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What Contributes to Self-Control and Grit? The Key Factors in College Students

Rishi Sriram Perry L. Glanzer Cara Cliburn Allen

Although scholars know an increasing amount about the benefits of self-control and grit for college students, they know less about what influences self-control and grit in students. In this study we examined influences on self-control and a key element of grit in a national sample of college students. Results indicated that 5 of the 13 predictor variables significantly contributed to self-control and grit: others-focused purpose, time spent socializing, time spent in academic activities, success-focused purpose, and importance of religion.

Self-control is receiving an increasing amount of positive attention from scholars and popular writers (Duckworth, White, Matteucci, Shearer, & Gross, 2016; Tough, 2013). The reasons are not surprising. As some scholars have noted, “the human capacity to exert self-control is arguably one of the most powerful and beneficial adaptations of the human psyche” (Tangney, Baumeister, & Boone, 2004, p. 272). Scholars have suggested that the skills required for self-control are as crucial as any other competency in psychosocial development (Duckworth et al., 2016). Self-control is so critical that its influence on important life outcomes compares well to other powerful predictors, such as family socioeconomic status and intelligence (Daly, Delaney, Egan, & Baumeister, 2015; Duckworth et al., 2016; Duckworth & Seligman, 2005).

Although self-control has received a

significant amount of recent attention, it is now sharing focus with a related variable known as grit (Duckworth, 2016). Self-control and grit, some have argued, are related but separable determinants of success: Duckworth and Gross (2014) defined *self-control* as “the capacity to regulate attention, emotion, and behavior in the presence of temptation” (p. 319). By contrast, they defined *grit* as “the tenacious pursuit of a dominant superordinate goal despite setbacks” (p. 319). Therefore, both self-control and grit involve pursuing goals of the individual and overcoming barriers in that pursuit. In short, self-control and grit both require goals and determination. Duckworth and Gross distinguished the two variables, however, in terms of the magnitude of the goals and the determination: self-control deals with short-term goals and short-term determination; grit concerns itself with long-term goals and long-term determination.

For college students, the importance of self-control is well documented in the extant literature, and an expanding body of literature is demonstrating the importance of grit for students (Duckworth, Peterson, Matthews, & Kelly, 2007; Duckworth & Seligman, 2005; Moffitt et al., 2011; Tangney et al., 2004; Zettler, 2011). Scholars know an increasing amount about the benefits of self-control and grit, but less about what influences self-control and grit in college students. The purpose of this study is to examine certain individual

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and environmental influences on self-control and a key element of grit (the perseverance toward long-term goals) in a national sample of college students.

LITERATURE REVIEW

Our literature review focuses on three particular areas: (a) definitional discussions, (b) the benefits of self-control and grit (and the costs of a lack of either one), and (c) the development of self-control and grit (with a particular focus on college students).

Definitional Discussions

In recent literature, numerous scholars set forth slightly varying definitions of self-control. Peterson and Seligman (2004) suggested that *self-regulation* or *self-control* “refers to how a person exerts control over his or her own responses so as to pursue goals and live up to standards” (p. 500). The standards Peterson and Seligman referred to include “ideals, moral junctions, norms, performance targets, and the expectations of other people” (p. 500). Baumeister, Vohs, and Tice (2007) defined *self-control* as “the capacity for altering one’s own responses, especially to bring them into line with standards such as ideals, values, morals, and social expectations, and to support the pursuit of long-term goals” (p. 351). Most recently, Duckworth et al. (2016) described *self-control* as “the voluntary regulation of conflicting thoughts, feelings, and actions in accordance with long-term goals” (p. 329). All three of these definitions contain two common elements.

Regulative Ability. Each of the definitions focuses on the ability of a person to alter or regulate the self. It should be noted that there is some similarity and a minor difference in how these authors conceptualized what is regulated. For example, Duckworth et al. (2016) identified three domains of regulation:

“thoughts, feelings, and actions” (p. 329). Baumeister (2002), by contrast, argued that self-control is exercised in four domains: thoughts, “suppressing unwanted thoughts or forcing oneself to concentrate”; emotions, “getting into, out of, or unnaturally preserving some emotion or mood”; impulses, “resisting temptation”; and action, “persisting” (p. 670). The additional fourth domain, “resisting temptation,” concerns what we call *the will*.

Goals. The second commonality with all three definitions is that each identifies the importance of goals in motivating regulation. Individuals consider the long-term effects of their actions and delay instant gratification for long-term goals or standards (Mischel & Ayduk, 2004; Zettler, 2011). Self-control fundamentally involves overriding human behaviors that are not in the individual’s best interest in the long term (Oaten & Cheng, 2006). As Peterson and Seligman (2004) noted, the “ability to transcend the immediate situation is crucial” in order to pursue long-term goals (p. 510).

