

Analysis of adolescents' grit based on gender

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Abstract

One of the driving forces for each individual in achieving success is grit. Grit is needed by every individual as their provision in facing every challenge and obstacle to achieving long-term goals. If individuals have high grit, it will be easier to face challenges in achieving success. This study aims to determine the grit score based on gender differences. The method used in this study was quantitative, and the research design used is a survey. The respondents in this study were 504 high school students in Bangka Belitung Province. The data in this study was collected by using Duckworth's grit scale during the odd semester of 2021/2022 academic year. Instrument's validity and reliability was tested by using Rasch model analysis. The data in this study was processed using the SPSS version 22 application. Based on the results of the Mann Whitney U test with α : 0.05, the researcher found that the significance of the test was at 0.00, so it can be said that the statistical hypothesis was rejected, and the research hypothesis was accepted. It can be concluded that there is an average difference between male students' grit and female students' grit. The results of the study have implications for guidance and counseling practitioners as well as policymakers about the importance of strengthening grit in the context of education to maintain character and increase student potential.

Keywords: adolescent's grit, gender difference, Rasch model

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INTRODUCTION

One of the drivers for each individual in achieving his success is grit. Grit is needed by every individual in facing every challenge they encounter in their daily life. In the concept of grit, perseverance and tenacity are more important when compared to an inborn talent. This is also expressed by Perkins-gough & Duckworth (2013) who also say that the deep thought that persistence is a better thing than innate talent is the actual concept of grit. This is because persistence will help each student in facing every challenge they face in their lives.

In the life of each individual, there are various tasks undertaken by the individual, and success can be obtained. This was also expressed by Santrock (2017) who said that various problems and challenges will always be faced by an individual to achieve success in the future. Furthermore, Elliot & Thrash (2001) said that the grit of an individual will greatly affect the individual's academic achievement.

Although some people say that grit does not always determine one's success in the future, in reality, grit has a significant influence on one's success. This is as with a descriptive study conducted by Rosalina (2016) dan (Andrian & Ilfiandra, 2020) who conducted research in Purwakarta secondary schools. Based on the results of his research, it was found that student participants who had high grit also had good academic achievements. This fact can be one of the pieces of evidence that non-cognitive factors also have a significant influence on the success and success of an individual.

These findings indicate to us that the level of success of an individual is not only determined by the individual's cognition but is also determined by the individual's grit. In the end, individuals who have strong perseverance and persistence will achieve the goals they want to get in a

relatively short time (Christopoulou et al., 2018; Angela Lee Duckworth & Quinn, 2009). Therefore, it can be understood that grit has a big role in determining the success of an individual.

The description above confirms that grit study as part of student competence (personal, social, academic, and career) is one of the important things to do. This is because grit is closely related as an inseparable part of future student success. Findings about grit can be a basis for consideration for professionals and policy makers in making decisions or policies in order to increase the potential of students and maintain the character of students in the context of education.

Grit

Grit is one thing that will help an individual in achieving his goals despite facing various challenges. In line with this statement, Duckworth et al. (2007) said that grit is the ability of an individual to maintain his persistence and interest in achieving his goals despite facing various challenges and obstacles in his life. Furthermore, Alamer (2021) said that grit is a form of the character of an individual who shows perseverance in achieving goals in life despite having to face various difficulties. Grit refers more to the stability of an individual to think and act in the end individuals who have high grit will not easily give up achieving their goals even though the individual faces various challenges and obstacles that feel difficult and almost impossible to achieve (Yudiar et al., 2021). The high degree of grit possessed by an individual will be able to make him achieve his life goals.

It is also said that grit is a combination of various attitudes shown by an individual in achieving his goals. Sudina et al. (2021) said that grit is a combination of various attitudes of an individual such as focus, enthusiasm, determination, resilience, and others that allow individuals to maintain their optimism in achieving goals despite facing various challenges over the years. Furthermore, Clark et al. (2020) said that grit is formed from a tenacious attitude, reasoning power, determination, and others that will forge an individual to continue trying to achieve his goals even though he gets bad results.

