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Predicting school success: Comparing Conscientiousness, Grit, and Emotion Regulation Ability

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ABSTRACT

The present paper examines validity of three proposed self-regulation predictors of school outcomes – Conscientiousness, Grit and Emotion Regulation Ability (ERA). In a sample of private high school students ($N = 213$) we measured these constructs along with indices of school success obtained from records (rule violating behavior, academic recognitions, honors, and GPA) and self-reported satisfaction with school. Regression analyses showed that after controlling for other Big Five traits, all school outcomes were significantly predicted by Conscientiousness and ERA, but not Grit. The discussion focuses on the importance of broad personality traits (Conscientiousness; measure of typical performance) and self-regulation abilities (ERA; measure of maximal performance) in predicting school success.

1. Introduction

Achieving challenging goals – such as school success – requires willingness to control impulses and work hard, as well as the ability to manage emotions associated with goal pursuit. While it is clear that academic achievement is predicted by intellectual abilities (Poropat, 2009), it is less clear what is the predictive power of psychological attributes at the intersection of emotions, cognition and self-regulation. Conscientiousness – a personality trait that primarily describes impulse control and self-regulation of behavior (John, Naumann, & Soto, 2008) – has been consistently related to academic achievement (Poropat, 2009). In this paper we test another two proposed predictors of school success – Grit and Emotion Regulation Ability (ERA). Grit is a lower-level personality trait in the domain of Conscientiousness (Duckworth, Peterson, Matthews, & Kelly, 2007). Both Conscientiousness and Grit describe typical everyday performance or behavior (how people generally behave). By contrast, ERA is an ability to reason about effectiveness of different emotion regulation strategies and describes maximal capacity for solving emotion-related problems (Brackett, Rivers, & Salovey, 2011). While both self-regulation traits (such as Conscientiousness and Grit) and ERA predict important outcomes (Brackett et al., 2011; Duckworth et al., 2007; Roberts, Walton, & Bogg, 2005), they are only modestly and inconsistently correlated to each other (e.g., Day & Carroll, 2004; Lopes, Salovey, & Straus, 2003; Lopes et al., 2004).

Conscientiousness is the Big Five trait that "describes socially prescribed impulse control that facilitates task- and goal-related behavior" (p. 120, John et al., 2008). As a super-trait, Conscientiousness includes a number of lower-level traits or facets, such as self-control and perseverance (e.g., MacCann, Duckworth, & Roberts, 2009; Roberts, Chernyshenko, Stark, & Goldberg, 2005). Grit is a noncognitive personality trait involving persistence and long-term consistency of interests (Duckworth et al., 2007). As such, Grit is conceptually closely related to Conscientiousness; persistence, a major component of Grit has been identified as one of the facets of Conscientiousness in multiple studies (e.g., Hough & Ones, 2001; MacCann et al., 2009). Conscientiousness emerged as the personality trait most consistently and strongly correlated to academic success (Poropat, 2009), and initial studies of Grit showed relationships to various measures of academic achievement (Duckworth & Quinn, 2009; Duckworth et al., 2007).

In contrast to the personality traits of Conscientiousness and Grit, ERA is an ability (a component of emotional intelligence; Mayer & Salovey, 1997) and describes individual's maximal capacity to evaluate emotion regulation strategies and to influence one's affective experience and actions in ways that promote goal attainment in emotionally charged situations (e.g., presence of competing goals, experience of challenges or obstacles). This ability is distinct from personality traits describing a tendency toward positive or negative emotions (i.e., Extraversion and Neuroticism; Mayer, Roberts, & Barsade, 2008) and rather describes the capacity to reason about a variety of emotions. The present study aims to

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examine the independent predictive power of Conscientiousness, Grit, and ERA in relation to measures of high school success.

1.1. Conscientiousness and Grit in prediction of school success

Conscientiousness is a super-trait that encompasses a family of lower-level traits in the broad domain of self-regulation (John et al., 2008; Roberts, Lejuez, Krueger, Richards, & Hill, 2014). Analyses of trait adjectives and personality inventories define a range of lower-level Conscientiousness-related traits, with five traits identified in multiple studies: orderliness, self-control, industriousness, responsibility, and traditionalism (Roberts et al., 2014). Two most common traits are orderliness and industriousness (Roberts et al., 2014). Orderliness can be defined as "the overarching tendency to be prepared" (p. 1317, Roberts et al., 2014), which includes a predisposition toward neatness and planfulness, while industriousness describes a predisposition to be hard-working and persistent in the face of obstacles (Roberts et al., 2014). Developmental precursors of Conscientiousness, such as childhood impulsivity and delay of gratification, further support the conceptualization of Conscientiousness as a self-regulation trait (Roberts et al., 2014).

