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Does Grit Protect against the Adverse Effects of Depression?

Jenna Kilgore

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Does grit protect against the adverse effects of depression?

By

Jenna Kilgore

A Thesis
Submitted to the Faculty of
Mississippi State University
in Partial Fulfillment of the Requirements
for the Masters of Science
in Psychology
in the Department of Psychology

Mississippi State, Mississippi

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Jenna Kilgore

2019

Does grit protect against the adverse effects of depression?

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Grit, or the ability to persevere toward a long-term goal despite adversity, has been linked to academic success. Grit may also potentially buffer against the negative effects of depressive symptoms in an academic domain. The current study explores the relationship between depression, grit, and GPA, while also accounting for defensive responding, which has been proposed as a confound of grit but not empirically assessed in this context. We examined how social desirability affects the relationship between grit and GPA and hypothesized that social desirability would moderate the effect of grit between depressive symptoms and GPA. We found support for all hypothesized direct relationships. However, the interaction between depression, grit, social desirability, and GPA was non-significant. Results suggested modest construct validity of grit with it predicting GPA at low levels of social desirability but demonstrated no buffering effect against depression on GPA, highlighting the complexity of the relationship between these variables.

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS	iii
LIST OF TABLES	vi
LIST OF FIGURES	vii
CHAPTER	
I. INTRODUCTION	1
Major Recent Criticism of Grit.....	2
Conscientiousness and cognitive factors	2
Social desirability	3
Depression	4
Rationale for Present Study	6
Hypotheses	6
II. METHOD	8
Power	8
Participants	8
Materials	8
Grit	8
Social Desirability Scale.....	9
Depression	9
Additional Measures.....	9
Procedure	9
III. RESULTS	11
Data Analytic Plan.....	11
Data Cleaning.....	11
Hypotheses Examined via Correlation	13
Hypotheses Examined via PROCESS Model 1.....	13
Hypothesis Examined via Model 3.....	17
IV. DISCUSSION	19
Strengths and Limitations.....	21

Conclusion	23
REFERENCES	24
APPENDIX	
A. IRB Approval Letter	29

LIST OF TABLES

Table 1	Descriptive Statistics for the Sample ($N = 520$)	10
Table 2	Pearson Correlation Matrix among Depression, Grit, and GPA.....	13

LIST OF FIGURES

<i>Figure 1.</i> Relationship between grit and GPA at levels of social desirability (MC).....	15
<i>Figure 2.</i> Relationship between depression and GPA at levels of grit.	16
<i>Figure 3.</i> Relationship between depression and GPA at levels of social desirability.....	17

CHAPTER I

INTRODUCTION

How the concept of grit should be defined is highly debated. It is most often defined as perseverance toward long-term goals while maintaining effort and interest despite failure, adversity, or plateaus in progress (Duckworth, Peterson, Matthews, & Kelly, 2007). Theorists embracing this definition also advocate for grit splitting into two distinct components: (1) perseverance of effort, and (2) consistency of interest over time (Crede et al., 2016; Duckworth et al., 2007; Von Culin, Tsukayama, & Duckworth, 2014). A main point of contention in the grit literature is whether grit meets the requirements to be a valid higher-order construct. Although grit is commonly operationalized as an independent construct and its implications are touted as revolutionary, grit closely relates to aspects of conscientiousness, self-control, and openness (Crede, et al., 2016; Duckworth et al., 2007; 2014; Suzuki, Tamesue, Asahi, & Ishikawa, 2015), and is inconsistent in its ability to predict academic success across domains (e.g., 2-year colleges, 4-year universities, an Ivy League University, and a Military Academy) (Bazelais, Lemay, & Doleck, 2016; Chang, 2014; De Vera et. al., 2015; Duckworth et al., 2007; Jaegar, Freeman, Whalen, & Payne, 2010).

Duckworth and Gross (2014) argue that the important difference between grit and self-control is pursuit of a long-term goal; whereas self-control involves denying pleasurable alternatives in the short term, grit entails continuously working toward a goal over an extended

period of time. A gritty individual, for example, may not exhibit self-control in areas not involving his or her valued goal, but would exhibit *stamina* in pursuit of a valued goal.

Relatedly, grit is often studied as a predictor of success in a number of achievement-oriented settings, such as in pedagogical settings for military, academic, legal, and medical training (Duckworth et al., 2007; 2013; Crede et al., 2016; Stewart, 2015). In these settings, some research suggests that grittier individuals are more likely to complete tasks that they begin, showing that grit predicts retention over and beyond intelligence, physical aptitude, personality traits, and job tenure (Crede et al., 2016; Doskoch, 2005; Duckworth et al., 2007; Duckworth & Gross, 2014; Duckworth & Quinn, 2009; Eskreis-Winkler, Shulman, Beal, & Duckworth, 2014; Fillmore, 2015). However, other research contradicts these findings, suggesting that grit does not predict school outcome over and above conscientiousness and emotion regulation ability (Ivcevic & Brackett, 2014).