Meanwhile, Clark & Malecki (2019) revealed that grit is a personal trait or skill consisting of determination, resilience, and focus to pursue long-term goals. When one individual can control the life of another individual, that is what is known as grit determination. While grit resilience is the ability of an individual to adapt quickly in overcoming various difficulties, traumas, or sources of stress. Lastly, focus in grit is the ability of an individual to focus on completing a given task despite being under pressure. Based on the explanation of grit above, we can conclude that grit is the unique ability of an individual to continue to do his best in trying to achieve his goals despite being under pressure and faced with various challenges and obstacles.

When we talk about grit, we will discuss the dimensions of grit which consist of two dimensions, i.e consistency of interest and perseverance of effort (Duckworth et al., 2007). Duckworth (2016) explained that grit is an individual's determination to achieve the life goals that the individual has set. As explained above, grit theory describes an individual's attitude which is divided into two dimensions, namely consistency of interest and perseverance of effort. Consistency of interest refers to the extent to which an individual remains focused on a sustainable basis on the long-term goals that the individual has set. Meanwhile, perseverance of effort relates to the extent to which an individual can face various challenges and difficulties while maintaining his efforts and determination to achieve his long-term goals (Datu et al., 2017).

There are three key elements identified from grit itself, namely (a) clarity of goals to be achieved by an individual; (b) the desire to continuously work hard to achieve the goal; (c) commitment and enthusiasm in achieving the goal. Clear goals emphasize directed goals, hard work that continuously shows "perseverance of effort" which is related to mental toughness to keep working under pressure, while commitment and enthusiasm in pursuing goals are about "consistency of interest" (Lam & Zhou, 2019).

Furthermore, consistency of interest and perseverance of effort have been found to significantly explain the unique differences in the learning process and performance (Hochanadel & Finamore, 2015). In research (Wolters & Hussain, 2015), it was found that perseverance of effort consistently demonstrated a range of independent learning indicators, including grades, self-efficacy, cognition, metacognition, time management strategies and learning environments, and procrastination, while the consistency of interest was only associated with a few indicators only. In addition, Sturman & Zappala-Piemme (2017) also found that the effect size of consistency of interest on students' Mathematics tests was higher than that of perseverance of effort. However, the students' perseverance of effort was higher on the English language and art tests compared to the consistency of interest. Therefore, the researcher will analyze this study by taking grit as a whole, both consistency of interest and perseverance of effort.

In an academic context, it is very much needed by students so that the goals they have set can be achieved. A student who has a high consistency of interest will not easily change his interest in order to achieve the goals that the student has set. The student will stay focused on the goals that have been set and tend to maintain these goals. High consistency of interest in a student will be shown by continuing his studies and focusing on continuing to stick to a predetermined goal in order to get satisfactory results. In addition, the student will not be influenced by various distractions and his mind will remain focused on the goals he has set.

Students who have the perseverance of effort will show their ability to carry out the given task until the task is completed. A student who has high perseverance of effort will always try to face every failure, challenge, and obstacle with a tenacious attitude, never give up, and do not give up to achieve his goals. In addition, students who have high perseverance of effort will always try to complete any given activity or task and will not give up on the challenges associated with the task. For students who have the perseverance of effort, they can study independently to prepare the material before the teacher explains the material and they will actively share references and literature to understand each material. In academic grit, 3 aspects affect students, namely enthusiasm in the learning process, quality of effort in learning, and the ability to deal with stress while studying (Bozgün & Akın-Kösterelioglu, 2021). Enthusiasm is related to the motivation that triggers students to be more active in learning. The quality of effort in learning is related to the focus of students on achieving learning goals and not giving up easily when faced with various difficulties. The ability to deal with stress is related to students' persistence when faced with learning difficulties and students' optimism in facing learning challenges.

RESEARCH METHOD

This research uses quantitative methods and the type of this research is survey research. We chose to use surveys because this research method is easier and safer to use in the Covid-19 pandemic situation. To get the students' grit level, the researcher used 10 statements that had to be answered by the respondents to collect data that could be used as the basis for the findings. The questions are shared through WhatsApp groups, Facebook, and others.