In this study, we maintain with Baumeister et al. (2007) that it is important to include the component of moral will—“resisting temptation”—in our understanding of self-control, since it is an important item in the self-control scale we use (Tangney et al., 2004).

Scholars have defined *grit* as “perseverance and passion for long-term goals” (Duckworth et al., 2007, p. 1087) or “the tenacious pursuit of a dominant superordinate goal despite setbacks” (Duckworth & Gross, 2014, p. 319), noting that we need to make an important distinction between self-control and grit (Duckworth, 2016; Duckworth et al., 2007; Duckworth & Gross, 2014). In some basic ways, grit shares similarities to the core components of self-control. Self-control and grit both involve goals and determination. Furthermore, both qualities help a person defend their valued long-term

goals against some kind of impulse, adversity, or temptation (Baumeister et al., 2007; Mischel & Ayduk, 2004; Peterson & Seligman, 2004; Zettler, 2011).

The difference between self-control and grit, however, involves three things: the types of goals, the nature of the temptation, and the time scale (Duckworth & Gross, 2014, p. 322). First, self-control pertains more to helping oneself with lower-level goals. Duckworth and Gross (2014) provided the example of a professor choosing between editing the Method section of her graduate student's manuscript or checking *Us Weekly* for the latest Hollywood gossip. In contrast, grit relates more with highest level goals, such as that same professor "producing new insights into the psychological determinants of success" (p. 321). Second, although self-control helps with current action impulses or rival momentary goals of lesser worth (e.g., reading *Us Weekly*), grit helps one overcome significant disappointments and setbacks to longer term goals, such as the professor receiving a rejection on a grant proposal. Third, self-control is sometimes understood as regulating oneself between a momentary desire and goals that require a longer time horizon (e.g., finishing a research paper)—but not quite as long term as something requiring years, such as finishing law school (Duckworth & Gross, 2014; Maglio, Trope, & Liberman, 2013). Grit, in contrast, involves "pursuing a passionate interest with determination and effort over the course of years" (Duckworth & Gross, 2014, p. 320). Both concepts involve the pursuit of goals, but Duckworth and Gross suggested that a difference between the two concepts is the time to goal completion or achievement.

It should be noted that though grit has been presented as a construct that is different from self-control, "there has however been almost no empirical investigation of the discriminant validity of grit from these other constructs

using the types of methodologies commonly employed to determine discriminant validity" (Crede, Tynan, & Harms, 2016, p. 495).

Benefits of Self-Control and Grit

Self-control influences a broad range of desired student outcomes (Duckworth et al., 2007; Duckworth & Seligman, 2005; Moffitt et al., 2011; Oaten & Cheng, 2006; Tangney et al., 2004; Zettler, 2011). In college students, self-control is more important than IQ in predicting school performance, grades, and attendance (Duckworth & Seligman, 2005; Wolfe & Johnson, 1995). In addition to higher grades, college students with higher levels of self-control have less alcohol and drug abuse, better interpersonal relationships, better university citizenship behavior, and more emotional stability than those students with less self-control (Tangney et al., 2004; Zettler, 2011). Low self-control in college students has been linked to cheating (Williams & Williams, 2012), compulsive purchases (Claes et al., 2010), sexual assault (Franklin, Bouffard, & Pratt, 2012), gambling (Mishra, Lalumière, & Williams, 2010), alcohol and drug abuse (Ford & Blumenstein, 2013), and general unhappiness (Tangney et al., 2004). Overall, scholars have suggested that the skills required for self-control are as crucial as any other competency in psychosocial development (Duckworth et al., 2016).

Like self-control, grit has been shown to be as good or better at predicting academic success compared to cognitive ability (Akos & Kretchmar, 2017; Duckworth et al., 2007; Duckworth & Seligman, 2005; Moffitt et al., 2011). Both self-control and grit highly correlate with conscientiousness, agreeableness, and emotional stability (Duckworth et al., 2007; Tangney et al., 2004). Moreover, like self-control, grit has no known drawbacks (Duckworth, 2016; Peterson & Seligman, 2004). High levels of grit and self-control

have also been tied to the importance of deliberate practice (Duckworth, 2016; Duckworth, Kirby, Tsukayama, Berstein, & Ericsson, 2011). In general, “gritty people tend to be self-controlled and vice versa” (Duckworth, 2016, p. 273).

