

# Investigation of Grit and Self Regulation in Learning and Their Role on Academic Achievement of Medical Students in Jakarta

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## ABSTRACT

Researchers investigated the role of grit and self-regulation in learning on academic achievements of medical students. Participants were 205 medical students, have completed the questionnaire including the Grit Shot Scale (Duckworth & Quinn, 2009), seven indicators of self-regulation in learning and current academic achievement. The results show that grit is consistent and adaptive to one indicator of self-regulation in learning, which is intrinsic purpose. Grit does not determine student academic achievement. Therefore, student involvement in self-regulation in learning serves as a mediator between grit and better outcomes on student academics. In contrast, there is only one indicator of self-regulation in learning that perfectly mediates grit and student academic achievement. Implications of the findings for research and additional instructions will be discussed.

**Keywords:** *Grit, self-regulation in learning, academic achievement of medical students*

## 1. INTRODUCTION

Student drop outs continue to increase from year to year in various countries. Based on reported data [17], the number of students dropping out of school or dropping out of tertiary institutions in Indonesia is rather high. Based on data [2], from a total of 6,924,511 students enrolled, a total of 195,176 students dropped out or left their campuses. One of the faculties with high drop out rate is the medical faculty. Aarhus University in Denmark reported that 639 medical students were enrolled from 1999 to 2000, and around 20% of students had dropped out [10]. Generally, the highest drop outs in medical students are first year students [10]. The main predictor of drop out is academic difficulty faced by medical students [10].

Student academic achievement is inseparable from one's personal characteristics such as personality, intelligence, and achievement motives [18]. One personal trait that is considered to be able to improve student academic achievement is grit. This shows the importance of high level of grit to medical students. Previous research [5] defines grit

as the persistence and passion a person has of achieving goals in a long-term period. Grit is an important component in improving the academic achievement of medical students. Grit shows that talent accompanied by effort will produce skills, and skills accompanied by effort will produce achievements [13].

Previous research [9] on medical student samples showed that low grit could discourage them from continuing their study and feel exhausted both physically and psychologically. Supposedly, medical students who will become a practitioner need to have passion and endurance in order to remain persistent in handling the needs of patients, even under pressure [7]. Therefore, grit is a factor that can predict the academic success of medical students, better performance, and can lead good results in other aspects [9].

However, grit is often equated with self-control when both are different indicators. Previous research [4] states that grit can be better explained as stamina to achieve long-term goals, and students who have grit will persistently pursue their goals for

years, while self-control is part of self-regulation in learning that allows students to control themselves and to overcome any existing disturbances [1]. Student learning and academic performance is inseparable from important aspects that are part of self-regulation of cognition and behavior [12]. In learning, self-regulation is known as self-regulation in learning, which is defined as "self-improvement and self-monitoring of thoughts, feelings, and behaviors to achieve goals" [14].

Previous research [15] has proven that the application of self-regulation programs in learning is considered effective in reducing low academic achievement and increasing individual academic achievement. Self-regulation in learning helps first year medical students who were initially limited in understanding the content for each available literature, but in subsequent years can have their own strategies and interests according to their needs in learning [8]. In this case, self-regulation in learning, based on social cognitive theory of self-regulation in learning becomes a factor that motivates and regulates individual behavior [3].

However, the results of a recent study found that grit does not directly predict student academic achievement. Although the grits of students have increased, this has not resulted in specific changes to their GPA throughout the year [7]. This might happen because there are other factors that affect the relationship between grit and academic achievement. Therefore, researcher put self-regulation in learning as a mediator between grit and academic achievement of medical students. Previous studies have shown that self-regulation in learning has a positive correlation with academic achievement because it allows them to control progress towards achieving their learning goals, and make necessary adjustments to their learning activities and processes in the future [3]. If individual behavior is regulated only based on the external environment such as social influence, then individuals can easily change the direction of their goals to adjust to their environment [3].

Walberg in his theory of academic achievement shows that the factors influencing students' academic results include the character and psychological environment including their cognitive, behavioral, and attitude [9]. Nine indicators that can affect academic outcomes include (a) the ability or achievement of previous students, (b) motivation, (c) age or level of development, (d) the amount of teaching, (e) quality of teaching, (f) classroom environment, (g)

the home environment, (h) peer groups, and (i) mass media outside educational institutions [16].

Related to medical students dropping out which is still a problem in various countries, the researcher wants to examine further the psychological factors that influence the drop out of medical students, namely the relationship between grit and self-regulation in learning on student academic achievement. The gap in this research is that the researcher uses specific participants, namely active undergraduate students of medical faculties to strengthen the conclusions in this study [18]. Thus the question is "Do grit and self-regulation in learning contribute to the academic achievements of medical students?"

## 2. METHOD

### A. Participants and Procedure

Participants in the study were 205 students who are active undergraduate students of medical faculty and are living in Jakarta. The researcher used snowball sampling to recruit participants by asking several participants to fill out a questionnaire and some of the participants encouraged other participants to take part in the study.

### B. Research Instrument

Grit Short Scale is a grit measuring instrument developed by Duckworth and Quinn (2009) [6]. This measuring instrument consists of eight statements. Grit Short Scale is answered by using a scale of 1 (Not like me at all) to 5 (very much like me). The higher the grit score the subject has, the higher the grit the subject has.

