the Federal Drug Administration's priorities of respect for other persons, beneficence, and justice (Creswell, 2015). See Appendix F for IRB approval. The target population was college students, with a sample drawn from the enrolled students at three private colleges in Southern California. All institutions have agreed to invite students to participate through their learning management system (i.e. Canvas) and through e-mail. This e-mail invitation included a brief summary of the research and expected benefit. Also, a link was included to provide students with more details about the topics under investigation and how they may view the study once it is complete. In addition to this e-mail, a link was provided on the learning management software (LMS) for all schools. Dillman et al. (2014) recommended follow-up reminders as an effective way to increase participant response rates. Three reminders were sent by the colleges, for a total of four prompts to the students.

Participants were be asked to digitally sign a consent form (see Appendix A). Data was collected through Survey Monkey. It was analyzed using SPSS. All data was anonymous and password protected and no ISBN numbers were collected. No personal identifiers were used or stored by the researcher. The data was stored locally on the researcher's computer. Two backups will be used as well. A copy of the data and current research will be saved onto an external hard

drive at the end of each week and a dynamic backup is kept using Dropbox. All data collected will be stored securely for a period of three years following the study. Data was collected using Survey Monkey and downloaded as a comma separated file to be analyzed with IBM's Statistical Package for the Social Sciences (SPSS) on a Microsoft Windows computer.

Data Analysis

Results from the Grit-S survey and BSMAS survey were analyzed and compared for correlation. This analysis was conducted through use of the Pearson product-moment correlation to determine the strength and direction of the relationship between the two variables using the SPSS software. The Pearson product-moment correlation is appropriate for this study because it can measure the strength and direction of the relationship between two variables with continuous scale (Warner, 2013). This measure is often used in educational research and will result in a correlation coefficient referred to as Pearson's r (Gall et al., 2007). A multiple regression model was utilized for additional findings that are also reported.

The researcher screened the data prior to full analysis. Screening is important to verify the overall integrity of the data and is useful for identifying incorrect entries, significant outliers, and normal distribution of the variables. After the data was entered into the Statistical Package for Social Sciences (SPSS) software it was examined for missing values and inconsistent responses. Surveys that were missing necessary data resulted in listwise deletion and were not used in further analysis.

A Pearson product-moment can be used if the assumptions of univariate normal distribution, no extreme bivariate outliers, linear relation, and homoscedasticity of variance are met (Warner, 2013). All of these assumptions were assessed through use of a scatter plot between the independent and dependent variables (grit and social media addiction, respectively) and

casewise diagnostics. The first assumption of normal distribution was verified by looking for a classic cigar shape between the two variables. The next assumption of no significant outliers was examined using the casewise diagnostics routine to ensure the standardized residual is not greater than ± 3 standard deviations. Extreme outliers would have been removed prior to analysis. Finally, the assumption of linear relation and homoscedasticity of the variables was evaluated through visual examination of the scatterplot. The researcher checked for a consistent, linear relationship between the variables that does not fan out toward the ends of the spectrum or show any curvilinear pattern.

The Pearson product-moment correlation is routinely used in studies involving grit (Dunn, 2018) as it is a continuous variable (Murphy, 2019). A p value of 0.05 will be set for this study. A minimum number of participants of 121 and will provide a statistical power .7 at the .05 alpha level (Warner, 2013).

CHAPTER FOUR: FINDINGS

Overview

The purpose of this study was to determine if there is a relationship between grit and social media addiction in college students. This chapter reviews the data that was gathered to explore the relationship between grit as measured by the Grit-S instrument and social media addiction as measured by the Bergen Social Media Addiction Scale (BSMAS) instrument. Survey responses from 158 college students were used for this study. Descriptive statistics are used to analyze the population of participants and nature of the data. This provides the reader with an overview of the information. The quantitative nature of the research question requires a correlational analysis between the variables. The specific question regarding the relationship between these two constructs was examined as well as additional findings.

Research Question

This study addressed the following research question:

RQ1: What is the relationship between grit and social media addiction for college students as shown by the Grit-S scale and BSMAS?

Hypothesis

The null hypothesis for this study was:

H₀1: There is no correlation between the grit score and social media addiction score for college students as shown by the Grit-S scale and BSMAS.