The distinctions between self-control and grit are important, however. Defining the two terms separately adds nuance and sophistication to the understanding of determination. Self-control helps with the types of everyday achievements mentioned above, such as academic success, better social relationships, emotional health, and fewer addictive behaviors, but grit leads to exceptional achievements, such as winning a national spelling bee or completing an arduous West Point program (Duckworth & Gross, 2014). Grit also is linked to finding a purpose in life (Duckworth, 2016; Hill, Burrow, & Bronk, 2016). There is also some evidence that grit positively influences retention for college students, but self-control does not (Duckworth et al., 2007).

Development of Self-Control and Grit in College Students

There are two basic views about the development of self-control. One view conceptualizes self-control as a fixed personality trait that remains constant over time (Gottfredson & Hirschi, 1990; Grasmick, Tittle, Bursik, & Arneklev, 1993; Vazsonyi & Huang, 2010). Individuals with lower amounts of self-control cannot resist deviant behavior that distracts from goals. Most recent scholars, however, have viewed the regulative aspect of self-control as similar to a muscle that can be developed, strengthened, and conserved for future use—or depleted after repeated use—in which individuals with lower levels of self-control cannot resist temptations in the pursuit of goals (Baumeister, 2014; Baumeister et al., 2007; Baumeister, Gailliot, DeWall, & Oaten,

2006; Duckworth et al., 2016; Muraven, Shmueli, & Burkley, 2006). Baumeister and Exline (1999) even referred to self-control as a moral muscle, as it aids individuals in acting in socially desirable ways. The self-control muscle is also not necessarily constrained by a specific domain; rather, shaping self-control behavior in one area of life can strengthen self-control behaviors in other areas of life, because the effects of self-control encompass all domains (Baumeister & Vohs, 2007). Similarly, grit is also a trait that can be strengthened or developed (Duckworth, 2016).

A few researchers have studied the effects of strengthening and depleting the self-control moral muscle on college student behavior (Dalton & Crosby, 2011; Mead, Baumeister, Gino, Schweitzer, & Ariely, 2009; Oaten & Cheng, 2005, 2006). When college students had to exert self-control on a prior task, they demonstrated greater dishonesty and cheating on a secondary task, suggesting that “the moral muscle loses some of its strength after exertion” (Mead et al., 2009, p. 594). College student stress during exam time causes self-regulating behavior to falter in other domains of their lives, such as spending and dietary habits, because stress depletes the self-control resource (Oaten & Cheng, 2005). In this regard, Oaten and Cheng (2006) found that college students who participated in a 2-month study program strengthened their self-control muscle and showed no increase in stress during exam time, resulting in improved self-control behaviors in other domains of life. Concerning specific student subpopulations, Melzer and Grant (2016) found that underprepared students need more assistance delaying gratification, an essential component of self-control.

Beyond these studies, there is a lack of research studies on the predictors of self-control or grit in college students. Dalton and Crosby (2011) hypothesized that students who spend more time on task working on academics

would have higher levels of self-control and consequently do better academically than those who spend more time socializing, working, or participating in cocurricular efforts that are not tied to their academic experience. Overall, as this literature review suggests, we increasingly know more and more about the nature of self-control and grit, their possible differences, the positive benefits of both, and some possible ways to develop them in college students. Nonetheless, we do not have a national study to help us understand the variety of factors that may be correlated with or predict the presence of self-control or grit. In our study we examined what factors may be correlated with self-control and grit in college students.

METHOD

We utilized a cross-sectional, correlational research design in order to determine the influence of predictor variables on self-control and grit in college students. The population of interest consisted of all 18-to-23-year-olds attending college in the United States. We sought and obtained approval from our institution's Institutional Review Board for this project on June 23, 2014. The sample for this study was gathered through the Gallup daily tracking sample—a nationally representative sample of US adults aged 18 or older. Participants responded to questions via a telephone survey. All adults with access to a cellphone or landline device had an equal probability of selection, and the sample was stratified by time zone within each region to ensure the sample was representative of individuals throughout the United States. The sample weights were created to minimize bias in the survey-based estimates. Additional information about the method is available on the Gallup website (Gallup, 2017).

A total of 14,119 student phone numbers were contacted for this study. Potential

participants were removed for a number of reasons, including wrong numbers (1,508), refusals to participate (1,940), language barriers (120), incomplete interviews (52), and unanswered calls (7,729). Respondents who agreed to participate and were between 18 and 23 years old were included in the study during Spring 2014. A total of 2,503 college students were selected for this study (response rate of 17.7%). After deleting 52 cases for missing values using listwise deletion, the final dataset included 2,451 college undergraduates. We used listwise deletion because it is a more conservative approach that removes all cases that have any missing data. We did not want our results influenced by partial data.

