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## Grit relates to Academic Performance among College Students: A Five-year Systematic Literature Review

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# GRIT RELATES TO ACADEMIC PERFORMANCE AMONG COLLEGE STUDENTS: A FIVE-YEAR SYSTEMATIC LITERATURE REVIEW

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## ABSTRACT

In recent years, many scholars have studied the influence of non-cognitive factors on academic success, including grit. However, few studies comprehensively analyze the connection between grit and academic outcomes with university learners. Therefore, the research aims to explore how grit affects their academic performance in the context of higher education. This paper presents a comprehensive, systematic review of 13 studies between 2018 and 2023 from two databases: Scopus and Web of Science. The selection criteria focus on empirical research, including the impact of grit on academic achievement. This review finds that grit has a great influence on academic success. It is worth mentioning that perseverance of effort (POE) and consistency of interest (COI), which are two aspects of grit, seem to have different effects on academic performance. In addition, further study on the correlation of grit and other factors with college learners' academic performance can be considered to provide alternative and new ideas for improving students' academic performance.

**Keywords:** academic success, consistency of interests, higher education, perseverance of efforts

## **1. Introduction**

### **1.1. Background and Rationale**

The importance of intelligence and cognitive ability for academic outcomes has been demonstrated across many different examinations. However, Bazelaïs et al. (2016) pointed out that intellectual skills are considered to be an inadequate and tentative predictor of completing college entrance courses. In fact, when considering higher education students, many cognitive and non-cognitive elements come into play and have been found to have a significant influence on academic outcomes (Al-Sheeb et al., 2019). In recent years, the role of grit, which is attributed to the non-cognitive factor, in academic performance has attracted the attention of researchers, while different studies have given different results on the influence of grit on academic outcomes.

Academic success is one of the main objectives of education. There is no denying the connection between a person's quality of life, future career, and academic achievement (Moyano et al., 2020). It is more than just a measure of a person's success or failure (Chen et al., 2013). Besides, it can also evaluate the whole education system (including projects and teachers) (Sukhsarwala et al., 2015). In other words, academic performance is a crucial source for evaluating the education system, teaching quality, and students' academic changes (Lei et al., 2015). In the academic environment, academic performance (AP) has attracted the attention of many researchers and educators, and many studies have been carried out on it. It refers to the performance of learners in learning (academic and educational), and the results of exams or tests are used as evaluation means. Many factors may affect learners' academic performance, such as cognitive factors, learners' motivation, or personal characteristics (Sánchez-Álvarez et al., 2020; Howard et al., 2021). Kim and Seo (2015) emphasized that the main academic performance indicators in the world are test scores, course scores, and average grades (e.g., GPA, Richardson et al., 2012; CGPA, Hasan et al., 2017). Although some studies have investigated specific academic fields, such as mathematics or language literacy (e.g., Zhou & Ee, 2012; Bierman et al., 2008), there are other studies that study academic performance as a universal academic performance (Trentacosta & Izard, 2007; Denham et al., 2014). For undergraduates, academic scores are very important. This is because they are not only objective indicators of learning outcomes (Stockinger et al., 2021), but can also predict academic and future career development, as well as play a key role in cultivating high-quality graduates (Respondek et al., 2017). Therefore, when it comes to education or learners' pursuit of studies, performance is an important and inevitable topic (Boylan et al., 2023).

Many studies have proved that grit is an important trait (Gonzalez et al., 2019). Grit refers to the ability to make persistent efforts to complete challenging tasks (Lufi,

1987). It consists of two aspects: on the one hand, perseverance of effort (POE) towards long-term goals, and on the other hand, consistency of interest (COI, Duckworth et al. 2007). Generally speaking, it is closely related to positive academic behavior and achievements. No matter how big the challenge is, people with high grit will continue to work hard and keep the desire to achieve their goals (Duckworth & Quinn, 2009). In other words, when there are unsatisfactory situations (such as disappointment or boredom) in the learning process, persistent students usually regard their studies as a long marathon, so they are more likely to choose to persist and make more efforts to achieve their goals, so as to realize their ideals. Relatively speaking, individuals with a low level of grit may choose to avoid difficulties and ultimately find it difficult to complete tasks (Duckworth et al., 2007; Duckworth & Quinn, 2009). This topic has attracted the attention of personality psychologists because research shows that grit can positively predict achievements in education and other fields besides talent or opportunity (Duckworth et al., 2007). Although grit is relatively stable and needs years of development, it may be more plastic than intelligence or other cognitive abilities (Duckworth & Gross, 2014; Eskreis-Winkler et al., 2014) and interact with other personal characteristics. Psychological factors, such as resilience, responsibility, self-control, and perseverance, are necessary for academic success (Bashant, 2014).

