
| RESEARCH ARTICLE

Can Getting to Grips with Grit Reconnect the Gen-Z Undergraduate Mindset and Learner-Centered Educators?

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| ABSTRACT

This review presents a dialogue pondering whether getting to grips with the concept of grit can effectively reconnect learner-centered educators with the modern Gen-Z undergraduate mindset. Popularized by pioneering education psychologist Dr. Angela Duckworth as a combination of perseverance and passion for long-term goals, grit is synthesized in educational literature through its dual dimensions: perseverance of effort and consistency of interest. This study explores the concept as a potential catalyst for student engagement, motivation, and overall well-being, highlighting how higher levels of grit empower undergraduates with cognitive control and optimal emotional regulation. However, the framework faces noteworthy critique; its predictive power and validity remain somewhat inconsistent due to limited statistical power, and Duckworth's Grit Scale overlaps essentially with fundamental personality traits. Ultimately, this review explores future directions for refining how grit can be engaged as a crucial education dimension, and proposes targeted interventions to support Gen-Z undergraduates throughout their journey of educational experiences. Connecting within this generational gap requires active engagement and collaboration between educators and students, positioned within a shared context of resilient, active learning.

| KEYWORDS

Grit; Dr. Angela Duckworth; Gen-Z undergraduates; learner-centered educators; student engagement; student motivation; perseverance; sustained effort; consistency; resilience; emotional regulation; cognitive control; active learning; collaboration.

| ARTICLE INFORMATION

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Introduction

Dr. Angela Duckworth, a pioneering educational psychologist, popularized the transformative concept of grit as a phenomenon that is defined as a unique blend of long-term passion and perseverance (Duckworth, 2017), and which continues to be refined through scientific research activities globally. Her empirical studies continue to challenge traditional metrics of success, shifting the focus of contemporary education and psychology from innate intelligence toward the power of sustained effort. To illustrate grit as a distinct psychological phenomenon, she describes how successful individuals demonstrate both direction and ferocious determination, concluding that it is this rare combination of passion and perseverance for attaining long-term goals that makes high achievers special and which is captured in the word 'grit' (Duckworth, 2017). Grit encompasses perseverance and effort coupled with passion for reaching a long-term goal. The emphasis in the concept of grit is on sustained effort over time despite challenges and setbacks. Current research is comprehensive and has advanced knowledge of grit, exploring its dimensionality, measurement properties, relationship with performance outcomes, and relationship with similar constructs that contribute to

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focus on, and achievement of, short-term and long-term goals. The concept has recently received considerable attention as a predictor of academic success and personal growth in educational settings. The following review synthesizes this literature to examine the role of grit in educational outcomes, focusing on its measurement, impact on student success, and critiques of its application in academics.

Defining and Understanding Grit

Dr. Angela Duckworth and her colleagues were among the first to develop the grit construct and to measure it. Essentially, Duckworth et al. (2007) described grit for the first time as consisting of two dimensions: perseverance of effort and consistency of interest. The former reflects a sustained effort toward achieving goals despite obstacles, while the latter denotes a stable interest in goals over time. Both are empirically supported and constitutive in developing the Grit Scale, a means by which the level of grit can be measured. Following criticisms about the lengthiness of the original scale, Duckworth and Quinn (2009) developed the Short Grit Scale, which retains the critical dimensions, while the measure can be made more feasible in research and practical application.

Essentially, grit is conceptualized as a dual construct, namely perseverance in terms of effort and consistency of interest. According to Postigo et al. (2021), perseverance involves sustained effort over time, whereas consistency of interest reflects a continuous commitment to goals without any deviations in the face of challenges. The duality lies at the heart of research on grit, with both impacting educational attainment, career persistence, and lifelong personal achievement (Postigo et al., 2021). Grit is associated with tenacity and sustained interest in achieving long-term goals, a quality necessary for success in educational settings. Morell et al. (2021) contend that by distinguishing the "long" and "short" aspects of grit, each element can be seen to uniquely contribute to educational outcomes. These dimensions of grit are embodied in an accurate assessment of, desire for, and objectivity in, achieving short-term and long-term goals, especially in academic settings.