Motivated Strategies for Learning Questionnaire (MSLQ) is a measuring tool developed by Pintrich, Smith, García, and McKeachie (1991) [11]. Researchers used 36 statements to measure the dimensions of a) intrinsic goal orientation, b) extrinsic goal orientation, c) task value, d) rehearsal, e) organization, f) elaboration, and g) time and study environment. MSLQ uses a scale of 1 (not at all true of me) to 5 (very true of me). The higher the score of self-regulation in learning, the higher the level of self-regulation the subject has.

The researcher used GPA to measure the academic achievements of medical students. The GPA was asked by the researcher on the initial sheet of the

questionnaire to find out the level of academic achievement of the student.

### 3. RESEARCH RESULT

Participants were dominated by female students ( $n = 133, 64.9\%$ ). Academic rankings reported are as such: new students ( $n = 49, 23.9\%$ ), second year students ( $n = 66, 32.2\%$ ), third year students ( $n = 50, 24.4\%$ ), and post graduate students ( $n = 40, 19.5\%$ ).

The results of linear regression analysis showed that grit was not directly related to student academic achievement ( $R^2 = 0.005, p > 0.05$ ). This shows that grit predicts student academic achievement by 0.5%, while the remaining 99.5% is influenced by other factors.

Second, the results of linear regression analysis show that grit plays a role in one dimension of self-regulation in learning, namely intrinsic goal orientation ( $R^2=0.060, p < 0.05$ ). This shows that grit predicts the intrinsic goal orientation dimension by 6%, while the remaining 94% is influenced by other factors.

Furthermore, the results of the linear regression analysis showed that one dimension of self-regulation in learning, which is intrinsic goal orientation, plays a role in student academic achievement ( $R^2=0.073, p < 0.05$ ). This shows that intrinsic goal orientation dimension predicts student achievement by 7.3%, while the remaining 92.7% is influenced by other factors.

The result of multiple regression analysis showed that the relationship between grit and academic achievement of students was mediated by one dimension of self-regulation in learning which is intrinsic goal orientation, and is statistically significant ( $p < 0.05$ ).

### 4. DISCUSSION

There are a number of previous studies which suggest that grit is one of the triggers for academic achievement. But these research are still very limited, and is mostly conducted on students across several faculties and not specific on a certain faculty [18].

After testing the hypothesis, the researcher found that grit has a non-significant positive relationship with student academic achievement. These results indicate that grit has an indirect role in the academic achievement of medical students. The results showed that grit only affects 0.5% of academic achievement and the rest was influenced by other factors. One other factor that influences the relationship between grit and academic achievement is self-efficacy. [18] states that low self-efficacy can weaken the relationship between grit and academic achievement. Although students have the determination to maintain long-term goals, without the confidence to be able to achieve these goals, there is no increase in their academic results.

The results also indicated that grit has a significant positive relationship to self-regulation in learning. This is in line with previous research that says that grit is generally seen as an element that influences attitudes, beliefs, cognitive processes, and behaviors that produce self-regulation in learning [18]. So it can be concluded that the higher the grit, the higher the self-regulation of learning the person has and conversely, the lower the grit, the lower the self-regulation the person has.

After conducting a regression test of the seven dimensions of self-regulation in learning on academic achievement, there is one dimension that shows significant results, namely intrinsic goal orientation. This shows that the involvement of students in the learning process such as feeling challenged, curious, and mastery of the material is estimated to play a direct role in the academic achievement of medical students. This is also in accordance with social cognitive theory [3] which says that each individual needs to have the ability to think critically so as to enable them to be able to control their thoughts, feelings, motivation, and actions.

In relation to the seven dimensions of self-regulation in learning as a mediator, the results of the study indicate that only one dimension of self-regulation in learning, which is the intrinsic goal orientation that can act as a mediator between grit and student academic achievement. Not all dimensions of self-regulation in learning mediate the relationship between grit and student academic achievement because the seven dimensions can only mediate if grit and student academic achievement play a significant positive role and grit plays a significant role in the seven dimensions of self-regulation in learning [18].

From some of the differences obtained, it can be explained that the characteristics of different subjects can produce different research results. The characteristics of the previous research subjects [18] were students who came from various faculties at large and diverse public universities while the characteristics of the subjects in this study are medical students of a private university located in Jakarta.

## 5. CONCLUSION

In this study it can be concluded that the relationship between grit and academic achievement of medical students is mediated by one of the dimensions of self-regulation in learning, which is intrinsic goal orientation. This shows that the involvement of students in the learning process such as feeling challenged, curious, and mastery of the material is estimated to directly play a role in the academic achievement of medical students. In addition, it can be concluded that not all dimensions of self-regulation in learning can explain the academic achievements of medical students.

When viewed from the self-regulation in learning related to student academic achievement, the organization dimension of students is relatively low. This means that medical students in Jakarta tend not to have an appropriate learning strategy in building important information that can be used for learning.

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Our special thank goes to our Rector, Prof. Dr. Agustinus Purna Irawan, who has initiate this international conference, to our Plenary Speakers, Prof. Ir. Dr. Lee Sze Wei from Tunku Abdul

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