Participants

Among the participants of this study, 1,412 (58.1%) were men, while 1,018 (41.9%) were women. For those who provided information on their race, 1,578 (63.0%) identified as White, 402 (16.1%) as Hispanic or Latino, 300 (12.0%) as Black or African American, 171 (6.8%) as Asian, 33 (1.3%), as another race.

Regarding institutional type, 1,319 (52.7%) attended public 4-year institutions, 596 (23.8%) attended private 4-year institutions, 553 (22.1%) attended public 2-year institutions, and 35 (1.4%) attended private 2-year institutions.

Variables and Instruments for Data Collection

The predictor variables of interest to us were age, gender, the number of hours spent per week on academic activities, the number of hours spent per week on cocurricular activities, the number of hours spent per week socializing, the number of hours spent per week in paid employment, purpose in life, religious attendance, religious importance, and family financial status. Some of these predictor variables were exploratory in nature—we did

not find extant research that suggested their inclusion. We were nonetheless interested if these variables had an influential relationship with self-control and grit. Variables we included on an exploratory basis included age, gender, and family finances. Variables we included based on previous research included academic activity hours, cocurricular hours, socializing hours, and working hours (Dalton & Crosby, 2011; Oaten & Chang, 2006); purpose (Hill et al., 2016); religious importance and religious attendance (Vitell et al., 2009).

Our dependent variable was what some scholars have identified as self-control (Tangney et al., 2004), but what we would define (in light of the definitional discussion above) as both self-control and a key factor related to grit. In other words, we examined both “the capacity for altering one’s own responses, especially to bring them into line with standards such as ideals, values, morals, and social expectations, and to support the pursuit of long-term goals” (Baumeister et al., 2007, p. 351) and a key element involved with “the tenacious pursuit of a dominant superordinate goal despite setbacks” (Duckworth & Gross, 2014, p. 319).

For some of our variables, we used single items to gather information from participants. For example, we used one item each to measure how students spent their time (academic, social, cocurricular, and work). For other variables, however, we used multi-item scales to measure these latent variables in a valid and reliable manner. To measure purpose, we utilized a 17-item psychometric instrument based on an instrument developed by Bundick et al. (2006) and our own qualitative research (Glanzer, Hill, & Johnson, 2017). This 5-point Likert scale asked respondents how much they agreed or disagreed with various purpose statements—such as “The purpose of my life is to make money.” “. . . to produce new and original work.” “. . . to be happy.” and “. . . to serve my community and country.”—with

response options ranging from *strongly agree* to *strongly disagree*. Thereby, respondents were allowed to align themselves strongly with any item, without having to choose among different purposes.

We also used a psychometric instrument to measure the latent variable of self-control and grit. We used the Brief Self-Control Scale (Tangney et al., 2004) to measure self-control and grit as one higher-order latent variable. Conceptually, most of the items on the scale pertain to self-control, but we would argue that in light of the important distinctions made by scholars between self-control and grit, one item pertains specifically to grit. As we describe below, these items did not separate into distinct latent variables when we conducted a principal component analysis; therefore, we judged it best to combine them into one latent variable. Example items on this scale that pertain directly to self-control include “I am good at resisting temptation” and “I refuse things that are bad for me.” The one item that pertains more specifically to grit is “I am able to work effectively toward long-term goals” (the element of grit not measured by this item is passion toward goals). Overall, this 13-item Likert-type scale demonstrates strong internal reliability, with Cronbach’s alphas ranging from .83 to .85 in previous studies and test-retest reliability of .87 (Tangney et al., 2004).

Data Analysis

As a first step to data analysis, we conducted a principal component analysis with varimax (orthogonal) rotation to determine what, if any, underlying structure exists within the self-control scale and the purpose in life scale. Factors were retained based on eigenvalues, scree plot analysis, and total variance explained. For the Brief Self-Control Scale, the 13 items originally loaded onto three factors; however, after examination of the items under each factor, no theoretical basis could be identified

to separate the factors. In other words, nothing conceptually distinguished the items for one factor from the items for another factor. We were interested if the one item pertaining specifically to grit would rotate onto its own factor, but this was not the case; therefore, we decided to retain just one factor for all 13 items. This resulted in a Cronbach's alpha of .80, indicating good internal reliability for this scale measuring self-control and grit.

