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The Effect of Growth Mindset Training on Academic Engagement and Academic Buoyancy in Students

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The aim of the present study was to investigate the effectiveness of growth mindset training on academic engagement and academic buoyancy in students. The research design was a quasi-experimental design with an experimental group and a control group. The sample consisted of 40 9th grade students of Ahvaz city who were selected through convenience sampling and randomly assigned to two experimental (20) and control groups (20). The members of the experimental group received intervention growth mindset training, while the control group did not receive any intervention. The research questionnaires included the academic engagement Questionnaire (Meng and Jin, 2016) and academic buoyancy Questionnaire (Martin and Marsh, 2009). The data were analyzed using multivariate and univariate analysis of covariance. The results obtained by comparing the post-test of independence variables in the two groups by controlling the effect of the pre-test, after training growth mindset showed the scores of academic engagement and academic buoyancy in the experimental group compared to those in the control group were significantly increased (P >.01). Therefore, it can be concluded that training growth mindset an effective method to increase academic engagement and

academic buoyancy. Based on the results, it is suggested that a growing mindset program be taught to students.

Keywords: growth mindset training, academic engagement, academic buoyancy.

Academic engagement and buoyancy are vital for students' learning and achievement (Dweck & Yeager, 2019; Wang et al., 2019), so over the last seven decades, researchers and educators have exhibited a growing interest in engagement and academic buoyancy (Lei et al., 2018; Boulianne & Theocharis, 2020; Jansen et al., 2019; Myint & Khaing).

Academic engagement, according to Schaufeli et al. (2002), is defined as a fulfilling and positive study-related state of mind that is characterised by three dimensions: absorption, vigor, and dedication (Schaufeli et al., 2002). Initially, the notion of engagement was conceptualized as work-related engagement, but recently this concept has been expanded to include the notion of study engagement (Ouweneel, Le Blanc, & Schaufeli, 2014; Schaufeli et al., 2002; Upadyaya & Salmela-Aro, 2013). Schaufeli and his colleagues (e.g., Breso et al., 2011; Ouweneel, Le Blanc, & Schaufeli, 2011; Ouweneel, Schaufeli, & Le Blanc, 2013) have argued that, from a psychological point of view, a student's tasks and activities can be considered 'work'. Like an employee, the student is involved in coercive, structured tasks and activities (e.g., completing assignments and projects, attending class) that are targeted toward a particular aim (e.g., passing examinations, getting job) (OOuwneel et al., 2011). Therefore, educational places are settings in which student's work, so it is reasonable that the concept of engagement can be extended to the study context (Ouwneel et al., 2013; Ouwneel et al., 2011; Salmela-Aro & Upadaya, 2012). Thus, analogously to

work engagement, study engagement is characterised by students' feelings of vigor, their dedication to their studies, and their absorption in their academic-related tasks and activities (Schaufeli et al., 2002; Ouwneel et al., 2013). The following paragraph discusses in more detail the three dimensions of engagement: vigor, dedication, and absorption. The first dimension, vigor, refers to students' sense of high levels of mental resilience and energy while studying, their willingness to exert and invest effort into their academic-related activities, their persistence in the face of obstacles, and their positive approach to learning (Ouweneel et al., 2014; Ouweneel et al., 2013; Salmela-Aro & Upadyaya, 2014; Upadyaya & Salmela-Aro, 2013). The second dimension, dedication, is characterised by students' sense of enthusiasm, inspiration, significance, challenge, and pride for engaging in their studies, as well as their perception of school-related activities as meaningful (Ouweneel et al., 2013; Ouweneel et al., 2014; Salmela-Aro & Upadyaya, 2014; Upadyaya & Salmela-Aro, 2013). Finally, absorption is defined as students'sense of being deeply engrossed and fully concentrated on their studies (e.g., time passes quickly when studying) (Ouweneel et al., 2013; Ouweneel et al., 2014; Salmela-Aro & Upadyaya, 2014; Upadyaya & Salmela-Aro, 2013). The three aforementioned dimensions of engagement are separate constructs, but also correlate highly with each other (Schaufeli et al., 2002; Tuominen-Soini & Salmela-Aro, 2014; Upadyaya & Salmela-Aro, 2013).