Descriptive Statistics

The data for this study was collected through self-reported surveys sent to 930 active college students from three colleges. In total, 160 students provided feedback, of which 158 replies were complete enough to be included in the analysis (see Table 4). Two responses were

thrown out due to incomplete surveys. The target number of participants for this study was 121, which would provide a statistical power of .7 at the .05 alpha level, assuming a medium effect size (Warner, 2013). This minimum threshold was achieved and surpassed.

Table 5 displays the psychometric characteristics for the two primary scale scores. The GRIT score was $M = 3.42$ on a five-point metric. The social media addiction score was $M = 2.31$ on a five-point metric. Both scale scores had acceptable levels of internal reliability: GRIT score ($\alpha = .78$) and social media addiction score ($\alpha = .87$).

Table 5

Psychometric Characteristics for the Primary Scales Scores

Scale Score	Items	M	SD	Low	High	α
GRIT Scale	8	3.42	0.63	1.88	4.75	.78
Social Media Addiction	6	2.31	0.89	1.00	4.83	.87

Note. $N = 158$.

Results

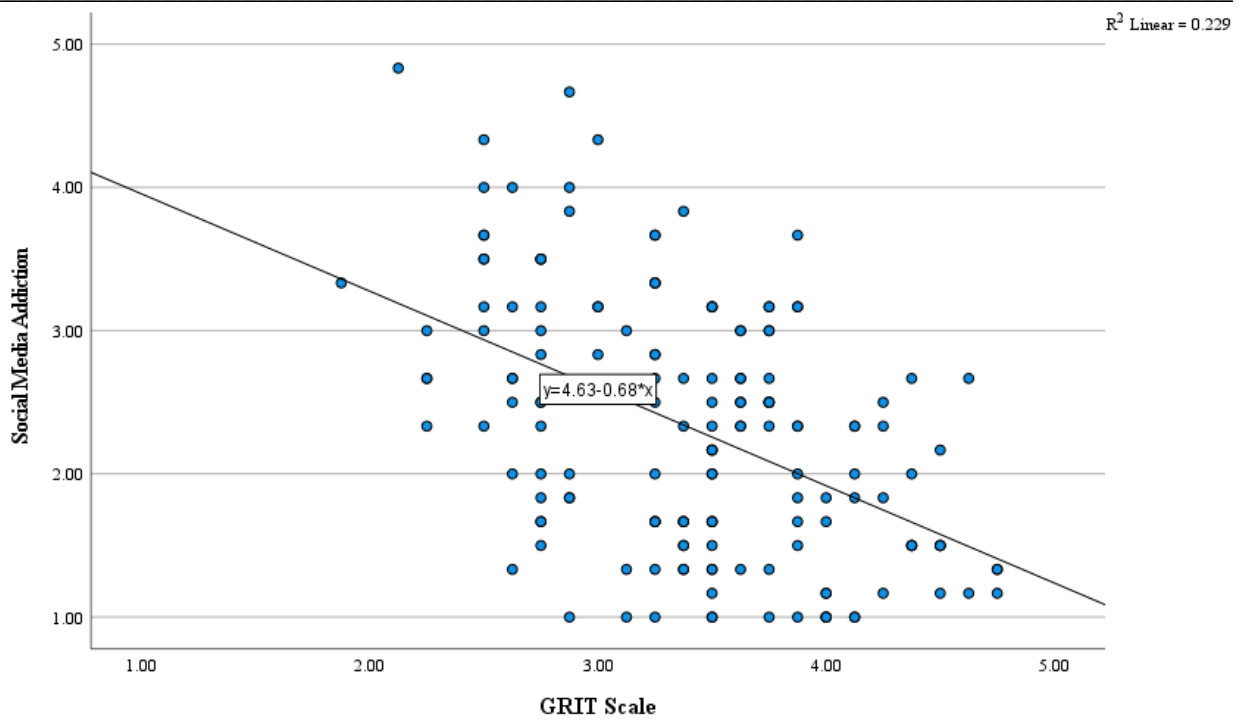
Data Screening

Data from the 160 respondents were collected from a group of 930 undergraduate and graduate students who were invited to participate. The researcher screened the data for inconsistencies, errors, and significant outliers. Two entries were identified as incomplete and were removed through listwise deletion. Data from the remaining 158 participants were free from detectable errors or significant outliers.

