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How Well do Trait Measures of Achievement Predict Students' Perceptions of the Link between Personal Effort and Academic Performance?

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Abstract

The concept of Grit has gained momentum in the last several years as a better predictor of achievement than traditional measures, such as IQ. Duckworth, et al. (2007) found grit to be positively correlated to the Big Five personality dimension of conscientiousness, but not to IQ, causing the authors to hypothesize that grit is a good noncognitive supplemental predictor of academic success. The current study is a continuing interdisciplinary investigation of the relationship between college students' perceptions of the link between personal effort and academic performance, and the influence of trait measures such as grit and the Big Five personality dimensions on students' perceptions of the link between personal effort and academic performance (Mannahan & Gray, 2015). Results indicated a significant positive correlation between grit and motivation and a significant positive correlation between conscientiousness and motivation, but conscientiousness did not relate to any other items on the Effort and Performance Inventory. Similar to the findings of Duckworth, et al. (2007), grit was correlated with conscientiousness, but conversely, grit was not related to most of our measures of perceptions of personal effort and academic performance.

Keywords: Grit, traits, effort, performance, personality.

There is a fairly significant body of literature supporting the link between personality measures and academic achievement as measured by IQ, particularly concerning the Big Five traits of openness, conscientiousness, extraversion, agreeableness, and neuroticism (Costa & McCrae, 1992; Komarraju, Karau, & Schmeck, 2009). Among the five personality dimensions, conscientiousness seems to be the strongest predictor of academic success as measured by GPA (Busato, Prins, Elshout, & Hamaker, 1998; Wagerman & Funder, 2007) and exam performance (Chamorro-Premuzic & Furnham, 2003).

Grit has gained momentum in the last several years with some debate that it may be a better predictor of achievement than traditional measures, such as talent or IQ. Grit is defined as passion and perseverance toward personal goals that is maintained in spite of setbacks and little success in the short-term (Duckworth, Peterson, Matthews, & Kelly, 2007). The concept has exploded as demonstrated by "Got Grit" becoming a popular

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buzz phrase in national education (Smith, 2014). Some college admissions officers have expressed interest in using grit as a college admissions selection criterion (Nelson, 2014), while others have questioned the validity of non-traditional measures of achievement such as grit and other personality tests. There appears to be some level of overlap among grit and personality as Duckworth, et al. (2007) found grit to be positively correlated with the Big Five personality dimension of conscientiousness. They also found that grit did not correlate with IQ as conscientiousness did, which indicated that grit may be a good non-cognitive supplemental predictor of academic success.

Personal effort, as defined by levels of motivation, class attendance, and paying attention and being engaged in class, has been associated with academic success (Mannahan & Gray, 2015). While it seems obvious that personal effort and academic performance are intrinsically connected, research indicates that the relationship is much deeper, more complex, and "often contradictory" (Khachikian & Guillaume, 2002; Khachikian, Guilliaume, & Pham, 2011; Rich, 2006, p. 2;). Many students "over-predict" grades because "they are too optimistic at the beginning" of their course, which results in self-deception about their abilities and dedication to their coursework (Khachikian et al., 2011).

Haynes, Ruthig, Perry, Stupnisky, and Hall (2006) suggest that self-deception among students may be dangerous because it has the potential to affect students' adaptability and future academic achievement. They note that, "the adaptiveness of the student's highly optimistic expectations may largely depend on his or her accompanying cognitions, in particular, underlying causal attributions and perceptions of control" (p. 756). In other words, students construct an individual narrative to explain the causes of their successes and failures, often base those explanations on the amount of control they perceive they have in the particular situation.

Currently the literature offers little empirical evidence of a clear connection between perceptions of personal effort and academic performance, so it is important to apply student opinion-based studies to better understand the students' phenomenological experiences (Mannahan & Gray, 2015). In a large qualitative study, Rose (2012) sought to understand how students view academic success, especially those students who have historically not achieved. His findings indicated, "[w]hat you see depends on where you sit," (p. 115) and he called for a more student-focused perspective on research that investigates what students experience from their point-of-view. The current study was an interdisciplinary investigation designed with Rose's call for a more student-focused perspective in mind. We sought to better understand the relationship between college students' perceptions of the link between personal effort and academic performance, and the influence of trait measures such as grit and the "Big Five" personality dimensions on students' perceptions of the link between personal effort and academic performance.

