

PSIHOLOGIE EDUCAȚIONALĂ

PREDICTORS OF STUDENTS' ACADEMIC PERFORMANCE IN PSYCHOLOGY FIELD

PREDICTORI AI PERFORMANȚEI ACADEMICE LA STUDENȚII ÎN DOMENIUL PSIHOLOGIE

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Abstract:

The present study aimed to theoretically and applicatively analyze the relationship between a set of non-cognitive attributes, supported by sufficient empirical evidence-namely, academic self-efficacy, grit (passion and perseverance), growth mindset, academic motivation, and conscientiousness as a personality trait, and academic performance, to identify a valid predictive model. a sample of 129 undergraduate of the Psychology students. Their ages ranged from 18 to 29 years ($M = 22.98$; $SD = 2.74$). The results indicated that grit is a significant predictor of academic performance (R^2 change = .391; F change (2, 119) = 61.281, $p = .000$). At the individual level, the following were found to be significant predictors of academic performance: Age ($\beta = -.127$), Conscientiousness ($\beta = -.244$), Academic Motivation ($\beta = .148$), Consistency of Interest ($\beta = -.147$), Perseverance of Effort ($\beta = .706$)

Keywords: students, academic performance, non-cognitive attributes, prediction.

Rezumat:

Prezentul studiu a avut drept scop analiza teoretică și analiza aplicativă a relației dintre un set de atribute non-cognitive, susținute de suficiente dovezi empirice ca: autoeficacitatea academică, perseverența (pasiunea și perseverența), mentalitatea de dezvoltare, motivația academică și conștiinciozitatea ca trăsătură de personalitate și performanța academică, pentru a identifica un model predictiv valid. Studiul a fost realizat pe un eșantion de 129 de studenți la licență în Psihologie. Vârstele acestora au variat între 18 și 29 de ani ($M = 22,98$; $SD = 2,74$). Rezultatele au indicat că curajul este un predictor semnificativ al performanței academice (schimbarea $R^2 = .391$; schimbarea F (2, 119) = 61,281, $p = .000$). La nivel individual, următorii s-au dovedit a fi predictorii semnificativi ai performanței academice: Vârsta ($\beta = -.127$), Conștiinciozitatea ($\beta = -.244$), Motivația academică ($\beta = .148$), Consecvența interesului ($\beta = -.147$), Perseverența efortului ($\beta = .706$).

Cuvinte-cheie: studenți, performanța academică, atribute non-cognitive, predicție.

INTRODUCTION In the educational context, students' academic performance is a fundamental objective. Essentially, academic performance refers to a student's ability to meet established academic and educational goals. It does not merely imply obtaining good grades, but also reflects understanding of the material, the ability to apply knowledge, and the effort invested in various learning activities. It further involves the development of skills such as problem-solving, effective communication, and collaboration. Academic performance portrays not only students' educational progress, but also their future educational and career opportunities, as well as their professional trajectory.

Despite the lack of consensus in the academic literature regarding its definition, academic performance remains a highly researched concept. While earlier studies focused on cognitive factors, recent empirical research has shown that the "predictive map of academic performance" [33, p.1] comprises a wide range of both cognitive and non-cognitive factors [19; 22; 36].

Currently, there is growing interest in the effects of non-cognitive attributes on students' academic performance, especially given that empirical evidence has revealed that certain psychological attributes directly influence well-being, professional development, health, and the learning process [15, 21, 60]. Moreover, attempts have been made to group predictive variables into parsimonious clusters, though few studies have sought to integrate them theoretically [43]. Michelle Richardson and Charles Abraham (2009) proposed that the most significant predictors of academic performance can be categorized into general personality traits (e.g., conscientiousness), trait-like dispositions (e.g., achievement motivation), and performance-related attributes (e.g., self-efficacy and grades) [43].

In this context, the present study **aims** to investigate the relationship between academic performance among Psychology students and a set of non-cognitive attributes, supported by substantial empirical evidence.

THEORETICAL FRAMEWORK

Measuring Academic Performance in Higher Education In the specialized literature, when referring to academic performance, terms such as performance, achievement, and success are often used interchangeably, without a specific rationale [45; 55; 56]. Although there is no consensus on the definition of academic performance, competence and persistence have frequently been used as its indicators. Competence is understood as "the ability to do and to know, which is evaluated according to a certain level or standard of performance" [50, p. 44]. Romanian higher education targets the development of both professional (specific) and transversal (general) competencies. Thus, a deeper understanding of students' academic performance requires the evaluation of both types of competencies. Persistence can be interpreted as students' academic progress — their advancement toward completing their degree — regardless of institutional transfers, academic programs, or institutional contexts [59]. Dropout rates have typically been suggested as indicators of persistence in higher education [11].

In higher education, academic performance is more often addressed as an operationalization (grade point average) rather than as a conceptual definition [47], although some voices argue that a mere analysis of academic results does not necessarily reflect students' acquisition of competencies or their persistence and retention [59]. In Romanian higher education, academic performance is operationalized by weighting grades with the credit points assigned to each course in the curriculum (the passing average ranges from a minimum of 5 to a maximum of 10).