Major Recent Criticism of Grit

Conscientiousness and cognitive factors

In a recent influential meta-analysis, Crede and colleagues (2016) highlighted both theoretical and empirical issues with the construct validity of grit. First, the overarching conceptualization of grit as a hierarchical construct (i.e., a construct which produces personality facets causally) was called into question. In addition, they suggest moderators of the relationship of grit and success, and question the independency of grit from cognitive ability and conscientiousness, echoing previous concerns (Ivcevic & Brackett, 2014). Crede et al. also drew attention to the question of whether social desirability might limit the predictive validity of grit.

Social desirability

Social desirability bias is an important construct to assess when using self-reported data in research. Social desirability bias is the tendency for individuals to respond favorably when reporting information about themselves either due to malingering or because they have encoded that information as more positive than it actually is (Winer & Newman, 2011). In relation to grit, this may be particularly problematic, as individuals may perceive themselves as grittier than they actually are.

Grit, as a self-reported construct, is potentially liable to social-desirability bias. Grit is a positively viewed trait; therefore, defensive individuals could be more likely to answer with higher self-endorsed grit, even though that would not validly indicate how they behave.

According to Duckworth, there should be a stronger relationship between grit and GPA when controlling for social desirability; however, this is because of previous findings that grit's relationship to achievement was still present when controlling for conscientiousness (which is also potentially subject to social desirability bias) and grit's correlations with objective measures (Eskreis-Winkler et al., 2014). Conversely, she also claims that if social desirability does inflate grit scores, it would strengthen the argument for the relationship between grit and achievement rather than weaken it (Duckworth et al., 2007).

In contrast, Crede and colleagues (2016) suggest that the relationship between grit and GPA would be weakened when controlling for social desirability. This is because social desirability may account for range restrictions, suggesting individuals may not be aware of their true grit, which may result in overall inflated scores. Steward (2015) examined how social desirability affects responding on the original grit scale via a 13-item short version of the original Marlowe Crowne Social Desirability Scale (M-C Form C) with acceptable reliability ($r_{KR-20} =$

.76). Results showed that social desirability accounted for some variance in the modified total grit scale, finding a correlation of $r = .340$, suggesting a small to moderate effect of social desirability bias on self-reported levels of grit. This dissertation is the only study found during the current literature review that includes analyses of social desirability bias when looking at grit.

Depression

Another construct that deserves further study in relation to grit is depression. Depressed individuals automatically avoid positive information and, as a result, devalue reward (Winer & Salem, 2016). Grit is defined as the propensity to persistently work toward future goals despite setbacks. Given that achievement-driven goals such as winning a spelling bee or completing military training are inherently positive, an individual who is “gritty,” should theoretically be buffered from a reward devaluative response commonly associated with depression.

Indeed, research has demonstrated that grit serves as a buffer on the impact of negative life events when assessing suicidal ideation, showing that grit may be a protective factor (Anestic & Selby, 2015; Blalock, Young, & Kleiman, 2015). In addition, Kim (2015) examined the mediating effect of grit on depression and suicidal ideation in a Korean population, finding evidence that grit has a partial mediating affect and a moderating effect between depression and suicide, such that individuals with low grit experienced higher suicidal ideation than individuals with high grit.

Two recent studies also assessed the relationship of grit and depression within Hispanic populations (O’Neal et al., 2016; Vela, Lu, Lenz, Savage, & Guardiola, 2016). O’Neal and colleagues (2016) examined the relationship between stress, depression, and grit among non-citizen and citizen Latino immigrants. They found that grit and depression have a negative relationship, such that more grit results in less depression; they also found immigration status to

be a significant moderator, such that there was a stronger negative relationship between depression and grit in non-citizens than in citizens.

Several studies have assessed the relationship between well-being, happiness, and grit (Machell, 2017; Singh & Jha, 2008; Vainio & Daukantaite, 2015). Vainio and Daukantaite (2015) found that grit was related to psychological well-being, satisfaction with life, and harmony with life, mediated by sense of coherence and authenticity. Machell (2017) found that grit was positively related to baseline meaning in life in adolescents; however, individuals with higher perseverance experienced less growth in meaning of life. Furthermore, the relationship between grit and meaning in life was influenced by experienced negative life events, such that adolescents who experience more negative life events evidenced an increase in meaning of life over time.