From research evidence, a one-dimensional model may not capture the comprehensive complexity that enables assessment of interest and perseverance of effort as related facets of grit. Schmidt et al. (2017) stress psychometric vigilance in designing grit scales, especially given students' diverse cultural and educational backgrounds. The approach is essential in designing and applying an evidence-based approach to establishing a psychometric model to understand grit better. The Grit Scale proposed by Schmidt et al. (2017) implies that further refinement increases the precision of the results for more contexts where it may manifest differently. This consideration is vital, as Munro and Hope (2019) argue, as a construct should be assessed with culturally and contextually appropriate tools to ensure that any estimate of the impact of grit is not understated.

Grit as a Predictor of Success in Education

Researchers have revealed that grit helps students develop academic perseverance and engagement with concepts in their respective fields. For instance, a systematic review by Christopoulou et al. (2018) indicated that it promotes resilience among students enhancing adaptability, thereby enabling them to perform better on academic fronts. Similarly, a study conducted by Direito et al. (2021) established a positive relationship between grit and persistence in engineering education. It is an essential psychological construct in fields of study that demand sustained devotion. The revelations indicate that grit is a disposition that assists students, especially those undergoing demanding classes or stressful situations, to realize academic resilience.

The idea of grit has already been helpful in other fields considered challenging, such as healthcare or critical care. Munro and Hope (2019) note that grit often buffers students in high-stakes fields where failure is common, and success often requires repeated attempts. Their study postulates that resilience driven by grit assists students in coping with setbacks, a common occurrence in complex learning environments. For instance, Direito et al. (2021) reveal that engineering students exhibit more grit, demonstrating increased perseverance to complete studies on time, which may imply that such persistence is necessary for persistence-based disciplines. Moreover, in the health profession, where resilience and management of stress are critical ingredients, grit also leads to better performance and mental well-being. According to Schimschal et al. (2021), grit is a construct that promotes academic success and promotes good mental health, anchored in resilience. The combination of resilience and perseverance nurtures adaptability among students of professional courses, whether that be dealing with academic or experiential challenges.

The grit construct has repeatedly become an independent predictor of success, distinct from intelligence and other cognitive abilities. In their landmark study, Duckworth and Eskreis-Winkler (2013) identified that grit positively relates to different measures of success, as well as academic performance, career success, and persistence in the most challenging fields. The arguments reveal that with persistence in the face of failures and distractions, individuals with higher scores for grit are most likely to reach their long-term goals. Duckworth & Gross (2014) also showed that grit uniquely contributes to success, above other factors like talent which had earlier been recognized as essential for success. Such evidence has, therefore, cemented the understanding that dedication and tenacity will always be necessary ingredients for attaining success over the long run.

The Role of Grit in Student Engagement and Motivation

Grit is related to improved academic engagement, motivation, and determination, and applies pertinently to the Gen-Z population in undergraduate programs. According to Qiao (2022), it is the missing link in stabilizing students for engagement in

situations that are challenging or otherwise unbearable. The reflective question follows whether getting to grips with grit can reconnect the Gen-Z undergraduate mindset and learner-centered educators? This human-human reconnection is a vital consideration and perspective that potentially strengthens educational outcomes. Additionally, grit can instill intrinsic motivation for academic success by enabling students to put in more effort over long periods of the learning experience. Stoffel and Cain (2018) reveal that students who report higher levels of grit are likelier to report higher satisfaction and resilience amidst rigorous learning. Therefore, a vital relationship exists between grit and motivation, providing a coping mechanism against burnout and feelings of dispiritedness in academic environments.

Grit has also mainly been useful in education based on its predictive relationship regarding academic performance. For example, Ris (2015) traced the historical development of grit, following its place within educational discourses, highlighting its role as a noncognitive predictor of performance. This is echoed in the health sciences, where noncognitive factors such as grit are posited to predict academic performance among students in rigorous professional curricula significantly (Chisholm-Burns et al., 2021). Further, other factors critical to determining student success and retention depend on grit. Integration of self-orientation fosters educational interventions that benefit students from an academic viewpoint.

