

Rasch model-based grit exploration in university of indonesia students: a descriptive study using the grit-o scale

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Keywords

College students, grit, grit-o, learning, rasch model

Abstract

This study aims to describe the level of grit of students in Indonesia and its technicality with their academic success. Grit, which consists of persistence and passion towards long-term goals, is an important factor in academic success. Using a quantitative descriptive approach, this study involved 461 students from various universities in Indonesia. Data were collected using the Grit-O Scale which measures two dimensions of grit, namely consistency and consistency of interest. The results of the analysis using the Rasch Model showed that most students had a moderate level of grit, with some students showing high or low levels. These findings illustrate the challenges faced by students in maintaining academic motivation and persistence. This study is expected to provide useful insights for the development of educational programs that support the improvement of students' grit, with the aim of improving their academic achievement and readiness to face global challenges in the future.

INTRODUCTION

Higher education plays a central role in shaping individuals who are prepared to face global challenges and rapid technological advancements. However, despite many students embarking on their academic journeys with high enthusiasm and great ambition, not all succeed in completing their studies. Additionally, the academic world often presents students with various challenges, such as completing assignments, practical work, and presentations. Some students even choose to change their majors due to difficulties in adapting to a learning system perceived as overly demanding. Research conducted by Johnson (Fahima & Akmal, 2018) revealed that 40% of the students studied had considered or decided to switch majors because they felt overwhelmed by the academic workload.

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One crucial factor that can influence students' academic success is grit, or perseverance. Grit is a non-cognitive factor that embodies steadfastness and passion for achieving long-term goals, even in the face of various difficulties (A. Duckworth, 2016; A. Duckworth & Gross, 2014). This concept extends beyond merely working hard on specific tasks; it also encompasses the willingness to persistently work toward larger goals over an extended period, despite encountering obstacles (Eskreis-Winkler et al., 2014). Therefore, grit plays a vital role in helping students maintain long-term motivation and overcome barriers that may arise throughout their academic journey (Alhadabi & Karpinski, 2020).

More specifically, academic grit can be defined as a skill set that includes perseverance, resilience, and focus in pursuing challenging long-term goals within the academic realm (Luthans et al., 2019). Students with high levels of grit are better equipped to tackle the challenges of higher education in a more optimistic manner, believing that their abilities can be enhanced through persistent effort (Wong et al., 2024). Research by Rosyadi and Laksmiwati (2018), as well as Andrian (2020), confirms that many of the issues faced by students in higher education are often due to their low levels of grit (Andrian, 2020).

Research on grit in Indonesia has been quite extensive, encompassing descriptive, correlational, and experimental studies. For instance, a study involving 51 nursing students at a private higher education institution in the Aru Islands found that 86.3% of the students had low levels of grit, while only 13.7% exhibited high grit (Izaache, 2017). Another study at a private higher education institution in Lampung, involving 62 psychology students, showed that the majority of students had moderate levels of grit (45.2%), followed by 27.4% with low grit, and only 16.1% with high grit (Septania & Ishar, n.d., 2018). At a private higher education institution in Bandung, research on 423 psychology students revealed different results, with 93.4% of students having high grit and only 6.6% having low grit (Vivekananda, 2017). Meanwhile, a study across public and private higher education institutions in Indonesia, involving 708 medical students, found that 44.4% had high grit, and 14.4% had very high grit (Salima et al., 2024). Another study at a private higher education institution in Purwokerto, involving 226 students, indicated that nearly half (48.5%) had moderate levels of grit (Rahayu et al., 2021).

According to Feldman (2017), measuring grit levels is of paramount importance in the academic context. Through such measurement, we can gain deep insights into the characteristics of perseverance and resilience that students exhibit when facing challenges (Schmidt et al., 2017). Grit reflects a combination of passion and perseverance in pursuing long-term goals, and it not only measures students' ability to endure obstacles but also illustrates how they overcome the barriers present in their learning process. By measuring grit, educators and educational practitioners can design more effective learning strategies that focus not only on academic abilities but also on adequate character development. This can help students continue to progress despite the various difficulties they encounter. Furthermore, such measurement provides information that can be used to design interventions supporting students' overall academic and personal development.