However, the evidence on the impact of grit on learners' educational success is mixed so far (Strayhorn, 2014). Especially in higher education, the relationship between grit and academic performance seems to be full of contradictions, and there is no definite conclusion (Sunbul, 2019). On the one hand, there have been many studies that have attempted to prove the unique role of grit in achieving positive academic success. In a college setting, more successful students may have long-term effort or perseverance that sustains their motivation (Bronk et al., 2010). Grit with the pursuit of long-range achievement will manifest itself in excellent academic performance in universities, thus causing them to seek higher education for a better life (Wei et al., 2012). On the other hand, some studies cannot fully determine the influence of grit on college learners' academic performance. Steinmayr et al. (2018) mentioned that grit is not suitable for short-term goals, while it may be beneficial to achieve long-term targets beyond school performance, such as winning the national spelling competition or maintaining a stable marriage. On the contrary, school performance is a relatively short-term target, so it is more useful to maintain rationality, have confidence in one's ability, and actively participate in learning activities to promote academic success. Sheridan et al. (2018) found that, unlike American college students, the grit index of some excellent Irish students has little effect on their academic performance. This is probably related to the fact that they already have grit. In addition, the validity of the grit structure has also been questioned because some research results show that there are differences in the

ability of POE and COI to predict academic performance in two aspects of grit (Credé et al., 2017; Mason, 2018; Tyumeneva et al., 2021). Therefore, the relationship between grit and college students' academic performance and how grit affects academic performance need to be further explored.

## **1.2. Purpose of Study**

According to the previous introduction, students at college are a unique group, and they are faced with the need to overcome the inadaptability following the transfer from high school to university. In addition, college academic performance is of great significance to future work and personal development. In the process of university growth, as “perseverance and enthusiasm for long-range objectives” (Duckworth et al., 2007), grit is one of the necessary qualities to overcome difficulties and persist for a long time. However, at present, there is almost no systematic review of how grit affects academic performance in the context of higher education. Therefore, this study aims to explore the connection between academic achievement and grit in higher education (undergraduate courses) in the past five years (2018-2023). In other words, this study explores how grit affects college students' academic performance using these research questions:

- (1) Do grit and two dimensions of grit (perseverance of efforts (POE) and consistency of interest (COI)) affect academic performance to the same extent?
- (2) Does grit directly affect academic performance?

The research results will further help us to understand the connection between grit and academic performance in higher education, so as to provide an effective way to encourage college students to improve their academic performance.

Additionally, in recent years, although many scholars have systematically studied the relationship between grit and educational success (such as Direito & Mitchell, 2018; Chisholm-Burns et al., 2021), only Lam et al. (2019) have systematically studied the relationship between students' grit and academic performance in the context of K-12 and higher education. The differences between this study and Lam et al. (2019) are as follows: (1) Time; and (2) Review target. The purpose of this systematic literature review is to investigate the connection between academic success and grit in the recent five years (2018-2023), while Lam et al. (2019) focused on 2007-2018. This study also only focuses on examining learners in the context of higher education, specifically undergraduates, while Lam et al. (2019) covered K-12 and higher education. Thus, in this study, we also consider whether other variables will work together with grit on academic performance.

## 2. Method

This study was conducted according to the method of systematic literature review (SLR) in order to ensure that researchers can reproduce the findings of SLR in the future. The purpose of our literature review is to solve the research problem. The qualified documents were collected from databases and subsequently sorted and analyzed. Paul et al. (2021) pointed out that Web of Science (WOS) and Scopus are the most well-known quality rankings of publications because they go beyond the subject field. On the one hand, WOS has high-standard indexing conditions. In other words, WOS can guarantee the standards of selected journals because of its strict screening standards. Scopus, on the other hand, has a wide range of subject areas and categories. This allows scholars to better find the journal domain based on the most relevant fields. These two databases (WOS and Scopus) were chosen for the search process of journal articles. A systematic literature review study was conducted in accordance with the Preferred Reporting Project for Systematic Reviews and Meta-Analyses (PRISMA) statement. PRISMA is an efficient way to provide a systematic review of previous research and follows the standardized inclusion and exclusion procedures (Kadam et al., 2020). The publications eligible for research are obtained through four strict steps: identification, screening, eligibility, and inclusion, as shown in Figure 1.