Conscientiousness is most commonly assessed using self-report inventories that ask about typical or average behavioral tendencies and preferences (e.g., tendency to be generally reliable and hard-working, liking order; John et al., 2008). Different personality inventories are based on different theoretical perspectives and thus assess a range of facets, but no single inventory assesses the whole breadth of the Conscientiousness domain (Roberts et al., 2014). Despite the imperfect correspondence in the facets measured by the various Big Five inventories, there is very strong convergence between Conscientiousness domain scores across measures (John et al., 2008), suggesting that these inventories adequately estimate a person's position on the broad trait domain.

Conscientiousness is correlated with a variety of behaviors that require planning and self-control of behavior, such as smoking, excessive alcohol use, drug use, and violence (Roberts, Chernyshenko, et al., 2005; Roberts, Walton, et al., 2005). Furthermore, Conscientiousness is consistently related to school success across age and level of schooling, and largely independent of general intelligence (Poropat, 2009). Conscientiousness predicts school success across cultures (e.g., U.S.: Noftle & Robins, 2007; Estonia: Laidra, Pullmann, & Allik, 2007; Croatia: Bratko, Chamorro-Premuzic, & Saks, 2006) and it predicts achievement over tutors' expectations of performance (Chamorro-Premuzic & Furnham, 2003) and prior achievement (Noftle & Robins, 2007).

Research suggests that both broad and lower-level traits predict important outcomes and that lower-level traits can be even more powerful predictors than broad traits (O'Connor and Paunonen, 2007). Roberts, Chernyshenko, et al. (2005) found that lower-level Conscientiousness facets had differential relationship with important criteria, such as work dedication and drug use, and that using these lower-level scales improved criterion validity over the use of broad trait measures. Similarly, when predicting academic achievement, several studies found the Achievement Striving facet of Conscientiousness to be more highly correlated with academic achievement than the broad trait of Conscientiousness (Chamorro-Premuzic & Furnham, 2003; Paunonen, 1998; Paunonen & Ashton, 2001).

In this study we test whether the most recently proposed lower-level Conscientiousness trait of Grit improves criterion validity in relation to school success outcomes over the broad Conscientiousness domain. Grit was proposed as a Conscientiousness-related trait that combines consistency of interests and persistence in pursuit of long-term goals (Duckworth et al., 2007). The conceptualization of Grit as a lower-level trait in the Conscientiousness domain is supported both conceptually – with persistence being a component of Grit and emerging as a facet of Conscientiousness in some analyses (e.g., Hough & Ones, 2001; MacCann et al., 2009) – and also based on measurement overlap. A self-report scale assessing Grit asks questions about typical everyday behavior in relation to achievement goals (e.g., "I am a hard worker" and "New ideas and projects sometimes distract me from previous ones"; Duckworth & Quinn, 2009; Duckworth et al., 2007), similar to assessment of Conscientiousness (e.g., "Tends to be lazy", reversed, and "Perseveres until the task is finished" on the Big Five Inventory Conscientiousness scale; John et al., 2008).

Grit predicted achievement-related outcomes, such as GPA and retention in the United States Military Academy (Duckworth et al., 2007), and it predicted academic success after controlling for educational aspirations and prior achievement (Strayhorn, 2013). In spite of its high correlation with Conscientiousness (*r*s between .70 and .77), Grit was a unique predictor of highest educational degree obtained and rankings in the National Spelling Bee (Duckworth & Quinn, 2009). The present paper contributes to the understanding of this newly proposed self-regulation trait by examining its predictive validity in relation to outcomes of high school success, as well as testing its discriminant and incremental validity in relation to the broad trait of Conscientiousness.