According to Martin (2013), "Academic buoyancy has been defned as a capacity to overcome setbacks, challenges, and difculties that are part of everyday academic life" (p. 488). It is

oriented toward the framework of positive psychology due to its focus on achieving "psychological growth and improved well-being over time" (Martin &Marsh, 2008a, p. 54). Thus, academic buoyancy refers to how well students can cope with, overcome, and recover from everyday academic adversity (Colmar et al., 2019).

Buoyancy functions as an adaptive response to frequent, ordinary, and temporary setbacks and challenges in educational settings. It is the capacity to deal with current and ongoing challenges and demands by regulating attention, emotion, and behavior adaptively and positively (Martin & Marsh, 2008a). Buoyancy is relevant to everyday problems and anxieties that interrupt learners' motivation and engagement in the learning process by threatening their self-confidence and persistence (Putwain et al., 2020a, b).

Previous research has linked academic buoyancy to various student outcomes such as school satisfaction (Hoferichter et al., 2021), high hope and enjoyment (Hirvonen et al., 2020), measures of achievement (for a review, see Datu & Yang, 2018) and has indeed been shown to buffer the effect of minor adversities on academic achievement (Hoferichter et al., 2021). Everyday academic adversity is less likely to cause a drop in performance for students with strong academic buoyancy (Putwain et al., 2020a, b).

Therefore, examining factors that can influence these two aspects is highly important. One such factor receiving recent attention is the concept of growth mindset. The Mindset Theory originated from the Implicit Theory of Intelligence, and it indicates that an individual either embraces a mindset of fixed and stable intelligence, or one of unfixed and changeable

intelligence (Yeager & Dweck, 2021). The concept of the growth mindset then began to develop with the release of the book by Dweck (2006), Mindset: The New Psychology of Success. Specifically, a growth mindset is described as "a person's belief that intelligence or abilities are easily influenced and can be developed through hard work, good strategies, and instruction from others"(Haimovitz & Dweck, 2017 ,p. 1849). A growth mindset has been confirmed to be both a persuasive psychological characteristic and an intra-individual characteristic of individuals (Dweck & Grant, 2008). Growth mindset posits that one's abilities can be developed through effort, practice, and support (Zhao et al, 2021). Students with a growth mindset believe their skills can grow with effort, while those with a fixed mindset perceive abilities as static (Dweck et al, 1995). Students with a growth mindset tend to be intrinsically motivated to learn, driven by curiosity and a desire for understanding, not just grades. They view mistakes as opportunities for learning and accept criticism constructively, demonstrating resilience and persistence (Dweck & Grant, 2008). Consequently, students with a growth mindset are more engaged in academic activities, as shown in previous studies (Carr& Dweck, 2011; Haimovitz & Dweck, 2017; Claro et al., 2016; Dweck & Yeager, 2020; Rege et al 2020 ; Wu ,2019).

As an intra-individual characteristic, a growth mindset has been shown to have a positive effect on learning motivation and resilience to stress for individuals who face challenges during the learning process (Carr & Dweck, 2011). A growth mindset can produce abundant positive outcomes, especially in educational contexts (Burnette et al, 2013). Learners with a growth mindset usually optimize their learning goals, consider

the effort of learning to be rewarding, and see challenges or difficulties as part of the learning process (Haimovitz & Dweck ,2017; Burnette et al, 2013). They actively engage in or expect more from learning (Chao et al, 2017) and set objectives for mastering certain knowledge or skills (Burnette et al, 2013). People with a growth mindset exhibit increased persistence in learning and actively involve themselves in difficult learning tasks and academic buoyancy (Yeager et al, 2019; Pratiwi et al., 2023; Yeager & Dweck, 2012; Aditomo, 2015).

Despite the importance and influential impact of growth mindset, but research on interventions to effect growth mindset on academic engagement and academic buoyancy has been largely neglected. Therefore, with considering this research gap, the need for a comprehensive experimental intervention using a training protocol for teaching growth mindset to students is keenly felt. Based on this, the important question of the present study is how much training growth mindset can increase academic engagement and academic buoyancy?