Academic Self-Efficacy and Academic Performance

The Social Cognitive Theory of Learning [2], one of the most influential models for explaining the processes that determine and regulate behavior, emphasizes the individual's role in self-determination while also accounting for situational factors. As a result, the concept of self-efficacy assumes that individuals can evaluate their abilities and engage in behaviors that lead to expected outcomes within a specific domain, making it particularly valuable in academic contexts [1; 13]. In educational research, academic self-efficacy is recognized as a robust construct offering unique and incremental validity when correlated with intelligence, prior academic achievement, and other psychological constructs such as test anxiety or learning styles and strategies [33; 44; 57]. From the perspective of its operational processes, self-efficacy is believed to influence students' choices, persistence, and successful completion of academic courses [21; 27; 33]. Furthermore, the theoretical framework of self-efficacy provides a foundation for understanding human potential, personal growth, and resilience [3; 20; 31]. In practice, academic self-efficacy refers to students' judgment of their ability to successfully achieve educational goals [13]. Numerous studies have shown that self-efficacy is positively associated with grade point average (GPA) [32; 50].

Grit and Academic Performance

Grit, a relatively recent concept, is defined as "perseverance and passion for long-term goals" [22, p. 1087]. Given that grit involves sustained effort toward achieving ambitious goals [22; 56], it is considered an essential trait for goal pursuit and perseverance in difficult tasks over long periods, even in the face of potential failure [56]. Research has shown that grit is a stronger predictor of success than cognitive ability [51], which helps

explain why some individuals outperform what would be predicted based solely on aptitude tests [16]. The concept of grit has generated a substantial body of research, with numerous empirical findings supporting its role in predicting academic achievement, school success [24; 28; 42; 52], and academic motivation [38].

Mindset and Academic Performance

Following the discovery and use of the intelligence quotient (IQ) in the 20th century, IQ was believed to determine whether a person could grow intellectually and was capable of or intelligent enough to be educated. As a result, IQ testing led to labeling and ranking students by performance and enabled academic comparisons. However, contemporary studies in neuroscience and psychology [5; 8] have shown that life experiences, highly flexible, shape the brain and influence learning behaviors. Mindset, a concept derived from implicit theories of intelligence, refers to individuals' unconscious beliefs about their intelligence or abilities. These beliefs are categorized as either fixed—assuming intelligence is innate and unchangeable—or growth-oriented (incremental), where intelligence is viewed as a personal trait that can be developed through learning [1, 55]. Mindset concerns internal locus of control over learning and related outcomes, varying in dimensions such as stability and controllability [58]. A growth mindset and perseverance allow individuals to face challenges and adversity, which is vital for living a successful life [22; 23]. In education, the mindset framework suggests that students who believe they can achieve their goals also believe they have the abilities to do so, with effort and perseverance being crucial [7; 25; 29]. Similarly, Angela Duckworth and her colleagues (2007) highlighted that consistency of interest and perseverance of effort are key predictors of academic goal attainment.

Conscientiousness and Academic Performance

Research has shown that the Big Five personality traits [15] influence students' GPA during their first semester of university studies [12; 26; 55], accounting for approximately 15% of the variance in academic grades. A recent meta-analysis reported a small-to-medium effect size for conscientiousness (C) on GPA ($\rho = 0.24$, $k = 23$, $N = 5,878$), while the correlations were negligible for extraversion (E), neuroticism (N), openness (O), and agreeableness (A), ranging from -0.05 to 0.06 [36]. These findings were largely confirmed by Arthur Poropat (2009). Among personality traits, conscientiousness is the strongest predictor of academic performance, which is unsurprising given that conscientious students are typically more organized, attentive, reliable, self-disciplined, and achievement-oriented [41].

Academic Motivation and Academic Performance

A comprehensive meta-analysis of student learning outcomes identified academic motivation as one of the strongest correlates of GPA ($\rho = .30$, $k = 17$, $N = 9,330$) [46]. Academic motivation refers to students' ability to persist in demanding and challenging academic tasks (e.g., "When the work is difficult, I either give up or study only the easy parts"). The strong association between academic motivation and performance for both male and female students has led some authors to suggest that academic motivation may be better conceptualized as a domain-specific personality trait, rather than merely a self-regulatory capacity [43]. Moreover, Michelle Richardson and Charles Abraham (2009) found that academic motivation fully mediated the relationship between conscientiousness and GPA [43].

MATERIALS AND METHODS

Research Design

The present study is a quantitative, cross-sectional survey with the follow-

ing independent variables (predictors): self-assessed constructs of academic self-efficacy (ASE), consistency of interest (CI) and perseverance of effort (PE) (components of grit), growth mindset (GM), conscientiousness (C) as a personality trait, and academic motivation (AM). The dependent variable (criterion) was academic performance (AP), self-reported through the number of credit points earned at the end of the first semester.

Research Hypothesis There is a valid predictive model of academic performance based on conscientiousness, consistency of interest, perseverance of effort, growth mindset, academic self-efficacy, and academic motivation.

Participants and Procedure

To estimate the sample size, an a priori power analysis was conducted for a multiple regression model with six predictors. We estimated a multiple correlation coefficient of $R^2 = 0.39$ (equivalent to an effect size of $f^2 = 0.15$), with a Type I error of $\alpha = 0.05$. The results indicated that a sample size of at least 98 participants would be sufficient for this type of analysis. To reach the recommended sample size, a non-probability convenience sampling method was employed. A total of 129 undergraduate psychology students from a Romanian university participated in the study (82 women, 63.6%, and 47 men, 36.4%) across first, second, and third academic years. Participants were aged between 18 and 29 years ($M = 22.98$; $SD = 2.74$). Data were collected using Google Forms between February and March 2025, in compliance with legal regulations concerning anonymity and the protection of personal data. Participants provided informed consent and were informed about the purpose of the study, the voluntary nature of participation, and the confidentiality of their responses.