This study uses high school students (SMA/MA/SMK) as the population from various high schools in Bangka Belitung Province. Respondents in this study amounted to 504 students consisting of 244 men and 260 women. In this study, researchers used a questionnaire as a tool in collecting data. The questionnaire used in this research is based on Google Form which has gone through the examination stage by experts. In the Google Form, there are ten statements that the respondents must answer based on their beliefs and experiences which are used to measure the grit of the respondents.

The ten statements are as follows. (1) New ideas and activities divert my attention from the old ideas or activities. (2) Failure does not discourage me since I not easily give up. (3) I frequently formulate a purpose, but ended up chasing different purposes. (4) I am a hard worker. (5) I can barely focus on an activity that last in a longer period. (6) I always finish what I have

started. (7) My interest changes in every year. (8) I am a hard worker who have never given up. (9) I have been obsessed into an idea or activity for a moment, then that interest just goes away. (10) I have experienced a failure in resolving an important challenge. These ten statements must be answered by the respondents based on their experience and by level category. We can see the level category that the researcher is referring to in Table 1.

Table 1. The category of response range

No	Statements	Category				
		Does not represent me at all	Does not represent me	Slightly represent me	Represent me	Exceedingly represent me
1	New ideas and activities divert my attention from the old ideas or activities	5	4	3	2	1
2	Failure does not discourage me since I not easily give up	1	2	3	4	5
3	I frequently formulate a purpose, but ended up chasing different purposes	5	4	3	2	1
4	I am a hard worker	1	2	3	4	5
5	I can barely focus on an activity that last in a longer period	5	4	3	2	1
6	I always finish what I have started	1	2	3	4	5
7	My interest changes in every year	5	4	3	2	1
8	I am a hard worker who have never given up	1	2	3	4	5
9	I have been obsessed into an idea or activity for a moment, then that interest just goes away	5	4	3	2	1
10	I have experienced a failure in resolving an important challenge	1	2	3	4	5

The students or respondents were asked to answer according to their experiences and feelings by choosing the answer whether they are not at all like them, not like them, somewhat like them, generally like them, or like them. The answers from each respondent will be summed which will then be processed by researchers using the SPSS version 22 application to find out whether there is a difference in the mean between male students and female students. The researcher will also calculate the average grit of male students and female students' grit to find out the difference in the grit of male students and female students by using the Microsoft Excel application. However, before the questionnaire was given to the respondents, the researcher first tested the validity and reliability. The results of the validity and reliability of the questionnaire that the researchers used are as described below.

Test the validity of the questionnaire in this study using the Rasch modeling approach (Rasch model) with the help of the Winstep application version 3.73. Some of the validity testing criteria based on Rasch modeling are as follows.

1. Outfit MNSQ value: $0.5 < \text{MNSQ} < 1.5$ to test the consistency of respondents' answers with the level of difficulty of the statement items;

2. Outfit ZSTD value: $-2.0 < ZSTD < +2.0$ to describe how much (measure result column) is an outlier item, does not measure, or is too easy or difficult;
3. Point Measure Correlation (Pt Measure Corr.): $0.4 < \text{Pt Measure Corr} < 0.85$ to describe how good (SE), the statement items are not understood, responded differently, or confused with other items;
4. Undimensionality, to evaluate whether the developed instrument can measure what it should measure with the requirement that the undimensionality is at least 20% (Sumintono & Widhiarso, 2014). With the following criteria in Table 2.

Table 2. Category of the construct validity

Construct Validity	Criteria
>60%	Very great
40-60%	Good
20-40%	Sufficient
<20%	Poor
<15%	Unexpected variance

Referring to the criteria for testing the validity of the instrument using Rasch modeling, from 10 statement items that were tested on 504 respondents, 10 statement items can be declared valid because the MNSQ and PT measure Corr outfit values are met. The raw data variance results obtained are 34.9%, which means that the minimum 20% undimensionality requirements can be met. The results of the validity test can be seen in Table 3 below.