Research Hypotheses:

1- Teaching growth mindset increases academic engagement.

2- Teaching growth mindset increases academic buoyancy.

Method

The research design in this research is quasi-experimental and pre-test-post-test with the control group. In the current study, teaching growth mindset was selected as independent variables, and academic engagement and academic buoyancy as dependent variables. The statistical population of this research was the 9^{th} grads student's boys. A number of 40 students voluntarily participated in the research in the form of convenience

sampling. Participants were divided into two groups of 20 people by simple random sampling, and they were also assigned to experimental and control groups by simple random sampling and completed the pre-test and post-test questionnaires. The participants of the intervention experimental group received training of growth mindset, but the control group did not receive any intervention. Multivariate analysis of covariance (MANCOVA) was used to analyze the data. The assumptions, including data normality and variance homogeneity were investigated by the Kolmogorov-Smirnov test and Levin test, respectively. Also, the homogeneity of regression slope, equality of variance and covariance were confirmed.

Instruments

Academic Engagement

Academic engagement Questionnaire was designed by Meng and Jin in 2016. This questionnaire consists of 17 items. Responses were provided on a 7-point Likert scale (1= strongly disagree to 7= strongly agree). The reliability of the questionnaire was reported by the developers as .91 using internal consistency. In addition, the academic engagement Questionnaire exhibits adequate validity with factor loadings between (.51 to .88) by the developers. In the present study, the reliability and validity of the research questionnaires were examined in a sample of 70 individuals. The reliability of the questionnaire was calculated using the Cronbach's alpha method, resulting in .89. Additionally, the confirmatory factor analysis index indicated the desirable validity of the questionnaire, with RMSEA=.07, IFI=.93, and CFI=.94.

Academic Buoyancy

Academic buoyancy Questionnaire was designed by Martin and Marsh in 2009. This questionnaire consists of 4 items. Responses were provided on a 5-point Likert scale (1 = strongly disagree to 5= strongly agree). An example item is "I am good at dealing with setbacks in academia, such as negative feedback on my work, poor results". The reliability of the questionnaire was reported by the developers as .81 using internal consistency. In addition, the academic engagement Questionnaire exhibits adequate validity with factor loadings between (.62 to .67) by the developers. In the present study, before conducting the main research, the reliability and validity of the research questionnaires were examined in a sample of 70 individuals. The reliability of the questionnaire was calculated using the Cronbach's alpha method, resulting in .81. Additionally, the confirmatory factor analysis index indicated the desirable validity of the questionnaire, with RMSEA=.08, IFI=.94, and CFI=.95.

In the present study, the training program growth mindset designed by Justin in 2016 was used. This training intervention was held during seven 90-minute sessions during seven weeks. The summary of the mindset training program sessions is presented in Table 1.

Table 1
Summary of Training Sessions of growth mindset Justin (2016)

session	goal	content & assignments
session One	introduces growth mindset	describes and introduces growth mindset, starting with the basic concepts associated with growth

		mindset.
session Two	The role of effort, practice growth mindset	understanding that with continued effort, practice, and repetition, the strength and number of connections between neurons
session Three	function of the brain and growth mindset	It goes on to explain about the work of the brain, what we can do to help our brain function at the optimal level, and what actually happens in the brain when it grows and becomes stronger so that we become smarter
session Four	summarize the key concepts from lessons one through three	follows with a game-show-format competition to summarize the key concepts from lessons one through three, check for student understanding and retention, and to have fun and engage the students
session Five	brain changes and growth mindset	explaining how the brain changes physically during thinking and learning just liken muscle changes physically and grows when it moves during exercise and performs tasks
session Six	importance of understanding and believing in the brain science	the importance of understanding and believing in the brain science that is concerned with the ability of our brains to grow and increase our learning capacity so we become more intelligent.
session Seven	the ability to accept that making mistakes	There is a discussion about a number of now famous personalities and the mistakes and failures they made prior to them becoming successful and famous.

Results

Table 2 shows the mean and standard deviation of academic engagement and academic buoyancy.

