



Exploring The Role of Epistemic Emotions on Students' Academic Performance

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Abstract. Academic achievement is influenced by a variety of factors, including interest, knowledge, friendships, family, and other factors. In the past, we could have linked a student's academic success to their focus in class, their command of the material, and the support of their parents and teachers. But as psychology has advanced, it has been discovered that a number of students' psychological activities related to learning might also have an impact on their academic achievement. The impact of epistemic emotions on students' academic performance will be demonstrated in this essay.

Keywords: epistemic emotions, academic performance, street

1 Introduction

With the advancement of human research, an increasing number of experimental data indicate that emotions have a substantial effect on complex learning and cognition [1]. Emotions are a means by which we are able to detect changes in our bodies [2]. There are a wide variety of emotions, the majority of which can be categorized as either positive emotion or negative. Feelings such as happiness, pleasure, and love are all examples of positive emotions. And a healthy dose of positive emotion can not only help people develop strong social connections but also improve their overall health [3]. On the other hand, when people feel negative emotions, it is typically because they are unable to find anything pleasurable to experience, which be defined as an unhappy emotion [4].

Emotions are associated with a variety of factors, and in the field of education, they play a crucial role. The academic environment is packed with emotions, including pride, enjoyment, anxiety or boredom, which can substantially impact student's motivation and performance [5]. Emotions influence learning in two ways: positive emotions assist students in concentrating and developing strategies to cope with challenges and setbacks despite encountering them. Positive emotions are an effective motivator for both student motivation and academic accomplishment. However, negative emotions can make students averse to learning and discourage their pursuit of knowledge [6]. Consequently, emotions have a substantial impact on the learning performance of children to a certain extent.

We all know that every negative emotion includes a bad feeling. Additionally epistemic emotions are the type of emotions that can directly affect students' academic achievement, according to research in educational psychology. For instance, many college students typically produce poor work during their first year because they are experiencing negative emotions, the same emotions that lead to academic failure. Students will also lose interest in learning if they find studying uninteresting [7]. On the other hand, those who study while experiencing negative emotions frequently lack the skills to manage those feelings [8]. The depth of how stress affects students' ability to learn and how it varies in various settings will be covered in the following part.

1.1 Stress's function on learning depends on specific situation

According to Tyng, Amin, Saad and Malik (2017), emotions plays a significant role in learning, and evidence indicates that emotions have a substantial impact on attention and long-term memory [9]. In this article, the author notes that negative emotion have a negative effect on learning, with some exception. People's attention and memory will improve with moderate stress; however, excessive and persistent stress affects memory. According to Shors the effects of stress on learning are adjustable [10]. Therefore, despite the fact that stress is categorized as a negative emotion, its influence on academic performance is not wholly positive nor wholly negative. As one of the most contradictory of the negative emotions, we should analyze the specific impacts of stress. Numerous studies have demonstrated that reduced levels of stress facilitate the construction of students' memory and have a positive impact on their academic performance. The retrieval of our memories can be affected by stress, and when relatively high level of stress is coupled with a negative event, such as high level of stress brought on by exam, the negative emotions can have a negative impact on students' attitudes toward learning and even their ability to retrieve their memories during the exam, which can result in lower academic achievement [11].

Hobson (2018) has written an article regarding stress and learning, in which he mentions that many students forget the have learned throughout their test, even if they prepared well. This is due to the fact that stress impairs our ability to recall past events [12]. In such a circumstance, stress has a negative effect on learning, and the short-term decline in memory function will not only reduce our learning efficiency but also prevents us from utilizing our strengths during the exam, resulting in poor performance. Having said that there is an additional circumstance. If we handle our stress in the right way, it has the potential to become a positive aspect of our ability to learn. Rudland, Golding and Wilkinson discovered that in some fields, people who experience stress are able to reach higher levels of success, that the appropriate amount of stress can help people grow and learn and increase their motivation to learn [13]. Rather than simply eliminating stress, we should aim to keep it within a manageable range; excessive comfort may impair our concentration to some degree.