Depression is also negatively related to the construct most commonly studied alongside grit, GPA, such that as individuals experience higher levels of depressive symptoms (i.e., feelings of sadness, feelings of hopelessness, loss of interest or pleasure), GPA decreases (Bruffaerts, et al., 2018; Deroma, Leach, & Leverett, 2009; Eisenberg, Golberstein, & Hunt, 2009; Hysenbegasi, Hass, & Rowland 2005). Bruffaerts and colleagues (2018) examined this relationship in college freshman and found that depression is associated with a .02-.03 reduction in GPA. In addition, Eisenberg and colleagues (2009) examined the relationship between depression and GPA over time and found that depressive symptoms predict lower GPA. Furthermore, when individual symptoms were examined separately, anhedonia (i.e. loss of interest or pleasure over time) was the only significant predictor when entering symptoms into a single regression model. This is of particular interest, as grit is partially defined as consistency of

interest. Thus, examining two constructs (grit and depression) that appear to oppositely relate to GPA may be of interest.

Rationale for Present Study

Numerous studies have evaluated the construct of grit and its potential relationship to a variety of domains. Many researchers have anecdotally noted that social desirability is a prospective limitation of the self-report nature of the grit scale; however, few studies have attempted to assess the impact social desirability has on the validity of the grit scale empirically, with many formative papers concluding that this is a notable gap in the literature (Bazelais et al., 2016; Chang, 2014; Crede et al., 2016; Hancock, 2017; Vainio & Daukantaite, 2015). Therefore, one goal of this study is to further explore this relationship between social desirability and grit that may influence the reliability of high-scoring individuals.

Moreover, little research has specifically focused on the relationship between depression, grit, and GPA, and there is a gap in the literature regarding research examining grit as a potential buffer for depressive symptoms when also taking social desirability into account. Thus, we wished to examine the validity of grit as a construct through two overarching research questions: (1) How does grit relate to the impact of depressive symptoms on achievement? (2) How does social desirability affect previously established relationships between grit and academic achievement?

Hypotheses

1. Grit will be negatively related to depression. (Crede et al., 2016)
2. Grit will be positively related to GPA. (Crede et al., 2016)
3. Depression will be negatively related to GPA. (Hysenbegasi et al., 2005)

4. Competing Hypotheses:
 - A. Duckworth: Social desirability will change the relationship between grit and GPA, such that grit's relationship with GPA will be more positive when social desirability is high, suggesting that social desirability will increase the existing relationship between grit and GPA (Duckworth, et al., 2007).
 - B. Crede: Social desirability will change the relationship between grit and GPA, such that grit's relationship with GPA will be less positive when social desirability is low, suggesting that social desirability will reduce the existing relationship between grit and GPA (Crede et al., 2016).
5. Grit will change the relationship between depression and GPA, such that depression's relationship with GPA will be less negative when self-reported grit is high (Duckworth, et al., 2007; Hysenbegasi, et al., 2005).
6. Social desirability will change the relationship of grit, depression, and GPA such that at high levels of social desirability, the relationship between depression and GPA will be more negative in comparison to when social desirability is low, suggesting that grit will no longer buffer symptoms of depression (Stewart, 2015; Vela, 2016).

CHAPTER II

METHOD

Power

Power analyses were run using G-Power 3.1.7. At the time of the proposal, it was estimated that between 395 and 652 participants were needed for a multiple linear regression, fixed model, powered to examine an R^2 increase. We estimated a small effect size of .02 with an alpha of .05 (.80-.95 power) for a total of 7 predictors, consistent with our hypothesis with the most predictors. With a final N of 520, this study was adequately powered for all hypotheses.

Participants

Participants were Mississippi State undergraduate students enrolled in a variety of psychology courses who earned research credits for participation and were at least 18 years of age (See table 1 for age breakdown).

Materials

Grit

The 12-item original grit scale (Grit-O) was used to assess for individuals' level of grit (Duckworth et al., 2007). The grit scale is a self-report 5-point Likert scale measuring consistency of interest and perseverance over time with an internal consistency of .85 established during validation. In the current sample, Grit-O had an internal consistency of .74.

Social Desirability Scale

The short version of the Marlowe Crowne Social Desirability Scale (MCSD; Strahan & Gerbasi, 1972) was used to account for potential social desirability bias. This version of MCSD is a 20-item true-false questionnaire that assesses an individual's tendency to respond in a socially desirable way that has evidenced reliability coefficients of .78 and .83 (Strahan & Gerbasi, 1972). In the current sample, MCSD has an internal consistency of .72.

Depression

The Quick Inventory of Depressive Symptoms-Self-Report (QIDS-SR) (Rush et al., 2003) was the main measure used to assess for depressive symptoms. The QIDS-SR is a 16-item Likert-scale measure with previously established adequate internal consistency of .86 (Rush et al., 2003). In the current sample, QIDS-SR has an internal consistency of .82. Respondents are asked to rate their symptoms from 0-3, for example, 0-does not feel sad to 3- feels intensely sad virtually all the time.