Table 2
The Mean and Standard Deviation of Academic Engagement and Academic Buoyancy, Separating the Test Group and Control Group

Statistical indices of variables		Experimental Group		Control Group	
		Mean	S. D.	Mean	S.D.
Academic engagement	Pre-test	41.15	3.75	41.95	3.82
	Post-test	62.80	7.34	39.60	8.97
Academic buoyancy	Pre-test	11.40	2.11	12.23	3.74
	Post-test	16.95	3.83	12.70	2.91

As can be seen in Table 2, the average scores academic engagement and academic buoyancy in the post-test in the experimental group are higher than the average scores of academic engagement and academic buoyancy in the post-test in the control group.

To investigate the impact of teaching growth mindset on the academic engagement and academic buoyancy, a multivariate analysis of covariance (MANCOVA) was used.

Covariance analysis has several main assumptions. Thus, these assumptions must be checked and verified to use this test. These assumptions include normality, homogeneity of the covariance matrix, homogeneity of variances, and homogeneity of regression slopes. Box test was not significant for variables of academic engagement ($p = .42$, $F = .92$, Box = 93.55) and

academic buoyancy (p = .32, F = .98, Box = 91.75). Hence, it can be said that the condition of homogeneity of the covariance matrix was properly met. Levine's test was also not significant for academic engagement (F= 1.35, P=.2) and academic buoyancy (F = 1.36, P=.16). As a result, the condition of equality of inter-group variances was also met. The F value of the interaction of pretests and posttests at the factor levels in the variables of academic engagement and academic buoyancy was not significant at the .01 level. Therefore, the assumption of regression homogeneity was established. Considering the fact that the assumptions of using the analysis of covariance test were properly met, the analysis of covariance was applicable.

In Table 3, the general results of Multivariable Analysis of Covariance are reported.

Table 3
Results of Multivariate Correlation Analysis (MANCOVA)

Test	Value	F	Df	Error df	Sig	Effect size
Pillai's Trace	.95	36.65	2	37	.001	.78
Wilks' Lambda	.09	36.65	2	37	.001	.78
Hotelling's Trace	13/45	36.65	2	37	.001	.78
Roy's Largest Root	13/455	36.65	2	37	.001	.78

As observed in Table3, the results of the multivariate analysis of covariance in the experimental and control groups indicate that these groups differ significantly in at least one of the dependent

variables. To test the hypotheses, a univariate analysis of covariance was used, the results of which are reported in Table 4 and 5.

Table 4
Results of Univariate Analysis of Covariance for academic

Sources of changes	Sum of squares	Df	Mean square	F	Sig	Effect size
Pre-test	133.54	1	133.54	2.76	.10	
Group	2676.40	1	2676.40	55.46	.001	.61
Error	1785.25	38	49.98			
Total	4595.40	40				

Hypothesis 1 suggests that teaching growth mindset increases academic engagement. According to the results listed in Table 4, since F=55/48 was significant at the 0.001 level. Referring to the means in Table 1, it can be observed that the mean scores in the post-test for the experimental group in the academic engagement are higher than the mean scores for the control group. Therefore, hypothesis 1 is confirmed. The effect of growth mindset training was 61%, considering the eta coefficients.

Hypothesis 2 suggests that teaching growth mindset increases academic buoyancy.

Table 5
Results of Univariate Analysis of Covariance for Academic Buoyancy

Sources of	Sum of squares	Df	Mean square	F	Sig	Effect size

changes						
Pre-test	246.65	1	246.65	4.37	.02	
Group	581.32	1	581.32	90.21	.001	.30
Error	485.42	38	12.77			
Total	1313.39	40				

+According to the results listed in Table 5, since F=901/21 was significant at the .001 level. Referring to the means in Table 1, it can be observed that the mean scores in the post-test for the experimental group in the academic buoyancy are higher than the mean scores for the control group. Therefore, hypothesis 1 is confirmed. The effect of growth mindset training was 30%, considering the eta coefficients.

Discussion

The present study was conducted to investigate the effect of teaching growth mindset on academic engagement and academic buoyancy.