Further, grit assists in the understanding of self in terms of cognition and emotion related to learning environments and outcomes. Van der Lingen et al. (2018) conceptually modeled a cognitive-affective model of grit within self-regulation frameworks, revealing that grit facilitates effective emotional regulation and cognitive control. The results revealed that it enhances motivation necessary for engagement and success in academic settings. According to the model, grit enables students to persist in their studies by helping them cope better with stress and setbacks, leading to persistence in commitment to academic and professional goals (Van der Lingen et al., 2018). More recently, research has begun explaining the interaction between grit, growth mindset, and resilience in the health professional education setting. One such intervention, by Calo et al. (2024), focused on how grit, resilience and a growth mindset positively enhance students' persistence and adaptability. Their meta-analysis supports the assumption that grit is not successful in a vacuum but is most potent when combined with a growth-oriented mindset. The research findings encourage students to embrace growth-opportunity challenges through continuous adaptation and emotional resilience.

Grit as a Predictor of Long-term Success and Well-being

Progressively and longitudinally, studies have repeatedly found that grit relates significantly to long-term success and well-being, especially in educational contexts. Morell et al. (2021) argue that it creates a growth trajectory whereby students perform at higher levels academically and develop a sustaining mindset underpinning lifelong learning. Grit and a growth-oriented mindset are linked to improved academic outcomes and overall life satisfaction. Schimschal et al. (2021) further suggest that grit may act in nurturing accomplishment and self-efficacy, contributing to well-being outside students' educational life. The predictive strength of grit in education and career outcomes has also been explored by Lee et al. (2023), who reveal that high-grit students outcompete their peers academically and professionally. Collectively, the findings encourage adaptive learning strategies, resulting in lifelong gains, positioning grit as a critical component in academic success and personal fulfillment. Although grit is often associated with self-control, the two constructs are not synonymous. Duckworth and Gross (2014) suggest that even while grit and self-control are essential for goal attainment, they operate under different mechanisms. Self-control applies more to situations that require suppression of immediate impulses for short-term rewards, while grit involves long-term devotion to goals. For instance, a student would apply self-control to avoid immediate distractions while studying but rely on grit to sustain the effort required to graduate (Duckworth & Gross, 2014). Thus, self-control and grit, though related, are distinguishable determinants of success, each contributing uniquely to explaining distinct aspects of successful performance in a complementary manner.

Critiques and Shortcomings of Grit in Education

Despite its phenomenal and widespread acceptance, the concept of grit has been critiqued regarding its general validity and predictive power. Arli et al. (2021) also question the possible negative consequences of grit, pointing to potential burnout and problems with students' mental health due to over-emphasis on perseverance. Credé (2018) critically reviewed the incremental validity of grit over other known personality dispositions, like conscientiousness, in respect of academic success, confirming its potential for adverse mental health outcomes among students. Evidently, while grit is vital for academic success, the potential for undesired outcomes among students should not be overlooked.

Furthermore, grit measurement has been burdened with challenging methodological questions, especially concerning cultural appropriateness. Abu Hasan et al. (2020) reviewed existing measures of grit, revealing that psychometric properties vary in different cultural contexts. The critique is further supported by Kannangara et al. (2018), who note that the effects of grit may be exaggerated, particularly among university students, where motivation and support systems also deserve foregrounding. Because grit has been observed to resonate with individualistic pursuits in Western cultures, researchers have also been investigating what grit-related scales would look like in collective contexts rather than focusing on individual students. In contemporary times, the specificity of grit in its application to the characteristics and profiles of Gen-Z is essential to empirically explore further for results that would entrench the value of grit within the mindset of this current generation. Critical appraisals

related to the construct of grit and its operationalization have also been raised. For instance, some scholars have argued that the Grit Scale might be conceived as overlapping with other already established constructs, such as conscientiousness, hence giving rise to debates related to its distinctiveness, as argued by Li (2015). Additionally, grit is not likely to function as a prime predictor across all contexts since not all achievements are solely best determined by perseverance and passion.