The hypotheses for this study were:

> H1: Based on the "overly optimistic" expectations students have at the start of a course (Haynes et al., 2006, p. 772), we expect participants will be more likely to

connect personal effort and academic performance at the start of the course, prior to the return of graded materials.

H2: Grittier participants, as defined by higher scores on the Grit Scale (Duckworth, et al., 2007), would be more likely to connect personal effort to academic performance as measured by the Effort and Performance Inventory.

H3: Participants higher in Conscientiousness[2], as measured by the TIPI (Ten-Item Personality Inventory, Gosling, Renfrow, & Swann, 2003) will better connect personal effort and academic performance as measured by the Effort and Performance Inventory.

Method

Our study was conducted to explore students' perceptions of the link between personal effort and academic performance. The study involved two administrations of the survey instrument. The first administration occurred during the first week of class (Time 1), and the second administration occurred after the first assignment was graded and returned (Time 2).

Participants. Eighty-five participants were recruited from introductory psychology and English courses at a small Southeastern college. These two courses were selected because most students at the institution take these two subjects (Psychology and English) at some point in their academic career, usually in their first year. The two specific sections were convenience samples because they were the principle investigators' (PIs) courses and represented the researchers' desire for an interdisciplinary approach. For Time 1, there were 85 total participants (36 males, 49 females); however, only 63 participants completed Time 2 of the survey (Part B). Because we used paired samples, we will report demographic information for only the 63 participants (31 males, 32 females) who completed part A and Part B. Ages ranged from 18 – 35 years (M = 20 years), and 20% of the sample were first-generation college students. Ethnicities included 73.4% Caucasian, 10.9% African American, 1.6% Hispanic, and 12.6% Other. These demographics were reflective of the general population of the college.

Instrument. Participants were asked to complete an Effort and Performance Inventory created by the authors containing demographic items such as gender, race, and ethnicity. Additionally, Likert-type items regarding the connection between effort and performance, such as "Your grade in this course will be a direct result of the effort you put into the course," were used, with 1 representing "Strongly Disagree" and 5 representing "Strongly Agree." Three qualitative items were intermingled to broaden the research perspective incorporating mixed methods to diversify the type of data obtained. These items assessed students' understandings of "effort" in an educational setting and identified their perceptions concerning confidence in their abilities in the classroom (Chronbach's alpha = .83). Finally, participants completed the Grit Scale (Duckworth et al., 2007; see Appendix)

[2] According to Duckworth et al., (2007), "Conscientious individuals are characteristically thorough, careful, reliable, organized, industrious, and self-controlled (p. 1089).

(Chronbach's alpha = .79) and the TIPI (Ten-item Personality Inventory, Gosling et al., 2003). The Grit scale is a 12-item inventory designed to measure grit in which participants respond to Likert-type items such, "I have overcome setbacks to conquer an important challenge" on a 1-5 scale with 1 representing "very much like me" and 5 representing "not like me at all." The TIPI is a brief measure of the personality traits commonly referred to as "the Big Five:" openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. For Time 2, the Grit Scale and the TIPI were not repeated because they are trait measures and would not change over such a short period of time.

Procedure. After receiving Institutional Review Board approval, the two courses from which the sample would be taken were selected. The PIs entered each other's classrooms on the day of the administration, invited class members to participate in the study, and distributed an informed consent form. After reading and signing the form, participants received the survey instrument. After completing the survey, the PIs collected the survey instrument and thanked the participants.