Instruments Academic Performance – Measured using the number of credit points earned by students at the end

of the first semester of the academic year. To pass the semester, a student must earn 30 credit points, based on exam grades from all curriculum subjects. However, progression to the second semester is not conditional upon earning all credits, as students may recover missing credits in subsequent sessions. Performance scores were analysed using a ratio-level interval scale: 1 = between 22 and 30 credit points; 2 = between 15 and 21 credit points; 3 = between 10 and 14 credit points.

ABCD-M Questionnaire – The Romanian Big Five questionnaire assesses the five major personality domains and key traits (facets) within each domain [34]. It includes 150 items written in the first person, using accessible and natural language suitable for individuals with basic educational levels. The questionnaire offers a comprehensive personality assessment through five main scales and 25 subscales. For this study, only items measuring conscientiousness (C) were used. Responses are recorded on a 5-point Likert scale ranging from “strongly disagree” to “strongly agree.”

Grit-S – The short form of the Grit Scale is a self-assessment tool consisting of 8 items that measure trait-level perseverance and passion for long-term goals [22]. The scale includes two subcomponents: Consistency of Interest (CI) ($\alpha = .89$); Perseverance of Effort (PE) ($\alpha = .86$) [42]. Responses are rated on a 5-point Likert scale where 1 = “not at all like me” and 5 = “very much like me.”

Mindset – To assess implicit theories of intelligence, the ITIS scale [14] was used. This instrument includes 8 items measuring two dimensions: Fixed Mindset and Growth Mindset. Responses are rated on a 6-point Likert scale from 1 (“strongly disagree”) to 6 (“strongly agree”). For the current study, the Romanian student-adapted version of the scale was used, which supports a two-dimen-

sional structure (CFI = .996; TLI = .994; RMSEA = .036; WRMR = 0.523).

Academic Self-Efficacy Scale (ASES) – This unidimensional scale consists of 10 items with responses recorded on a 5-point Likert scale ranging from 1 (“never”) to 5 (“always”) [35]. Confirmatory factor analysis supported the unidimensional structure with good model fit indices ($\chi^2 = 49.426$; $df = 20$; CFI = .985; RMSEA = .071). Internal consistency was high ($\alpha = .866$).

Academic Motivation Scale (AMS) – Academic motivation was measured using an 8-item scale designed to assess intrinsic and extrinsic motivation toward academic activities. Responses were recorded on a 5-point Likert scale ranging from “strongly agree” to “strongly disagree.” Preliminary psychometric analyses showed acceptable internal consistency ($\alpha = .74$).

4. Results and discussion Descriptive statistics for academic performance (dependent variable), growth mindset, consistency of interest, perseverance of effort, academic self-efficacy, and academic motivation (independent variables) are presented in **Table 1**. The mean scores for most variables tend to lean toward the upper end of the scales, indicating a strong presence of these attributes among participants. However, in the case of consistency of interest, the mean leans toward the lower end of the scale, suggesting a weaker presence of this trait.

To identify significant associations, correlations were analysed between the scores of the predictor variables and academic performance. Moderate positive correlations were observed between conscientiousness, consistency of interest, growth mindset, and academic self-efficacy ($p < .05$). Strong associations were found between academic performance and perseverance of effort ($p < .01$) (see **Table 1**). Additionally, moderate but statistically significant correlations were found

Table 1.

Descriptive Statistics and Correlation Coefficients for the Study Variables										
	M	SD	1	2	3	4	5	6	7	8
PA (1)	2.12	1.15	—							
C (2)	43.14	5.78	.28** ¹	—						
CI (3)	6.66	2.56	.23**	.19*	—					
PE (4)	17.98	7.41	.36**	.13*	-.19*	—				
GM (5)	17.55	8.33	.21**	.23**	.11	-.21**	—			
AM (6)	6.91	2.27	.30**	.20*	.07	.06	.11	—		
ASE (7)	28.78	6.85	.27**	.03	-.04	.13*	.01	-.22**	—	
G (8)	1.50	.05	.24**	.09	-.01	-.07	.02	-.06	.04	—

*Note: $N = 129$; M = Mean; SD = Standard Deviation; PA = Academic Performance; C = Conscientiousness; CI = Consistency of Interest; PE = Perseverance of Effort; GM = Growth Mindset; AM = Academic Motivation; ASE = Academic Self-Efficacy; G = Gender; $p < .05$; ** $p < .01$ (two-tailed); **¹ $p < .01$ (one-tailed).

among the predictor variables themselves, demonstrating the orthogonality of the scores and reducing concerns regarding multicollinearity [40; 48].