Assumption Testing

Five assumptions must be met for the Pearson correlation. Those assumptions are two continuous variables, variables are paired, there is a linear relationship between the variables, no

significant outliers, and bivariate normality. The assumption of two continuous variables was met based on the nature of the data gathered through the BSMAS and Grit-S instruments. The reliability for the primary surveys used in this study are reported in Table 5. The Grit-S instrument consists of 8 items and showed acceptable reliability ($\alpha = .79$). The BSMAS instrument has 6 items and showed good reliability ($\alpha = .87$). The assumption of paired variables was met based on the design of the study. Variables were paired in the analysis of the data. The assumption of linear relationship was examined with the scatterplot (see Figure 1). Inspection of the scatterplot found a linear relation between the two variables so this assumption was met. The assumption of no significant outliers was examined using the casewise diagnostics routine within linear regression. Inspection of the standardized residuals found that they ranged in size from -2.14 to +2.53 so this assumption was met. The assumption of bivariate normality was examined with the scatterplot (see Figure 1). Inspection of the scatterplot found a classic cigar shape and a significant negative relationship between the two variables, so this assumption was met. Taken together, the assumptions for the Pearson Product Correlation were met.

Figure 1*Scatterplot for Social Media Addiction and GRIT Scale***Null Hypothesis**

A Pearson product-moment correlation was run to test the null hypothesis which states that there is no relationship between grit and social media addiction for college students as shown by the Grit-S scale and BSMAS. A significant negative correlation was found, $r(156) = -.48, p < .001$. This finding provides support to reject the null hypothesis with a medium effect size at the .05 alpha level (see Table 6).

Table 6*Correlation results*

		BSMAS	GRIT-S Scale
Fluency score	Pearson Correlation	1	-.478**
	Sig. (2-tailed)		.001
	<i>n</i>	158	158
Literacy score	Pearson Correlation	-.478**	1
	Sig. (2-tailed)	.001	
	<i>n</i>	158	158

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

Data analysis included reviewing descriptive statistics of the participants. Table 4 outlines the frequency counts for all demographic variables including age, year in school, gender, and the race/ethnicity of the participants. The Grit-S score was determined by calculating the correct values represented by the participants' replies to the survey questions. Half of the Grit S scale are reverse scored. For questions 2, 4, 7, and 8 the following values were used; 5 for "Very much like me," 4 for "Mostly like me," 3 for "Somewhat like me," 2 for "Not very much like me," and 1 for "Not like me at all." For questions 1, 3, 5, and 6 the following values were used; 1 for "Very much like me," 2 for "Mostly like me," 3 for "Somewhat like me," 4 for "not much like me," and 5 for "Not like me at all" (see Appendix B). All points were added up and the total was divided by 8 for each participant's final score.

Scoring for the BSMAS involved assigning the correct values to each of the six questions. For this scale the following values were used; 1 for "Very rarely," 2 for "Rarely," 3 for "Sometimes," 4 for "Often," and 5 for "Very often" (see Appendix C). These points were totaled for each participant and formed an aggregate score. The researcher verified that all results were within the allowable range for the instruments.

CHAPTER FIVE: CONCLUSIONS

Overview

This chapter compares the results of this study to the existing literature, outlines conclusions and implications of this study, and highlights limitations. The purpose of this quantitative, correlational study was to explore the relationships between grit as measured through the Grit-S instrument and social media addiction as measured by the Bergen Social Media Addiction Scale (BSMAS) instrument among college students enrolled in several colleges during the spring 2023 semester. This study sought to address that gap that exists in current literature between these two variables and to better understand the factors that correlate with a high risk for social media addiction in this population. The researcher rejected the null hypothesis at the 95% confidence interval. This chapter will conclude with suggestions for further research.

Discussion

The purpose of this quantitative, correlational study was to examine the relationship between grit and social media addiction in college students. The Pearson product-moment correlation was conducted, as well as a Spearman rank correlation coefficient. The Grit-S scale and BMAS scale were used to measure these two constructs. The results of this study showed a strong negative correlation between these two constructs.

The research question for this study was, “What is the relationship between grit and social media addiction for college students as shown by the Grit-S scale and BSMAS?” The null hypothesis was, “There is no correlation between the grit score and social media addiction score for college students as shown by the Grit-S scale and BSMAS.” At the 95% confidence interval, the researcher rejected the null hypothesis.

There were several significant results from this survey. A statistically significant negative correlation did exist in this study between grit and social media addiction. Because addiction was measured on a scale, not every participant who scored higher than normal should be considered addicted. A BSMAS of 19 or higher places an individual at risk for problematic social media use (Lin et al., 2017). In this study, 35 out of the 158 participants were at or above this threshold, meaning 22% of them are at risk. These findings confirm several key aspects of the literature already written on social media addiction.