Results

Overall, students connected motivation, attending class, and attention and engagement with academic performance. However, paired-samples t-tests indicated that the strength of the connection was significantly lower in Time 2 than in Time 1:

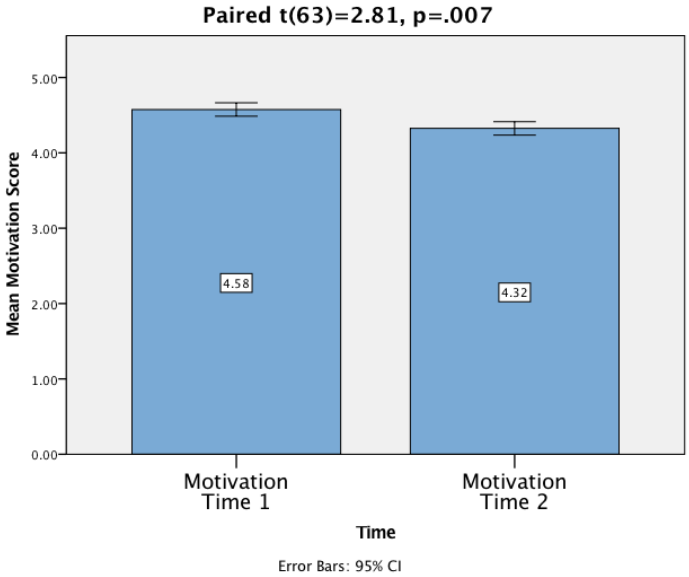

Figure 1. Mean scores for motivation Time 1 (first week of class) vs. Time 2 (after the first assignment was graded and returned).

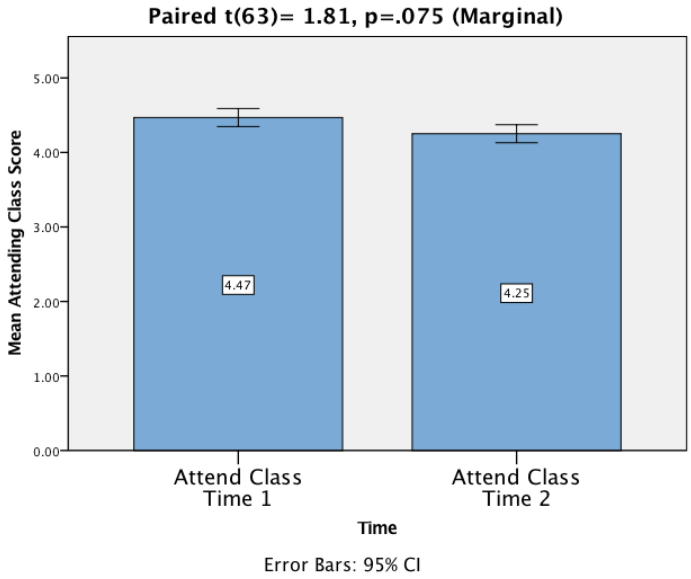

Figure 2. Mean scores for attending class Time 1 (first week of class) vs. Time 2 (after the first assignment was graded and returned).

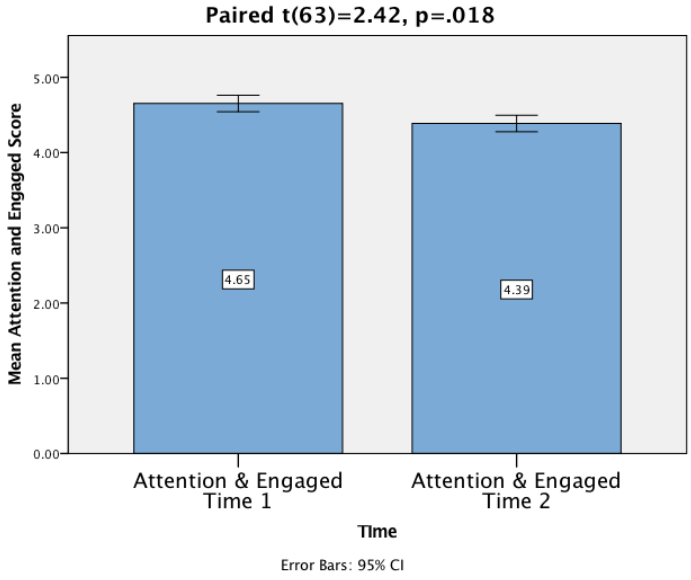

Figure 3. Mean scores for attention and engaged Time 1 (first week of class) vs. Time 2 (after the first assignment was graded and returned).

The graphs above illustrate the significant decrease in the mean responses across time in terms of linking motivation, attending class, and attention and engagement (the survey instrument items designed to measure personal effort) with academic performance. Because the mean responses on the items measuring motivation, attending class, and atten-

tion and engagement were significantly higher at Time 1 than Time 2, support was found for our first hypothesis that students are more likely to connect personal effort and academic performance at the start of the course rather than after receiving their first grade.