The first hypothesis had proposed the effectiveness of teaching growth mindset increases academic engagement. The research results confirm this hypothesis. The findings are consistent with previous research, such as Claro et al. (2016); Dweck & Yeager (2020); Rege et al (2020); Wu (2019) and Haimovitz & Dweck (2017).

Students with a growth-oriented mindset are believed to be more engaged and achieve higher scores (Claro et al., 2016; Dweck & Yeager, 2020). Previous studies have indicated that growth mindset can be stimulated over shorter periods of time (e.g., Niiya et al., 2004), and that it can be cultivated on a more permanent basis by interventions that support its relationship to

behavioral and emotional aspects of engagement and academic achievement (Lin-Siegler et al., 2016). Students who endorse a growth mindset have also been shown to seek more challenging and advanced academic assignments (Rege et al., 2020). Challenge-seeking is thought to be an important precursor to motivational learning processes, possibly mediated by increased perceived competence in completing challenging assignments (Dweck & Yeager, 2019). Students' growth mindset is thus likely to play a role in behavioral engagement, as shown by effort and persistence in schoolwork (Honicke & Broadbent, 2016). Growth mindset is also believed to enhance engagement in deep, self-driven, and valued learning processes, which are likely to reflect an interest in the topic through emotional engagement. Higher perceived academic competence is also associated with enhanced awareness of the relevance of schoolwork, which, in turn, bolsters students' academic achievements (Wu, 2019).

Students who harbor the belief that their abilities or intelligence can be developed or altered through concerted effort and practice are more predisposed to surmount challenges, pressures, and adversities in their academic pursuits. Moreover, they tend to persist and explore solutions, rather than capitulating, when confronted with difficulties or obstacles or obstacles. This predisposition enables them to engage more intensively in academic activities compared to those who perceive their abilities or intelligence as static and immutable. In essence, tertiary education students who believe that their abilities can be cultivated tend to exhibit higher vitality, enthusiasm, and pride towards their studies. Furthermore, they are also able to undergo their studies with consummate

concentration and a sense of joy, thereby perceiving time as seemingly fleeting rapidly and even finding it challenging to extricate themselves from academic activities (Wu, 2019).

The second hypothesis had proposed the effectiveness of teaching growth mindset increases academic buoyancy. The research results confirm this hypothesis. The findings are consistent with previous research, such as Pratiwi et al (2023); Yeager & Dweck (2012); Aditomo, (2015).

A growth mindset significantly influences academic buoyancy. The growth mindset bolsters academic buoyancy by allowing students to view challenges as opportunities for learning. In the academic context, a growth mindset plays a critical role in shaping students' attitudes towards learning and their ability to cope with academic challenges. When students possess a growth mindset, they are more likely to perceive difficulties as temporary setbacks that can be overcome through concerted effort and appropriate strategies. Such a mindset cultivates resilience, perseverance, and motivation, leading to increased academic buoyancy. This aligns with findings from previous research that reported students with a growth mindset tend to view difficulties as learning opportunities and exhibit higher academic buoyancy (Pratiwi et al, 2023).

Students who possess a growth mindset are more inclined to approach academic challenges with a positive demeanor and perceive failure as an opportunity for learning. This propensity is likely to bolster academic buoyancy, as students with a growth mindset are typically resilient in the face of minor academic setbacks, persevering despite encountering difficulties. Students with a growth mindset tend to have strong academic buoyancy, as they view difficulties as temporary and overcome

them with effort and appropriate strategies (Yeager & Dweck, 2012).

When learners hold a more positive attitude toward the learning behavior and have a greater belief in their capability to manage the learning, the person's learning intention may increase. As one of psychological characteristics, growth mindset can increase learners' persistence (Dweck, 2006) and push them to actively take on more difficult learning tasks. Thus, students with a positive growth mindset are likely to have a stronger belief that they have the ability to control the situation of self-regulated learning (Ortiz, et al, 2019).