1.2. Emotion Regulation Ability in prediction of school success

In addition to willingness to work hard, school success requires the ability to regulate emotions associated with social interactions and achievement-related experiences. Emotion regulation involves processes of monitoring and modifying emotional reactions in order to reach a goal, which can happen at any point in the emotion process, from selecting situations, changing situation appraisals, to modulating physiological and behavior reactions (Gross, 1998). Emotion regulation is necessary when one's experienced emotions are distressing (e.g., when test anxiety can interfere with performance) or when they are positive, but distracting or overwhelming (e.g., when one cannot focus in class anticipating an exciting weekend trip). Successful emotion regulation involves understanding the consequences of different reactions in emotion-laden situations and having knowledge of effective strategies (Brackett et al., 2011).

Emotion regulation can be conceptualized in terms of typical behavior – people's tendency to use different emotion regulation strategies on a daily basis – and also in terms of maximal performance – people's capacity to reason about and identify effective strategies for influencing emotions. This distinction between typical and maximal performance is often made when comparing personality traits (defined as typical performance, how people generally behave) and intelligence (defined as maximal performance on ability tests; Goff & Ackerman, 1992). An example of emotion regulation conceptualized in terms of typical performance is the Emotion Regulation Questionnaire (Gross & John, 2003), which measures people's tendency to engage in cognitive reappraisal and expressive suppression on a daily basis. The questionnaire items are similar to those on personality trait inventories and ask how much respondents agree with statement like: "When I want to feel less negative emotion, I change the way I am thinking about the situation" (reappraisal) or "When I am feeling negative emotions, I make sure not to express them" (expressive suppression).

In this paper, we conceptualize ERA as maximal performance by measuring it with an ability test that describes hypothetical emotion-laden situations and asks respondents to evaluate the efficacy of different strategies in reaching a specified goal (Brackett et al., 2011). Defined as maximal performance, ERA is a component of emotional intelligence and distinct from personality traits (Brackett & Mayer, 2003; Day & Carroll, 2004). Across studies,

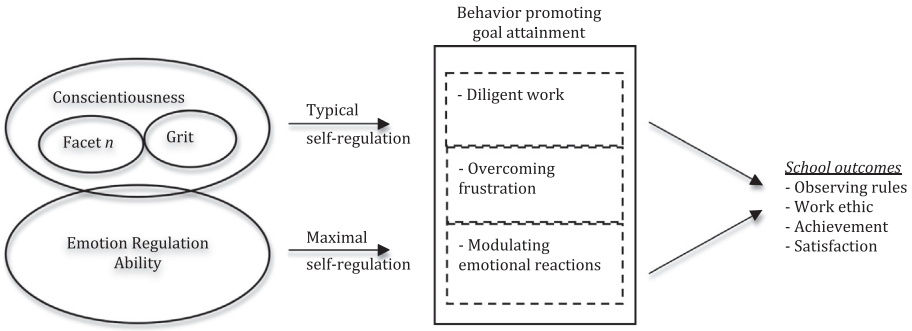

Fig. 1. Model of self-regulation influences on school success.

maximal performance ERA was most consistently related to Agreeableness (*r*s between .20 and .40; Day & Carroll, 2004; Lopes, Salovey, Côté, & Beers, 2005; Lopes et al., 2003; Lopes et al., 2004) and Conscientiousness (*r*s between .20 and .30; Ameriks, Wranik, & Salovey, 2009; Lopes, Grewal, Kadis, Gall, & Salovey, 2006; Lopes et al., 2003).

When measured as maximal performance, ERA is related to a host of cognitive and behavioral outcomes that promote self-regulation, such as more accurate affective forecasting (Dunn, Brackett, Ashton-James, Schneiderman, & Salovey, 2007), fewer negative social interactions at work and higher stress tolerance (Lopes et al., 2006), and productive investment behavior (Ameriks et al., 2009). The importance of ERA for school success has been investigated rigorously in early childhood and in the transition to elementary school (e.g., Denham, Zinsser, & Brown, 2012; Graziano, Reavis, Keane, & Calkins, 2007). ERA in preschool children was related to multiple measures of academic achievement in kindergarten and this relationship was mediated by behavioral self-regulation in the classroom (Howse, Calkins, Anastopoulos, Keane, & Shelton, 2003).