Gender showed a statistically significant association with academic performance ($p < .05$). Recent research examining gender differences in various educational variables has raised questions about the current relevance of these analyses [58]. In this context, Linda Sax (2008), a leading researcher in the field of gender differences in higher education, noted: “Focusing on gender differences, no matter how small may lead to an overestimation of gender disparities, thereby reinforcing public misconceptions about the differences between men and women” [49, p. 9]. Moreover, recent studies focusing on gender differences in grit, for instance, have produced contradictory results [51; 17; 18]. Nonetheless, researchers emphasize that examining gender differences remains important for better understanding students, as long as the findings are interpreted cautiously and without overgeneralization.

To test the effect of non-cognitive variable scores on academic performance,

a hierarchical multiple linear regression analysis was conducted, controlling for age, gender, and year of study. All assumptions for multiple linear regression were met. **Table 2** presents a summary of the hierarchical regression results.

In the regression model, control variables (age, gender, and year of study) were introduced in the first block, followed by the independent variables (conscientiousness, academic self-efficacy, growth mindset, academic motivation, consistency of interest, and perseverance of effort), with academic performance as the dependent variable. The first block (age, gender, year of study) explained approximately 8% of the variance in academic performance ($R^2 = .111$), which was statistically significant [$F(3, 128) = 5.185, p = .002$]. The second block (year of study, gender, age, academic self-efficacy, conscientiousness) explained 13% of the variance. The third block (year of study, gender, age, academic self-efficacy, conscientiousness, growth mindset, academic motivation) explained 18% of the variance, also statistically significant [$F(5, 128) = 4.822, p = .000$; $F(7, 128) = 5.144, p = .000$].

Table 2.
Hierarchical Multiple Regression: The Effect of Non-cognitive Attributes on Academic Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.333 ^a	.111	.089	1.100	.111	5.185	3	125	.002
2	.405 ^b	.164	.130	1.075	.053	3.914	2	123	.022
3	.479 ^c	.229	.185	1.041	.065	5.138	2	121	.007
4	.788 ^d	.620	.592	0.736	.391	61.281	2	119	.000

a. Predictors: (Constant), year of study, gender, age

b. Predictors: (Constant), year of study, gender, age, academic self-efficacy, conscientiousness

c. Predictors: (Constant), year of study, gender, age, academic self-efficacy, conscientiousness, growth mindset, academic motivation

d. Predictors: (Constant), year of study, gender, age, academic self-efficacy, conscientiousness, growth mindset, academic motivation, consistency of interest, perseverance of effort

e. Dependent Variable: academic performance

When grit scores (consistency of interest and perseverance of effort) were added in the fourth block, the model as a whole explained approximately 59.2% of the variance in academic performance ($R^2 = .620$). The results indicated that grit is a significant predictor of academic performance ($R^2 \text{ change} = .391$; $F \text{ change} (2, 119) = 61.281, p = .000$). At the individual level, the following were found to be significant predictors of academic performance (see **Table 3**): Age ($\beta = -.127$), Conscientiousness ($\beta = -.244$), Academic Motivation ($\beta = .148$), Consistency of Interest ($\beta = -.147$), Perseverance of Effort ($\beta = .706$)

Table 3.
Summary of Hierarchical Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	F (df)	t	Sig.
		B	Std. Error	β			
1	Gender	-.579	.201	-.252	5.185** (3, 128)	-2.883	.005
	Age	-.016	.125	-.012		-.131	.896
	Year of Study	.334	.131	.223		2.542	.012
2	Gender	-.625	.223	-.272	4.822** (5, 128)	-2.809	.006
	Age	-.054	.124	-.039		-.436	.664
	Year of Study	.231	.134	.154		1.725	.087
	Conscientiousness	.024	.019	.122		1.308	.193

3	Academic Self-Efficacy	-.035	.014	-.211		-2.464	.015
	Gender	-.512	.219	-.223	5.144** (7, 128)	-2.342	.021
	Age	-.076	.121	-.055		-.633	.528
	Year of Study	.171	.131	.114		1.307	.194
	Conscientiousness	.005	.019	.025		.262	.794
	Academic Self-Efficacy	-.034	.014	-.202		-2.417	.017
	Growth Mindset	-.019	.012	-.137		-1.642	.103
	Academic Motivation	.123	.042	.242		2.890	.005
	Gender	.016	.170	.007	21.615** (9, 128)	.095	.924
	Age	-.175	.086	-.127		-2.037	.044
4	Year of Study	.171	.093	.114		1.843	.068
	Conscientiousness	-.049	.015	-.244		-3.238	.002
	Academic Self-Efficacy	-.006	.010	-.037		-.597	.551
	Growth Mindset	-.008	.008	-.057		-.957	.341
	Academic Motivation	.075	.030	.148		2.454	.016
	Consistency of Interest	-.023	.010	-.147		-2.246	.027
	Perseverance of Effort	.318	.029	.706		10.800	.000

*Note: N = 129; p < .001

A positive association between conscientiousness and academic performance was expected, as this personality trait refers to self-control in terms of perseverance, perfectionism, orderliness, rationality, and control over one's own life—namely, self-organization, fulfilling duties, and planning [20; 44]. Research has shown that personality traits have both direct and indirect effects on academic outcomes, as well as on educational functioning more broadly [6; 10].