Limitations of Grit as a Construct

While grit has proven to be a good predictor of success across several domains, the construct faces several limitations that must be taken seriously. According to critics, grit, which primarily taps into two dimensions: perseverance and passion for long-term goals, shares considerable similarity with other personality traits, such as conscientiousness, compromising the Grit Scale's distinctiveness, says Li (2015). The resulting overlap has raised questions about whether grit represents an independent construct or old wine in a new bottle. Secondly, grit may not be an equally good predictor of outcomes across various contexts since the value of perseverance can vary significantly depending on other environmental factors, namely task relevance and situational constraints (Li, 2015). Sometimes, this form of persistence can be counterproductive and foster inefficiencies or burnout when an individual prioritizes pursuing unattainable goals despite negative feedback. Further, research findings suggest that grit is an overly individualistic concept that ignores the presence of structural and systemic moderators of success, such as socioeconomic barriers, educational opportunities, and organizational support (Chisholm-Burns et al., 2021). Evidently, while grit conveys a valuable understanding of persistence by the individual, understanding its whole meaning in terms of success requires considering the complex interaction of grit and forces outside personal control.

Future Directions for Grit Research

To address the limitations, future research should focus on refining the measurement of grit by examining its applications in diverse and nuanced contexts, and to consider Gen-Z contextual factors while also anticipating the future Gen-alpha that will follow Gen-Z. The development of the existing scales in capturing additional dimensions, such as adaptability or reflective persistence, helps differentiate grit from related traits and expands the view of how perseverance contributes to long-term success. Longitudinal studies and experiments could also explore how grit-enhancing interventions, such as resilience training and goal-setting workshops, influence whether grit can be systematically cultivated and sustained over time (Duckworth & Quinn, 2009). Equally important is how grit fairs when socio-environmental factors, like resource access and support networks, are foregrounded in a larger social framework. Research might focus on how grit manifests across different cultural and socioeconomic backgrounds, considering that what constitutes perseverance significantly differs between individualistic and collectivistic societies (Chisholm-Burns, 2021). Thus, such future research will target the mentioned areas to ensure that further development of the construct of grit is well-rounded and comprehensively extends its value as a predictor of success in various fields. Moving forward, there is a need to broaden the scope of study, when interrogating grit, to better appreciate its broad ramifications in professional and personal domains.

Datu (2021) insists that research into grit in education should be fine-tuned by studying passion and perseverance variables across age, culture, and field of study for a broader understanding of the relevance and applicability of grit within different educational systems. Similarly, Fernández et al. (2020) recommend exploring grit as an outcome and a predictor of success within diverse and multicultural educational settings. Therefore, focusing on specific contexts in terms of culture and propensity for individualism provides an ideal opportunity for enhancing knowledge of the relevance of grit in educational contexts for the benefit of students, the education system, and society as a whole.

Conclusion

In summary, grit represents a promising area of study that is applicable to the Gen-Z generation and the Gen-alpha generation that will follow in that it emphasizes the role of perseverance and passion in achieving long-term goals. However, human factors pertaining to learner-centered educators require consideration in underscoring the human connection particularly within the context of the digital education ecosystems. While the literature indicates that grit significantly promotes perseverance and academic achievement, it must be understood with contextual sensitivity. Supported by a growing body of research, grit distinguishes itself from cognitive factors, contributing uniquely to various success outcomes. Grit may improve educational outcomes because students become more resilient, determined, and focused. However, it also points out the need to balance approaches with concern for students' well-being. Future research would need to be more concerned with developing measures of grit and its interaction with other psychological factors to understand grit's place in education comprehensively, and to have empirical findings endorsed, possibly by triangulation with qualitative research methods such as focus groups or the World Café method. It should also continue to refine the measurement of grit, address limitations, and clarify its applications across diverse fields. Overall, as new research findings emerge and understanding of the grit construct evolves, it will remain vital to ensure a holistic understanding of how its application fosters success in educational engagements.

