

# Review of: "Grit Predicts Academic Achievement among Undergraduate Science Teachers at a University of Science and Technology"

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Potential competing interests: No potential competing interests to declare.

## Previous note

The article holds potential for publication, albeit requiring adjustments to its text. The topic under examination is of profound interest for research in Educational Psychology, particularly for those dedicated to exploring non-cognitive factors influencing academic performance among university students.

From a global perspective, the scrutinized construct "grit" is conceptualized as the personal ability to choose a long-term goal and persist in it, even in the face of inevitable obstacles and vicissitudes that will arise along the way. In summary, talent and intelligence are not the sole indicators of success; reaching the pinnacle requires determination. The theoretical rationale argues that highly successful individuals exhibit a form of fierce perseverance, delineated in two aspects. Firstly, these individuals are more persistent and determined than the average. Secondly, they possess clarity about their goals, harboring not only perseverance but also a defined direction. This combination of passion and perseverance often culminates in personal success.

In this sequence, QEIOS, by giving voice to this article, envisions the opportunity to enrich the theoretical foundation underlying the studied theme, simultaneously fostering the implementation of intervention programs in academic institutions. Such programs can effectively assist students in developing strategies to cultivate their resilience.

Furthermore, it is imperative that the results of this study are thoroughly elucidated and grounded, contributing to the strengthening of the analyzed article. It is noteworthy that the addressed text is intended for a diverse academic population characterized by heterogeneous knowledge of the studied topic and, therefore, should be structured to enhance the reader's comprehension.

Therefore, QEIOS's production, as a scientific journal, must maintain its excellence in the fields it encompasses. In this regard, some suggestions for adjustments to the article are presented, namely:

## Abstract

## Background

Considering that the main variable of this study is "grit" (perseverance), a relatively new concept (2004), it is suggested that this concept be further developed. This conception from modern psychology asserts that perseverance and passion

for what we do are the key elements to achieve personal success. It is above all, even talent and intelligence. In the present study, when addressed in the context of initial teacher training, it becomes essential to mention the importance of some best practices that influence student outcomes and learning, addressing different dimensions of engagement and persistence, namely; encouraging relationships between students and faculty; caring about the development of reciprocity and cooperation among students; seeking active learning; providing feedback; valuing students' time on the task; explaining expectations regarding various talents and ways of learning. In this perspective, "grit" can be understood as the time and effort students dedicate to specific educational activities.

It should be addressed that "gritties," individuals who are passionate, make an effort, and dedicate time to what they do, develop certain characteristic personality traits. For example: *The most productive*: Individuals with grit perform better and endure longer in their jobs. They are also happier and more helpful to their colleagues.

*The most consistent*: People with grit are generally more perseverant than others. They have a more positive mindset and dedicate more attention, hours, and effort to achieving their goals.

*The most responsible*: People with grit value the sense of their actions. Understanding how their work can benefit the community and the desire to create connections are vital to keep the flame of their passion burning.

*The most optimistic*: People with grit see adversities as something natural and face them with a smile. They trust in their abilities and how things will, thanks to their effort, improve in the future.

It would be interesting to briefly explore the issue of non-cognitive factors (e.g., motivation, attitude, and temperament, among others) that influence students' academic achievement in higher education institutions.

- The theoretical model supporting the study is not specified.
- Include results from studies that specifically associate the influence of "grit" on academic performance.
- In the literature review, there are references only until 2019. Update the bibliography with studies conducted between 2020 and 2023.
- It is suggested that before entering the methodology, the study hypotheses and the expected associations, whether positive or negative, be presented, as it is a confirmatory study of results. The information that is immediately after the results ("The present study was designed to find out the association...") should be presented here.

## Methodology

- The information in the methodology needs to be divided into subheadings - sample, procedures, instruments, and data analysis - and each of them should contain all the necessary information to characterize or operationalize the entire process developed in the study.
- The text about Informed Consent "The study participants provided written informed consent, using the IREC consent form, protocol number MUST-2021- 175." should be presented in the procedures.
- The information "Correlation between Grit and Academic Achievement among Undergraduate Teachers" belongs to the sample characterization and is repeated in table 1, and can be presented in full, not requiring the table.

