Growth mindset and Grit: Examining the Academic Buoyancy of Student Who Doing Online Learning

Marisya Pratiwi, Melania Delaritas Nesvita, Ummul Sabila Khairiyah and Rosada Dwi Iswari
School of Psychology, Faculty of Medicine, Universitas Sriwijaya, Palembang, Indonesia
marisya.p@fk.unsri.ac.id

Keywords: Academic Buoyancy, Growth Mindset, Grit, Online Learning

Abstract: In this study, researchers want to see the effect of growth mindset and grit on academic buoyancy in students who face online lectures. This study involved 140 first-year college students when this research was conducted (class of 2021). The sampling technique used is the purposive sampling technique. This study uses three scales as a measuring tool, namely the academic buoyancy scale which refers to dimensions of Martin and Marsh, growth mindset scale from Dweck's dimension and grit scale which refers to aspect of Duckworth et al.. The results of hypothesis testing using multiple regression analysis show that there is a role for growth mindset and grit on academic buoyancy for students who facing online lectures. Then, it is known that the role of growth mindset and grit together on academic buoyancy is 22.2% ($R^2 = 0.222$).

1 INTRODUCTION

The world was hit by an outbreak of corona virus disease 2019 or better known as Covid-19 in December 2019. After spreading throughout the world, in mid-March 2020 this outbreak was declared a pandemic by WHO. Based on the website of the Covid-19 Handling Unit, the Covid-19 outbreak has hit 223 countries with more than 116 million confirmed cases. In Indonesia, positive cases alone have touched 1.4 million cases with 38 thousand deaths (covid19.go.id). This caused the National Disaster Mitigation Agency (BNPB) to issue decree number 13A which stipulates a Covid-19 emergency period in Indonesia.

The Covid-19 pandemic has had an impact on various fields. One of those affected is the world of education (Sadikin & Hamidah, 2020). Aji (2020) revealed the impact of this pandemic on the world of education, one of which is that schools and tertiary institutions are required to implement online learning methods after the issuance of the Ministry of Education and Culture Circular Letter No. 1 of 2020. This is carried out with the aim of maintaining distance as a form of preventing the transmission of Covid-19 (WHO, 2020). Online or online learning is learning that uses an internet network with accessibility, connectivity and flexibility with the aim of establishing learning interactions (Moore et al., 2010).

Howlett et al. (2009) defines online learning as a learning system using technology for online learning processes between students and teachers. Online learning has been carried out almost all over the world (Goldschmidt & Msn, 2020). However, as stated by Jamaluddin et al. (2020), online learning has strengths, challenges and obstacles. The advantage of online learning is that there can be direct interaction between students and lecturers, as well as in the delivery of teaching materials (Naserly, 2020). Besides the advantages, there are some difficulties encountered. These difficulties include poor internet connection, limited media, as well as a lack of study space at home (Baticulon et al., 2021). Astuti and Febrian (2019) revealed that when the internet connection is bad, it can result in students having difficulty understanding instructions from lecturers.

Learning online has challenges, especially for students to be more independent in preparing their study material, as well as in maintaining learning motivation (Aina & Winanda, 2016). Martin and Marsh (2008) states that every student must have experienced academic setbacks and challenges that are still in the general context at school (e.g. getting low grades, experiencing pressure during exams and having difficulty doing assignments). These

Pratiwi, M., Nesvita, M. D., Khairiyah, U. S., & Dwi, R.
Growth mindset and Grit: Examining the Academic Buoyancy of Student Who Doing Online Learning
In *Proceeding of the International Conference on Current Advancement in Psychology (ICCAP) 2022 - Psychology for Sustainable Recovery in the Life after the Pandemic,* page 280-286

challenges are referred to as everyday hassles or pressure in academics that are usually felt every day by students (Martin & Marsh, 2006). Although not at a severe level, these challenges can still trigger stress on students. Especially nowadays, as stated by Moawad (2020), one of the student stressors is the use of online media (using online platforms). Therefore, students need the ability to overcome academic pressures or everyday hassles.