In older children and adolescents, ERA is commonly measured using ability tests. Among community college and middle school students, a positive correlation was found between ERA assessed by two different performance tests (Mayer, Salovey and Caruso Emotional Intelligence Test and Situational Test of Emotion Management for Youths) and GPA (MacCann, Fogarty, Zeidner, & Roberts, 2011). ERA was also significantly related to medical students' performance in courses on communication and interpersonal sensitivity over 3 years (Libbrecht, Lievens, Carette, & Côté, 2013). The present paper furthers the research on the predictive and incremental validity of maximal performance ERA by comparing it to typical performance traits of Conscientiousness and Grit.

While there is ample empirical evidence for predictive validity of Conscientiousness, there is no sufficient research on the validity of Grit and ERA for predicting school outcomes. The generality of the findings is tested using multiple outcome measures from school records (rule violating behavior, academic honors, recognitions, GPA), as well as student self-reports of satisfaction with school. Fig. 1 depicts the model describing how different self-regulation attributes predict school outcomes. We hypothesize that personality traits and ERA will independently predict school outcomes. Conscientiousness and related traits describe typical behavior, such as one's general level of diligence. ERA, on the other hand, reflects one's maximal knowledge and reasoning ability about strategies to influence emotions in order to reach a goal (e.g., modulate experiences of test anxiety to enable successful performance). At times, the same behavior can be influenced by Conscientiousness-related traits and ERA (e.g., persisting on a task in the face of frustration).

Furthermore, we hypothesize that Grit will show significant zero-order correlations with school success, but that it will not have incremental validity over Conscientiousness. Unlike the rankings in the National Spelling Bee studied by Duckworth and colleagues (2007), for instance, where students have a long-term goal requiring commitment and focused practice in a single domain (studying word spelling), school success criteria like GPA are comprised of many shorter-term goals (e.g., doing well on quizzes and paper assignments) across multiple academic subjects. School success should thus be better predicted by a broad trait of Conscientiousness.

2. Method

2.1. Participants

Participants were 213 students at a private high school in New England (112 identified as male; median age = 17). The sample included students in all secondary grade levels (9th grade: 17.1%, 10th grade: 32.7%, 11th grade: 25.1%, 12 grade: 19.4%, and college preparatory year: 5.7%). The sample was largely from middle class backgrounds (82.4% of mothers and 82% of fathers with college degrees or higher). Students self-identified as 74.4% White/Caucasian, 13.7% Asian/Asian-American, 4.3% Black/African-American, 3.8% Hispanic and 2.8% as mixed race.

2.2. Measures

2.2.1. School outcomes

From school records we obtained information on 4 indicators of student success: rule violation behavior, recognitions, academic honors, and grade point average (GPA).

Rule violation behavior is measured as points assigned for each infringement of school rules, including tardiness, missing or incomplete homework, missing or not working on school assignments in study hall. The scores ranged from 1 to 407 (5 scores greater than +3SD were excluded from the analyses).

The school awards two levels of recognitions based on faculty surveys at 6 points during the school year. All faculty, athletic coaches and community life leaders rate students using a 4-point scale on several attributes of work ethic (e.g., completing assignments, engagement, punctuality, positive attitude) and citizenship (e.g., respect, advocating responsibility, modeling appropriate behavior). The first recognition level is achieved when a student receives a minimum score of 30 (out of 40) on each survey and the second recognition level is achieved when a student earns a minimum score of 33, with no item rated below 3. We obtained summative information about recognition categories attained (i.e., level 1, level 2 or no recognition). To create the variable of recognitions, 1 point was assigned to each level 1 and 2 points to each level 2 recognition (range of scores from 0 to 12 when recognitions across 6 survey times are computed).

The school uses three levels of Latin honors. We assigned 1 point for each Cum Laude honor, 2 points for Magna Cum Laude, and 3 points for Summa Cum Laude and summed the points across 3 academic terms (range of possible scores between 0 – never achieved an academic honor – and 9 – achieved Summa Cum Laude each trimester). Academic honors are in part determined by students' grades (e.g., 90 or higher), and also include information about the level of courses taken (e.g., all courses at accelerated or AP level for Summa Cum Laude honor) and academic citizenship behavior.

GPA was computed as the average of official GPAs at the end of each trimester.

2.2.2. Satisfaction with school

Self-reported satisfaction with school was measured by an 8-item scale from the *Multidimensional Student Life Satisfaction Scale* (Huebner, 2001). Participants rated each item using a 6-point scale (e.g., "I look forward to going to school"; $\alpha = .85$).