Based on the above discussion, there is a need for more in-depth research on the levels of grit among students, encompassing a wider variety of study programs, a larger number of respondents, and broader geographical coverage, involving various types of higher education institutions, both public and private, to enrich the understanding of grit among students in Indonesia. This research is expected to make a significant contribution to developing a more comprehensive understanding of the grit factor among Indonesian students.

This study is important to provide new insights into how grit can be strengthened within the context of higher education in Indonesia to support students' academic success. The research will also contribute to designing various interventions aimed at enhancing students' perseverance and motivation, which can ultimately improve their academic outcomes. Thus, grit is not only a relevant concept in academic achievement but also plays a role in developing students' character, preparing them to face future global challenges.

METHODS

Research Design

This study employs a quantitative descriptive research approach, which aims to systematically depict phenomena, facts, or events related to the characteristics of a specific population or area (Klasik & Zahran, 2022). The primary objective is to elucidate the condition of Grit among university students in Indonesia. Descriptive research focuses on mapping and describing the characteristics or phenomena under investigation without manipulating existing conditions, making it well-suited to the study's goal of assessing the level of Grit among students (McKenney & Reeves, 2018).

Data Collection Instrument

The instrument used in this study is the Grit-O Scale, which measures the level of Grit through four response options (ranging from 1 to 4) and is adapted from the Grit theory developed by Angela Duckworth. The scale assesses two primary dimensions of Grit: perseverance of effort and consistency of interest, both of which have been established as significant predictors of academic success and long-term achievement (A. L. Duckworth et al., 2021; Lam & Zhou, 2022). The instrument's quality analysis revealed a reliability score of 0.99, a raw experience value of 37.8% (exceeding the 20% threshold), and a Cronbach's Alpha (KR-20) of 0.89. The Grit-O Scale was adapted to ensure cultural relevance within the Indonesian context, with construct validity and reliability tested using Cronbach's Alpha. Recent studies affirm the continued relevance and reliability of the Grit-O Scale across various educational contexts, including among university students (Apsley et al., 2023; Credé et al., 2017). The instrument also provides insights into factors influencing Grit and its relationship with academic achievement in higher education (Lam & Zhou, 2019). A table accompanying this study provides further details on the items within the Grit-O Scale and the interpretation of the obtained scores.

Table 2 <Grit-O Scale>

Aspect	No	Items
Consistency of interests	1	I am capable of overcoming setbacks to address significant challenges.
	2	New ideas and projects occasionally divert my attention from previous ones.
	3	My interests tend to change from year to year.
	4	Failure does not discourage me.
	5	I have been intensely preoccupied with a specific idea or project for a short period but subsequently lost interest.
	6	I am a diligent worker.
Perseverance of effort	7	I frequently set goals but later choose to pursue different ones.
	8	I experience difficulty sustaining focus on projects that require more than a few months to complete.
	9	I complete all tasks that I begin.
	10	I have achieved goals that required multiple years to accomplish.
	11	I am inclined to engage in new activities every few months.
	12	I am a diligent student.

Research Participants

The study involved 461 university students representing higher education institutions across Indonesia, divided into three main regions: western, central, and eastern. The sample comprised 124 male and 337 female students, enabling comparisons of Grit levels between genders. A stratified sampling method was used to reflect the diversity of students across different regions of Indonesia, as social and cultural factors may influence the development of Grit (Abu Hasan et al., 2020).