Martin (2013) states that in order to overcome academic problems or pressures to a less severe degree, academic buoyancy is needed. Academic buoyancy (Martin & Marsh, 2008) is defined as a student's ability to deal with setbacks and challenges that are common in academic life (e.g. getting poor grades, getting assignments by deadlines, dealing with exam pressure, or doing difficult school assignments). The concept of academic buoyancy itself has similarities with academic resilience. Academic resilience is usually related to 'acute' and 'chronic' problems that affect development. Meanwhile, academic buoyancy relates to setbacks, challenges and pressures that occur in everyday life (Martin, 2013). Previous studies have shown that academic buoyancy is related to academic and psychological outcomes such as the risk of continuing psychological (e.g. academic anxiety) (Martin et al., 2013); academic achievement (Miller et al., 2013); cries of fear (Symes et al., 2015); and positive motivational experiences (Collie et al., 2016).

Failure, setbacks and mistakes are inevitable in academic life. In dealing with these setbacks, a metacognitive process is needed to create self-regulation strategies, one of which is sponsored by a growth mindset (Jacovidis et al., 2020). The concept of mindset usually describes responses to academic challenges and setbacks (Yeager & Dweck, 2012). In his research, Dweck (Rhew et al., 2018) said that mindset is the reason some students seem comfortable learning even though the task is difficult while some other students seem anxious and don't want to try tasks that seem challenging. Mindset itself is divided into two, namely Fixed Mindset and Growth Mindset. Fixed Mindset is a mindset that believes that intelligence is fixed and cannot be changed and has doubts that business will give success (Dweck, 2015).

Growth mindset according to Dweck (2006) is a mindset that believes that potential and psychological attributes can be developed with effort and hard work. Individuals who have a growth mindset are more adaptable and adaptable to academic failures and changes. Dweck and Yeager (2019) also said that individuals who adhere to a growth mindset are stronger in dealing with difficulties and continue to grow. According to Dweck (in Smith, 2015), those who see intelligence as something that can be developed or changed tend to have higher resilience and academic buoyancy.

Students who have failed will have fear of new challenges and have doubts about getting back up (MacIntyre, 2016). In building the ability to rise from failure, it can be done by managing fear and anxiety about failure, namely by developing a growth mindset (Anderson et al., 2020). Growth mindset is a mindset that believes that one's psychological attributes and potential can develop through effort and hard work (Dweck, 2006). Student mindset influences various non-cognitive factors, one of which is how students overcome the challenges they face (Heine et al., 2001). Students with a growth mindset display greater academic buoyancy when faced with challenges and setbacks (Waite, 2016).

Farrington et al. (2012) identified that the combination of growth mindset and grit is related to academic buoyancy. Grit itself can also be examined in relation to academic buoyancy independently. The results of research conducted by Duckworth et al. (2007) show that students who have more grit in themselves will be more resistant in facing unpleasant activities even when faced with challenges. Duckworth et al. (2007) stated that grit is a tendency to maintain perseverance and enthusiasm for challenging long-term goals. Grit gives rise to hard work to face challenges, maintain effort and interest. Based on the explanation above, researchers are interested in seeing the role of growth mindset and grit on academic buoyancy in students who are taking online lectures. Furthermore, researchers also want to see which variable between growth mindset and grit has a bigger role in academic buoyancy.

2 METHOD

There were 140 students involved as subjects in this study. The data collection technique used was purposive sampling, which is one of the non-probability's samplings. The participants who were included were those who met the criteria set by the researchers, namely currently undergoing their first year of college (class of 2021). This criterion is based on the results of several previous studies, namely by Sari et al. (2020); White and Watt (in Estiane, 2015); Maulana et al. (2014); Oktovia et al. (2017); Adiwaty & Fitriyah (2015). These studies found similar results in that first-year students faced more lecture challenges than students in other years.

There are three variables examined in this study. The first variable is academic buoyancy. Academic buoyancy (Martin & Marsh, 2008) is defined as a student's ability to deal with setbacks and challenges that are common in academic life (e.g. getting unsatisfactory grades, dealing with deadlines when working on assignments, experiencing pressure during exams and when working on assignments that difficult). In this study, academic buoyancy in first year students was measured using the academic buoyancy scale compiled by researchers based on the academic buoyancy dimensions expressed by Martin and Marsh (2010), namely self-efficacy, planning, persistence, composure/low anxiety, and control.