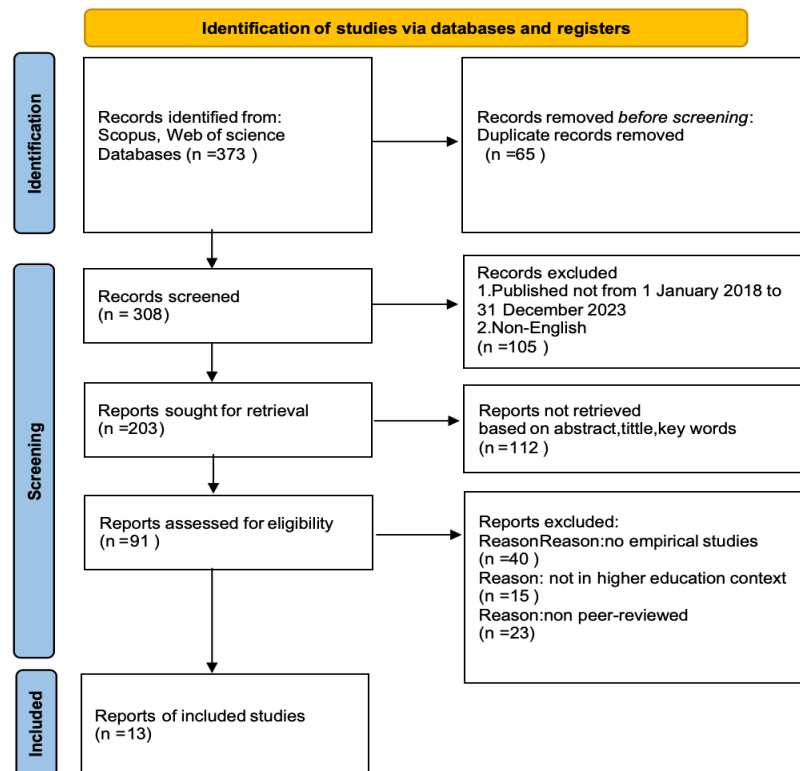


Figure 1: PRISMA flowchart

## **2.1. Identification**

This literature search was conducted in October 2023. Scopus and Web of Science (WOS) were the two databases used, in which peer-reviewed articles were collected from January 1, 2018 to 2023. This research was conducted to discuss the impact of university learners' grit on academic outcomes. Different keywords were used: (1) "grit," substitution terms ("perseverance of effort" and "consistency of interest"); (2) "academic performance," substitution terms ("academic achievement," "academic success," "academic outcome," "school success," and "educational success"); and (3) "higher education," substitution terms ("post-secondary education," "university," and "college"). The keywords were matched by Boolean operators AND/OR. The two databases use strings, as in Table 1, where 373 articles were identified.

**Table 1: Search strings**

<b>Search Builder</b>	<b>Search String</b>
Grit	"grit" OR "perseverance of effort" OR "consistency of interest"
Academic performance	"academic performance" OR "academic achievement" OR "academic success" OR "academic outcome" OR "school success" OR "educational success"
Context	"higher education" OR "post-secondary education" OR "university" OR "college"

## **2.2. Screening**

In order to find answers to the research questions, relevant inclusion and exclusion criteria were established. In this way, the research could find comprehensive knowledge of the grit and academic outcomes of students. For a paper to be reviewed, it must first match the relevant criteria in Table 2.

- 1) Only the samples of college students in higher education are included (the demographic characteristics of participants, such as gender and grade, are not limited), and learners at other levels are excluded.
- 2) This collection is limited to empirical research and does not include other forms of research.
- 3) In order to popularize the research and facilitate reading, this study only contains articles written in English.
- 4) In order to ensure the reliability of the sources of articles, only articles that have been peer-reviewed are included in this study.

At this stage, all the titles and key parts of journals should have been thoroughly reviewed to meet the inclusion requirements of this study. If the purpose is to examine how college students' grit affects their academic transcripts, then these articles are eligible for examination. Firstly, a total of 373 articles were obtained from the two e-databases. Secondly, 308 articles were listed in endnote 21, and 65

duplicate articles were deleted. Thirdly, according to the time (2018-2023) and the conditions of English writing, 105 articles were deleted and 203 articles remained. Fourthly, the researchers screened the articles by meeting the qualification criteria based on title, abstract, and keywords, deleting 112 articles. Fifthly, after a full evaluation by several authors, combined with the inclusion and exclusion criteria, the controversial pieces were discussed.

**Table 2: Inclusion and exclusion criteria**

<b>Inclusion Criteria</b>	<b>Exclusion Criteria</b>
College students sample group	Preschool children, primary, secondary, or high school students, special education, teachers, and other adult learners sample group
Empirical studies	Literature review, commentaries, meta-analysis, essays, letters, or anecdotal articles
Written in English	Written in other languages
Peer-reviewed	Non peer-reviewed

### **2.3. Article Extraction**

After a rigorous screening procedure, 13 articles published in the past five years were selected and met the inclusion criteria. These articles provided effective empirical research data, so they qualified for this systematic evaluation.

## **3. Result**

In all 13 journals, perseverance is related to academic achievements. Next, the research results are analyzed from several aspects.

### **3.1. Information of research results**

All 13 selected articles are quantitative studies. To help readers understand, the authors reviewed selected publications based on year, location, journal, research objectives, and key findings. The outcomes of higher education students' grit and academic performance are shown in Table 3.