Regarding academic self-efficacy, although the initial analysis blocks support-

ed a strong association between performance and academic self-efficacy, in the final block, its contribution declined ($p > .05$). From students' perspective, setting realistic and achievable goals, pursued step by step, is an effective mechanism for supporting progress [21; 39]. Additionally, academic self-efficacy holds considerable pedagogical value, as reflected in its operational definition. However, some studies in the literature do not report significant correlations between self-efficacy and academic performance [47]. Other research has shown that academic self-effi-

cacy tends to correlate positively with performance towards the end of the academic year, while no significant relationship is observed when measured earlier [30]. In the same vein, Paul Gore (2006) reported that academic self-efficacy increases significantly toward the end of the study period [27].

As shown in Table 3, mindset, when analysed individually, does not significantly load the model, a finding also reported in other studies. In fact, meta-analytic reviews examining this attribute have concluded that, when it comes to a growth mindset, the picture is more complex. For instance, mindset interventions seem to be effective primarily for at-risk students and those from lower socio-economic backgrounds [4]. Given these findings, we share the view of specialists who argue that this non-cognitive trait requires further investigation and analysis.

The results of the study highlight the important role that motivation and grit play in achieving academic performance. Perseverance of effort emerged as the component of grit with the strongest predictive power for academic success, working in tandem with consistency of interest. The findings are consistent with other studies that have explored this relationship [44; 45; 54]. This suggests that students with higher levels of grit feel more confident, which boosts their motivation and academic outcomes, regardless of situations involving challenges or failures [30; 37].

CONCLUSIONS The present study examined hierarchical models of academic performance among Psychology students at a university in Romania, based on

a set of relevant non-cognitive attributes. The proposed hierarchical sequence was supported. The results showed that conscientiousness, one of the most influential predictors of academic performance, does not directly predict performance; however, its correlation with motivation and perseverance indicates an indirect effect. The alternative path from conscientiousness to self-efficacy was not supported, which is consistent with previous research suggesting that self-efficacy is more strongly associated with another personality trait, namely neuroticism. In addition, the findings demonstrated that, beyond personality effects, academic motivation considered as a dispositional rather than a self-regulatory tendency and academic adjustment, including year of study, also play an important role.

Despite its limitations, namely that the research was conducted within a single higher education institution, making it more difficult to generalize the results, and the fact that academic performance was assessed only based on first-semester grades, the findings confirm the existence of a valid predictive model of academic performance based on a range of relevant non-cognitive attributes throughout students' academic trajectory and beyond.

The study highlights that non-cognitive attribute have a significant impact on academic success. In this regard, higher education institutions have the responsibility to support the development of these skills through educational interventions, counseling programs, and academic advising activities, in order to enhance academic performance among students with weaker motivational profiles.

REFERENCES:

1. BANDURA, A. *Self-efficacy: toward a unifying theory of behavioral change*. Psychological Review, 1977, 84, 191-215. [cited February 19, 2025]. Available: <https://educational-innovation.sydney.edu.au/news/pdfs/Bandura%201977.pdf>
2. BANDURA, A. *Social Cognitive Theory: An Agentic Perspective*. Psychology: the Journal of the Hellenic Psychological Society, 2005, 12(3), pp. 313-333. [cited March 19, 2025]. Available: DOI:10.12681/psy_hps.23964

3. BANDURA, A. *On the functional properties of perceived Self-efficacy revisited*. Journal of Management, 2012, 38, pp. 9-44. [cited March 19, 2025]. Available: <https://journals.sagepub.com/doi/10.1177/0149206311410606>
4. BAZELAIS, P., LEMAY, D., DOLECK, T. HU, X., VU, A., YAO, J. *Grit, Mindset, and Academic Performance: A Study of PreUniversity Science Students*. EURASIA Journal of Mathematics, Science and Technology Education, 2018, 14(12), em1615. [cited December 20, 2024]. Available: DOI:10.29333/ejmste/94570
5. BETSY, N. *The Neuroscience of Growth Mindset and Intrinsic Motivation*. Brain Sciences, 2018, 8(2), pp. 1-10. [cited January 5, 2025]. Available: DOI:10.3390/brainsci8020020
6. BIDJERANO, T., DAI, D. Y. *The relationship between the Big Five model of personality and self-regulated learning strategies*. Learning and Individual Differences, 2007, 17, 69-81. [cited March 25, 2024]. Available: DOI.org/10.1016/j.lindif.2007.02.001
7. BLACKWELL, L., TRZESNIEWSKI, K., DWECK, C. *Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention*. Child Development, 2007, 78(1), 246-263. [cited December 26, 2024]. Available: <https://doi.org/10.1111/j.14678624.2007.00995.x>
8. BRANSFORD, J. D., BROWN, A. L., COCKING, R. R. *How people learn: brain, mind, experience, and school* (Vol. 11). Washington, DC, Publisher: National Academy Press, 2000. 374 p. ISBN 0-309-07036-8
9. BRUNELLO, G., SCHLOTTER, M. *Non Cognitive Skills and Personality Traits: Labour Market Relevance and their Development in Education & Training Systems*. SSRN Electronic Journal, 2011, IZA DP No. 5743, pp. 1-46. [cited March 18, 2024]. Available: <https://docs.iza.org/dp5743.pdf>
10. CAPRARA, G. V., VECCHIONE, M., ALESSANDRI, G., GERBINO, M., & BARBARANELLI, C. *The Contribution of Personality Traits and Self-Efficacy Beliefs to Academic Achievement: A Longitudinal Study*. British Journal of Educational Psychology, 2011, 81, 78-96. [cited January 5, 2025]. Available: https://www.academia.edu/17471930/The_contribution_of_personality_traits_and_self_efficacy_beliefs_to_academic_achievement_A_longitudinal_study
11. CASILLAS, A., ROBBINS, S., ALLEN, J., KUO, Y., HANSON, M.A., SCHMEISER, C. *Predicting early academic failure in high school from prior academic achievement, psychosocial characteristics, and behavior*. Journal of Educational Psychology, 2012, 104(2), pp. 407-420. [cited December 22, 2024]. Available: DOI:10.1037/a0027180
12. CHAMORRO-PREMUZIC, T., FURNHAM, A. *Personality predicts academic performance: Evidence from two longitudinal university samples*. Journal of Research in Personality, 2003, 37(4), pp. 319-338. [cited March 19, 2025]. Available: https://www.academia.edu/1993122/Personality_predicts_academic_performance_Evidence_from_two_longitudinal_university_samples
13. CHOI, N. *Self-efficacy and self-concept as predictors of college students' academic performance*. Psychology in the Schools, 2005, 42(2), 197-205. [cited January 5, 2025]. Available: DOI:10.1002/pits.20048
14. CORREA-ROJAS, J., GRIMALDO, M., MARCELO-TORRES, N.E. *Psychometric evidence of the Implicit Theories of Intelligence Scale (ITIS) in Peruvian university students*. Interdisciplinaria, 2024, 41(1), pp. 1-37. [cited December 26, 2024]. Available: DOI: 10.16888/interd.2024.41.1.19
15. COSTA, P. T., MCCRAE, R. R. *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa: Psychological Assessment Resources, 1992, 97 p. MMS 997438353406676 [cited February 24, 2025]. Available: https://catalog.nlm.nih.gov/discovery/fulldisplay/alma997438353406676/01NLM_INST:01NLM_INST
16. CREDE, M., TYNAN, M. C., HARMS, P. D. *Much ado about grit: A meta-analytic synthesis of the grit literature*. Journal of Personality and Social Psychology, 2017, 113(3), pp. 492-511. [cited March 8, 2024]. Available: DOI:10.1037/pspp0000102
17. DATU, J. A. D., VALDEZ, J. P. M., KING, R. B. *Perseverance counts but consistency does not! Validating the Short Grit Scale*