The next variable studied is the growth mindset. In this study, the growth mindset of first-year students was measured using a growth mindset scale compiled by researchers based on the growth mindset dimension, namely the belief that intelligence and individual abilities can be developed by studying and working hard. If the score on the growth mindset scale is high, then first year students have a high growth mindset within themselves.

The third variable studied is Grit. The researcher compiled his own grit scale based on the grit aspects of Duckworth et al. (2007), namely consistency of interest and persistence of effort. If the grit score is high, then the grit for students who have a low GPA is high, and vice versa.

Before being used in this study, the three scales were tested on 50 subjects who met the criteria set by the researchers. Due to the pandemic situation when the research was conducted, data collection for scale trials was carried out by distributing questionnaires online. To test the validity of the researchers looked at the score of its discriminant power, namely the RIT value ≥ 0.3.

3 RESULT AND DISCUSSION

From the results of the validity and reliability tests conducted by the researchers, there were 20 items for the academic buoyancy scale, 10 items for the growth mindset scale and 11 items for the Grit scale. To be clearer, the following table will show the results of the validity and reliability of the tryout of each scale:

Table 1. Validity and reliability test result

Variables	Discriminant Power Range	Alpha Cronbach	
		Before elimination	After elimination
Academic buoyancy	0.30 – 0.603	0.750 (n=50)	0.866 (n=20)
Growth mindset	0,555 – 0,698	0,915 (n=30)	0,919 (n=10)
Grit	0,348 – 0,612	0,744 (n=20)	0,835 (n=11)

*n = number of items

All items that have been proven valid and reliable are then used for the research data collection process. This research itself involved 140 first year students (class of 2021) who were undergoing online lectures. In analyzing the research results, the research will conduct several assumption tests first, namely the normality test, linearity test, multicollinearity, and heteroscedasticity. Because all of the assumption tests performed showed results as expected, the researcher then tested the hypothesis using multiple regression testing techniques. The researcher also calculated the magnitude of the role of each independent variable on the dependent variable.

Based on the results of hypothesis testing that has been done, the following results are obtained:

Table 2. Research Hypothesis Test Results

Variables	R	R^2	F	Sig	Note
AB-G-GM	0,471	0,222	9,579	0,000	Sig.

From the results of the hypothesis testing, it was found that the value of p=0.000 (P<0.05) thus the hypothesis in this study was accepted, namely that there is a role of growth mindset and grit on academic buoyancy in students who face online lectures. This result is in line with several previous studies which have examined the role of each independent variable on the dependent variable.

Changes in academic standards that are increasingly challenging make students need to adapt to situations, especially during a pandemic. Yeager and Dweck (2012) said that the growth mindset directs individuals to reactions of resilience in situations of academic challenges, namely academic buoyancy. This finding is supported by Mosanya's research (2020), that a growth mindset is needed in students as a form of building resilience to academic stress during a pandemic. The growth mindset supports students' academic life during stressful times of social isolation to reduce the spread of COVID-19. It is said that people with a growth mindset have better self-regulation (Burnette et al., 2013), thus leading to the formation of academic buoyancy during a pandemic. Then research from Mrazek et al. (2018) also said the same thing, where developing a

growth mindset can change your outlook and willingness to do challenging tasks and persistence to complete them. Both of these lead to dimensions of academic buoyancy, namely self-efficacy and persistence.

Students' beliefs about intelligence have important consequences for the way they go through school and the way they respond to setbacks and adversity. When students have a growth mindset, they may perceive school as a fun place to grow, embracing challenges as opportunities to develop mastery (Yeager & Dweck, 2012). Students with a growth mindset prefer to take on challenging assignments and survive challenges by creating new strategies or increasing effort so as to achieve academic success (Smiley et al., 2016). Broda et al. (2018) explained that growth mindset interventions are beneficial for students with a high level of risk for showing poor academic performance, one of which is first year students.