2.2.3. Big Five personality traits

Self-reported personality traits were measured using the Big Five Inventory (John et al., 2008; wording of some items changed for greater comprehension in adolescent samples, Soto, John, Gosling, & Potter, 2008): Extraversion (e.g., "is outgoing, sociable"; $\alpha = .83$), Agreeableness (e.g., "is helpful and unselfish with others"; $\alpha = .74$), Conscientiousness (e.g., "does things carefully and completely"; $\alpha = .78$), Neuroticism (e.g., "worries a lot"; $\alpha = .77$), and Openness to Experiences (e.g., "is original, comes up with new ideas"; $\alpha = .78$). Students rated each item on a 5-point scale.

2.2.4. Grit

The 12-item Grit scale (Duckworth et al., 2007) measured perseverance (e.g., "I finish whatever I begin") and consistency of interests (e.g., "I often set a goal but later choose to pursue a different one"). Participants rated each item on a 5-point scale ($\alpha = .72$).

2.2.5. Emotion Regulation Ability

ERA was measured using the Mayer, Salovey, and Caruso Emotional Intelligence Test – Youth Version (MSCEIT-YV; Mayer, Salovey, & Caruso, 2004). The ERA subtest assesses knowledge of strategies for influencing emotions in order to reach greater well-being, build successful relationships, and achieve important goals. The test consists of 6 vignettes that describe everyday situations in which a protagonist feels a certain emotion (e.g., Li is excited about an upcoming party), while facing a challenge or task that requires influencing or changing that emotion (e.g., Li has to study for a test). Each vignette is followed by 3 potential emotion regulation strategies (e.g., Li thinks about how important the grade in the class would be to her). Respondents use a 5-point scale to rate the extent to which each action would help the protagonist reach the specified goal. The test is scored using veridical scoring in which correctness of answers is determined based on the judgments of emotion researchers and supported by empirical research on emotion regulation (see Rivers et al., 2012; Roberts, Zeidner, & Matthews, 2001). Test scores are standardized to have a mean of 100 and a standard deviation of 15 (split-half reliability = .83).

2.3. Procedure

All measures were collected as a part of a larger study of social and emotional development in high school students (including measures of academic attitudes, creativity, quality of social relationships, and psychological well-being). The measures were administered in small groups (10–15 students) in school classrooms using the online Qualtrics software.

3. Results

Preliminary analyses examined the correlations between school success and our target predictors – Conscientiousness, Grit, and ERA – with the Big Five personality traits of Extraversion, Agreeableness, Neuroticism, and Openness to Experience. Conscientiousness was positively correlated with Agreeableness ($r = .37$, $p < .001$) and Openness ($r = .14$, $p = .035$) and negatively with Neuroticism ($r = -.14$, $p = .05$). Grit was positively correlated with Agreeableness ($r = .19$, $p = .005$) and Neuroticism ($r = -.33$, $p < .001$). ERA was positively correlated with Extraversion ($r = .24$, $p = .003$), Agreeableness ($r = .46$, $p < .001$), and Openness ($r = .29$, $p < .001$). Furthermore, Agreeableness was correlated with school recognitions and satisfaction with school ($rs = .18$, $p = .10$ and .25, $p < .001$, respectively), while Neuroticism was negatively correlated with satisfaction with school ($r = -.27$, $p < .001$). In order to control for these observed correlations and test our hypotheses about the unique predictive power of Conscientiousness, Grit and ERA, we included all Big Five traits in the first step of multiple regression analyses when predicting school outcomes.

Table 1 presents descriptive statistics and intercorrelations among the main study variables. Consistent with previous research (Duckworth et al., 2007; Lopes et al., 2003; Lopes et al., 2006), Conscientiousness was significantly correlated with both Grit ($r = .44$, $p < .001$) and ERA ($r = .30$, $p < .001$). Grit was not significantly correlated with ERA.

As predicted, Conscientiousness, Grit and ERA had significant correlations with school outcomes (13 of 15 correlations statistically significant; with the exception of the correlations of Grit with GPA and academic honors). Correlations with school outcomes were low for Grit; $rs = -.18$, $p = .014$ with rule violation and .18, $p = .011$ with recognitions and .20, $p = .004$ with satisfaction with school. Conscientiousness and ERA showed a similar pattern of correlations with school outcomes, ranging from low correlations

Table 1
Descriptive statistics and correlations among variables.