- Provide the average age of the respondents and its range. In the procedures, indicate the entire data collection process, including addressing the ethical issue of the Helsinki Declaration.
- In order to observe the magnitude and intensity of the obtained results, indicate the cut-off points of the indices used for metric evaluation, for example, those indicated for skewness and kurtosis, Pearson's correlation matrix ( $<.200$ /very weak;  $.200$ -. $399$ /weak; .... moderate; strong; very strong).), as well as the indices used for model fit adjustment.
- Skewness and kurtosis values are usually indicated to the thousandths (0.000).
- Identify correctly the Grit-s scale used, its author, and whether it was validated for the context where the instrument was applied. The study was conducted in China, using scales validated in the countries of origin for each. To scientifically validate the results obtained in this study, it is important to specify whether the scales used were validated for the Chinese context. The necessity of validating scales for the context in which they are applied arises from the numerous cases in scientific research where results are biased due to difficulties in translating questionnaires (semantic, syntactic), often altering the question's meaning. Additionally, significant cultural differences among different countries further emphasize the need for scale validation. For example, a questionnaire on school discipline in elementary education validated for the United States may not make sense when applied in Japan, given the vast behavioral differences among students in each country. There are often words, expressions, and feelings, among other aspects, that make sense in one country but are entirely unknown or impractical in others. Hence, it is imperative to validate all scales, in any field of study, for the context of the country where they will be applied. The Cronbach's alphas obtained and indicated in this study only make sense if the scale was properly validated at the exploratory and confirmatory levels.

## Results

### Socio-demographic Characteristics of Undergraduate Teachers of Science

#### Correlation between Grit and Academic Achievement among Undergraduate Teachers

- Tables 3 and 4 lack further clarification regarding the presentation of data fit indices.

#### Association between Grit and Academic Achievement among Undergraduate Teachers of Science

- Verify if the statement "Moreover, the highest correlation was between the perseverance of effort subscale and academic achievement ( $r = .218$ ,  $p < .01$ ).\" is accurate. Is it the highest correlation value?
- Why aren't the other associations mentioned, even though they have significant values?
- To which variables do the numbers 5, 6, and 7 in Table 3 refer?
- The explanation of the association between grit and academic achievement is not very clear. It would be helpful to elaborate more on how the values in Table 4 are derived. Adding a legend to Table 4 to identify the meaning of the abbreviations would significantly improve the readability.

## Discussion

- According to APA guidelines, authors should not appear for the first time in the discussion and conclusions. They

should be referenced in earlier chapters, most notably in the introduction. Undoubtedly, some of the authors/studies now mentioned might be missing from the introduction section. Parte superior do formulário

## Conclusions

- The conclusions could be further developed by associating the obtained results with other studies conducted previously.

## Recommendations

- Support programs for initiatives related to the welcoming and integration of students can also be mentioned. It is important for the integration of new students to occur in a manner that highlights the benefits of higher education and the challenges of scientific research, knowledge, and culture. Encouraging shared moments among students, stimulating a sense of curiosity, and promoting a humanistic culture among future teachers are essential aspects.
- Peer tutoring projects can be mentioned as well, aiming to promote healthy and proactive integration of students in the context of higher education. These projects foster the acquisition of transversal skills, including personal, social, academic, and interpersonal relationship skills. Equally important are the skills related to emotional intelligence, an essential capacity in the initial and continuous training of teachers.
- Another important aspect is the creation of observatories for students' academic paths. The objectives include identifying student profiles and their expectations upon entry, particularly valuing the heterogeneity of their characteristics. This involves characterizing the paths of undergraduate and postgraduate students, considering activities directly linked to their courses and, more broadly, psychosocial and cultural development activities. The aim is to analyze the impact of personal, academic, and contextual variables on students' trajectories, assessing their impact on academic success, retention, satisfaction with courses and the institution, and employability skills. Providing data to pedagogical coordination bodies about students and determinants of their academic and future professional success, as well as designing devices and proposing initiatives that promote students' connection to courses and the university, and their integral development, are part of these observatories.
- These suggestions are linked to the next point of "implications for future research."
- Indicate limitations of the study.

## Implications for further research

## References

- It is essential to update the bibliography. There are no studies between 2020 and 2023.