Students with a growth mindset have persistence and a desire to grow which lead to success (Hochanadel & Finamore, 2015). This is in line with Dweck's statement (2015) that students are said to develop a growth mindset if they appreciate every effort that has been made. In his book, Dweck (2006) also says that when students who have a growth mindset get bad grades in exams, they can bounce back on the next exam. When individuals view abilities as something that can be developed, then developing abilities becomes more important, effort is seen as a means in the process, and setbacks are seen as a learning process, then persistence can be maintained (Yeager & Dweck, 2020).

For previous studies discussing the role of grit in academic buoyancy, not many researchers have found it. According to Fong and Kim (2019), although grit itself is often understood as a personality trait, it is also often researched in an educational context and associated with the construction theory of motivation. One of them is research conducted by Duckworth et al. (2011) where it was found that students who have more grit in themselves will be more resistant in facing unpleasant activities even when faced with challenges. Research conducted by Fong and Kim (2019) also found that grit can positively predict a student's final grade.

The results of data processing that has been done also shows an R Square value of 0.222. This shows that the role of growth mindset and grit together on the academic buoyancy of students undergoing online lectures is 22% and the rest is influenced by other factors. Furthermore, the researcher then conducted further analysis to see the role of each independent variable on the dependent variable and obtained the following results:

Table 3. Additional Analysis Results

IV	B	Cross Product	Regression	R^2
Growth mindset	0,133	740,814	1620,061	22,2%
Grit	0,759	2005,171		

Based on the data above, the researcher conducted an effective contribution test using the formula:

$$SEx = | Bx \, . \, CP \, . \, R^2 / Regression |$$

Note :
Bx : coefficient B component X
CP : Cross product component X
R^2 : Total Contribution
Regression: Regression value

The results of the effective contribution of the growth mindset and grit variables to academic buoyancy are:

Table 4. Additional result of Effective Contribution Analysis

Independent Variables	Effective Contribution
Growth mindset	1,35%
Grit	20,85%

From the results of calculating the role of each independent variable in academic buoyancy, it can be concluded that the grit variable actually has a much bigger role than grit, namely 20.85%. Grit itself is seen as one of the non-cognitive factors in a person which has attracted a lot of interest in previous research in the fields of education and psychology (Fong & Kim, 2019). The magnitude of the role of grit on academic buoyancy compared to growth mindset in this study shows that non-cognitive factors are one of the things that have a major influence in predicting one's academic success.

When viewed further, it turns out that the growth mindset only has a small role in student academic buoyancy. As explained earlier, from the various definitions found related to growth mindset, it can be concluded that growth mindset is how a person perceives intelligence and psychological potential within oneself as something that can be developed. Heine et al. (2001) stated that students' mindsets influence various non-cognitive factors, one of which is how students overcome the challenges they face. Researchers suspect that this growth mindset itself

refers more as a cognitive factor within oneself that influences non-cognitive factors within oneself in helping students overcome the challenges they face. This is what causes the results of the role of the growth mindset together with grit towards academic buoyancy to not be too big.

4 CONCLUSIONS

Based on the results of the tests carried out, the hypothesis in this study was accepted, namely that there is a role for growth mindset and grit in academic buoyancy in students undergoing online lectures. Furthermore, the role of growth mindset and grit together on academic buoyancy is 22.2%, while the rest is influenced by other variables not examined in this study. If looked at one by one, the role of grit is greater than growth mindset in academic buoyancy. The researcher suggests that further researchers examine the role of grit in academic buoyancy mediated by the growth mindset variable within them.

REFERENCES

Adiwaty, M. R., & Fitriyah, Z. (2015). Efektivitas strategi penyesuaian mahasiswa baru pada proses pembelajaran di perguruan tinggi (Studi pada UPN "veteran" Jawa Timur). *Jurnal Neo-Bis*, *9*(2), 1–15.

Aina, M., & Winanda, N. (2016). Pengembangan multimedia interaktif menggunakan camtasia studio 8 pada pembelajaran biologi materi kultur jaringan untuk siswa kelas XI MIA. *BIODIK*, *2*(1), 20–26. https://doi.org/10.22437/bio.v2i1.3365

Aji, R.H.S. (2020). Dampak Covid-19 pada Pendidikan di Indonesia: Sekolah, Keterampilan dan Proses Pembelajaran. *Salam: Jurnal Sosial dan Budaya*. *7*(5). 395-402. https://doi.org/10.15408/sjsbs.v7i5.15314

Anderson, R. C., Beach, P. T., Jacovidis, J. N., & Chadwick, K. L. (2020). Academic buoyancy and resilience for diverse students around the world. *Inflexion*, *August*.