We conducted another principal component analysis with varimax (orthogonal) rotation for the 17 purpose in life items, which loaded onto four factors and demonstrated a theoretical basis for measuring separate latent variables. The purpose in life items loaded onto four separate purposes: others-focused purpose, self-focused purpose, success-focused purpose, and influence-focused purpose. Even though one of the items—"love God or a higher power"—loaded onto the others-focused purpose factor, we decided to remove the item because we did not believe that it theoretically fit with the remaining others-focused items. In addition, the Cronbach's alpha was higher without the item than with it, further justifying its removal. As a result, each purpose in life scale had four items with the following Cronbach's alphas: others-focused

purpose (e.g., "The purpose of my life is to help others"; $\alpha = .70$), self-focused purpose (e.g., "The purpose of my life is to be happy"; $\alpha = .67$), success-focused purpose (e.g., "The purpose of my life is to make money"; $\alpha = .72$), and influence-focused purpose (e.g., "The purpose of my life is to change the way people think"; $\alpha = .62$). Table 1 presents a summary of the principal component analysis for purpose in life.

In order to determine what predictor variables influence self-control and grit, we conducted a multiple regression analysis. Predictor variables included demographic variables for age and gender. We also included time-on-task variables for academic activity, cocurricular activity, socializing, and paid employment. We used the four purpose in life variables from our principal component analysis as additional predictor variables. The final three predictor variables were religious attendance, religious importance, and family financial status. It is important to note that we did not enter these predictor variables into the model hierarchically. Rather, we used standard multiple regression, because we did not think we had sufficient theoretical basis to purposefully alter the order that variables were entered into the model. Our dependent

TABLE 1.
Factors and Results From Principal Component Analysis

Factor	Number of Items	Example Item	Eigenvalue	% of Variance	Cumulative %	α
Others-Focused Purpose	4	the purpose of my life is to help others.	4.72	27.75	27.75	.70
Self-Focused Purpose	4	the purpose of my life is to be happy.	2.04	12.02	39.77	.67
Success-Focused Purpose	4	the purpose of my life is to make money.	1.47	8.65	48.42	.72
Influence-Focused Purpose	4	the purpose of my life is to change the way people think.	1.05	6.16	54.58	.62

variable—self-control and grit—was the scale score for the 13-item Brief Self-Control Scale.

Limitations

There are several limitations to this study that should be considered when interpreting results. First, a multiple regression examines relationships that are not necessarily causal; therefore, even though we intended to reveal variables that influence self-control and grit, the relationship can work in both directions (with self-control or grit influencing the predictor variable). The variables most at risk for this limitation are those related to time spent (academic activity, cocurricular activity, socializing, working, and religious attendance). Rather than these activities influencing self-control and grit, it could be that self-control and grit influence the time spent or not spent in these activities. Other predictor variables (such as the purpose in life variables and the religious importance variable) could possibly have the causal relationship go in either direction, but the most logical direction of relationship is for these predictor variables to influence self-control and grit. In other words, based on previous research, there is no reason to believe that self-control and grit influence the importance people place on religion. Three more variables (age, gender, and family financial status) are demographic and would not logically be influenced by self-control or grit.

Another limitation of this study is one that is inherent in any attempt to quantify what truly is a *latent*, or hidden, variable. While proponents of postpositivist epistemology acknowledge this limitation, they do not resolve the potential danger in utilizing such an approach. Specifically, despite the demonstrated validity and reliability of the scales used in this study, no one can know for certain the true score of a latent variable in any student (DeVellis, 2017). Although the scales

used are valid and reliable, the reliabilities do vary from acceptable ($\alpha = .62$) to good ($\alpha = .80$). The scales also rely on self-reports. There were no incentives for participants to provide other than honest responses, but it is still possible that participants did not provide accurate information about themselves or their views. A related limitation of this study is that the people who chose to participate could be different from nonresponders in unknown ways.

RESULTS OF MULTIPLE REGRESSION

To answer our research question regarding the influences on self-control in college students, we conducted a standard multiple regression with the following 13 predictor variables: age, gender, family financial status, academic activity hours, cocurricular hours, socializing hours, work hours, others-focused purpose, self-focused purpose, success-focused purpose, influence-focused purpose, religious attendance, and importance of religion. Table 2 presents a summary of correlations among all variables used in our analyses.