**Table 3: Reported relationships between grit and academic performance**

Nu.	Authors (Year)	Country	Title	Aim(s)	Participant	Variables and Instrument Used	Main Findings
1	Abubakar et al. (2021)	Malaysia	Association between grit and academic achievement among undergraduate pharmacy students in Malaysia	To explore the effect of grit on college learners' educational success as Malaysian medical undergraduates.	247 college students	Grit (IV): Adopted from the Short Grit (Grit-S) scale (Duckworth in 2009) with 7 items Academic achievement (DV): GPA in the last semester and CGPA	Academic achievement is predicted by consistency of interest (CGPA $\geq$ 3.50), while CGPA has no association with perseverance of effort scores.
2	Whipple & Dimitrova-Grajzl (2021)	America	Grit, fit, gender, and academic achievement among first-year college students	To investigate whether grit affects academic success and whether there are gender differences.	186 first-year students	Grit (IV): Short Grit Scale (Duckworth & Quinn, 2009) with 8 items Gender (MOD) Academic achievement (DV): GPA of first-year college	Grit positively affects the academic performance of male students but not female students. Gender plays a moderating role between grit and GPA.
3	Pleace & Nicholls (2022)	South Africa	Grit, motivation, and university grades	To explore how grit and intrinsic motivation affect academic achievement.	432 college students	Grit(IV): Grit-S survey (Duckworth & Quinn, 2009) Motivation (IV): open-ended questions Academic achievement (DV): Grades	It is grit, not intrinsic motivation, that can significantly predict academic success. Grit is positively produced by intrinsic motivation.
4	Sunbul (2019)	Turkey	How grit mediates the relations between personality and GPA in university students?	To study the connection between character, grit, and academic success of higher education learners.	406 undergraduates	Personality (IV): Turkish adaptation of The Big Five inventory (Sumer and Sumer, 2005) with 44 items Grit(MED): Turkish adaptation of Grit-S (Saricam, Celik and Oguz, 2016) with 8 items Academic performance (DV): GPA	There is only an indirect relationship between grit and academic performance; that is, grit needs to affect academic performance through the intermediary role of consciousness.
5	Alqarni (2022)	Saudi Arabia	Investigating the Relationship between Emotional Well-being and Grit as Predictors of Saudi EFL Female Students' Foreign Language Achievement	To explore what role happiness and courage play in Saudi Arabian women's academic success in foreign language learning.	84 female college students	Emotional well-being (IV): PERMA-Profiler scale includes 23 items(Butler and Kern, 2016) Grit (IV): Grit scale with 12 items from Duckworth et al. (2007) Academic success (DV): English scores	Grit and happiness are both significant predictors of academic success.
6	Hernández et al. (2020)	Portugal	Passion or Perseverance? The Effect of Perceived Autonomy Support and Grit on Academic Performance in College Students	To explore the correlation with the satisfaction of basic psychological needs, motivation, grit, and independent support from teachers and academic success.	474 college students	Autonomy support (IV): Autonomy support scale with 12 items (Moreno-Murcia et al., 2019) Basic psychological needs satisfaction (IV): Portuguese version of Exercise Scale (Cid et al.,2016) with 15 items Intrinsic motivation (IV): Academic Motivation Scale with 4 items (Vallerand et al.,1989) Grit (MED): Grit Scale short version with 8 items (Raykov,1997) Academic grades(DV):GPA	Perseverance not only significantly affects college grades but also mediates between other variables (perceived autonomous support) and academic success.
7	Akos et al. (2022)	America	The Promise of Noncognitive Factors for Underrepresented College Students	For underrepresented college students, testing non-cognitive variables (including grit) can predict the possibility of academic success.	1436 college students	Resilience (IV): Connor-Davidson Resilience Scale (Conner & Davidson, 2003) with 10 items Grit (IV): short grit scale (Duckworth & Quinn, 2009) with 8 items Growth mindset (IV): Growth mindset assessment (Dweck, 2009) includes 3 items Academic performance (DV): GPA and credit hours completed	Original growth mindset and grit can predict academic success, while the change of resilience in a year can positively predict the total number of total credit hours.
8	Guo et al. (2023)	China	Purpose in life and academic performance: Grit mediation among Chinese college students	To explore whether life goals affect academic performance through grit.	439 undergraduates	Purpose in life (IV): Claremont Purpose Scale (Bronk et al., 2018) including 12-items Grit (MED): Short Grit Scale (Duckworth & Quinn, 2009) consisting of 8 items Academic performance (DV): A single-item scale adapted from Leung and Xu (2013)	Grit and its two dimensions positively affect academic performance. Grit (especially perseverance of effort) acts as a mediator between life purpose (especially target orientation and beyond-the-self) and academic achievement, promoting academic success.