	M	SD	1	2	3	4	5	6	7
1. Rule violations	60.97	64.07	–						
2. Recognitions	6.03	3.64	−.44***	–					
3. Academic honors	2.20	2.72	−.41***	.64***	–				
4. GPA	3.25	.36	−.45***	.66***	.76***	–			
5. Satisfaction with school	3.92	1.00	−.15*	.33***	.28***	.29***	–		
6. Conscientiousness	3.34	.61	−.24***	.42***	.29***	.30***	.39***	–	
7. Grit	3.25	.53	−.18*	.18*	.06	.14	.20**	.44***	–
8. Managing emotion	101.82	16.20	−.16*	.35***	.27***	.28***	.30***	.30***	.13

Note: $185 \geqslant N \leqslant 213$ because of missing data.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

with rule violations ($rs = -.24$, $p < .001$ and $-.16$, $p = .026$, respectively) to moderate correlations with school recognitions ($rs = .42$, and $.35$, $p < .001$, respectively).

Next, we examined the predictive power of Conscientiousness, Grit, and ERA for school outcomes. We conducted a series of hierarchical regression analyses using the Big Five traits in Step 1, Grit in Step 2, and ERA in Step 3. The test of incremental validity is crucial for Grit (entered in Step 2), which we defined as a facet of Conscientiousness. Finally, as a maximal performance measure, ERA was considered conceptually distinct and was entered in the final step. The regression analyses are summarized in Table 2.

Big Five personality traits (Step 1) predicted between 8% and 20% of the variance in school success outcomes, with Conscientiousness consistently predicting all outcomes. Introversion predicted academic honors and GPA, while Emotional Stability predicted satisfaction with school. Grit (Step 2) did not explain additional variance in school outcomes. ERA (Step 3) was a significant independent predictor of school outcomes, explaining additional 2% of variance in rule violations, 3% of variance in satisfaction with school, 4% in academic honors, 5% in GPA, and 6% variance in school recognitions.

4. Discussion

What are significant self-regulation predictors of school success? The present study tested criterion validity of proposed typical performance predictors – the broad trait of Conscientiousness and Grit, a lower-level trait in the Conscientiousness domain, as well as a maximal performance predictor – the ability to manage and influence emotions (ERA). When controlling for other Big Five traits, Conscientiousness emerged as a consistent predictor of both criteria of success obtained from school records (rule violations, recognitions, honors, and GPA) and student-rated satisfaction with school. ERA was a significant independent predictor of school outcomes, but Grit was not.

Predicting school success is important both theoretically and practically warranting continued scholarly pursuit. School success outcomes are based on multiple assessments aggregated through an extended period of time and require multiple cognitive, emotional, and self-regulation attributes. As such, school success is an ideal criterion in personality research, where broad and relatively stable attributes are used to predict complex outcomes. In addition, success in high school predicts post-secondary education opportunities (e.g., college acceptance and competitiveness). Schools are interested in increasing student success and often search for programs that aim to enhance traits, skills, and behaviors believed to be necessary to achieve this goal. Our results point educators to the importance of a broad trait of Conscientiousness instead of the lower-level trait of Grit, and underscore the joint importance of Conscientiousness (denoting a typical tendency to self-regulate behavior) and the ability to manage and influence emotions (denoting a maximal performance in regulating behavior in emotion-laden situations).

We depicted a model of self-regulation influences on school outcomes in Fig. 1. Typical performance traits describe general or overall level of control over one's behavior. These traits include the broad domain of Conscientiousness and its facets (like Grit and others; Roberts et al., 2014), and also other self-regulation traits like impulsivity or self-control (Tangney, Baumeister, & Boone, 2004). Maximal performance attributes reflect knowledge and reasoning about productive ways to behave in order to achieve one's goals. ERA enables a person to reason about emotion-laden situations and influence one's experience and behavior (e.g., modulate math anxiety in order to better focus on a lecture). Some achievement-related behaviors are aided both by the general behavioral tendencies and an ability to influence one's emotional reactions. For instance, frustration is a common emotion when working on a difficult task (such as physics problem sets) or a challenging long-term task (such as in project-based learning). Tendency to work diligently and tirelessly will contribute to success on these tasks, as will the ability to manage the emotional experience of frustration. Our results support the independent predictive power of the typical performance domain of Conscientiousness and the maximal performance ERA.