Astuti, P., & Febrian. (2019). Blended learning syarah : Bagaimana penerapan dan persepsi mahasiswa. *Jurnal Gantang IV*, *2*, 111–119. https://doi.org/10.31629/jg.v4i2.1560

Baticulon, R. E., Jenkin, J., Nicole, S., Alberto, R. I., Beatriz, M., Earl, R., Lloyd, C. M., Rizada, G. T., Jan, C., Charlie, S. T., & Reyes, J. C. B. (2021). Barriers to online learning in the time of COVID - 19 : A national survey of medical students in the Philippines. *Medical Science Educator*. https://doi.org/10.1007/s40670-021-01231-z

Broda, M., Yun, J., Schneider, B., Yeager, D. S., Gregory, M., & Diemer, M. (2018). Reducing inequality in academic success for incoming college students : A randomized trial of growth mindset and belonging interventions. *Journal of Research on Educational Effectiveness*, 1–52. https://doi.org/10.1080/19345747.2018.1429037

Collie, R. J., Martin, A. J., Malmberg, L. E., Hall, J., & Ginns, P. (2015). Academic buoyancy, student's achievement, and the linking role of control: A cross-lagged analysis of high school students. *British Journal of Educational Psychology*, *85*(1), 113–130. https://doi.org/10.1111/bjep.12066

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), 1087-1101. https://doi.org/10.1037/0022-3514.92.6.1087

Dweck, C. S. (2006). Mindset: The New Psychology of Success. New York: Random House Publishing Group.

Dweck, C. S. (2015). Growth Mindset, Revisited. *Education Week*, *35*(5), 20–24.Goldschmidt, K., & Msn, P. D. (2020). The COVID-19 pandemic : Technology use to support the wellbeing of children. *Journal of Pediatric Nursing*, 3–5. https://doi.org/10.1016/j.pedn.2020.04.01

Estiane, U. (2015). Pengaruh dukungan sosial sahabat terhadap penyesuaian sosial mahasiswa baru di lingkungan perguruan tinggi. *Jurnal Psikologi Klinis Dan Kesehatan Mental*, *4*(1), 29–40.

Fong, C.J., Kim, Y.W. (2019). A Clash of Construct? Re-Examining Grit in Light of Academic Bouyancy. *Currrent Psychology*. January 2019. https://doi.org/10.1007/s12144-018-0120-4

Hochanadel, A., & Finamore, D. (2015). Fixed and growth mindset in education and how grit helps students persist in the face of adversity. *Journal of International Education Research (JIER)*, *11*(1), 47–50. https://doi.org/10.19030/jier.v11i1.9099

Howlett, D., Vincent, T. I. M., Gainsborough, N., Taylor, N., Cohen, J. O. N., & Vincent, R. (2009). Integration of a case-based online module into an undergraduate curriculum :

What is involved and is it effective ? *E-Learning*, *6*(4), 372–384. https://doi.org/10.2304/elea.2009.6.4.372

Jacovidis, J. N., Anderson, R. C., Beach, P. T., & Chadwick, K. L. (2020). Growth Mindset Thinking and Beliefs in Teaching and Learning. *International Baccalaureate Organization*, *August*.

Jamaluddin, D., Ratnasih, T., Gunawan, H., & Paujia, E. (2020). Pembelajaran daring masa pandemik Covid-19 pada calon guru : Hambatan, solusi dan proyeksi. *Lembaga Penelitian Dan Pengabdian Kepada Masyarakat UIN Sunan Gunung Djati Bandung*, 1–10.

MacIntrye, P.D. (2016). *Positive Psychology Perspectives on Foreign Languange Learning and Teaching*. Springer.