in a collectivist setting. Current Psychology, 2016, 35(1), 121-130. [cited March 25, 2025]. Available: DOI:10.1007/s12144-015-9374-2

18. DATU, J.A.D., YUEN, M., CHEN, G. *Development and validation of the triarchic model of grit scale (TMGS): evidence from Filipino undergraduate students.* Personality and Individual Differences, 2017, 114, 198–205. [cited March 23, 2024]. Available: DOI: 10.1016/j.paid.2017.04.012

19. DEARY, I. J., STRAND, S., SMITH, P., FERNANDES, C. *Intelligence and educational achievement.* Intelligence, 2007, 35, 13–21. [cited February 1, 2025]. Available: DOI: 10.1016/j.intell.2006.02.001

20. DI GIUNTA, L., ALESSANDRI, G., GERBINO, M., KANACRI, P. L., ZUFFIANO, A., CAPRARA, G. V. *The determinants of scholastic achievement: The contribution of personality traits, self-esteem, and academic self-efficacy.* Învățare și diferențe individuale, vol. 27, 2013, pp. 102-108. [cited December 26, 2024]. DOI:10.1016/J.LIN-DIF.2013.07.006

21. DISETH, A. *Self-efficacy, goal orientations and learning strategies as mediators between preceding and subsequent academic achievement.* Learning and Individual Differences, 2011, 21(2), pp. 191-195. [cited January 5, 2025]. Available: <https://doi.org/10.1016/j.lindif.2011.01.003>

22. DUCKWORTH, A. L., PETERSON, C., MATTHEWS, M. D., KELLY, D. R. *Grit: perseverance and passion for long-term goals.* Journal of Personality and Social Psychology, 2007, 92, pp. 1087–1101. [cited March 26, 2024]. Available: <https://gwern.net/doc/psychology/personality/conscientiousness/2007-duckworth.pdf>

23. DUCKWORTH, A.L., QUINN, P.D. *Development and validation of the Short Grit Scale (Grit-S).* Journal of Personality Assessment, 2009, 91, pp. 166–174. [cited December 26, 2024]. Available: DOI: 10.1080/00223890802634290

24. DUCKWORTH, A.L. *The Key to Success? Grit.* TED Talk, 2013. [cited March 08, 2024]. Available: https://ngl.cengage.com/21centuryreading/resources/sites/default/files/B2_TG_AT5.pdf

25. DWECK, C. S. *Mentalitatea învățătorului. O nouă psihologie a succesului.*

București: Editura Curtea Veche, 2006, 384p. ISBN: 9786065883406

26. FURNHAM, A., CHAMORRO-PREMUZIC, T., MCDOUGALL, F. *Personality, cognitive ability, and beliefs about intelligence as predictors of academic performance.* Learning and Individual Differences, 2003, 14(1), pp. 47-64. [cited March 3, 2025]. Available: <https://www.cin.ufpe.br/~ssj/Personality,%20cognitive%20ability,%20and%20beliefs%20about%20intelligence%20as%20predictors%20of%20academic%20performance.pdf>