This study advances a growing body of literature that has demonstrated the negative correlation of grit with a large number of addictions. While no previous research has explored the relationship between grit and social media addiction, it has been shown that grit has a negative correlation with other types of addictions. Grit has been shown to have a negative correlation to addictive Internet usage (Lan & Wang, 2020; Maddi et al., 2013). Low grit scores are correlated to traditional addictions such as recent heroin use (Griffin et al., 2016). Borzиковsky and Bernhardt (2018) found that age and level of grit were both protective against online gaming addiction. Low grit scores, which can be influenced by stress, also lead to higher smartphone addiction among adolescents (Griffiths, 2016; Khoo & Yang, 2022; Kim et al., 2023; Yang et al., 2022).

Based on the conservation of resources theory, negative correlation between grit and addiction may be due to the fact that students who spend emotional energy creating and interacting with content on social media may have less resources available for other important decisions (Zivnuska et al., 2019). This could explain why resilience has a mediating effect on smartphone addiction (Kim et al., 2023). Delayed gratification is known to correlate with grit. Park et al. (2020) found that delayed gratification at the age of four was the only predictor of an

adolescence' level of grit at age 14 out of all that she studied. College is a time when many students have more choices and demands placed on them than they did as adolescents. It is not surprising to find that the continual draw of instant gratification and “fear of missing out” presented through social media is more difficult to regulate for students who are less gritty (Alt, 2018).

The current findings confirm previous research suggesting that age generally correlates with higher levels of grit and lower levels of social media addiction. In a study of German gamers, Borzikowsky and Bernhardt (2018) found that older people were lower on the addiction scale and had higher grit scores. When social media addiction is studied specifically, younger users are generally more likely to have problems regulating their use (Zhao, 2023).

Previous research has generally found the males were more prone to Internet addiction than females (Anderson et al., 2017; Lopez-Fernandez & Kuss, 2020; Su et al., 2019). However, this is not universal, and some studies did not detect a statistical difference (Awan & Khan, 2017). One may suspect that this pattern would hold true in social media addiction as well, but it did not. Multiple linear regression analysis of the data in study showed that while there is no difference in grit between genders, females were higher on the social media addiction scale. This differs from a study by Azizi et al. (2019) that found males were significantly more likely to have moderate addiction to social networks than females.

Implications

The importance of social media on students' overall wellbeing is assumed by parents, educators, and policymakers. Even government officials seem torn between protecting peoples' rights online and the risk that is posed by various social media platforms. Society recognizes the potential for addiction to social media, but more needs to be known about what puts a person at

risk. This study builds on a growing body of literature that indicates problematic social media use is widespread. Just over one out of five college students who participated in this study are in the at-risk category with their social media use. Younger students and female students are especially vulnerable. Social media addiction endangers these students' academic success and mental health. The generational impact of this new societal risk is unknown, but early indicators are alarming.

While much is still unknown about social media addiction, researchers are learning more about which students are most vulnerable. The importance of grit in this arena is more significant than many would have thought. Grit enables an individual to be resilient against a broad range of addictions and negative habits. This trait is important partially because it can be both measured and developed. Policy makers should understand both the danger of social media addiction and importance of grit.

Administrators and practitioners in education need to recognize the importance of this area and provide appropriate resources to their students. One form of this is through education about grit. Students need to be taught the importance of this trait and that it can be developed. Through clarifying their goals and practicing perseverance, students may develop this key characteristics that will not only help them avoid social media addiction but also achieve success in many other facets of life as well. Combining a growth mindset with seeking out gritty people and cultures will produce a climate of perseverance that protects against addictive tendencies.

Limitations

This study was based on data collected through self-reported surveys. Although the instruments had high reliability, participants are susceptible to intentionally or unintentionally misrepresenting themselves (Warner, 2013). Indirect measures such as self-reported instruments

are generally inferior to direct measures. Another limitation for this study was the sample population and size. Students who were invited to participate were all enrolled in faith-based private colleges and universities. It may be that individuals who enroll in college are already higher than average in grit, or that students at faith-based colleges do not accurately represent the broader college population.