As shown in Table 3, regression results indicate that the overall model significantly predicted self-control and grit, $R^2 = .11$, $R^2_{adj} = .10$, $F(13, 2437) = 22.52$, $p < .001$. This model accounts for 11% of the variance in self-control and grit, which we interpret as a medium effect size (Mayhew et al., 2016). The model indicates that 5 of the 13 predictor variables significantly contributed to self-control and grit: others-focused purpose, time spent socializing, time spent in academic activities, success-focused purpose, and importance of religion. Predictors that were not significant and were not retained in the model were age, gender, family financial status, time spent in cocurricular activities, time spent working, self-focused purpose, influence-focused purpose, and religious attendance.

TABLE 2.
Means, Standard Deviations, and Intercorrelations for Variables Predicting Self-Control and Grit

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
Self-Control and Grit	44.08	8.09	.00	.08***	.09***	.00	-.12***	.04*	.26***	.12***	.10***	.07**	.16***	.18***	-.02
1. Age	19.91	1.30	—	-.08***	.00	-.08***	-.04*	.14	.02***	-.01	-.01	-.03	-.02	.02	.00
2. Gender	0.42	0.49	—	—	.05**	-.08***	-.08***	.06**	.12***	.06**	.04*	.05*	.07***	.11***	-.13***
3. Time Spent in Academic Activities***	13.34	11.54	—	.13***	—	.13***	.12***	-.10***	.07***	-.02	-.02	.04*	.04*	.02	.04*
4. Time Spent in Cocurricular Activities	4.64	7.33	—	—	.26***	—	.26***	-.17***	.06**	.03**	-.02	.01	.09***	.04*	.09***
5. Time Spent Socializing***	11.38	11.41	—	—	—	-.03*	—	-.03*	.01	.01***	.04*	.03*	-.05**	-.07***	.08***
6. Time Spent Working	14.17	14.34	—	—	—	—	—	—	.03	.04*	.11***	.00	.01	.04*	-.14***
7. Others-Focused Purpose***	17.40	2.52	—	—	—	—	—	—	.50***	.22***	.42***	.28***	.32***	.28***	-.08***
8. Self-Focused Purpose	17.64	2.47	—	—	—	—	—	—	—	.43***	.39***	.01	.05**	.05**	-.09***
9. Success-Focused Purpose**	15.18	3.00	—	—	—	—	—	—	—	.13***	.13***	-.07***	-.01	-.07***	-.07***
10. Influence-Focused Purpose	15.23	2.96	—	—	—	—	—	—	—	—	—	—	-.03	.01	-.09***
11. Religious Attendance	4.00	2.30	—	—	—	—	—	—	—	—	—	—	—	.74***	-.01
12. Importance of Religion*	1.90	0.85	—	—	—	—	—	—	—	—	—	—	—	—	-.07***
13. Financial Status	2.14	0.65	—	—	—	—	—	—	—	—	—	—	—	—	—

p* < .05. *p* < .01. ****p* < .001.

TABLE 3.
Regression Analysis Summary for Variables Predicting Self-Control and Grit

Variable	B	SE B	95% CI	β	<i>t</i>	<i>p</i>
Age	−0.08	0.12	[−0.32, 0.16]	.03	−0.641	.522
Gender	0.44	0.32	[−0.19, 1.07]	.03	1.360	.173
Time Spent in Academic Activities***	0.07	0.01	[0.04, 0.09]	.09	4.790	.001
Time Spent in Cocurricular Activities	0.02	0.02	[−0.03, 0.06]	.01	0.657	.511
Time Spent Socializing***	−0.09	0.01	[−0.12, −0.07]	−.13	−6.520	.001
Time Spent Working	0.02	0.01	[0, 0.04]	.04	1.810	.070
Others-Focused Purpose***	0.69	0.08	[0.53, 0.85]	.21	8.540	.001
Self-Focused Purpose	0.02	0.08	[−0.14, 0.18]	.01	0.292	.770
Success-Focused Purpose**	0.18	0.06	[0.06, 0.29]	.07	3.040	.002
Influence-Focused Purpose	−0.10	0.06	[−0.22, 0.02]	−.04	−1.630	.104
Religious Attendance	0.16	0.10	[−0.04, 0.36]	.04	1.530	.127
Importance of Religion*	0.61	0.28	[0.07, 1.15]	.06	2.200	.028
Family Financial Status	0.18	0.25	[−0.30, 0.66]	.01	0.735	.462

Note. $R^2 = .11$ ($N = 2,451$, $p < .001$).

* $p < .05$. ** $p < .01$. *** $p < .001$.

DISCUSSION

Our purpose for this study was to examine certain individual and environmental variables in college students that influence self-control and a key element of grit: the perseverance toward long-term goals. Of the 13 variables entered into the multiple regression model, 5 were of significant and meaningful influence (listed in order of effect size according to standardized beta weights): others-focused purpose, time spent socializing (negative influence), time spent in academic activities, success-focused purpose, and importance of religion. These findings have important implications for theory, current practice, and future research.