27. GORE, P. A. *Academic self-efficacy as a predictor of college outcomes: Two incremental validity studies.* Journal of Career Assessment, 2006, 14(1), pp. 92-115. [cited December 26, 2024]. Available: DOI:10.1177/1069072705281367

28. HAGGER, M.S., HAMILTON, K. *Grit and self-discipline as predictors of effort and academic attainment.* British Journal of Educational Psychology, 2019, 89(2), pp. 324–342. [cited 5, 2025]. Available: DOI:10.1111/bjep.12241

29. HONG, Y. Y., CHIU, C. Y., DWECK, C. S., LIN, D. M., WAN, W. *Implicit theories, attributions, and coping: A meaning system approach.* Journal of Personality and Social Psychology, 1999, 77, pp. 588-599. [cited January 5, 2025]. Available: DOI:10.1037/0022-3514.77.3.588

30. HONICKE, T., BROADBENT, J. *The influence of academic self-efficacy on academic performance: A systematic review.* Educational Research Review, 2016, 17(2), 63-84. [cited January 5, 2025]. Available: DOI:10.1016/j.edurev.2015.11.002

31. KATZ, I., EILOT, K., NEVO, N. *“I’ll do it later”: Type of motivation, self-efficacy and homework procrastination.* Motivation and Emotion, 2014, 38(1), pp. 111-119. [cited February 24, 2025]. Available: <https://selfdeterminationtheory.org/wp-content/uploads/2015/01/2014KatzEilotNevo1.pdf>

32. LAIDRA, K., PULLMANN, H., ALLIK, J. *Personality and intelligence as predictors of academic achievement: A cross-sectional study from elementary to secondary school.* Personality and Individual Differences, 2007, 42(3), pp. 441–451. [cited February 5, 2025]. Available: <https://>

www.academia.edu/80155019/Personality_and_intelligence_as_predictors_of_academic_achievement_A_cross_sectional_study_from_elementary_to_secondary_school

33. MCILROY, D., PALMER-CONN, S., LAWLER, B., POOLE, K., URSAVAS, O. F. *Secondary Level Achievement: Non-Intellective Factors Implicated in the Process and Product of Performance*. Journal of Individual Differences, 2017, 38 (2), pp. 102-112. ISSN 1614-0001. [cited February 3, 2025]. Available: <https://files.core.ac.uk/download/386963934.pdf>

34. MINULESCU, M. *Big-Five. AB-CD-M*. Cluj-Napoca: Editura Sinapsis., 2008, 270p. ISBN 978-973-1860-45-9

35. NAVARRO-LOLI, J., DOMINGUEZ-LARA, S. *Psychometric properties of an academic self-efficacy scale in a sample of Peruvian adolescents*. Psychology, Society, & Education, 2019, 11(1), 53-68. [cit. January 5, 2025]. Available: <https://ojs.ual.es/ojs/index.php/psy/article/view/1985/2851>

36. O'CONNOR, M., PAUNONEN, S. *Big Five personality predictors of post-secondary academic performance*. Personality And Individual Differences, 2007, vol. 43, pp. 971-990. [cited January 5, 2025]. doi:10.1016/j.paid.2007.03.017

37. PALISOC, A. J. L., MATSUMOTO, R. R., HO, J., PERRY, P. J., TANG, T. T., IP, E. J. *Relationship between grit with academic performance and attainment of postgraduate training in pharmacy students*. American Journal of Pharmaceutical Education, 2017, 81(4), pp. 1-10. [cited December 20, 2024]. Available: DOI:10.5688/ajpe81467

38. PATE, A.N., PAYAKACHAT, N., KRISTOPHER HARRELL, T., PATE, K. A., CALDWELL, D. J., FRANKS, A. M. *Measurement of grit and correlation to student pharmacist academic performance*. American Journal of Pharmaceutical Education, 2017, 81(6), pp 1-8. [cited March 19, 2025]. Available: DOI:10.5688/ajpe816105

39. PINTRICH, P. R. *A Motivational Science Perspective on the Role of Student Motivation in Learning and Teaching Contexts*. Journal of Educational Psychology, 2003, 95(4), pp. 667-686. [cited January 5, 2025]. Available: DOI: 10.1037/0022-0663.95.4.667

40. POPA, M. *Statistici multivariate aplicate în psihologie*. Iași: Polirom, 2010. 360 p. ISBN 978-973-46-1794-4.

41. POROPAT, A. E. *A Meta-Analysis of the Five-Factor Model of Personality and Academic Performance*. Psychological Bulletin, 2009, 135(2), pp. 322-338. [cited February 3, 2025]. Available: DOI:10.1037/a0014996

42. PREDA, C. E. *Analiza calităților psihometrice a Scalei Grit: puterea pasiunii și a perseverenței la studenți și elevi. Studiu preliminar*. Conferința Științifică Anuală a doctoranzilor cu participare internațională "Cercetare, inovare, dezvoltare" / redactor științific: Braniște Ludmila; Chișinău: [S. n.], 2024 (CEP UPSC), pp. 371-381. ISBN 978-9975-46-969-2

43. RICHARDSON, M., ABRAHAM, C. *Conscientiousness and Achievement Motivation Predict Performance*. European Journal of Personality, 2009, 23(7), pp. 589-605. [cited February 5, 2025]. Available: DOI:10.1002/per.732