Data Analysis

This study utilized the Person Dimensional approach within the Rasch Model for data analysis. The Rasch Model was selected for its ability to measure the underlying dimensions of each item in the instrument while simultaneously providing accurate estimates of individual ability and item difficulty. This model enables comprehensive validation of the scale and addresses measurement issues related to latent variables, such as Grit (Bond & Fox, 2013). Additionally, the Rasch Model facilitates detailed analysis of item responses, including item difficulty levels and respondent abilities, which is critical for understanding how students respond to various aspects of Grit in the context of higher education. Alhadabi (2023) confirms that the Rasch Model is effective for evaluating item fit and dimensional structure in the Grit scale, enhancing data interpretation through unidimensionality and reliability analyses (Alhadabi, 2023). Thus, the application of the Rasch Model in this study is expected to yield a deeper and more accurate understanding of the Grit levels among university students in Indonesia.

RESULTS AND DISCUSSIONS

Result

The analysis of the Grit-O Scale using the Rasch Model yielded diverse insights into the condition of Grit among university students. The results are presented in the table below.

Table 2 <Predicted Score Grit-O Scale>

Category Matrix : Confusion Matrix : Matching Matrix						
Predicted Scored-Category Frequency						
Obs	Cat	Freq	1	2	3	4 Total
	1		214.94	277.91	194.61	54.53 742.00
	2		307.17	541.81	495.92	168.09 1513.00
	3		169.52	499.10	830.95	518.43 2018.00
	4		51.74	193.73	494.88	518.65 1259.00
	Total		743.38	1512.55	2016.37	1259.71 5532.00

Remark: 1 (Inappropriate); 2 (Moderately Appropriate); 3 (Appropriate); 4 (Very Appropriate)

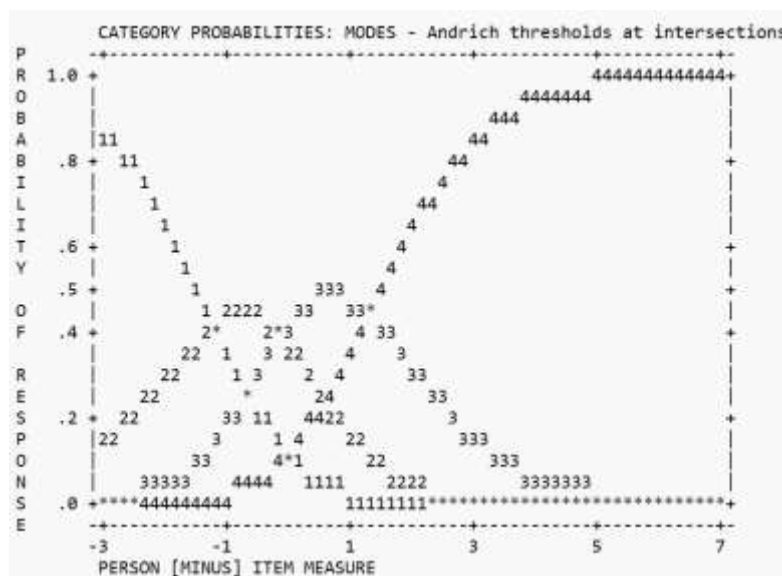


Figure 1 <Grit-O Scale Responses>

Table 2 showed the data analysis, conducted using the Rasch Model and summarized in the Category Matrix, indicates that the overall Grit level among students falls within the moderate category, with a total score of 2016.37. This score reflects the students' level of perseverance and consistency in their learning activities. The table illustrates the predicted frequency distribution for each category, with Category 1 having a predicted frequency of 214.94, Category 2 at 277.91, Category 3 at 194.61, and Category 4 at 54.53. Although Category 2 exhibits the highest predicted frequency (277.91), suggesting a relatively higher level of Grit, the majority of students are situated in Categories 3 and 4. This indicates that many students have yet to achieve an optimal level of perseverance in their learning endeavors. Overall, these data highlight the challenges students face in maintaining consistency and motivation in their academic pursuits. Further details can be found in the figure 1.

The Figure 1 presents the Category Probability Plot, which illustrates the probability of student responses across each category of the Grit-O Scale. This plot reveals how students respond to varying levels of agreement with the tested items. The results indicate that the majority of students provided responses in Category 3 (agree) and Category 4 (strongly agree), suggesting that most students perceive themselves as possessing a moderately to highly developed level of Grit in their learning processes.