The fact the Covid-19 lockdowns were ending the year before this study was conducted which could also have affected the role that social media played in college students' lives. This season of lockdowns and limited social interaction had an outsized impact on already vulnerable populations (Fletcher et al., 2023). Participants in this study recently experienced this disruptive event which may have exasperated any addictive tendencies that would have otherwise remained dormant.

These limitations partially restrict the generalizability of the findings in this study. While in line with the literature that is already in the field, any number of factors could have caused the results to be skewed. The number of participants was sufficient to provide strong statistical significance, but those findings are only sure to apply to this population. The correlational nature of this study means that cause and effect has not been shown.

Recommendations for Future Research

The significance of both grit and social media addiction commends additional investigation by researchers. Future studies could build on the current literature regarding grit and social media addiction in several ways. Due to the limitations in this study, suggestions for future research is given below.

1. A longitudinal study over a period of years could investigate whether those who are at risk develop addictions later in life. It is possible that an individual with a low grit score is at risk for social media addiction even if that has not yet been manifested.
2. An experimental study to reveal important information that is not currently known about causation. Since social media is easier to manipulate than grit, a population could be divided into two groups, with the treatment group having little to no access to social media and the other allowed normal use. Grit scores after the experiment could reveal if social media use has an effect on an individual's level of grit.
3. Using a different population could also be beneficial. Although this study focused on college students, social media addiction certainly exists in adolescents as well. It may be that the most important strategies for intervention could only be developed with an understanding of this younger population.
4. A qualitative study of students experiencing social media addiction to better understand their lived experiences. This would reveal a student's perception of how this area has affected their lives. As a result, educators and policy makers could develop more effective support systems for vulnerable individuals.

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APPENDIX A: DIGITAL CONSENT FORM

Digital Consent Form

Grit and Social Media Addiction
Tobias England
Liberty University/School of Education

Title of the Project: The Role of Grit in Social Media Addiction for College Students
Principal Investigator: Tobias England, Ph. D. student at Liberty University School of Education.

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be 18 years of age or older and currently enrolled in a college program. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of the study is to determine the relationship between grit and social media addiction. This study will look for a correlation between these two constructs in order to better understand how they relate and help educators and future researchers.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to complete the survey. This will include some demographic questions, as well as the Grit-S and Bergen Social Media Addiction Scale.

Completing this survey will likely take between 6 to 12 minutes.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include a better understanding of these two important factors effecting students in higher education. Grit has been described as passion and perseverance for long-term goals. Current research establishes that it has a positive correlation with numerous desirable outcomes, including academic success. Social media addiction has increased in recent years and is a fairly recent field of research. Studying these two factors together will enable educators and students to be better prepared for success.

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the IRB. Our physical address is Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA, 24515; our phone number is 434-592-5530, and our email address is irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

Before agreeing to be part of the research, please be sure that you understand what the study is about. You can print a save or print a copy of this document for your records. If you have any questions about the study later, you can contact the researcher using the information provided above.

APPENDIX B: GRIT SURVEY

Grit Survey for Participants

Demographic Information

Please tell me a little about yourself

1. Age
 - a. 18-19
 - b. 20-21
 - c. 22-24
 - d. 25-30
 - e. 31-40
 - f. over 40
2. Year in College
 - a. Freshman
 - b. Sophomore
 - c. Junior
 - d. Senior
 - e. Graduate student
3. Gender
 - a. Male
 - b. Female
4. Race
 - a. Caucasian

- b. African American
- c. Hispanic
- d. Asian
- e. Other

Short Grit Survey

Directions for taking the Grit Scale: Here are a number of statements that may or may not apply to you. For the most accurate score, when responding, think of how you compare to most people – not just the people you know well, but most people in the world. There are no right or wrong answers, so just answer honestly!

1. New ideas and project sometimes distract me from previous ones.

Very much like me

Mostly like me

Somewhat like me

Not much like me

Not like me at all

2. Setbacks don't discourage me.

Very much like me

Mostly like me

Somewhat like me

Not much like me

Not like me at all

3. I have been obsessed with a certain idea or project for a short time but later lost interest.

Very much like me

Mostly like me

- Somewhat like me
- Not much like me
- Not like me at all
4. I am a hard worker.
- Very much like me
- Mostly like me
- Somewhat like me
- Not much like me
- Not like me at all
5. I often set a goal but later choose to pursue a different one.
- Very much like me
- Mostly like me
- Somewhat like me
- Not much like me
- Not like me at all
6. I have difficulty maintaining my focus on projects that take more than a few months to complete.
- Very much like me
- Mostly like me
- Somewhat like me
- Not much like me
- Not like me at all
7. I finish whatever I begin.