Nu.	Authors (Year)	Country	Title	Aim(s)	Participant	Variables and Instrument Used	Main Findings
9	Luthans et al. (2019)	America	Refining Grit in Academic Performance: The Mediation Role of Psychological Capital	To explore whether grit mediates the correlation of educational success through psychological capital.	176 business students	Grit (IV): 8-item Short Grit Scale ( Duckworth & Quinn, 2009) Psychological capital (MED): 24-item PsyCap Questionnaire adapted by Luthans et al., (2016) Academic performance (DV): GPA	Grit is positively correlated with GPA. To a great extent, the relationship between them is mediated by psychological capital.
10	Hu et al. (2022)	China	Relationship Between Growth Mindset and English Language Performance Among Chinese EFL University Students: The Mediating Roles of Grit and Foreign Language Enjoyment	To explore the relationship between grit and foreign language performance and the mediating role of grit between English performance and other variables.	383 university students	Growth mindset (IV): Language Mindsets Inventory (Lou and Noels, 2017) with 18 items Grit (MED) :L2 Grit Scale (Teimouri et al., 2020) with 8 items Foreign language Enjoyment (MED): English Classroom Enjoyment Scale adopted by (Jin and Zhang, 2019) with 15 items English language performance (DV): College English Test-Band 4 scores	Grit is positively correlated with learners' English performance. Both grit and foreign language enjoyment are partly mediating growth mindsets and English scores.
11	Hodge et al. (2018)	Australia	The Role of Grit in Determining Engagement and Academic Outcomes for University Students	To explore the mediating role of engagement between grit and educational success.	395 college students	Grit (IV): 8 items grit scale (Duckworth 2009) Engagement (MED): Utrecht work engagement scale for schools (UWES-9 (S); Schaufeli 2003) with 9 items Academic outcomes (DV): job demands-resources scale (Bakker 2014a) with 3 items to assess the students' beliefs about their academic performance	There was no gender difference in grit, and engagement mediates between grit and academic achievement.
12	Casali & Meneghetti (2023)	Italy	Soft Skills and Study-Related Factors: Direct and Indirect Associations with Academic Achievement and General Distress in University Students	To explore how five soft skills (including grit) influence academic success and general distress through the mediating role of learn-related factors.	606 students	Soft skills (IV): Questionnaires measuring 5 soft skills (epistemic curiosity, creativity, critical thinking, perseverance, and social awareness) Study-related factors (MED): Questionnaires measuring 4 study-related elements (achievement emotions, self-regulated learning strategies, motivational beliefs, and study resilience) Academic achievement (DV): Grades General distress (DV): 21 items Depression, Anxiety, and Stress Scales-21 (Bottesi 2015)	Soft skills (including persistence) indirectly affect the performance of higher education through the intermediary of other learning-related factors.
13	Sulla et al. (2022)	Italy	University Students' Online Learning During COVID-19: The Role of Grit in Academic Performance	To investigate whether the psychological distress caused by the virus lockdown would moderate the mediation of self-efficacy between grit and academic performance.	176 college students	Grit (IV): Grit-s scale (Italian version by Sulla et al., 2018) with 8 items Self-efficacy (MED): Perceived self-efficacy in the management of complex problems scale (Farnese et al., 2007) with 24 items Psychological distress (MOD): Symptom Checklist 6 (Rosen et al., 2000) with 6 items Academic performance(DV):Scores	Grit affects students' final exam results. Self-efficacy in the management of complex problems had a mediation effect on grades, while psychological distress moderated the first part of the mediation process.

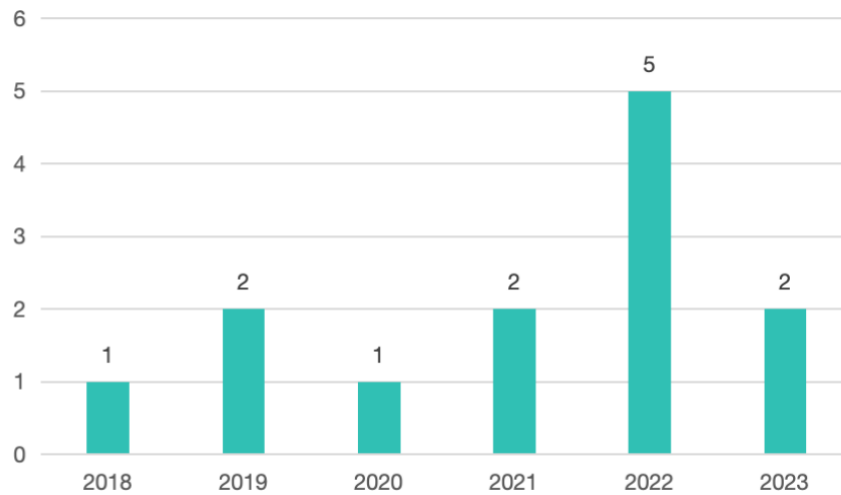
Note: IV = Independent Variable; MED = Mediator Variable; MOD = Moderator Variable; DV = Dependent Variable

### 3.2. Research Status of Grit and Academic Achievement

Some features were identified from the collected 13 documents. On the one hand, by observing the number of articles published in different years, we discovered the changes in people's attention to grit and academic performance. On the other hand, from the geographical distribution of the articles, we found which regional researchers pay attention to grit and academic success.

#### 3.2.1. Number of Publications by Year

As shown in Figure 2, the publication years of 13 documents are as follows: one in 2018, 2020, and 2022, and two in 2019, 2021, and 2023. Most journal articles mainly focus on the last three years, and this shows that researchers are paying increasing attention to the effect of grit on college learners' educational success.



**Figure 2: Number of publications by year**

### 3.2.2. Geographical Distribution of Articles

These 13 articles have been presented in 12 different journals, including one article each in 11 journals and two articles in one journal, namely *Frontiers in Psychology*. As shown in Figure 3, researchers from nine countries explored the influence of grit on academic outcomes among university learners, with the number of publications in descending order from the United States (three articles), Italy and China (two articles), and South Africa, Turkey, Saudi Arabia, Portugal, Malaysia, and Australia (one article). As can be seen from the figure, the impact of grit on the educational success of higher education learners has attracted the attention of researchers in many countries, but attention to this issue needs to be further increased worldwide.



**Figure 3: Geographical distribution of articles**

### **3.3. The Role of POE and COI in College Academic Performance**

In all 13 journals, grit is related to academic performance. However, the two dimensions of grit, POE and COI, have different results.