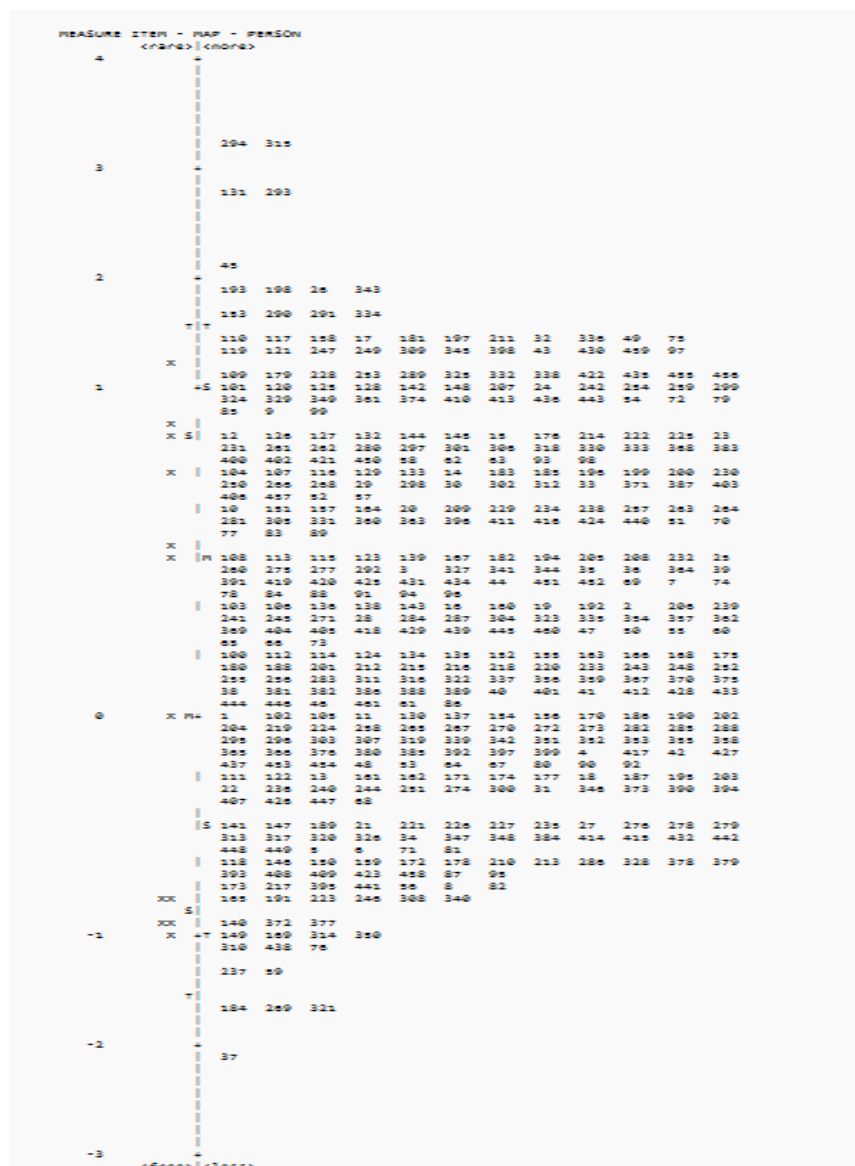


Figure 2 <Person Wright Map>

The distribution of categories shows a peak at Categories 3 and 4, indicating that the majority of students selected responses reflecting a considerable degree of perseverance and passion for achieving their academic goals. This is further evidenced by the high probability observed in these categories, which suggests that most students view themselves as having moderate to high levels of Grit.

However, despite the dominance of Categories 3 and 4, the distribution also provides important insights into the presence of lower responses in Categories 1 and 2. This indicates that a small subset of students perceives themselves as having lower levels of perseverance and passion, even though they are still capable of selecting these response options. Thus, while the majority of students demonstrate relatively high levels of Grit, it is critical to identify those who may require additional support to enhance their Grit in academic contexts. Further details regarding the students' conditions are presented in the figure 2.