Additional Measures

Four additional measures were used to assess symptoms that are theoretically similar to depression or grit and retained for future hypothesis testing: the Fear of Happiness Scale (FOH) (Gilbert et al., 2012), the Specific Loss of Interest and Pleasure Scale (SLIPS) (Winer, Veilleux, & Ginger, 2014), The Five Factor Model Rating form (Mullins-Sweat et al., 2006), and The Barratt Impulsiveness Scale (Patton, Stanford, & Barratt, 1995).

Procedure

Participants were recruited from psychology courses using SONA Systems for research credits. Within this system, participants are able to choose studies to complete for course credit.

The current study was administered online via Qualtrics. Participants received an informed consent and, upon choosing to participate, completed the aforementioned measures in random order. Participants were instructed to complete measures and report their MSU student identification number. Basic demographic information that would still allow subjects to not be identified was collected (i.e., race, gender, GPA, SAT scores, and ACT scores). See Table 1 for descriptive statistics.

Table 1

Descriptive Statistics for the Sample (N = 520)

	Minimum	Maximum	Mean	<i>SD</i>
Age (years)	18.00	57.00	19.94	2.20
GPA	.00	4.00	3.06	.65
QIDS-SR (8-item)	0	23.00	6.96	4.43
Grit	1.58	4.83	3.35	.52
MCSD	.00	19.00	10.25	3.53

Note. Participant sample includes male ($n=150$) and female ($n = 370$) college students.

CHAPTER III

RESULTS

Data Analytic Plan

Initial correlational analyses were run to assess the relationship between the first independent variable of depression and dependent variable GPA and the second independent variable grit and GPA. All other hypotheses were examined via moderation using PROCESS macro for SPSS, which tests for moderation using bootstrapping (Hayes, 2012; 2013). Two moderation hypotheses were examined using PROCESS Model 1. Our moderated moderation hypothesis was examined using PROCESS Model 3.

Data Cleaning

Prior to conducting proposed analyses, data was examined and cleaned. Upon completion of the study, 625 participants were shown to have begun the survey. Examination of distribution of duration (measured in seconds) to complete the entire study yielded a potential bimodal distribution. With all 625 subjects included, there was a skewness of 10.683 ($SE = .10$), which was not in an acceptable range. After removing participants who began but did not complete the study for credit, 546 participants remained. Duration time was again examined as a potential exclusion criterion for participants who completed to survey too quickly to provide valid responses, resulting in a duration time mean of 846.73 seconds ($SD = 380.43$) and a skewness of .52 ($SE = .10$), falling within an acceptable range for analyses. When examining duration time to assess for speeded response time, one standard deviation below the mean was 466.30 seconds in

duration. However, after further exploration of duration, only the extreme 5% of the distribution (duration less than 303 seconds, which would definitively not allow for the completion of the study) were excluded, as exclusion of everyone below one standard deviation below the mean could have potentially excluded valid responders.

In addition, data were screened for missing values. Three participants were shown to be missing more than 33 items and were excluded. Four participants had between 1 and 5 missing data points, with 2 of these participants having 1 missing data point in a measure included in the current analyses (i.e., MCSD or QIDS-SR). These data were replaced using mean substitution.

Variables assessing response patterns were created to assess for validity of responding (i.e., if they responded with the same number or in a distinct pattern within each questionnaire). Participants were excluded if they responded “1” to all items of the Grit Scale, MCSD, or BIS. Additionally, participants were excluded if they did not finish the survey, were missing more than 33 items, were missing GPA, or responded in less than 303 seconds, as discussed above, leaving a final *N* of 520 for the analysis, remaining consistent with the power estimates noted above.

After data was cleaned and examined for valid responding, a total score variable was created for each measure included in the analysis (i.e., Grit Scale, QIDS-SR, MCSD). These variables and the Overall GPA variable were then converted into z-scores to examine remaining potential outliers. Any outliers more than 3 standard deviations above or below the mean were adjusted to 3 standard deviations above or below the mean as is standard practice, including 2 outliers within GPA and two within QIDS-SR.

Hypotheses Examined via Correlation

Correlations examined initial relationships between variables, as presented in Table 2. We predicted that grit would be negatively related to depression in hypothesis one, that grit would be positively related to GPA in hypothesis two, and that depression would be negatively related to GPA in hypothesis three. Depression was negatively related to grit $r(518) = -.40, p < .001$, as predicted. Grit was positively related to GPA $r(518) = .12, p < .01$, consistent with previous literature (Duckworth et al., 2007; 2013). Lastly, depression was negatively related to GPA, $r(518) = -.18, p < .001$, as predicted. Thus, all relationships were significant and in directions consistent with hypotheses.