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References

- Abu Hasan, H. E., Munawar, K., & Abdul Khaiyom, J. H. (2020). Psychometric properties of developed and transadapted grit measures across cultures: A systematic review. *Current Psychology*, 1-19.
<https://link.springer.com/article/10.1007/s12144-020-01137-w>
- Arlı, D., Tjiptono, F., Tkaczynski, A., & Bakpayev, M. (2021). Grit: The good, the bad, and the ugly. *Asia Pacific Journal of Marketing and Logistics*, 33(5), 1270-1285. <https://www.emerald.com/insight/1355-5855.htm>
https://www.researchgate.net/profile/Denni-Arli/publication/347306697_Grit_the_good_the_bad_and_the_ugly/links/5fea031692851c13fecfacdc/Grit-the-good-the-bad-and-the-ugly.pdf
- Calo, M., Judd, B., & Peiris, C. (2024). Grit, resilience and growth-mindset interventions in health professional students: A systematic review and meta-analysis. *Medical Education*, 58 (8), 902-919.
<https://asmepublications.onlinelibrary.wiley.com/doi/pdfdirect/10.1111/medu.15391>
- Chisholm-Burns, M. A., Berg-Poppe, P., Spivey, C. A., Karges-Brown, J., & Pithan, A. (2021). Systematic review of noncognitive factors influence on health professions students' academic performance. *Advances in Health Sciences Education*, 1-73.
<https://link.springer.com/article/10.1007/s10459-021-10042-1>
- Christopoulou, M., Lakioti, A., Pezirkianidis, C., Karakasidou, E., & Stalikas, A. (2018). The role of grit in education: A systematic review. *Psychology*, 9(15), 2951-2971. <https://doi.org/10.4236/psych.2018.915171>
<https://link.springer.com/article/10.1007/s10459-021-10042-1>
- Credé, M. (2018). What shall we do about grit? A critical review of what we know and what we do not know. *Educational Researcher*, 47(9), 606–611. https://lib.dr.iastate.edu/psychology_pubs/52
<https://www.academia.edu/download/85004759/8c59fc36f7b4062d499fc8c33bd743c8b29b.pdf>
- Datu, J. A. D. (2021). Beyond passion and perseverance: Review and future research initiatives on the science of grit. *Frontiers in Psychology*, 11, 545526.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7873055/>
<https://www.frontiersin.org/articles/10.3389/fpsyg.2020.545526/pdf>
- Direito, I., Chance, S., & Malik, M. (2021). The study of grit in engineering education research: A systematic literature review. *European Journal of Engineering Education*, 46(2), 161-185.
<https://www.tandfonline.com/doi/pdf/10.1080/03043797.2019.1688256>
https://pure.port.ac.uk/ws/files/17966106/The_study_of_grit_in_engineering_education_research_a_systematic_literature_review.pdf
- Duckworth, A. (2017). Grit: Why passion and resilience are the secrets to success. Vermilion.
<https://psycnet.apa.org/record/2016-30309-000>
<https://www.biblio.com/book/grit-l/d/1613234034>
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(6), 1087.
<https://psycnet.apa.org/record/2007-07951-009>
<https://pubmed.ncbi.nlm.nih.gov/17547490/>
- Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the Short Grit Scale (GRIT-S). *Journal of Personality Assessment*, 91(2), 166-174. <https://doi.org/10.1080/00223890802634290>,
<https://doi.org/10.1080/00223890802634290>
<https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=1e3934dcd6122459e8c850c2d826aac40d2125f>
- Duckworth, A. L., & Eskreis-Winkler, L. (2013). True grit. *Aps Observer*, 26.
https://www.psychologicalscience.org/observer/true-grit?utm_source=socialmedia&utm_medium=sociallinks&utm_campaign=twitter
<https://sites.millersville.edu/mdupain/psychology/goalsoc.pdf>