Figure 2 maps the position of each respondent based on the Grit-O Scale, which measures the consistency of interest and perseverance of students in the context of learning. The distribution of respondent positions reveals a range of Grit levels, from low to high. The data indicate that the majority of respondents fall within the moderate category. Notably, two respondents, coded 294 and 315, stand out for their high levels of consistency of interest and perseverance, demonstrating a strong commitment to completing their studies with enthusiasm and motivation.

Conversely, a respondent coded 37 falls within the low category, indicating a lack of perseverance and consistency of interest in completing academic tasks or challenges. This suggests that this individual may struggle to maintain motivation and passion for learning over the long term. These findings underscore the importance of recognizing that, while most students exhibit satisfactory levels of perseverance and consistency of interest, some individuals may require additional support to develop their Grit. Such support could include more engaging learning strategies or programs designed to foster greater perseverance and interest in academic pursuits.

Discussions

Grit plays a pivotal role in determining the academic success of university students, particularly in overcoming challenges and obstacles encountered during their studies. Students with high levels of Grit tend to exhibit an optimistic mindset when facing challenges and pressures, believing that their abilities can be enhanced through persistent effort (Pratiwi et al., 2023). Such students are less likely to give up and demonstrate greater resilience in the face of failure, which often contributes to their success in achieving academic goals. Conversely, students with low levels of Grit frequently display a lack of motivation for learning, tend to surrender when confronted with academic obstacles, and are more likely to have lower cumulative grade point averages (GPAs), which may contribute to higher dropout rates. Research by Sulaeman (2023) and Jehanghir and Akbar (2022) further reveals that low levels of Grit among students can be a primary cause of various challenges encountered during their academic journey (Jehanghir & Akbar, 2022; Sulaeman, 2023).

The data analysis using the Rasch Model on the Grit-O Scale indicates that the majority of university students in Indonesia possess moderate levels of perseverance and determination in addressing academic challenges. With a total score of 2016.37, most students fall within the moderate category, suggesting that while they demonstrate perseverance in pursuing academic goals, their Grit levels have not yet reached an optimal threshold. According to Duckworth et al. (2019), Grit—comprising perseverance and passion for long-term goals—is a critical factor in academic success. Although the majority of students exhibit moderate to high levels of perseverance, a small subset falls into lower categories, indicating challenges in sustaining long-term motivation. Further research by Credé et al. (2017) suggests that while Grit is positively correlated with academic achievement, its impact varies across individuals and contexts, including in the context of higher education in Indonesia.

The predicted frequency distribution in the table shows that Category 2 (somewhat agree) has the highest frequency (277.91), reflecting that most students perceive themselves as having a reasonably good level of Grit, though not yet at a very high level of perseverance. While some students fall into Categories 3 and 4, indicating higher levels of Grit, the majority remain in the moderate category. This suggests that many students have not fully realized their potential in terms of perseverance in learning, which may impact their academic achievements. As Dweck (2006) notes, mindset and Grit are crucial in addressing academic challenges, particularly in higher education, where students are required to remain resilient despite significant obstacles (Martoyo & Lindawati, 2023). Research by Moten and Ko (2020) also highlights the importance of developing Grit in students to prepare them for the challenges of higher education, where maintaining motivation and passion over the long term can be difficult (Li & Li, 2021).

Further analysis of the Category Probability Plot reveals that the majority of students provided responses in Category 3 (agree) and Category 4 (strongly agree), indicating that they perceive themselves as having a considerable or high level of Grit in their learning processes. This aligns with findings by Duckworth et al. (2019), which suggest that students with high Grit are more likely to achieve long-term success due to their resilience in the face of failure and adversity. However, the distribution also shows a smaller proportion of responses in Categories 1 and 2, indicating a subset of students who lack perseverance and passion in their academic endeavors. Consequently, it is essential to provide targeted support to students with low Grit to ensure they receive appropriate interventions to enhance their perseverance and motivation. Research by Jachimowicz et al. (2018) supports this, demonstrating that Grit can be strengthened through appropriate interventions, such as developing time management skills and fostering motivation (Jachimowicz et al., 2018).