Implications for Theory

Our findings bring to the forefront an important insight regarding the relationship among purpose, self-control, and grit. When examining the significant predictor variables

in our model—and if we use Duckworth and Gross's (2014) distinction between self-control and grit—the five variables can be subdivided into two self-control-related variables and three grit-related variables.

Self-Control-Related Variables. Two variables—time spent socializing and time spent in academic activities—directly connect to the concept of self-control. Time spent socializing was a negative and more powerful predictor variable on self-control. In fact, according to effect size, it was the second most powerful variable of the five variables retained. The third most influential variable was time spent in academic activities. How college students spend their time directly relates to self-control and the short-term goals and temptations associated with it. As we detail below, this finding has important implications for the practice of college educators.

Grit-Related Variables. The three remaining predictor variables—others-focused purpose,

success-focused purpose, and the importance of religion—theoretically pertain more to the concept of grit. In fact, our findings suggest that a strong sense of certain kinds of purposes may be the possible character strength that helps turn the virtue of self-control into the exceptional quality of grit. Others-focused purpose was the most influential predictor in the model. This finding reinforces what Hill et al. (2016) found regarding the important relationship between grit and purpose, but it also clarifies this relationship further by examining different types of purpose. According to this study, others-focused purpose is specifically an important influence. Because correlation does not prove causation, it could also be interpreted that people with more grit focus more on considering, valuing, and serving others; theoretically, however, this makes less sense. There is nothing in the extant literature on grit that would indicate it may lead to considering, valuing, and serving others. But it makes sense that college students who focus on considering, valuing, and serving others would reflect more on the purpose of life, which could connect to having broad long-term goals (grit). The connection between others-focused purpose and grit is fascinating on its own, but it is especially fascinating in light of the fact that others-focused purpose had the largest effect size on the key factor of grit we measured—the perseverance toward long-term goals. The element of grit not measured by our study was passion toward goals.

Success-focused purpose, on the other hand, has a less mysterious theoretical connection to grit. The items in this scale pertained to money, career success, standard of living, and career fulfillment. Although these goals may vary in terms of worthiness and merit, they all pertain to the kind of long-term goals grit requires. Making money, having a high standard of living, career success, and

career fulfillment are not goals that connect to short-term goals. They require a strong level of determination and a long-term commitment to overcoming obstacles.

The remaining grit-related predictor variable was the importance of religion. College students who placed greater importance on religion in their lives were more likely to indicate a willingness to work toward long-term goals. The effect was small but significant. Religion does have implications for short-term self-control, such as situations of immediate temptation. This finding supports the results of Barton and Miller (2015), who found that spirituality (relationship with a higher power and sense of a sacred world) can be influential to the formation of the positive virtues of grit, optimism, forgiveness, and meaning in life. It is important to note that religious attendance was a separate, nonsignificant predictor variable in the model. Conceptually, religious attendance (“Do I go to a religious assembly or do I spend my time in other ways?”) connects to self-control, while the importance of religion in one’s life (“What is the meaning of life and what role does religion play for me?”) connects to the key element of grit we measured.

Nonsignificant Predictor Variables. In addition to religious attendance, other nonsignificant predictor variables also have theoretical implications. Demographic variables entered into the model as predictor variables were nonsignificant. These variables included age, gender, and family financial status. These results provide evidence that self-control and grit in college students cannot be predicted by these variables. Other nonsignificant predictor variables included time spent on cocurricular activities, time spent working, self-focused purpose, and influence-focused purpose. These variables did not influence self-control or grit in any significant or meaningful manner.

Implications for Practice

These findings have important implications for higher education practice. It is clear that self-control and grit are important for college students. What is less clear—but slowly becoming clearer—is how the two concepts differ and what that means for college students. Based on our review of the literature and the findings of this study, we align with the argument of Duckworth and Gross (2014) that self-control and grit overlap in terms of their connection to goals and determination. Previous researchers have suggested that self-control and grit differ from each other in terms of the magnitude of the goals and the determination required. Self-control is about short-term goals and overcoming immediate temptation. Grit is about choosing a long-term goal and overcoming setbacks toward achieving that goal. We agree with this conceptually, but based on the results of our study we cannot determine the validity of this argument. Scholars performing future research will need to further distinguish between self-control and grit.