#### **3.3.1. Both POE and COI Predict Academic Performance**

In a study of African-American freshmen, Akos et al. (2022) found that the initial grit score can effectively predict the academic performance (GPA) of learners. They believe that for African-American students, it is very important to cultivate non-cognitive elements in the key first year of study for academic success, and relevant background factors should be considered. Pleace and Nicholls (2022) pointed out that grit can predict the performance of learners majoring in economics and management science, and there is a positive correlation between them. In addition, they also studied the influence of motivation and grit, where the higher the intrinsic motivation, the higher the grit. This study mentioned that in the context of a South African university, intervention measures that take into account moldable personality traits are conducive to narrowing the achievement gap between different classes and are of great significance to helping disadvantaged groups improve their academic performance. In English learning, there are similar findings. Alqarni (2022) found in a cross-sectional study of the English learning of female students in Saudi Arabia that grit is significantly related to English achievement. Another new discovery of this study is that the age of learners significantly affects two aspects of grit (POE and COI); that is, the older learners are, the higher their grit is. In addition, although the results show that grit is related to emotional health, happiness is only positively related to grit and unremitting efforts and has nothing to do with the consistency of interests. In the cross-sectional study of the English learning environment in China, Hu et al. (2022) not only emphasized the significant correlation between grit (POE and COI) and College English Test-Band 4 (CET-4), but also proposed that grit played a mediated role between growth mindset and achievement. This also highlights the role grit plays in encouraging foreign language learning achievement. In the face of difficulties, learners with a higher level of grit are more inclined to make more efforts and persist in learning to improve their academic performance.

#### **3.3.2 POE and COI Play Different Roles**

In some studies, researchers have shown that the two aspects of grit (POE and COI) do not function in a similar way. On the one hand, some studies describe that POE seems to have a stronger relationship with academic performance than COI. In the cross-sectional study of college students from all over Australia, Hodge et al. (2018) believed that although grit is a contributor to academic success, perseverance in efforts contributes more to achievements than consistency of interest. They emphasize that learners are more likely to improve their academic performance and perform better by persisting in completing tasks, while maintaining interest seems to

have little effect. They also said that the first generation of higher education learners has a higher perseverance of efforts index (POE) than their peers. There are variations in the number between male and female learners, but male and female learners show the same degree of grit (women account for the majority of the sample). Hernández et al. (2020) also believed that the two dimensions of grit have not played the same role. That is, POE in grit is the main factor in forecasting the academic performance of Portuguese college learners. Whipple and Dimitrova-Grajzl (2021) hold that the study is essentially longitudinal by evaluating the level of grit before entering the university and the academic performance (GPA) at the end of the freshman year, and point out that grit can affect the academic performance of military academy students. In addition, POE can predict academic performance better than COI. It should be noted that grit can positively predict the GPA of male freshmen, but the academic performance of female students has no significant impact. The researchers believed that this was related to the specialty particularity (military academy background) and the fact that there are more men than women. The reason is because female learners who choose to enter the military academy are estimated to have many characteristics related to grit. That is, compared with men, grit is a necessary quality for women to join military academies. Therefore, grit has little effect on promoting female learners to improve their academic performance.

On the other hand, there are also different voices stating that COI is more closely related to academic success. For example, in Abubakar et al.'s (2021) study, after a cross-sectional investigation including pharmacy students of a university in Malaysia, a noteworthy correlation was shown between grit and academic achievement (CGPA) rather than the GPA of the previous semester. Although learners' scores on POE are higher than those on COI, consistency of interest has a greater relationship with academic performance (CGPA). This shows that pharmaceutical students can persist in their efforts regardless of their grades. However, students with high grades generally have more sustained interest. In other words, it can help students improve their academic performance by increasing their interest in the course. In addition, grit has no significant difference in demographic characteristics and study years. They also pointed out that different cultural groups seem to have different views on the size of gravel; the grit scores of college students in the study are lower than those of American medical students, but they are consistent with those of Thai medical students.

### **3.3.3. Grit, Academic Performance, and Other Variables**

At present, many studies have not only studied grit and academic performance but also discussed their relationship with other psychological factors. For example, a horizontal study shows that grit and academic achievement (GPA) are significantly positively correlated for business learners, but it is largely because academic psychological capital plays a regulatory role. Researchers believe that psychological

capital (HERO: hope, efficacy, resilience, and optimality) can guide courageous business learners to achieve their goals. In other words, grit may not directly affect academic performance, but if learners can combine grit with other positive academic psychological resources, it will effectively promote academic success (Luthans et al., 2019). In an ongoing investigation on the shift from traditional classroom instruction to virtual learning caused by COVID-19, Sulla et al. (2022) pointed out that grit will affect the final grades of Italian college students. In addition, strict blockade rules may lead to low-level psychological distress. Therefore, self-efficacy plays a mediating role in the connection between grit and college students' academic performance. The researchers also mentioned that even for students with a high level of grit, stress will hinder them from pursuing their goals. In other words, students and educators need to pay attention to psychological pressure and learners' mental health during special periods, so that the grit level will not decrease and grit will play a role in academic outcomes. In a cross-sectional study of Italian college students, there is a slight but significant negative correlation between five soft skills and average grades. Furthermore, soft skills alone are not enough to promote academic success, and they must consider other factors related to their studies in the learning process. As there are many factors affecting learners' personal conditions and academic success, their relationship is very complicated. Only when soft skills are beneficial to learners will they attract learners' attention. Grit, as one of the five soft skills, can affect academic success through the mediation of learning-related variables such as achievement, emotion, and self-regulation (Casali & Meneghetti, 2023). Hernández et al. (2020) posited that although perseverance is important to academic performance, learners' perceptions of demand support will affect their belief system. Moreover, in the study of undergraduates majoring in physical education in Portugal, they found that grit (mainly perseverance) not only predicts academic success, but also plays an intermediary role between teachers' independent support and students' performance. That is to say, if learners can get more autonomous support in their studies, they will show a more positive state and make more efforts to complete their academic tasks with high quality.