One important aspect of being a successful educator understands why some students can bounce back following setbacks, while others become de-motivated and suffer negative consequences (Aditomo, 2015). A growth mindset about academic ability prompted the adoption of mastery goals and effort attribution, which buffered against demotivation in the face of an academic setback, which in turn led to better academic achievement (Aditomo, 2015). In their education, students will inevitably experience academic setbacks; how they respond in the face of academic setbacks can determine their level of academic achievement. When students believe that their intelligence is malleable, success and failure in tasks are not taken as a validation of ability. Instead, students are engaged in tasks view them as opportunities to improve their competence. A growth mindset predisposes students to make effort attributions even during times of setbacks and failures. These effort attributions protect them against negative emotions and lack of motivation (Aditomo, 2015).

This study has several limitations that need to be considered. One of the limitations of this study is that it was conducted only on 9th grade boy's students, so caution should be exercised in generalizing the findings to other grades and girl students. Additionally, due to schools constraints, the opportunity to follow up on the results was not possible for a while. Therefore, it is recommended that this issue be addressed in future research.

While convenience sampling inherently carries threats to validity, especially external validity, these can be mitigated through increased sample diversity, statistical controls, using multiple sources, transparent reporting, and supplemental methods. In current research tried to include participants from diverse backgrounds. Instead of using just one group, data was collected from multiple locations and subgroups. A more heterogeneous sample improves the representativeness and enhances generalizability. It has been used statistical techniques like ANCOVA (Analysis of Covariance).These help control the influence of extraneous or confounding variables that may bias your results.

The findings of this research have both practical and theoretical implications. Practically, the results of this study provide valuable insights for educators, counselors, and other educational practitioners. By understanding the benefits of a growth mindset, educational institutions can develop programs and interventions designed to promote growth mindset among students. Furthermore, instructors can be encouraged to provide feedback that supports a growth mindset and urge students to view difficulties and failures as opportunities for learning and growth. Thus, through an approach that focuses on cultivating

mindset, education can be more effective in preparing students to face challenges and achieve success in the future.

Theoretically, the results of this study reinforce and expand the educational psychology literature concerning the roles of growth mindset in enhancing students' academic engagement and academic buoyancy. These findings support previously reported concepts about the benefits of possessing a growth mindset in the educational context. By gaining a deeper understanding of how this construct impact students' academic engagement and academic buoyancy, researchers can further explore other factors that may influence these constructs and develop more comprehensive theoretical models.

Conflict of Interest

The author declare no conflict of interest regarding this article

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References

Aditomo, A. (2015). Students' response to academic setback: "growth mindset" as a buffer against demotivation. *International Journal of Educational Psychology, 4*(2), 198-222.

Boulianne, S., & Theocharis, Y. (2020). Young people, digital media, and engagement: A meta-analysis of research. *Social Science Computer Review, 38*(2), 111–127. https://doi.org/10.1177/0894439318814190

Bresó, E., Schaufeli, W. B., & Salanova, M. (2011). Can a self-efficacy-based intervention decrease burnout, increase engagement, and enhance performance? A quasi-experimental study. *Higher Education, 61*(4), 339-355. http://dx.doi.org/10.1007/s10734-010-9334-6

Burnette, J. L., O'boyle, E. H., VanEpps, E. M., Pollack, J. M., & Finkel, E. J. (2013). Mind-sets matter: A meta-analytic review of implicit theories and self-regulation. *Psychol. Bull*, *139*, 655–701.

Carr, P. B., & Dweck, C. S. (2011). Intelligence and Motivation. In *The Cambridge Handbook of Intelligence*; Kaufman, R.J.S.S.B., Ed.; Cambridge University Press: Cambridge, UK, pp. 748–770

Chao, M. M., Visaria, S., Mukhopadhyay, A., & Dehejia, R. (2017). Do rewards reinforce the growth mindset?Joint effects of the growth mindset and incentive schemes in a field intervention. *J. Exp. Psychol. Gen*, *146*, 1402. https://doi.org/10.1037/xge0000355

Claro, S., Paunesku, D., & Dweck, C. S. (2016). Growth mindset tempers the efects of poverty on academic achievement. *Proceedings of the National Academy of Sciences, 113*(31), 8664–8668..https://doi.org/10.1073/pnas.1608207113