In terms of the trait measures of Grit and the TIPI, correlational analyses revealed a significant positive correlation between grit and motivation, r=.336, $p<.05$, but grit did not relate to any other measures on the Effort and Performance Inventory. We hypothesized that grittier students would be more likely to connect personal effort to academic performance as measured by the Effort and Performance Inventory. Although overall there was not a clear relationship between grit and all of the items on the Effort and Performance Inventory, higher mean scores on the Grit scale, which Duckworth, et al. (2007) call a "grittier" student, were more motivated toward academic success and personal goals than less grittier students.

Correlational analyses also indicated a significant positive correlation between conscientiousness and motivation, $r=.260$, $p<.05$, but conscientiousness did not relate to any other items on the Effort and Performance Inventory. Our final hypothesis was that participants higher in Conscientiousness, as measured by the TIPI (Ten-Item Personality Inventory, Gosling et al., 2003), will better connect personal effort and academic performance as measured by the Effort and Performance Inventory. Similar to hypothesis 2, while the results overall did not demonstrate a direct relationship among all measures with the Effort and Performance Inventory, there was a positive correlation between Conscientiousness and motivation.

The qualitative portions of the study indicated that students listed effort as one contributing factor for course performance; however, other factors were frequently identified, including "love for the subject," "natural ability," and "liking the teacher."

Discussion

Results revealed that while participants appeared to connect motivation, attending class, and attention/engagement with performance, the connection was significantly weaker after the first test/assignment was returned. Perhaps the reality of the first graded assignment was problematic for students to accept. It seems that the participants' locus of control[3] with regard to their own academic performance became increasingly external as the semester progressed. They no longer connected personal control over their actions, and they were quick to divorce themselves from responsibility. This removal of personal effort, in such a short time period, may demonstrate a lack of resilience or apathy on the students' part. Haynes et al. (2006) indicated that "overly optimistic" students can be "problematic" (p. 772), especially in unfamiliar situations such as the transition from high

[3] Locus of Control is defined by Rotter (1966) as the extent to which one believes he or she is in control of the circumstances of their life. Someone with an internal locus of control believes he or she has more control over life, and someone with an external locus of control believes that external forces, such as a higher power or luck, controls life.

school to college. Because these courses are often selected by first-year students who are in transition, this research is particularly relevant to our study.

Results revealed that the grittier the participant, the more likely they were to connect their personal level of motivation to their academic performance. These grittier participants maintained their level of motivation from Time 1 to Time 2, demonstrating that grit may influence a student's motivation levels in a persistent manner. However, the other areas measured (attending class, attention and engagement) were not significantly correlated to grit suggesting that grit may not be as strong of a global predictor of academic success as it has been touted. Further research is warranted to explore the predictive power of grit before measures of grit become a standard component for college admission criterion.

With regard to the trait measures of grit and conscientiousness, in line with Duckworth et al., (2007), we found grit was positively correlated with conscientiousness. Duckworth et al. (2007) note that "grit overlaps with achievement aspects of conscientiousness but differs in its emphasis on long-term stamina rather than short-term intensity" (p.1089). In our study, conscientiousness was positively correlated with motivation at both Time 1 and Time 2 as was grit. The similar pattern of results of the trait measures of grit and consciousness suggests that these concepts map onto each other and both may be useful in determining short-term and long-term academic success.

Qualitative elements of the study showed that students connected personal effort with their academic performance at Time 1 and Time 2. However, other factors associated with academic success were identified, such as "love for the subject," "natural ability," and "liking the teacher." These results reflect that students are able to say what they need to do in order to have academic success, but the mean scores on the Effort and Performance Inventory show that it may be all talk and no action. For example, the qualitative results showed that participants could easily identify what they need to do in order to perform well (study, read the text, do homework, put forth effort, etc.); however, when asked what specific behaviors they engaged in while studying or doing coursework, the most common response was "listen to music." This discovery may be useful in the design of study-skill programs because students may not be aware they need to learn the actual process of how to study. Therefore, some students may have difficulty realizing "a problem exists" and they may "not seek help in time to gain benefits" (Ofori & Charlton, 2002, p. 514). Within the classroom, teachers can use the GRIT scale as a classroom-based activity, which would promote reflective examination on the students' part. This focus on grit places attention squarely on potential predictors of academic success, a conversation that may not be occurring in many classrooms and may be contributing to the lack of connection between personal effort and academic performance demonstrated in this study.