Very much like me

Mostly like me

Somewhat like me

Not much like me

Not like me at all

8. I am diligent.

Very much like me

Mostly like me

Somewhat like me

Not much like me

Not like me at all

APPENDIX C: BSMAS**Bergen Social Media Addiction Scale**

Directions for taking the Bergen Social Media Addiction Scale: The following statements are about how you use social media (on any platform). There are no wrong answers, so please pick the answer that most applies to you:

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

Very rarely

Rarely

Sometimes

Often

Very often

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

Very rarely

Rarely

Sometimes

Often

Very often

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

Very rarely

Rarely

Sometimes

Often

Very often

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

Very rarely

Rarely

Sometimes

Often

Very often

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

Very rarely

Rarely

Sometimes

Often

Very often

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

Very rarely

Rarely

Sometimes

Often

Very often

APPENDIX D

[External] Re: Seeking permission to use Grit survey instrument

I

info@angeladuckworth.com

To:

- England, Tobias K

Thu 1/12/2023 12:52 AM

You don't often get email from info@angeladuckworth.com. [Learn why this is important](#)

[EXTERNAL EMAIL: Do not click any links or open attachments unless you know the sender and trust the content.]

Thank you for taking the time to write!

Unfortunately, my research and teaching priorities mean that I don't have time to respond to each and every email in my inbox—as much as I wish I could.

In hopes that one of my colleagues or an online resource can help you, see below for contacts and links.

I'm a parent or teacher. Can you direct me to the most useful online information?

Sign up for my weekly tip of the week and, for parents and educators in particular, find free resources at characterlab.org

How do I get permission to use the Grit Scale?

There are no restrictions for non-commercial uses for research, translation, or education. However, copyright protections prohibit reproduction in books, magazines, or other outlets, and/or commercial use.

For research, please note that the only validated English-language versions that we endorse have either 12 items (Duckworth et al., 2007) or 8 items (Duckworth & Quinn, 2009). The 10 item-version was what I published in the book *Grit for the convenience of readers who wanted to calculate their scores by summing and dividing by 10*. These scales are all extremely highly correlated (and are just subsets of the original 12-item scale), so if you've already collected data using the 10-item scale, you might point out this fact and cite this paper (click [here](#)): Duckworth, A. L., Quinn, P. D., & Tsukayama, E. (2021). Revisiting the factor structure of grit: A commentary on Duckworth and Quinn (2009). *Journal of Personality Assessment*. 103(5), 573-575. <https://doi.org/10.1080/00223891.2021.1942022>.

For most research purposes, because it more fully represents the construct of grit, I recommend the 12-item version. Note, too, that I do not keep track of translations of the Grit Scale into other languages than English but am aware, and encouraged, that other researchers have done so.

There are no published norms for any version of the Grit Scale. One reason I am hesitant to publish norms is [reference bias](#).

For more information on measurement, please click [here](#).

Currently, I'm a student at Penn, and I have questions about your courses—including how to get into one. Whom do I ask?

I am planning on being on sabbatical in 2022-23, so please be advised that I haven't yet decided how much teaching I'll be doing. I do know that I will not be supervising independent research during that academic year. Also my lab is full at the moment, so there are no volunteer opportunities this academic year. For any further questions, please contact Paolo Terni (pterni@characterlab.org).

Are you accepting PhD students?

Yes—but I'm also trying to keep my lab to a size where I can really support all my students well. As a policy, to be fair to all applicants, I do not speak individually with prospective students in advance of the formal Penn application process. However, once you've completed your PhD application, feel free to send it to me as a PDF via this email.

Can you read and endorse my book?

I wish I could! However, a wise psychologist (named Danny Kahneman) shared his rules for endorsing books, which I adapted to the following. First, only endorse books one has the time to read cover to cover. Second, only endeavor to read books that have a previously established connection with one's work. These two rules mean I probably cannot help you—but mazeltov to you...writing a book is one of the most heroic things anyone can do.

How do I pitch you an idea for your No Stupid Questions podcast with Stephen Dubner?

Please contact the show producer, Rebecca Lee Douglas at nsq@freakonomics.com

Whom do I ask about translations, foreign rights, or other questions related to your book?

Please contact Lyndsey Blessing (lyndsey@inkwellmanagement.com)

Where do I get your bio or headshot, access more FAQs, find your academic papers, and so on?