Colmar, S., Liem, G. A. D., Connor, J., & Martin, A. J. (2019). Exploring the relationships between academic buoyancy, academic self-concept, and academic performance: A study of.mathematics.and

reading among primary school students. *Educational Psychology,.39*(8),1068–1089.

https://doi.org/10.1080/01443410.2019.1617409

Dweck, C. S., & Yeager, D. S. (2019). Mindsets: A view from two.eras..*Perspectives.on.Psychological Science,.14*(3),.481–496. https://doi.org/10.1177/1745691618804166

Dweck, C. S., & Grant, H. (2008). Self-Theories, Goals, and Meaning. In *Handbook of Motivation Science*; Gardner, J.Y.S.W.L., Ed.; Guilford Press: New York, NY, USA.

Dweck, C. S. (2006). *Mindset: The New Psychology of Success*; Random House: New York, NY, USA.

Dweck, C. S., Chiu, C. Y., & Hong, Y. (1995). Implicit theories and their role in judgments and reactions: A word from two perspectives. *Psychol. Inq*, *6*, 267–285. https://doi.org/10.1207/s15327965pli0604_1.

Haimovitz, K., & Dweck, C. S. (2017). The origins of children's growth and fixed mindsets: New research and a new proposal. *Children.Development.,.88,*.1849–1859. https://doi.org/10.1111/cdev.12955.

Hirvonen, R., Putwain, D. W., Määttä, S., Ahonen, T., & Kiuru, N. (2020). The role of academic buoyancy and emotions in students' learning-related expectations and behaviours in primary school. *British Journal of Educational Psychology*, *90*(4), 948–963.

Hoferichter, F., Hirvonen, R., & Kiuru, N. (2021). The development of school well-being in secondary school: High academic buoyancy and supportive class- and school climate as buffers. *Learning and Instruction, 71*, 101377. https://doi.org/10.1016/j.learninstruc.2020.101377

Honicke, T., & Broadbent, J. (2016). The influence of academic self-efficacy on academic performance: A systematic

review. *Educational Research Review, 17*, 63–84. https://doi.org/10.1016/j.edurev.2015.11.002

Jansen, R. S., Van Leeuwen, A., Janssen, J., Jak, S., & Lester, L. (2019). Self-regulated learning partially mediates the effect of self-regulated learning interventions on achievement in higher education: A meta-analysis. *Educational Research Review, 28.* https://doi.org/10.1016/j.edurev.2019.100292

Justin, E. (2016). What are you learning? Competencies, standards, and outcomes in online education. *Online College Website.*

Lei, H., Cui, Y., & Zhou, W. (2018). Relationships between student engagement and academic achievement: A meta-analysis. *Social Behavior and Personality: An International Journal, 46*(3), 517–528. https://doi.org/10.2224/sbp.7054

Lin-Siegler, X., Ahn, J. N., Chen, J., Fang, F. F. A., & Luna-Lucero, M. (2016). Even Einstein struggled: Effects of learning about great scientists' struggles on high school students' motivation to learn science. *Journal of Educational Psychology,.108*(3),.314–328. https://doi.org/10.1037/edu0000092.

Martin, A. J., & Marsh, H. W. (2008a). 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.

Martin, A. J., & Marsh, H. W. (2009). Academic resilience and academic buoyancy: Multidimensional and hierarchical conceptual framing of causes, correlates and cognate constructs. Oxford Review of Education. 35(3), 353–370.

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

Myent, H., & Khaing, N. (2020). Factors influencing academic engagement of university students: A meta-analysis study. *Journal of Myanmar Academic Arts and Sciences, 18* (9b), 185–199. http://www.maas.edu.mm/Research/details.php?id=1304

Niiya, Y., Crocker, J., & Bartmess, E. N. (2004). From vulnerability to resilience: Learning orientations buffer contingent self-esteem from failure. *Psychological Science, 15*(12),.801–805.https://doi.org/10.1111/j.0956-7976.2004.00759.x.

Ortiz Alvarado, N. B., Rodríguez, Ontiveros, M., & Ayala Gaytán, E. A. (2019). Do mindsets shape students' well-being and performance? *Journal of Psychology,153*(8), 843–859.