Table 2

Pearson Correlation Matrix among Depression, Grit, and GPA

	Grit	GPA
QIDS-SR	-.40**	-.18**
Grit		.12**

** $p < 0.01$

Hypotheses Examined via PROCESS Model 1

To explore if social desirability affects the relationship between grit and GPA, our first moderation analysis assessed the interaction between grit and social desirability in predicting GPA (Chang, 2014, Crede et al., 2016, Duckworth et al., 2007, Duckworth & Quinn, 2009). We had two competing hypotheses. First, consistent with literature by Duckworth, social desirability

will change the relationship between grit and GPA, such that grit's relationship with GPA will be more positive when social desirability is high, suggesting that social desirability will increase the existing relationship between grit and GPA (Duckworth, et al., 2007). Second, consistent with literature by Crede and authors, social desirability will change the relationship between grit and GPA, such that grit's relationship with GPA will be less positive when social desirability is low, suggesting that social desirability will reduce the existing relationship between grit and GPA (Crede et al., 2016).

Grit, $b = .16$, 95% CI [.067, .248], $t=3.43$, $p < .001$, and social desirability, $b = -.10$, 95% CI [-.189, -.009], $t=-2.16$, $p = .031$, were each uniquely predictive of GPA, such that higher grit and lower social desirability were associated with higher GPA. When examining the interaction, social desirability did not significantly moderate the relationship between grit and GPA, $b = -.07$, 95% CI [-.148, .007], $t=-1.78$, $p = .076$. However, due to the trending, albeit non-significant, p -value, we probed the interaction (both due to theoretical interest and as is automatic in the PROCESS module). At low levels of social desirability, grit remained positively associated with GPA, $b = .23$, 95% CI [.106, .350], $t=3.67$, $p < .001$. However, at high levels of social desirability, the relationship between grit and GPA was no longer significant, $b = .09$, 95% CI [-.028, .204], $t=1.48$, $p = .139$. Although limited due to the non-significant interaction term in the omnibus model, these results, as seen in figure 1, suggest that individuals with high social desirability may be less likely to accurately report levels of grittiness, whereas individuals with normal to low levels of social desirability are more likely to answer honestly and accurately about grit. In other words, those with higher levels of social desirability may also be reporting grit that is no longer as predictive of related strengths.

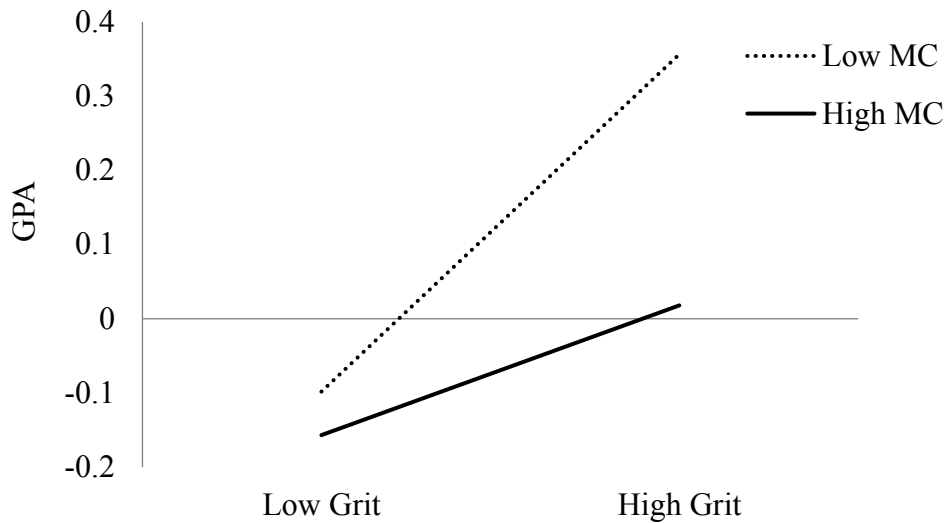


Figure 1. Relationship between grit and GPA at levels of social desirability (MC)

The second moderation assessed the interaction between depression and grit in predicting GPA, further exploring how the presence of grit may protect against the previously established negative relationship between depression and GPA (Bruffaerts et al., 2018; Deroma, et al., 2009; Eisenberg et al., 2009; Hysenbegasi et al., 2005). We hypothesized that grit will change the relationship between depression and GPA, such that depression's relationship with GPA will be less negative when self-reported grit is high (Duckworth, et al., 2007; Hysenbegasi et al., 2005). The main effect of depression, $b = -.15$, 95% CI [-.242, -.053], $t = -3.06$, $p = .002$, was significant, evidencing a negative relationship with GPA; however, within this model, grit was not uniquely predictive of GPA, $b = .05$, 95% CI [-.039, .144], $t = 1.14$, $p = .256$. Additionally, the interaction was not significant, $b = .05$, 95% CI [-.034, .127], $t = 1.13$, $p = .260$. These results, as seen in figure 2, suggest that grit does not buffer against the negative impact of depressive symptoms on

GPA; rather, depression maintains its relationship with GPA even when grit is included in the model.