Table 3. Format of recapitulation and interpretation of instrument trial results

ITEM	OUTFIT			INTERPRETATION			DECISION
	MNSQ ($0,5 < \text{MNSQ} < 1,5$)	ZSTD ($-2,0 < \text{ZSTD} < 2,0$)	Pt. Mean Corr ($0,4 < \text{Pt. Corr} < 0,85$)	MNSQ	ZSTD	Pt. Corr.	
P7	1.26	4.9	0.46	✓	x	✓	Use
P10	1.22	3.6	0.37	✓	x	✓	Use
P2	1.19	3.1	0.50	✓	x	✓	Use
P5	1.12	2.5	0.43	✓	x	✓	Use
P3	1.07	1.5	0.51	✓	✓	✓	Use
P1	1.03	0.7	0.40	✓	✓	✓	Use
P9	0.99	-0.2	0.53	✓	✓	✓	Use
P6	0.87	-2.2	0.54	✓	✓	✓	Use
P4	0.82	-3.4	0.51	✓	x	✓	Use
P8	0.70	-6.2	0.54	✓	x	✓	Use

Note: $N < 300$, All Criteria Must Be Meet (1), If $N \geq 300$, Then ZSTD Ignore (2).

Reliability

Referring to the criteria for testing the reliability of the instrument with Rasch modeling that the reliability of person and item as well as Cronbach's alpha (item-person interaction) must be greater than (0.60). Meanwhile, item-person separation must be greater than 3.0 (Sumintono & Widhiarso, 2014). More detailed reliability test results can be seen in Table 4.

Table 4. Summary of reliability test results

	Mean Measure	Separation	Reliability	Alpha Cronbach
Person	0.02	7.30	0.93	0,91
Item	0,00	11.54	0.99	

Table 4 shows that the person reliability value of 0.93 is at the level of very good respondent consistency, with a separation value of 7.30. While the item reliability value of 0.99 indicates that the level of item consistency is in a special category, with a separation value of 11.54. As for Cronbach's alpha value of 0.91, it indicates that the interaction between items and persons is in the special category.

The data obtained by the researcher through the questionnaire was then analyzed quantitatively and explained by the researchers descriptively. The data analyzed by the researchers is expected to provide a clear picture of the grit of male and female students

RESULTS AND DISCUSSION

Results

Knowing the grit of students is an important thing for every teacher to do. This is because by knowing and understanding students' grit, teachers will better understand students' needs in learning. If the grit possessed by students is of high value, a teacher will find it easier to assign tasks and responsibilities to students. However, if the grit possessed by students is of low value, a teacher will find it difficult to assign tasks and responsibilities to students. Therefore, a teacher should know and understand the grit level of his students.

After the researchers distributed the questionnaires and got the results, the researchers then processed the data using the SPSS version 22 application with parametric or non-parametric tests. This is done by the researchers to find out whether there is a difference in the mean grit between male students and female students. Researchers will also look at the average grit of male and female students to find out the difference between the two.

The first step that the researcher took was to test the data from the questionnaire whether the data was normally distributed or not with the following hypothesis:

H_0 : data distribution is normally distributed

H_1 : data distribution is not normally distributed

The results of the normality test can be seen in Table 5.

Table 5. Tests of normality

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Men	.089	244	.000	.988	244	.039
Women	.167	244	.000	.907	244	.000

Based on the results of the normality test with $\alpha:0.05$ as in table 5 above, we can see that the significance of the normality test is 0.000. This shows us that the statistical hypothesis (H_0) is rejected and the research hypothesis (H_1) is accepted. Thus, we can say that the data distribution is not normally distributed. Therefore, the next step that will be taken by the researcher is to conduct a non-parametric test.

As the researcher described above that the data distribution is not normally distributed, the researcher will perform the two-tailed Mann-Whitney U test. This is done to find out the difference in mean between the grit of male students and the grit of female students with the following hypothesis:

H_0 : there is no mean difference between the male students' grit and the female students' grit

H_1 : there is an average difference between the male students' grit and the female students' grit

The results of the Mann-Whitney U test can be seen in Table 6.

Table 5. Test of Mann-Whitney U

	Results
Mann-Whitney U	17554.500
Wilcoxon W	51484.500
Z	-8.691
Asymp. Sig. (2-tailed)	.000

Based on the results of the normality test with $\alpha:0.05$ as in table 6 above, we can see that the significance of the two-tailed Mann-Whitney U test is 0.000. This shows us that the statistical hypothesis (H_0) is rejected and the research hypothesis (H_1) is accepted. Thus, we can say that there is an average difference between the grit of male students and the grit of female students.