The mapping of respondent positions using the Person Wright Map reveals clear variations in students' Grit levels. While most students fall within the moderate category, two respondents stand out for their exceptionally high levels of Grit, indicating a strong commitment to completing their studies with enthusiasm. In contrast, some respondents fall into the low category, reflecting a lack of perseverance and passion in learning. This underscores the importance of identifying students with low perseverance and providing them with targeted interventions, such as mental coaching and more effective motivational programs (Tang et al., 2021). Consistent with research by Lase (2024), supporting students with low Grit is critical for improving their academic performance, particularly in addressing long-term challenges (Lase & Wibowo, 2024). Additionally, Luthans et al. (2015) suggest that social support and the development of emotional skills can enhance students' Grit, thereby increasing their motivation and academic success (Lase & Wibowo, 2024).

The findings of this study indicate that while some students exhibit high levels of Grit, the majority fall into the moderate to low categories, highlighting challenges in developing their perseverance and motivation. Therefore, it is imperative for educators and policymakers to design programs that support the development of Grit among students, particularly those struggling to maintain motivation and overcome academic challenges.

Various studies in Indonesia on Grit reveal significant variations in Grit levels among students across different higher education institutions. A descriptive study by Izaach (2017) involving 51 nursing students at a private university in the Aru Islands found that 86.3% of students had low levels of Grit, while only 13.7% exhibited high Grit. A similar study by Septania et al. (2018) involving 62 psychology students at a private university in Lampung reported that 6.5% had very low Grit, 27.4% low, 45.2% moderate, 16.1% high, and 4.8% very high. In contrast, a study by Vivekananda (2018) involving 423 psychology students at a private university in Bandung found that 93.4% had high Grit, with only 6.6% exhibiting low Grit. Meanwhile, research by Salima et al. (2024) involving 708 medical students at both private and public universities in Indonesia revealed that 44.4% had high Grit, 33.6% moderate, and only 0.3% very low (Salima et al., 2024). A study by Rahayu et al. (2021) involving 226 students at a private university in

Purwokerto found that 48.5% had moderate Grit, 26.3% low, and 16.9% high (Rahayu et al., 2021). These findings highlight significant variations in Grit levels among students, with the majority falling into moderate to low categories, particularly among students at private universities in fields such as medicine, nursing, and psychology.

Overall, while most students demonstrate a reasonably good level of Grit, a subset requires targeted attention to enhance their perseverance and passion for learning. A more holistic approach to teaching and character development, along with programs focused on fostering perseverance and passion, can help address these challenges. Furthermore, additional research on Grit and the implementation of programs to support its development are crucial for improving the quality of education in Indonesia, as exemplified by Woodward et al. (2024), who emphasize the importance of fostering Grit to address challenges in higher education (Woodward et al., 2024).

CONCLUSIONS

The analysis conducted using the Rasch Model on the Grit-O Scale reveals that the majority of university students in Indonesia fall within the moderate Grit category. While many students exhibit a reasonably good level of perseverance, most have not yet attained an optimal level of Grit. This reflects the challenges students face in sustaining motivation and consistency in their academic endeavors. Students with high levels of Grit tend to demonstrate an optimistic mindset and a belief that their abilities can be enhanced through sustained effort, which enables them to overcome academic obstacles effectively. In contrast, students with low Grit often lack motivation and are more prone to giving up when faced with challenges, which adversely affects their academic performance. Overall, although the majority of students display a satisfactory level of Grit, many remain in the moderate to low categories. This highlights the need for greater attention to fostering their perseverance and passion for achieving academic goals. Consequently, it is imperative for educators to design programs that support the development of Grit, with an emphasis on character building, motivation, and the cultivation of social skills among students. Moving forward, further research is necessary to identify effective strategies for enhancing Grit, enabling students to confront academic challenges with greater resilience and commitment to their long-term objectives.