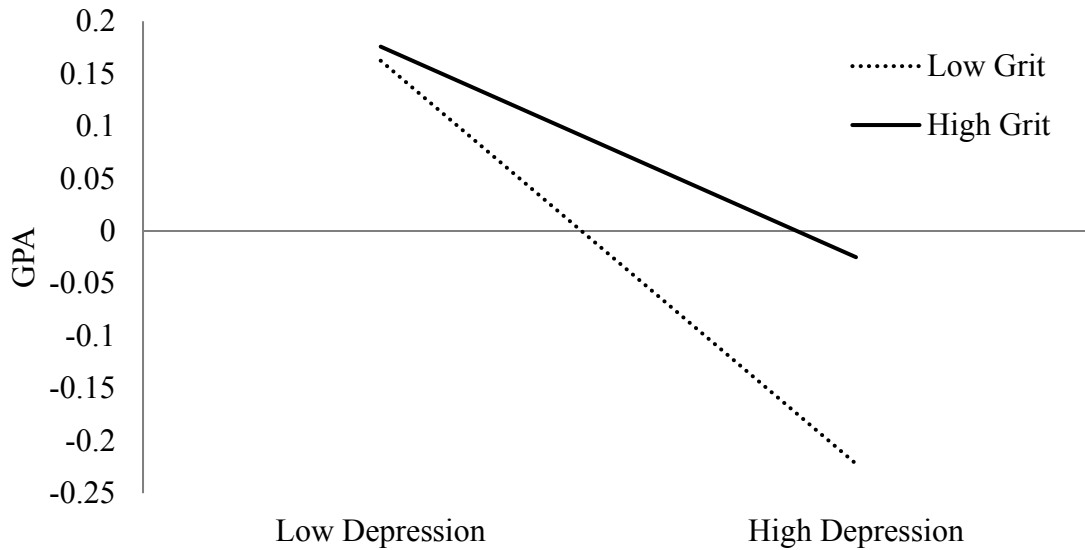


Figure 2. Relationship between depression and GPA at levels of grit.

A third moderation assessed the interaction between depression and social desirability in predicting GPA. We hypothesized that grit will change the relationship between depression and GPA, such that depression's relationship with GPA will be less negative when self-reported grit is high (Duckworth, et al., 2007; Hysenbegasi, et al., 2005). The main effect of depression was significant, $b = -.20$, 95% CI $[-.285, -.113]$, $t=-4.55$, $p < .001$, evidencing a negative relationship with GPA, and the main effect of social desirability was not significant, $b = -.08$, 95% CI $[-.170, .001]$, $t=-1.94$, $p = .053$, although it evidenced a trend in a negative direction. However, the interaction was non-significant, $b = .05$, 95% CI $[-.036, .134]$, $t=1.13$, $p = .261$. These results suggest that social desirability did not affect the relationship between depression and GPA,

evidencing that even at high levels of social desirability, depressive symptoms are negatively related to GPA, as seen in figure 3.

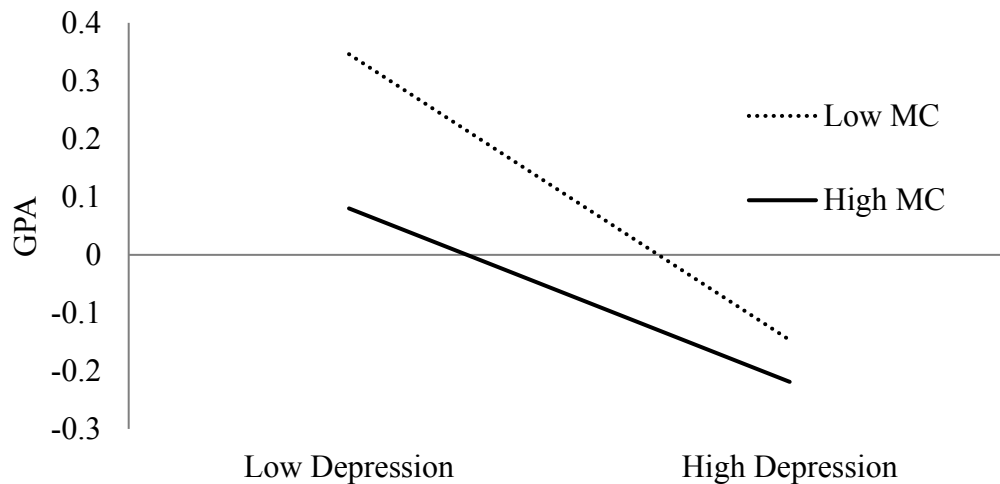


Figure 3. Relationship between depression and GPA at levels of social desirability.