Martin, A. J. (2013). Academic buoyancy and academic resilience: Exploring "everyday" and "classic" resilience in the face of academic adversity. *School Psychology International*, *34*(5), 488–500. https://doi.org/10.1177/0143034312472759

Martin, A. J., Ginns, P., Papworth, B., & Nejad, H. (2013). The role of academic buoyancy in aboriginal/indigenous students' educational intentions: Sowing the early seeds of success for post-school education and training. In *Diversity in Higher Education*. 14 2013). Emerald Group Publishing Limited. https://doi.org/10.1108/S1479-3644(2013)0000014003

Martin, A. J., & Marsh, H. W. (2006). Academic resilience and its psychological and educational correlates : A construct validity approach. *Psychology in the Schools*, *43*, 267–282. https://doi.org/10.1002/pits.20149.1

Martin, A. J., & Marsh, H. W. (2008). Academic buoyancy: Towards an understanding of students' everyday academic resilience. *Journal of School Psychology*, *46*(1), 53–83. https://doi.org/10.1016/j.jsp.2007.01.002

Miller, S., Connolly, P., & Maguire, L. K. (2013). Wellbeing, academic buoyancy and educational achievement in primary school students. *International Journal of Educational Research*, *62*, 239–248. https://doi.org/10.1016/j.ijer.2013.05.004

Moore, J. L., Dickson-deane, C., & Galyen, K. (2010). E-learning, online learning, and distance learning environments : Are they the same? *Internet and Higher Education*, 1–7. https://doi.org/10.1016/j.iheduc.2010.10.001

Mosanya, M. (2020). Buffering academic stress during the COVID-19 pandemic related social isolation : Grit and growth mindset as protective factors against the impact of loneliness. *International Journal of Applied Positive Psychology*, *6*(2), 159–174. https://doi.org/10.1007/s41042-020-00043-7

Mrazek, Alissa J., Ihm, Elliott D., Molden, Daniel C., Mrazek, D., Zedelius, Claire M., & Schooler, Jonathan W. (2018). Expanding minds : Growth mindsets of self - regulation and the influences on effort and perseverance. *Journal of Experimental Social Psychology*. *79*(164-180). https://doi.org/10.1016/j.jesp.2018.07.003

Naserly, M. K. (2020). Implementasi zoom, google classroom, dan whatsapp group dalam mendukung pembelajaran daring (online) pada mata kuliah bahasa inggris lanjut (Studi kasus pada 2 kelas semester 2, jurusan administrasi bisnis, fakultas ekonomi dan bisnis, universitas Bina Sa. *Jurnal AKSARA PUBLIC*, *4*(5), 155–165.

Oktovia, W., Zulharman, & Risma, D. (2012). *Hubungan Kecerdasan Emosional Dengan Tingkat Stres Pada Mahasiswa Tahun Pertama Fakultas Kedokteran Universitas Riau*. Universitas Riau.

Rhew, E., Piro, J. S., Goolkasian, P., & Cosentino, P. (2018). The effects of a growth mindset on self-efficacy and motivation. *Cogent Education*, *5*(1), 1–16. https://doi.org/10.1080/2331186X.2018.1492337

Sadikin, A., Hamidah, A. (2020). Pembelajaran Daring di Tengah Wabah Covid- 19. Biodik: *Jurnal Ilmiah Pendidikan Biologi*, Vol. 6, No. 2. https://doi.org/10.22437/bio.v6i2.9759

Sari, S. P., Aryansyah, J.E., Sari K. (2020). Resiliensi Mahasiswa dalam Menghadapi Pandemi Covid 19 dan Implikasinya terhadap Proses Pembelajaran. *Indonesian Journal of Guidance and Counseling : Theory and Application*, (*9*)1, 17-22.

Smiley, P. A., Buttitta, K. V., Chung, S. Y., Dubon, V. X., & Chang, L. K. (2016). Mediation models of implicit theories and achievement goals predict planning and withdrawal after failure. *Motivation and Emotion*, *40*(6), 878–894.https://doi.org/10.1007/s11031-016-9575-5

Smith, M. (2015). *From adversity to buoyancy*. *28*(9), 718–721. https://doi.org/10.1007/s10862-014-9427-0

Yeager, David Scott, & Dweck, C. S. (2012). Mindsets that promote resilience: When students believe that personal characteristics can

be developed. *Educational Psychologist*, *47*(4),
302–314.
https://doi.org/10.1080/00461520.2012.72280