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AUTHOR CONTRIBUTION STATEMENT

The authors of this study contributed in the following ways: S.A. conceptualized the research, led the analysis using the Rasch Model, and contributed to the writing of the manuscript. K.B. assisted with data collection and provided critical feedback on the manuscript. I. conducted the Rasch analysis, supported data interpretation, and reviewed the manuscript. L.T.S. offered interpretations of the analysis results, highlighted practical implications of the findings, and reviewed the manuscript for clarity and coherence. S. contributed to data tabulation, prepared data for analysis, and provided feedback on the

manuscript's structure. R.D.A. contributed to the interpretation of findings and offered valuable suggestions during the writing process. A.Y.A.B. contributed to discussions on the significance of grit among students and its urgency, and reviewed the English-language journal manuscript.

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.
- Alhadabi, A. (2023). Psychometric properties of Grit-S scale in university students: An application of the graded response model. *Cogent Education*, 10(1), 2162699.
- Alhadabi, A., & Karpinski, A. (2020). Grit, self-efficacy, achievement orientation goals, and academic performance in University students. *International Journal of Adolescence and Youth*, 25, 519–535. <https://doi.org/10.1080/02673843.2019.1679202>
- Andrian, R. (2020). Grit World Strategy to Evolve the Academic Grits of Senior High School Students. *International Conference on Educational Psychology and Pedagogy-" Diversity in Education"(ICEPP 2019)*, 198–201.
- Apsley, H. B., Knapp, K. S., Eng, S., & Cleveland, H. H. (2023). Validation and Psychometric Properties of the Original Grit Scale (Grit-O) Among Cambodian Adolescents. *Journal of Psychoeducational Assessment*, 41(8), 900–915.
- Bond, T. G., & Fox, C. M. (2013). *Applying the Rasch model: Fundamental measurement in the human sciences*. Psychology Press.
- Credé, M., Tynan, M. C., & Harms, P. D. (2017). Much ado about grit: A meta-analytic synthesis of the grit literature. *Journal of Personality and Social Psychology*, 113(3), 492.
- Duckworth, A. (2016). *Grit: The power of passion and perseverance* (Vol. 234). Scribner New York, NY.
- 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.
- Duckworth, A. L., Quinn, P. D., & Tsukayama, E. (2021). Revisiting the factor structure of grit: A commentary on Duckworth and Quinn (2009). *Journal of Personality Assessment*, 103(5), 573–575.
- Eskreis-Winkler, L., Shulman, E. P., Beal, S. A., & Duckworth, A. L. (2014). The grit effect: Predicting retention in the military, the workplace, school and marriage. *Frontiers in Psychology*, 5, 36.
- Izaach, R. N. (2017). Gambaran Derajat Grit Pada Mahasiswa Akademi Keperawatan di Kabupaten Kepulauan Aru. *Humanitas (Jurnal Psikologi)*, 1(1).
- Jachimowicz, J. M., Wihler, A., Bailey, E. R., & Galinsky, A. D. (2018). Why grit requires perseverance and passion to positively predict performance. *Proceedings of the National Academy of Sciences*, 115(40), 9980–9985.
- Jehanghir, M., & Akbar, R. A. (2022). GRIT: A Non-Cognitive Attribute of University Students. *Journal of Development and Social Sciences*, 3(4), 391–405.
- Klasik, D., & Zahran, W. (2022). The Art of Sophisticated Quantitative Description in Higher Education Research. *Higher Education: Handbook of Theory and Research*. https://doi.org/10.1007/978-3-030-66959-1_12-1
- Lam, K. K. L., & Zhou, M. (2019). Examining the relationship between grit and academic achievement within K-12 and higher education: A systematic review. *Psychology in the Schools*, 56(10), 1654–1686.
- Lam, K. K. L., & Zhou, M. (2022). Grit and academic achievement: A comparative cross-cultural meta-analysis. *Journal of Educational Psychology*, 114(3), 597.
- Lase, P. D. J., & Wibowo, D. H. (2024). The Power of Peers: Understanding the Link Between Social Support and Grit Among Working Students. *Jurnal Bimbingan Dan Konseling Terapan*. <https://doi.org/10.30598/jbkt.v8i1.1890>