Hypothesis Examined via Model 3

Lastly, a moderated moderation was conducted to determine how depression, grit, and social desirability interact and influence GPA. We hypothesized that social desirability will change the relationship of grit, depression, and GPA such that at high levels of social desirability, the relationship between depression and GPA will be more negative in comparison to when social desirability is low, suggesting that grit will no longer buffer symptoms of depression (Stewart, 2015; Vela, 2016). The main effects for depression, $b = -.16$, 95% CI [-.253, -.059], $t = -3.16$, $p = .002$, and social desirability, $b = -.11$, 95% CI [-.208, -.020], $t = -2.39$, $p = .017$, were significant. While results support depression and social desirability negatively relating

to GPA, grit remained predictive of GPA in a positive direction. However, the main effect for grit was non-significant, although it evidenced a positive trend, $b = .09$, 95% CI [-.006, .191], $t = 1.85$, $p = .064$. None of the interactions were significant (Depression x grit: $b = .03$, 95% CI [-.060, .115], $t = .61$, $p = .540$; depression x social desirability: $b = .01$, 95% CI [-.090, .110], $t = .20$, $p = .843$; grit x social desirability: $b = -.05$, 95% CI [-.132, .040], $t = -1.04$, $p = .297$; depression x grit x social desirability: $b = -.01$, 95% CI [-.082, .070], $t = -.15$, $p = .881$).

CHAPTER IV

DISCUSSION

Proponents of grit have asserted its importance to success across domains, including academic and job-related achievement (Crede et al., 2016; Doshkoc, 2005; Duckworth et al., 2007; Duckworth & Gross, 2014; Duckworth & Quinn, 2009; Eskreis-Winkler, Shulman, Beal, & Duckworth, 2014; Fillmore, 2015). Previous results were inconsistent with regard to grit's ability to predict success across these domains, however. Although some studies supported the ability of grit to predict academic success (Duckworth et al., 2007; Duckworth & Gross, 2014; Duckworth & Quinn, 2009; Eskreis-Winkler et al., 2014; Fillmore, 2015) and support Duckworth's original claims, other studies contradict these findings with weak correlations that are not likely to be significant to success in school or the workplace (Chang, 2014; Davidson, 2014; Hogan, 2013; Sheehan, 2014). These conflicting studies suggested that the positive relationship between grit and academic success needed further research.

The purpose of the current study was to explore how constructs of depression, grit, and social desirability relate to and predict GPA within a college sample. We hypothesized that grit would be negatively related to depression and positively related to GPA (Crede et al., 2016). We also predicted that depression would be negatively related to GPA, consistent with previous research (Hysenbegasi et al., 2005). We further examined the effect of social desirability on GPA, pitting ideas from Crede and authors and Duckworth against each other: one suggesting

social desirability will expand the positive relationship between grit and GPA, and the other suggesting social desirability would minimize the positive relationship between grit and GPA.

Initial correlational analyses supported hypotheses that grit is positively related to GPA, depression is negatively related to GPA, and depression is negatively related to grit, which are all in line with previous research. A particularly complex picture emerged due to the trending nature of the interaction of our analysis examining the interaction of social desirability and grit in association with GPA. With the marginal interaction term as a caveat, our analyses suggested that social desirability alters grit's relationship with GPA more in accordance with Crede's assumption. That is, at high levels of social desirability, grit no longer predicted GPA; whereas, at average or low levels of social desirability, grit moderately predicted GPA. So, although our results should be considered in context, they certainly did not evidence a pattern such that increased social desirability increased the relationship between grit and GPA, as Duckworth seems to have previously suggested.

However, our results did suggest that at average and low levels of social desirability, individuals exhibit "true grittiness." In other words, the ability of grit to predict GPA is significant even when social desirability is included in the model, which supports previous claims that grit is a non-artifactual predictor of GPA (Duckworth & Quinn, 2009).

Additionally, grit has previously been positively linked to overall well-being and success, whereas symptoms of depression have been negatively linked to well-being and success (Batres, 2011; Blalock et al., 2015; Bruffaerts, et al, 2018; Eisenberg, Golberstein, & Hunt, 2009). Based on these established relationships in the literature, we hypothesized that grit would moderate the effect that depression has on GPA, such that individuals who are depressed but gritty would not evidence a typically low GPA. Despite literature suggesting a buffering effect, our findings

indicate that grit does not moderate the relationship between depression and GPA. Unfortunately, this may mean that even effortful, focused individuals may still experience negative effects of depressive symptoms.