According to one study, grit must be mediated by other factors in order to have an impact on academic achievement because it is not directly associated with it. For example, in the cross-sectional study of three Turkish universities, although grit is considered a predictor of academic achievement (GPA), it can only affect GPA on the premise that consciousness plays an intermediary role. That is, there is only an indirect relationship between grit and academic performance, but there is no direct relationship (Sunbul, 2019). The mediated role of grit is the subject of other publications. Guo et al. (2023) pointed out that although both dimensions of grit are positively related to academic performance, it is perseverance of efforts, not the other side of grit, that plays an intermediary role between life goals (including goal

orientation and self-transcendence) and academic success. Researchers believed that this is because, under the cultural background of China, Asian students often choose to keep working hard for a long time to improve their academic performance in order to meet the external expectations of improving their academic performance (such as parents or social culture). This starting point may not be related to their real interests. The researcher suggests that learners with different cultural backgrounds can be selected from future studies to verify the connection between the factors in this study.

#### **4. Discussion**

Based on 13 articles published in two databases in the past five years (2018-2023), this study investigates how grit affects college students' academic performance. We are particularly concerned about two aspects: (1) Although both grit and grit are related to academic performance, their influence is different; and (2) Grit affects academic performance directly or indirectly. In addition, we also discussed the concept and research methods of grit because all these will affect the relationship between grit and academic performance. These findings are very meaningful, as they not only show that grit really affects the academic performance of undergraduates, but also provide a direction for further exploring the future significance of grit in higher education.

First of all, grit is a whole structure, and all 13 articles show that grit is related to academic performance. However, some studies show that the two dimensions of grit have different functions. Specifically, compared with the consistency of interest, the efforts of grit are more closely related to academic performance (Hernández et al., 2020; Guo et al., 2023; Casali & Meneghetti, 2023). That is to say, POE (perseverance of efforts) can better predict academic performance (Hernández et al., 2020). Researchers believe that what makes learners progress is their determination to persist in completing their academic tasks, not their ability to maintain interest (Hodge et al., 2018). Moreover, learners who have no higher education background (first generation college students) show a higher degree of effort. Lam et al. (2019) explained this from the perspective of learning motivation. Although learners' interest in learning belongs to intrinsic motivation (Deci & Ryan, 2013), learners with strong intrinsic motivation usually make persistent efforts and get better academic performance (Goodman et al., 2011). At the same time, students with high grades usually have more lasting academic interests (Abubakar et al., 2021). It should be pointed out that the relationship between POE and COI and educational performance is still controversial, so it is necessary to examine their functions with objective and sufficient evidence in the future instead of arbitrarily denying any dimension (Zhao & Wang, 2023).

Secondly, although the research shows that there is a relationship between grit and academic performance, grit affects academic performance in various ways, including

direct influence (Hodge et al., 2018; Abubakar et al., 2021; Whipple & Dimitrova-Grajzl, 2021; Pleace & Nicholls, 2022; Alqarni, 2022; Hernández et al., 2020; Akos et al., 2022; Sulla et al., 2022; Hu et al., 2022; Casali & Meneghetti et al., 2023; Guo et al., 2023) and indirect effects (Sunbul, 2019; Luthans et al., 2019), as well as indirectly affecting academic performance through the intermediary role of personality or psychological capital. There is a complicated relationship between individuals and learners, which is influenced by many factors (Akos et al., 2022). This is reflected in the literature: among the 13 selected articles in journals, 12 articles not only explored the relationship between grit and academic performance, but also combined with other psychological factors (e.g., psychological capital, engagement, and growth mindset) to explore the relationship between grit and academic performance and the role of grit in academic grades and other variables from multiple angles, so as to tap the potential of grit in promoting college students' academic performance as much as possible. However, it should be noted that a study shows that five soft skills (including grit) are negatively correlated with academic performance (Casali & Meneghetti, 2022). This is different from other positive correlation results. Although the negative correlation is small, it still needs attention. The reason is worth further exploring.