- Li, J., & Li, Y. (2021). The role of grit on students' academic success in experiential learning context. *Frontiers in Psychology*, 12, 774149.
- Luthans, K. W., Luthans, B. C., & Chaffin, T. D. (2019). Refining grit in academic performance: The mediational role of psychological capital. *Journal of Management Education*, 43(1), 35–61.
- Martoyo, I., & Lindawati, L. (2023). Grit, Student Academic Achievement and Factors Affecting It. *Jurnal Psikologi Teori Dan Terapan*, 14(03), 262–269.
- McKenney, S., & Reeves, T. (2018). *Conducting educational design research*. Routledge.
- Pratiwi, M., Iswari, R. D., Nesvita, M. D., & Khairiyah, U. S. (2023). Growth Mindset and Grit: Examining the Academic Buoyancy of College Students Implementing Online Lectures. *Jurnal Sains Psikologi*. <https://doi.org/10.17977/um023v12i12023p70-80>
- Rahayu, E., Herdian, H., & Wahidah, F. R. (2021). Students' Grit in University "X" in Purwokerto. *Proceedings Series on Social Sciences & Humanities*, 2, 65–68.
- Rosyadi, A. K., & Laksmiwati, H. (2018). Hubungan antara grit dengan subjective well-being pada mahasiswa psikologi Universitas Negeri Surabaya angkatan 2017. *Character Jurnal Penelitian Psikologi*, 5(2).
- Salima, A. M., Purwanti, M., & Aisyah, A. R. K. (2024). GAMBARAN GRIT PADA MAHASISWA PENDIDIKAN PROFESI DOKTER PERGURUAN TINGGI NEGERI (PTN) DAN PERGURUAN TINGGI SWASTA DI INDONESIA. *MANASA*, 13(1), 1–24.
- Schmidt, F. T. C., Fleckenstein, J., Retelsdorf, J., Eskreis-Winkler, L., & Möller, J. (2017). Measuring grit. *European Journal of Psychological Assessment*.
- Septania, S., & Ishar, M. (n.d.). Sulastri.(2018). Pengaruh Grit terhadap Prokrastinasi Akademik Mahasiswa Fakultas Psikologi Universitas Muhammadiyah Lampung. *Prosiding Seminar Nasional Psikologi Universitas Muhammadiyah Lampung*, 1(1).
- Sulaeman, B. (2023). An Overview Grit Implementation among Psychology Students at Private Universities. *Proceedings of International Conference on Psychological Studies (ICPsyche)*. <https://doi.org/10.58959/icpsyche.v4i1.22>
- Tang, X., Wang, M.-T., Parada, F., & Salmela-Aro, K. (2021). Putting the goal back into grit: Academic goal commitment, grit, and academic achievement. *Journal of Youth and Adolescence*, 50, 470–484.
- Vivekananda, N. L. A. (2017). Studi deskriptif mengenai grit pada mahasiswa fakultas psikologi universitas kristen maranatha bandung. *Humanitas (Jurnal Psikologi)*, 1(3), 183–196.
- Wong, R. S.-Y., Teh, C. P. W., De Mel, W. P. A., Kil, Y.-E., Ting, M. K.-H., & Osman, M. K. M. (2024). Grit and Optimism Predict Academic Performance Among Medical and Health Sciences Students at a Malaysian University: A Cross-sectional Study. *Education in Medicine Journal*. <https://doi.org/10.21315/eimj2024.16.3.12>
- Woodward, L., Patrick, S., & Rapport, L. (2024). Grit and Graduation: Exploring Persistence Among Urban University Students. *Journal of College Student Retention: Research, Theory & Practice*. <https://doi.org/10.1177/15210251241240742>