Although self-control leads to better choices in how to spend one's time, we wanted to analyze the relationship in the other direction—utilizing how college students spend their time as predictor variables for self-control. Our findings revealed that college students who spend more of their time on academic activities have higher self-control; moreover, our results show that when college students spent more of their time socializing, they had lower levels of self-control. College leaders can and should think about how they can teach their students self-control.

The results of this study highlight the power that educators have to encourage their students to spend more time on academic activities outside of class and less time purely socializing. These results encourage the

implementation of innovative programs on campuses such as study programs and living-learning programs. For example, Oaten and Cheng (2006) showed the importance of study programs in strengthening the self-control muscle, decreasing stress during exams, and improving self-control behaviors in other aspects of their lives. Furthermore, Leeming (1997) revealed that having students make a formal, public commitment to studying at designated times can “improve the academic performance of students who underachieve due to procrastination and poor study habits” (p. 506). For example, faculty can have students turn in a document that outlines what times they commit to studying for an upcoming exam, which could increase their study time by helping them delay the immediate gratification of doing an activity that is more appealing than studying. In addition, living-learning programs attempt to intentionally unite the academic experiences and social experiences of students in their residential communities (Shushok, Scales, Sriram, & Kidd, 2011). Living-learning programs have multiple positive outcomes on college students (Brower & Inkelas, 2010; Rose & Sriram, 2016; Sriram & McLavain, 2016; Wawrzynski & Jessup-Anger, 2010) with environments that encourage academic activity over social activity to promote self-control in students.

The findings of this study also support a growing body of literature on the powerful role purpose, spirituality, and religion can play in the development of college students (Astin, Astin, & Lindholm, 2011; Clydesdale, 2015; Glanzer et al., 2017; Hill et al., 2016). In his book *The Purposeful Graduate*, Clydesdale (2015) examined programs on college campuses across the United States that were intended to help students live an examined life. Clydesdale emphasized the relational aspect of purpose development, noting that purpose is

developed through human connection with something that is bigger than the self—such as a class, an idea, or an emerging issue—and it usually comes about through a relationship with a faculty member, an administrator, or an inspiring peer. He concluded that these programs result in increased campus engagement and help students embark on journeys of significance and impact after college. Clydesdale noticed that the students he studied who had high levels of purpose also had high levels of grit: “Such grit was rooted in a resolute sense of life purpose; one could call it other-directed grit, purposeful grit, or, given the theism of most of its articulators, Godly grit” (p. 223).

Finally, in their 7-year study of college students’ spiritual development, Astin et al. (2011) found that spirituality can affect a wide range of student outcomes, including academic performance, leadership self-concept, satisfaction, and cross-cultural relationship building (see also Astin, 2016). Other scholars have emphasized the critical need for and potential of programs on campuses that improve the development of purpose for college students (Chickering, Dalton, & Stamm, 2006; Glanzer et al., 2017; Kuh & Gonyea, 2006; Nash & Murray, 2010; Palmer & Zajonc, 2010; Parks, 2000). Shin and Steger (2016) noted that colleges and universities can help facilitate students’ pursuit of purpose by offering workshops, courses, and seminars that encourage students to consider their life purpose, as well as through student conversations with mentors and advisors. Keeping in mind institutional mission and campus culture, educators should consider how programs aiming to foster purpose might also increase grit in their students.

Implications for Future Research

Our findings lead to further questions that need to be addressed by future research. A key

limitation to this study is the use of one scale—the Brief Self-Control Scale (Tangney et al., 2004)—to capture both self-control and grit. As mentioned above, we conducted an exploratory factor analysis in order to examine if the one grit item on the scale would load onto its own factor, but this did not occur; therefore, we decided to conceptualize self-control and grit as one, high-order latent variable for this study. Using one scale also allowed us to have one dependent variable in our multiple regression. Scholars performing future research should use the Brief Self-Control Scale to measure self-control and Duckworth’s scale to measure grit (Duckworth et al., 2007) in order to examine differences between these variables. Separating the measurement of self-control and grit will require researchers to use structural equation modeling to determine how both variables interact with each other and other variables of interest (such as purpose and time spent on social or academic activities). This would also allow for the study of the other element of grit not analyzed in this study—passion or motivation. Structural equation modeling would also help to answer the question of whether purpose is the missing link between self-control and grit.

Researchers must develop and analyze theoretical models to examine the interplay of self-control, purpose, and grit. We have demonstrated the importance of all three variables for college students but did not address, however, how to help college students increase their self-control, purpose, or grit. Therefore, this study should lead to future research on the effectiveness of campus programs and other interventions to increase these three variables in college students.

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