Further, despite grit emphasizing not giving up, overcoming obstacles, and pursuing goals for a long time (Duckworth et al., 2009), we found that there are a few studies that provide clear meanings of "specific obstacles" and "long-term goals." In other words, researchers need to improve the concept of grit (Zhao & Wang, 2023) because the important premise of research is reliable conceptual structure and tools (Elahi Shirvan et al., 2024). In addition, learners from different cultural backgrounds may have different understandings of the concept of grit and pay different attention to COI and POE. Therefore, it may affect the relationship between grit and academic performance. For example, in short-term culture, people pay more attention to the present and attach importance to current interests (Hofstede, 2011). However, for Chinese students in a long-term culture, academic success cannot be their long-term goal but a temporary one (Guo et al., 2023). In other words, the importance of grit for academic performance may be different due to different cultural backgrounds. Similarly, Hodge et al. (2018) also mentioned that potential cultural prejudice poses certain challenges to grit and academic performance. The research results show that, compared with students whose parents have received higher education, the first generation of college students (whose parents have not participated in higher education) show greater efforts and perform as well as others (Marks, 2007). Therefore, in the follow-up research, the concept of grit should be defined more accurately and expressed more strictly, so that grit can be better understood by learners with different cultural backgrounds and play its due role. In addition, considering the differences between different types of schools and grades (Pleace &



Nicholls, 2022), it is also helpful to understand the influence of non-cognitive factors (grit) on academic performance by expanding multiple grades (Akos et al., 2022).

Finally, the differences in research methods can explain the differences in the relationship between grit and academic achievement, such as using different self-report scales and different standards to measure academic success. In these 13 articles, most of them (11 articles) are based on objective test scores in the form of GPA, CGPA, or other examination scores (e.g., Sunbul, 2019; Abubakar et al., 2021; Whipple & Dimitrova-Grajzl, 2021; Hu et al., 2022), and two articles also contain subjective measurement forms (such as Hodge et al., 2018; Guo et al., 2023). Subjective measurement of academic performance has been proven to be acceptable (Watson et al., 2021). Therefore, future research can try to measure academic performance in a more comprehensive way, such as by combining objective scores with subjective scales to better understand learners' real learning situations. In addition, most articles use quantitative and cross-sectional research methods, and internal research is insufficient (e.g., qualitative or mixed research). It is very important to understand the predictability and persistence of cognitive and behavioral outcomes (Hernández et al., 2020). Since grit will develop with time (Duckworth, 2007), the plasticity of grit on academic performance needs to be further explored (Alamer, 2021). Therefore, it is very necessary to do longitudinal research over different time lengths. In this way, people can understand the development and changes of grit and academic performance (for example, how grit affects academic performance and how it affects academic performance over time) and their causal relationship.

## **5. Implications of the Study**

This study examines the influence of grit on educational success in the past five years, and systematically shows how grit affects college students' academic performance. These empirical results are very meaningful because they provide a direction for further study on how grit affects college students' academic performance. Therefore, four understandings can be drawn from the reviewed journals. First, there are many articles supporting the claim that POE is more effective than COI, but we do not ignore the objective fact that COI promotes academic performance. Therefore, more objective and sufficient evidence is needed in future research to examine the influence of two dimensions of grit (POE and COI) on academic performance, and it is not easy to decide to deny either dimension. Second, there is not a single model between learners and learning, and the relationship between them is complicated. Therefore, we should actively explore the interaction and influence among grit, academic performance, and other related psychological factors, so as to explore the positive influence of grit on academic performance from a new angle or way. Thirdly, the concept of grit needs to be further improved and concretized to be suitable for learners with different cultural

backgrounds and learning situations. Finally, the number of research methods in this field is unbalanced, and qualitative research, mixed method, or longitudinal research should be added in future research to further understand learners' real thoughts and explore the cause and effect and development of the relationship between grit and academic performance.

## **6. Conclusion**

This study discussed how grit affects the academic performance of college students under the background of higher education and selected 13 articles from Scopus and Web of Science by means of a systematic literature review. In every article, grit is related to academic success. Grit and grit's two dimensions (POE and COI) affect the academic performance of college learners. However, the influence of two dimensions of grit (POE and COI) on academic performance is still controversial and needs further discussion. Most studies show that grit can directly affect academic performance. In addition, grit can mediate between academic performance and other variables. By reviewing the literature in the past five years (2018-2023), this paper also found that other cognitive and non-cognitive variables are related to grit and academic performance, and they jointly affect academic performance through different structural frameworks. This can not only fully tap the potential of grit in promoting college students' academic performance, but also provide new methods and directions for studying grit and academic success with college learners in the future. In addition, educators can help college students strengthen grit in a planned and purposeful way to promote academic success.

## **7. Limitations and Recommendations for Future Studies**

Like many studies, this one also has some limitations. On the one hand, the limitation of this study lies in the limited databases, including Scopus and Web of Science (WOS). Although they are the most well-known high-quality journal lists (Paul et al., 2021), this may lead to the reduction of qualified literature. In other words, if studies from more databases are included, the analysis results will be more comprehensive. On the other hand, this research focused on the study of university learners' grit and academic achievement in the recent five years (2018-2023). Even though this means keeping abreast of the latest research trends, it may also limit the understanding of the historical context of the development of grit and academic achievement research. In addition, this study only paid attention to English language journals and omitted other documents such as books, chapters, and reports. This limited other discoveries to some extent. Therefore, future researchers can appropriately increase the database, extend the research period, or modify the screening criteria so as to get more comprehensive and unique results.

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