There are some limitations of this study and future directions that should be considered. The TIPI is a very short version of a personality measure with only two items measuring each of the "Big Five" personality dimensions. Perhaps a longer, more thorough measure of personality would illuminate more nuanced results. Also, the relatively short time frame of the current study could be problematic. Duckworth and Quinn (2009) and

Duckworth et al. (2007) asserted that grit is about persistence and sticking with a goal for extended periods of time, and in fact, the main differentiating factor between grit and conscientiousness is stamina. Since the current study only spanned one semester with first-year students, it would be interesting to perform longitudinal research with the same participants until graduation to investigate how their perceptions of their personal effort and academic performance shift throughout their undergraduate career, and whether the grittier students were more successful long-term than those high in conscientiousness.

In their investigation of personality traits and academic performance, Furnham, Nuygards, and Chamorro-Premuzic (2013) found that personality traits played a more essential role in course work, rather than exam results. This is particularly relevant to the current study as we used an interdisciplinary approach and our Time 2 administration was after the first graded assignment was received. The first graded assignment in the English class was a paper, which is considered course work, and the first graded assignment in the Psychology class was an exam. Our sample was not evenly distributed enough in the current study to compare the two classes to each other, but it would be valuable to follow up in this area to determine if our study would provide support for Furnham, Nuygards, and Chamorro-Premuzic's (2013) findings.

A final direction for future research would be to examine other personality differences that may contribute to different perceptions of the link between personal effort and academic performance, such as dispositional optimism (Haynes et al., 2006; Thompson & Gaudreau, 2008), self-efficacy (Bandura, 1977), narcissism (Farwell & Wohlwend-Lloyd, 1998), and locus of control (Rotter, 1966). Extracting the nuances of students' phenomenological experiences in the classroom can guide practitioners to focus on what their students may need to succeed.

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Appendix. Grit Scale

Directions for taking the Grit Scale: Please respond to the following 12 items. Be honest – there are no right or wrong answers!

1. I have overcome setbacks to conquer an important challenge.
❑Very much like me
❑Mostly like me
❑Somewhat like me
❑Not much like me
❑Not like me at all

2. New ideas and projects 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

3. My interests change from year to year.*
❑Very much like me
❑Mostly like me
❑Somewhat like me
❑Not much like me
❑Not like me at all

4. Setbacks don't discourage me.
❑Very much like me
❑Mostly like me
❑Somewhat like me
❑Not much like me
❑Not like me at all

5. 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

6. I am a hard worker.
❑Very much like me
❑Mostly like me
❑Somewhat like me
❑Not much like me

❑Not like me at all

7. 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

8. 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

9. I finish whatever I begin.
❑Very much like me
❑Mostly like me
❑Somewhat like me
❑Not much like me
❑Not like me at all

10. I have achieved a goal that took years of work.
❑Very much like me
❑Mostly like me
❑Somewhat like me
❑Not much like me
❑Not like me at all

11. I become interested in new pursuits every few months.*
❑Very much like me
❑Mostly like me
❑Somewhat like me
❑Not much like me
❑Not like me at all

12. I am diligent.
❑Very much like me
❑Mostly like me
❑Somewhat like me
❑Not much like me
❑Not like me at all

Scoring:

1. For questions 1, 4, 6, 9, 10 and 12 assign the following points:

5 = Very much like me
4 = Mostly like me
3 = Somewhat like me
2 = Not much like me
1 = Not like me at all

2. For questions 2, 3, 5, 7, 8 and 11 assign the following points:

1 = Very much like me
2 = Mostly like me
3 = Somewhat like me
4 = Not much like me
5 = Not like me at all

Add up all the points and divide by 12. The maximum score on this scale is 5 (extremely gritty), and the lowest scale on this scale is 1 (not at all gritty).

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