Our results did not support the incremental validity of Grit over Conscientiousness. The concept of Grit has captured popular imagination through bestselling books such as How Children Succeed: Grit, Curiosity and the Hidden Power of Character (Tough, 2013) and articles like True Grit: The Best Measure of Success and How to Teach It (Davis, 2014) that are read and shared by thousands of people on education-related websites. Here, we do not settle the debate about the relative importance of broader and lower-level traits in predicting behavior (e.g., Paunonen & Ashton, 2001; Roberts, Chernyshenko, et al., 2005; Roberts, Walton, et al., 2005). Instead, we propose researchers undertake a conceptual analysis of behavioral criteria with a goal of mapping conditions under which broad and lower-level traits should have greater predictive power. The framework of Brunswik Symmetry offers a model for such analysis (Ackerman & Kanfer, 2004; Wittmann, 1988). According to this framework, prediction is maximized when predictors and criteria are matched in breadth; broader, more general predictors, such as Big Five personality traits, will be best able to predict broad criteria, and lower-level traits will be best able to predict narrower criteria. School success involves navigating relationships with peers and teachers, managing demands of multiple academic subjects, and academic challenges. This broad criterion should be better predicted by Conscientiousness than Grit. Because Grit is defined as a combination of passion or consistency of interests and persistence, it can be expected to be most important for goals where individuals have substantial choice. While students might be passionate about some subjects or activities, they are unlikely to be passionate about all subjects in high school. Thus, Grit might be a better predictor of achievement in self-selected narrower goals, such as performance in elective courses or extracurricular pursuits (e.g., Spelling Bee studied by Duckworth et al., 2007).

In addition to typical behavioral tendencies in the domain of Conscientiousness, ERA significantly predicted school success. ERA is the capacity to reason about situations that require emotion regulation and evaluate the usefulness of different regulation strategies for reaching personal goals. As such, ERA enables successful coping with challenging situations, such as test anxiety, frustration in face of difficult assignments, and interpersonal problems with teachers or peers. Extant research points to the mediating effects of problem-focused coping in the relationship between ERA and GPA (MacCann et al., 2011). Similarly, research on emotional intelligence (of which ERA is a component) shows that students with higher emotion abilities are rated by teachers as having fewer school problems, such as attention and learning difficulties, lower anxiety and depression, and self-report less negative attitudes about school (Rivers et al., 2012).

We acknowledge that the present study had several limitations. The sample was relatively small, comes from a single private high school, and was largely from middle class family backgrounds. In adult samples there is a significant association between Conscientiousness and socioeconomic status (Chapman, Fiscella, Kawachi, & Duberstein, 2010), pointing to the importance of sample diversity. It is encouraging that in spite of the relative uniformity of the sample in relation to socioeconomic status, Conscientiousness emerged as a robust predictor of school outcomes. Studying students from a single high school ($N = 291$; MacCann et al., 2009) or college ($N = 131$; Wagerman & Funder, 2007) is common for practical

Table 2
Multiple regression analysis predicting school outcomes.