Ouweneel, E., Le Blanc, P. M., & Schaufeli, W. B. (2014). On being grateful and kind: Results of two randomized controlled trials on study-related emotions and academic engagement. *The Journal of Psychology: Interdisciplinary and,Applied,.148*(1), 37-60. http://dx.doi.org/10.1080/00223980.2012.742854.

Ouweneel, E., Le Blanc, P. M., & Schaufeli, W. B. (2014). On being grateful and kind: Results of two randomized controlled trials on study-related emotions and academic engagement. *The Journal of Psychology: Interdisciplinary and Applied, 148*(1), 37-60. http://dx.doi.org/10.1080/00223980.2012.742854.

Ouweneel, E., Schaufeli, W. B., & Le Blanc, P. M. (2013).

Believe, and You Will Achieve: Changes over Time in Self-Efficacy, Engagement, and Performance. *Applied Psychology: Health and Well-Being, 5*(2), 225-247. http://dx.doi.org/10.1111/aphw.12008

Pratiwi, M., Dwi Iswari, R., Delaritas Nesvita, M., & Sabila Khairiyah, U. (2023). Growth mindset and grit: *Examining the academic buoyancy of college students implementing online lectures, 12*(1), 70–80.

Putwain, D. W., Wood, P., & Pekrun, R. (2020b). Achievement emotions and academic achievement: Reciprocal relations and the moderating influence of academic buoyancy. *Journal of Educational Psychology.* Advance online publication. https://doi.org/10.1037/edu0000637.

Rege, M., Hanselman, P., Solli, I. F., Dweck, C. S., Ludvigsen, S., Bettinger, E., Crosnoe, R., Muller, C., Walton, G., & Duckworth, A. (2020). How can we inspire nations of learners? An investigation of growth mindset and challenge-seeking in two countries. *American Psychologist, 76*(5), 755–767. https://doi.org/10.1037/amp0000647

Salmela-Aro, K., & Upadyaya, K. (2014). School burnout and engagement in the context of demands–resources model. *British Journal of Educational Psychology, 84*(1), 137-151. http://dx.doi.org/10.1111/bjep.1201

Schaufeli, W. B., Salanova, M., González-romá, V., & Bakker, A. B. (2002). The Measurement of Engagement and Burnout: A Two Sample Confirmatory Factor Analytic Approach. *Journal of Happiness Studies, 3*(1), 71-92. http://dx.doi.org/10.1023/A:1015630930326

Tuominen-Soini, H., & Salmela-Aro, K. (2014). Schoolwork engagement and burnout among Finnish high school

students and young adults: Profiles, progressions, and educational outcomes. *Developmental Psychology, 50*(3), 649. http://dx.doi.org/10.1037/a0033898.

Upadyaya, K., & Salmela-Aro, K. (2013). Development of school engagement in association with academic success and well-being in varying social contexts: A review of empirical research. *European Psychologist, 18*(2), 136-147. http://dx.doi.org/10.1027/1016-9040/a000143

Wu, Z. (2019). Academic motivation, engagement, and achievement among college students. *College Student Journal, 53*(1), 99–112.

Yeager, D. S., & Dweck, C. S. (2012). Mindsets that promote resilience: When students believe that personal characteristics can be developed. *Educational Psychology, 47*(4),.302–314. http://dx.doi.org/10.1080/00461520.2012.722805

Yeager, D. S., Hanselman, P., Walton, G. M., Murray, J. S., Crosnoe, R., Muller, C., Tipton, E., Schneider, B., Hulleman, C. S., & Hinojosa, C. P. (2019). A national experiment reveals where a growth mindset improves achievement. *Nature, 573*, 364–369. https://doi.org/10.1038/s41586-019-1466-y.

Zhao, H., Xiong, J., Zhang, Z., & Qi, C. (*2021***).** Growth mindset and college students' learning engagement during the COVID-19 pandemic: A serial mediation model. *Front. Psychol,12,*621094. https://doi.org/10.3389/fpsyg.2021.621094.