44. RICHARDSON, M., BOND, R. ABRAHAM, C. *Psychological Correlates of University Students' Academic Performance: A Systematic Review and Meta-Analysis*. Psychological Bulletin, 2012, 138(2), pp. 353-387. [cited January 5, 2025]. Available: <https://emilkirkegaard.dk/en/wp-content/uploads/Psychological-correlates-of-university-students-academic-performance.pdf>

45. ROCHFORD, C., CONNOLLY, M., DRENNAN, J. *Paid part-time employment and academic performance of undergraduate nursing students*. Nurse Education Today, 2009, 29(6), pp. 601-606. [cited December 22, 2024]. Available: https://www.academia.edu/8693968/Paid_part_time_employment_and_academic_performance_of_undergraduate_nursing_students

46. ROBBINS, S. B., LAUVER, K., LE, H., DAVIS, D., LANGLEY, R., CARLSTROM, A. *Do psychosocial and study skill factors predict college outcomes? A Meta-analysis*. Psychological Bulletin, 2004, 130(2), pp. 261-288. [cited February 8, 2025]. Available: <https://www.mrmont.com/teachers/self-Predictorsofsuccess2.pdf>

47. RODRÍGUEZ-HERNÁNDEZ, C. F., CASCALLAR, E., KYNDT, E. *Socio-eco-*

conomic status and academic performance in higher education: A systematic review. Educational Research Review, 2019, pp. 1-76. [cit.Feb.19, 2025]. Available: <https://repository.uantwerpen.be/docman/irua/6e5226/167799a.pdf> ISSN 1747-938X

48. SAVA, A. F. *Analiza datelor în cercetarea psihologică.* București: Editura ASCR. 2011, 346p. ISBN: 978-606-8244-23-5

49. SAX, L. J. *The gender gap in college: Maximizing the development potential of women and men.* San Francisco, CA: Jossey-Bass, 2008, 360p. ISBN 978-0-7879-6575-4 360p.

50. SHAVELSON, R. J. *On the measurement of competency.* Empirical Research in Vocational Education and Training, 2010, 2(1), 41-63. [cited December 19, 2024]. Available: https://www.pedocs.de/volltexte/2012/5235/pdf/ERVET_2010_1_Shavelson_On_the_measurement_of_competency_D_A.pdf

51. SIGMUNDSSON, H., HAGA, M., HERMUNDSDOTTIR, F. *Passion, grit and mindset in young adults: Exploring the relationship and gender differences.* New Ideas in Psychology, 2020, 59, 100795, pp. 1-7. [cited February 24, 2025]. DOI:10.1016/j.newideapsych.2020.100795

52. STRAYHORN, T. L. *What role does grit play in the academic success of black male collegians at Predominantly White Institutions?* Journal of African American Studies, 2013, 18, 1-10. [cited March 8, 2024]. Available: <https://bma.issuelab.org/resources/33676/33676.pdf>

56. TANG, X., WANG, M. T., PARADA, F., SALMELA-ARO, K. *Putting the goal back into grit: Academic goal commitment, grit, and academic achievement.* Journal of Youth and Adolescence, 2021, 50(3), 470-484. [cited March 25, 2025]. Available: DOI:10.1007/s10964-020-01348-1

54. TANG, H., DATU, J.A.D., LIU, Z., SHEN, J., XING, Q. *The engaged lives of encouraged students: Academic encouragement, grit and academic engagement in Chinese first year undergraduate students.* Current Psychology, 2022, 1-11. [cited January 5, 2025]. Available: DOI:10.1007/s12144-022-03057-3

55. TRACEY, T. J. G., ALLEN, J. ROBBINS, S. B. *Moderation of the relation between person-environment congruence and academic success: Environmental constraint, personal flexibility and method.* Journal of vocational behavior, 2012, 80(1), 38-49. [cited December 22, 2024]. Available: DOI:10.1016/j.jvb.2011.03.005

56. TROLIAN, T. L., JACH, E. A., HANSON, J. M., PASCARELLA, E. T. *Influencing Academic Motivation: The Effects of Student-Faculty Interaction.* Journal of College Student Development, 2016, 57(7), pp. 810-826. [cited March 25, 2025]. Available: DOI:10.1353/csd.2016.0080

57. VALENTINE, J. C., DUBOIS, D. L., COOPER, H. *The Relation Between Self-Beliefs and Academic Achievement: A Meta-Analytic Review.* Educational Psychologist, 2004, 39(2), 111-133. [cited March 19, 2025]. Available: <https://scispace.com/pdf/the-relation-between-self-beliefs-and-academic-achievement-a-2h8monsxr5.pdf>

58. VOINEA, L. *Aportul mindset la facilitarea și subminarea învățării elevilor.* Revista de Pedagogie, LXIII, 2015, 2, pp. 41-55. [cited March 19, 2025]. Available: https://revped.ise.ro/wp-content/uploads/2017/06/2015-2_Full-issue.pdf

59. YORK, T. T., GIBSON, C., RANKIN, S. *Defining and Measuring Academic Success. Practical Assessment, Research & Evaluation,* 2015, 20(5), pp. 1-20. ISSN 1531-7714. [cited March 19, 2025]. Available: <https://files.eric.ed.gov/fulltext/EJ1059739.pdf>

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