	Rule violations			School recognition			Academic honors			GPA			Satisfaction with School		
	95% Confidence interval for B		ΔR^2	95% Confidence interval for B		ΔR^2	95% Confidence interval for B		ΔR^2	95% Confidence interval for B		ΔR^2	95% Confidence interval for B		ΔR^2
	Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper	
Step 1			.08**			.19***			.13***			.12***			.20***
Extraversion	−1.544	16.977		−.927	.452		−1.174	−.104		−.149	−.001		−.216	.171	
Agreeableness	−7.717	16.185		−.529	1.213		−.474	.878		−.120	.072		−.159	.337	
Neuroticism	−12.941	6.811		−.280	1.190		−.081	1.059		−.076	.084		−.530	−.122	
Openness	−10.214	11.520		−.464	1.112		−.176	1.047		−.001	.173		−.152	.279	
Conscientiousness	−29.553	−7.923		1.628	3.225		.661	1.900		.094	.267		.318	.764	
Step 2			.01			.00			.00			.00			.00
Extraversion	−1.598	16.995		−.926	.458		−1.183	−.110		−.149	−.001		−.218	.170	
Agreeableness	−7.792	16.208		−.528	1.219		−.482	.872		−.119	.073		−.161	.337	
Neuroticism	−13.497	7.125		−.287	1.257		−.170	1.027		−.077	.090		−.555	−.125	
Openness	−10.373	11.572		−.459	1.136		−.212	1.025		−.001	.176		−.160	.276	
Conscientiousness	−30.487	−6.564		1.488	3.265		.693	2.071		.078	.272		.318	.807	
Grit	−14.028	12.893		−.890	1.157		−1.063	.525		−.094	.124		−.333	.217	
Step 3			.02*			.06***			.04**			.05***			.03**
Extraversion	−1.236	17.192		−.986	.374		−1.214	−.164		−.154	−.009		−.223	.159	
Agreeableness	−3.093	23.030		−1.194	.618		−.934	.485		−.192	.012		−.308	.215	
Neuroticism	−12.302	8.245		−.308	1.118		−.235	.939		−.092	.072		−.570	−.147	
Openness	−7.923	14.370		−.777	.803		−.427	.810		−.033	.143		−.230	.208	
Conscientiousness	−29.435	−5.662		1.307	3.040		.569	1.926		.064	.254		.285	.768	
Grit	−13.334	13.359		−.907	1.075		−1.078	.474		−.100	.113		−.336	.204	
Emotion Regulation	−.919	−.029		.030	.093		.016	.065		.002	.009		.004	.022	
Final model	R^2 = .10			R^2 = .24			R^2 = .18			R^2 = .17			R^2 = .24		
	F (7, 180) = 2.96**			F (7, 202) = 9.36***			F (7, 202) = 6.14***			F (7, 185) = 5.53***			F (7, 195) = 8.56***		

	Satisfaction with school		
	95% Confidence interval for B		ΔR^2
	Lower	Upper	
Step 1			.20***
Extraversion	−.216	.171	
Agreeableness	−.159	.337	
Neuroticism	−.530	−.122	
Openness	−.152	.279	
Conscientiousness	.318	.764	
Step 2			.00
Extraversion	−.218	.170	
Agreeableness	−.161	.337	
Neuroticism	−.555	−.125	
Openness	−.160	.276	
Conscientiousness	.318	.807	
Grit	−.333	.217	
Step 3			.03**
Extraversion	−.223	.159	
Agreeableness	−.308	.215	
Neuroticism	−.570	−.147	
Openness	−.230	.208	
Conscientiousness	.285	.768	
Grit	−.336	.204	
Emotion regulation	.004	.022	
Final model	R^2 = .24		
	F (7, 195) = 8.56***		

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

reasons of participant recruitment. These practical considerations in individual studies make it more important to accumulate results from multiple samples that can then be subjected to meta-analyses.

Another limitation of the present study is conceptual in nature. We compared typical performance traits (Conscientiousness, Grit) that describe regulation of behavior across a variety of goal situations with the maximal performance attribute of ERA that is specific to modulation of behavior in emotionally charged situations. It can be argued though that in the context of school performance this is a relevant comparison. Academic goals and outcomes are commonly associated with discrete emotions (e.g., attainment of mastery goals is related to hope and pride; Perkun, Elliot, & Maier, 2006) and therefore self-regulation in pursuit of these goals occurs in emotionally charged situations and necessitates influencing emotions. Emotions are regulated when deciding whether to take a challenging course, when experiencing a conflict between one's desire to go out with friends or study for a test, or when having to work hard on a task which one does not enjoy.

How can we predict school success? The present paper showed independent power of two distinct sets of self-regulation predictors – a typical performance self-regulation trait (Conscientiousness) and maximal performance emotion problem-solving ability (ERA). Self-regulation traits address the typical style of behavior (tendency to work hard, be reliable, thorough and persistent), while ERA involves the maximal capacity to influence one's emotional reactions in order to reach a goal. The results did not support incremental validity of Grit, a lower-level self-regulation trait, in predicting school success beyond Conscientiousness. Finally, the results also have practical implications for what programs, curricula and interventions get developed to aid educators to enable students to achieve the most. Instead of focusing on lower-level traits, such as Grit, educational programs should aim to develop a broad set of Conscientiousness-related behaviors, as well as a rich repertoire of emotion-regulation strategies to address challenging school experiences.

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