After the researchers found out that there was an average difference between the grit of male students and the grit of female students, the researchers then calculated the difference in the average grit of male students with the grit of female students in general and the average grit based on the dimensions of consistency of interest and dimensions of perseverance effort. The results of these calculations can be seen in Table 7, Table 8, and Table 9.

Table 6. Average

Gender	Total	Average
Men	244	32
Women	260	28

Table 7. Average of consistency of interest dimension

Consistency of interest		
Gender	Total	Average
Men	244	14
Women	260	11

Table 8. Average of perseverance of effort dimension

Perseverance of effort		
Gender	Total	Average
Men	244	18
Women	260	17

Based on Table 7, Table 8, and Table 9, it can be seen that the average grit of 244 male students is 32. Meanwhile, the average grit of female students, totaling 260 students, is 28. From this, we can see that the grit of male students is higher than the grit of female students. Meanwhile, in table 8, we can see the comparison of the average grit of male students and female students' grit from the consistency of interest dimension. The average grit of male students is 14 and the average grit of female students is 11. For the perseverance of effort dimension, the average grit of male students differs slightly from the grit of female students with a higher grit. Thus, it can be said that the grit of male students both in general and based on dimensions is higher than that of female students.

Discussion

The persistence of students to face various challenges and obstacles is one of the important factors for students to complete every task they face. Persistence will also be the key for them to

achieve success in the future. The more persistent the student is in maintaining his interest, the greater the chance for success in the future. In line with this statement, Disabato et al. (2019) also said that a person's level of persistence will affect his success in the future.

In the study, students were asked to show their grit level by responding to various statements given to them. Based on the explanation of the research results above, the high school students who were the respondents in this study had different levels of grit. This is because each individual has a different level of persistence, toughness, tenacity, and discipline (Howard et al., 2019). This difference is considered a natural thing because each individual has a different character (Kayhan & Meltem, 2020).

Based on the results of the research above, we can find that there are differences in grit levels between male respondents and female respondents. The difference in grit between each individual is influenced by various factors, one of which is whether the respondent has a positive character or not. This was also expressed by Vivekananda (2018) who said that the difference in grit is something that must happen due to various factors. The ability of students to successfully achieve their goals in the future refers to William James' theory which emphasizes the way an individual or student maximizes his potential (Septania, 2019). This also applies to male and female students.

In general, the difference in average grit between male and female students is only 4 points different. Although the difference in average grit between male and female students is not large, this finding has provided evidence that there are differences between male and female students in maximizing their potential. In addition, we can also find out that there are differences in passion between male and female students. Sudarji & Juniarti (2020) revealed that students who have passion for themselves will have a high passion for completing every task or activity they have started. They will look for solutions to solve every challenge and obstacle they face. Passion will also make students more enthusiastic in carrying out their activities at school.

Based on the two dimensions, consistency of interest and perseverance of effort dimensions, it was found that the average male students were higher than female students. This shows us that the various difficulties, obstacles, and challenges faced by male students may make them feel they have the opportunity to maximize the potential that lies within them. In addition, it is possible for male students to feel that the challenges, obstacles, and difficulties they face are steps towards success. Thus, the grit level possessed by male students slowly formed and gradually increased. Although there are studies that stated that there is no significant difference between the grit of male students and the grit of female students (Angela Lee Duckworth & Quinn, 2009), this study has provided evidence that there is a difference in grit between male and female students. In addition, the study Baytemir (2019) also found that there were differences in grit, well-being, and happiness between male and female students.

CONCLUSION

Grit is one thing that is very important for every student in living his life. Grit will be a provision for them to face every challenge and obstacle they encounter. Based on the explanation of the results and discussion above, there are differences in the mean grit between male students and female students. The average grit possessed by male students both in general and based on dimensions is higher than that of female students. In addition, the grit level of male students is higher than that of female students. The recommendation for further research is to explore grit based on cultural (ethnic) background in Indonesia.

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