- Duckworth, A., & Gross, J. J. (2014). Self-control and grit: Related but separable determinants of success. *Current Directions in Psychological Science*, 23(5), 319-325.
<https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=8e237d68888e36cdb8d0c0047ec4f3c7f85e56c5>
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4737958/?source=post_page-----
- Fernández Martín, F. D., Arco Tirado, J. L., & Hervás Torres, M. (2020). Grit as a predictor and outcome of educational, professional, and personal success: A systematic review. *Psicología Educativa*, 26(2), 163-173.
https://digibug.ugr.es/bitstream/handle/10481/62435/1135_755X_psed_26_2_0163.pdf?sequence=1
<https://www.redalyc.org/journal/6137/613765725009/613765725009.pdf>
- Kannangara, C. S., Allen, R. E., Waugh, G., Nahar, N., Khan, S. Z. N., Rogerson, S., & Carson, J. (2018). All that glitters is not grit: Three grit studies in university students. *Frontiers in Psychology*, p. 9, 1539.
<https://www.frontiersin.org/articles/10.3389/fpsyg.2018.01539/pdf>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6123604/>
- Lee, D. H., Reasoner, K., & Lee, D. (2023). Grit: What is it, and why does it matter in medicine? *Postgraduate Medical Journal*, 99(1172), 535-541.
<https://doi.org/10.1136/postgradmedj-2021-140806>
<https://academic.oup.com/pmj/article-abstract/99/1172/535/7198349>
- Li, C. (2015). The short grit scale: A dimensionality analysis. Master of Science in Education Thesis, University of Kentucky.
https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1035&context=edp_etds
https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1035&context=edp_etds&httpsredir=1&referer=
- Morell, M., Yang, J. S., Gladstone, J. R., Turci Faust, L., Ponnock, A. R., Lim, H. J., & Wigfield, A. (2021). Grit: The long and short of it. *Journal of Educational Psychology*, 113(5), 1038.
<https://psycnet.apa.org/manuscript/2020-62514-001.pdf>
<https://experts.illinois.edu/en/publications/grit-the-long-and-short-of-it>
- Munro, C. L., & Hope, A. A. (2019). Grit makes us unstoppable. *American Journal of Critical Care*, 28(5), 334-336.
<https://doi.org/10.4037/ajcc2019871>
<https://aacnjournals.org/ajconline/article-abstract/28/5/334/21972>
- Postigo, Á., Cuesta, M., García-Cueto, E., Menéndez-Aller, Á., González-Nuevo, C., & Muñiz, J. (2021). Grit assessment: Is one dimension enough? *Journal of Personality Assessment*, 103(6), 786-796. <https://doi.org/10.1080/00223891.2020.1848853>
https://digibuo.uniovi.es/dspace/bitstream/handle/10651/59019/Grit%20assessment_posprint.pdf?sequence=1
- Qiao, R. (2022). A theoretical analysis of approaches to enhance students' grit and academic engagement. *Frontiers in Psychology*, p. 13, 889509.
<https://www.frontiersin.org/articles/10.3389/fpsyg.2022.889509/pdf>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9289543/>
- Ris, E. W. (2015). Grit: A short history of a useful concept. *Journal of Educational Controversy*, 10(1), 3.
<https://cedar.www.edu/cgi/viewcontent.cgi?article=1246&context=jec>
<https://www.academia.edu/download/77650582/viewcontent.pdf>
- Schimschal, S. E., Visentin, D., Kornhaber, R., & Cleary, M. (2021). Grit: A concept analysis. *Issues in Mental Health Nursing*, 42(5), 495-505.
<https://www.tandfonline.com/doi/abs/10.1080/01612840.2020.1814913>
<https://pubmed.ncbi.nlm.nih.gov/32915678/>
- Schmidt, F. T., Fleckenstein, J., Retelsdorf, J., Eskreis-Winkler, L., & Möller, J. (2017). Measuring grit: A German validation and domain-specific approach to grit. *European Journal of Psychological Assessment*, 35(3), 436-447.
<https://econtent.hogrefe.com/doi/full/10.1027/1015-5759/a000407>
<https://psycnet.apa.org/fulltext/2017-28538-001.html>
- Stoffel, J. M., & Cain, J. (2018). Review of grit and resilience literature within health professions education. *American Journal of Pharmaceutical Education*, 82(2), 6150. <https://doi.org/10.5688/ajpe6150>
[https://www.ajpe.org/article/S0002-9459\(23\)01883-1/fulltext](https://www.ajpe.org/article/S0002-9459(23)01883-1/fulltext)
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5869747/>
- Van der Lingen, E., Chen, J. Y., Lourens, R., & Armstrong, A. (2018). Towards a new model of grit within a cognitive-affective framework of self-regulation. *South African Journal of Business Management*, 49(1), 1-8.
<https://www.econstor.eu/bitstream/10419/218670/1/sajbm-v49i1-0013.pdf>
<https://www.academia.edu/download/67222642/f99ff792a3a39463b4799778efabd6195733.pdf>