Lastly, when combining grit, social desirability, and depression in predicting GPA, it is of note that results evidenced no interactions; however, main effects of depression and social desirability were still present. Again, these findings suggest that the construct of grit, may be less influential on GPA than depression or social desirability, when considering the unique contribution of each construct on overall GPA.

Strengths and Limitations

A major strength of the current study is the inclusion of actual GPA rather than self-reported GPA. Self-reported GPA may be problematic, especially in the context of this study. College students may report an incorrect GPA for a number of reasons, including not knowing their actual GPA or inflating GPA in attempt to look like a better student (i.e., social desirable responding). Furthermore, this study is assessing the construct of grit, which has been linked to GPA and academic success, thus possibly adding to the potential pressure of students to report higher GPA's (Duckworth et al, 2014). In the current study, we independently collected students' GPA's from their student account, ensuring accuracy and forgoing potential confounds. Additionally, this study included a measure of social desirability: a construct typically excluded in prior research and listed as a limitation (Crede et al., 2017; Duckworth et al., 2007). These inclusions add to and expand the current grit literature by assessing the effects between grit and potentially related variables of depression and social desirability. The current study also establishes the importance of including a measure of social desirability in future grit research. By

including this additional measure, researchers will be able to parse apart individuals who exhibit “true grit” from those who are inflating their scores, thus focusing on the desired sample.

The current study also examined the relationship between grit and current depressive symptoms rather than well-being or meaning in life. Including specific depressive symptoms, as outlined in the DSM-5, filled a gap in the literature and allowed for analysis of grits effect on depression as a disorder (American Psychiatric Association, 2013). Importantly, results suggest that despite researchers defining grit as the ability to overcome obstacles to pursue a goal, individuals high in grit continued to be affected by depressive symptoms, meaning that perseverance toward a goal does not seem to be enough to combat symptoms of depression.

Lastly, although social desirability is a well-known construct, and it is not uncommon to control for social-desirability when conducting studies using self-report measures, research on grit often has not included a measure of social desirability despite multiple authors acknowledging the potential need (Crede et al., 2016; Duckworth et al., 2014; Eskreis-Winkler et al., 2014). Given that grit is self-report measure with questions such as “I am a hard worker” and “I am diligent,” the measure may be considered to be face-valid, potentially resulting in individuals responding favorably rather than truthfully. Including social desirability in the current study thus also fills a gap in the literature and provided valuable information, in concert with actual GPA scores, regarding how strong the association between grit and GPA really is.

One limitation of the current study is the population. Although grit is particularly relevant to college students, students at a 4-year university are typically high-achieving. Future research should include older individuals, individuals at 2-year colleges, and middle or high school students. Additionally, the cross-sectional collection of data is another limitation of the current study. These variables should be examined longitudinally to assess potential causal relationships

among these variables. Lastly, comparison of grit to the similar construct of resilience (Hartley, 2013) in relation to depression and social desirability would further assess grit's discriminate and predictive validity.

Conclusion

Taken together, the current study's findings, in concert with other previous critical appraisals of grit, suggest that precaution should be taken when considering the construct validity of grit, although some evidence supportive of grit as a valid construct emerged. In particular, the need for future research to assess social desirability in relation to grit seems paramount, and the prospect of grit as a buffer against depression seems bleaker in light of our results.

However, it is important to note that even small improvements toward academic success can be impactful when applied to large populations such as college students, as Crede et al., (2016) mention. Indeed, the hope for small improvements may represent a more achievable – and defensible – goal for those already translating grit into applied settings.

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APPENDIX A
IRB Approval Letter

From: <apb30@msstate.edu>
Date: Fri, Mar 9, 2018 at 3:28 PM
Subject: Approval Notice for Study # IRB-18-066, Grit and achievement
To: <sw1388@msstate.edu>, <cm998@msstate.edu>, <hld166@msstate.edu>, <jkk99@msstate.edu>

Protocol ID: IRB-18-066
Principal Investigator: Eric Winer
Protocol Title: Grit and achievement
Review Type: EXEMPT
Approval Date: March 09, 2018
Expiration Date: March 08, 2023

The above referenced study has been approved. To access your approval documents, log into myProtocol and click on the protocol number to open the approved study. Your official approval letter can be found under the Event History section. For non-exempt approved studies, all stamped documents (e.g., consent, recruitment) can be found in the Attachment section and are labeled accordingly.

If you have any questions that the HRPP can assist you in answering, please do not hesitate to contact us at irb@research.msstate.edu or 662.325.3994.