Please visit <https://angeladuckworth.com/>

Are you available for speaking?


I am limiting my speaking engagements in order to make more time for research and teaching. Schools and nonprofit organizations are an exception, but that work is coordinated by [characterlab.org](#). Any other inquiries, please contact David Lavin at Lavin Agency

(www.thelavinagency.com). Fees for speaking help support the nonprofit characterlab.org (see below).

I'm eager to partner with Character Lab. How do I do that?

As a nonprofit, Character Lab provides actionable advice to parents and teachers based on psychological science. Get in touch with Sean Talamas (stalamas@characterlab.org) and Elliot Luscombe (eluscombe@characterlab.org) if you're interested in using any of our resources.

 Reply

 Forward

From: England, Tobias K

Sent: Wednesday, January 11, 2023 4:53 PM

To: aduckworth@characterlab.org <aduckworth@characterlab.org>

Subject: Seeking permission to use Grit survey instrument

Dr. Duckworth,

Thank you for your insight into achievement that has helped me on a personal and professional level.

I am a doctoral student at Liberty University and desire to study the correlation between Grit and social media addiction. It is my understanding that this would be an academic study and does not explicitly require permission to proceed using the scale. I wanted to confirm that this is true or seek permission if necessary.

Thanks again for your helpful work!

Tobias England

APPENDIX E

RE: [External] RE: Bergen Social Media Addiction Scale

SP

Ståle Pallesen <Staaale.Pallesen@uib.no>

To:

- England, Tobias K

Wed 1/11/2023 4:34 PM

My thoughts exactly. You got it! Exactly!

Great – then just go ahead 😊

Ståle

From: England, Tobias K [REDACTED]

Sent: Wednesday, January 11, 2023 5:33 PM

To: Ståle Pallesen <Staaale.Pallesen@uib.no>

Subject: Re: [External] RE: Bergen Social Media Addiction Scale

Thank you, sir! We intend to use the English version.

From: Ståle Pallesen <Staaale.Pallesen@uib.no>

Sent: Wednesday, January 11, 2023 4:26 PM

To: England, Tobias K [REDACTED]

Subject: [External] RE: Bergen Social Media Addiction Scale

[EXTERNAL EMAIL: Do not click any links or open attachments unless you know the sender and trust the content.]

Hi Tobias.

The scale is free to use. If you however are going to use it in another language than English please use a translation-back-translation procedure and send us the final version for our records.

Best of luck with your project.

All the best,

Ståle Pallesen
Professor, PhD
University of Bergen
Department of

Psychosocial Science
Christiesgt.12, 5015
Bergen
Phone +47 55 58 88
42
Mobile: +47 926
32 099
www.spillforsk.no
www.uib.no/en/rq/fgav
www.BeSCN.no

From: England, Tobias K [REDACTED]
Sent: Wednesday, January 11, 2023 5:24 PM
To: Ståle Pallesen <Stale.Pallesen@uib.no>
Subject: Bergen Social Media Addiction Scale

Dr. Pallesen,

I am a doctoral student at Liberty University and desire to study the relationship between Grit and a person's score on the Bergen Social Media Addiction Scale.

I am not aware of any restriction on using this scale in research, but wanted to verify that permission is granted to use for this purpose if necessary. Please let me know if you would like to see a copy of the proposal.

Tobias England

APPENDIX F

Date: 24/5/2023

IRB #: IRB-FY22-23-840

Title: The Role of Grit in Social Media Addiction for College Students

Creation Date: 16/1/2023

End Date:

Status: **Approved**

Principal Investigator: Tobias England

Review Board: Research Ethics Office

Sponsor:

Study History

Submission Type	Initial	Review Type	Exempt	Decision	Exempt
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Key Study Contacts

Member	Joanne Gilbreath	Role	Co-Principal Investigator	Contact	
Member	Tobias England	Role	Principal Investigator	Contact	
Member	Tobias England	Role	Primary Contact	Contact	

LIBERTY UNIVERSITY

INSTITUTIONAL REVIEW BOARD

April 17, 2023

Tobias England
Joanne Gilbreath

Re: IRB Exemption - IRB-FY22-23-840 The Role of Grit in Social Media Addiction for College Students

Dear Tobias England, Joanne Gilbreath,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording).

The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects.

Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, PhD, CIP
Administrative Chair
Research Ethics Office