1.2 Enjoyment benefits positive learning outcomes

Finding the key characteristics that influence students' academic achievement is the pursuit of many psychologists. Academic performance is an essential aspect of education, and it has been the focus of several studies. Positive emotions, such as enjoyment, happiness, and pride, are associated with better academic performance, according to research. On the other hand, boredom and other negative emotions reduce motivation to learn and interfere with our ability to learn more effectively, resulting in poor academic performance [13]. Since Tyng, Amin, Saad, and Malik discussed the relationship between emotion and academic achievement, this study examines the correlation between emotion and academic performance. If you employ a positive mood to overcome difficulty or confusion, you can enhance your academic performance [9].

Kulakow and Raufelder discussed the connection between enjoyment and learning. They noted that making studying entertaining enhances students' motivation and gives them the incentive to learn better [14]. Simultaneously, engaging lectures and conversations can boost the students' learning experience and help them obtain higher results. Additionally, making learning fun will increase people's enjoyment of the process. A positive attitude makes studying more satisfying, improves memory retention, and enables pupils to concentrate more intently on their academic assignments. And an optimistic outlook can enhance our learning process, making it simpler to learn well [15].

1.3 Different emotions predict students' appraisal on specific academic contexts

There is research that demonstrates how different emotions affect students when they are learning a second language. The research model demonstrates that when students experience anxiety in the classroom, it is detrimental to their learning because they will make a connection between anxiety and the classroom, concluding that the classroom makes them feel bad, and this way of thinking will impede students' academic achievement to some degree. However, if students find the lesson interesting, teachers make the class fascinating while also providing encouragement and appreciation to students. Even when the students encounter a difficult situation, they continue to improve. In addition, there is evidence that students who love learning a second language tend to have more positive feelings toward their teachers and parents [16]. Therefore, based on this research, we can conclude that the learning emotion will, in some way, encourage students to form a connection with the class. If students learn in a way that they find enjoyable, they will believe that what they are learning is what makes them feel this way, and as a result, they will be more motivated to learn and produce greater learning outcomes.

Research Questions (RQ):

RQ1: What is the role of stress in learning performance?

RQ2: Why positive emotion can lead to good academic performance?

2 Method

2.1 Participants

There were 102 participants in this study. I created a survey and distributed it to everyone. They were from various majors and academic levels. Students in middle school make up 18.63% of the participants, undergraduate students make up 61.73%, and graduate students make up 19.61%.

2.2 Research Design

This work had included two types of questions in my survey: a 10-point Likert scale for evaluating emotions and open-ended questions. The research covered the following topics in the 10-likert scale questions: "Do you think emotions impact academic achievement?" And "Do you think it is important to regulate your emotions when studying? ", choose the number from 0 to 10 that best describes you. And the open-ended question asked about "Which emotions will help you prepare for examinations and get better grades, and why?" and "In your opinion, will feeling stressed in your studies have a good or bad effect on your academic performance, and why?"

2.3 Analytic Method

This research uses Jeffreys' Amazing Statistics Program (JASP, 2019) to determine the mean and standard deviation of the multiple-choice items in the survey. And for the open-ended question, I chose ten percent of the participants from the high school students, college students, and graduate students, and examined the study questions based on their responses.

2.4 Result

In the 10-likert scale question "do you think emotions have an impact on academic achievement? ", the mean response is 7.343 (n=102), and 88.23% of respondents choose the number over 5, whereas the mean response to the question "do you think it is important to regulate your emotions while studying?" is 8.71 (n=102), and 95% of respondents choose the number over 5. Consequently, the majority of individuals believe that emotions have an impact on their academic performance, and regulating emotions is a useful strategy to assist people maintain the emotions that can aid their academic performance while they are studying. This conclusion was consistent with the studies conducted by Finch, Peacock, Lazdowski, and Hwang, whose findings indicate that emotions can play either a positive or negative influence in learning [17]. Negative emotions can limit learning outcomes, and learning to effectively manage your emotions will help you control negative emotions so you can concentrate on your learning objectives [18].

The response to RQ1 has been read in order to learn more about the impact stress has on learning "In your opinion, feeling stressed in your studies will have a good or

bad effect on your academic performance and why?”. The participants' responses appear to be rather similar, and some of their responses are as follows: “Although appropriate pressure can bring good effects, pressure will be motivated to continue to study well and strive hard, but excessive pressure will be counterproductive, so that you have a low self-esteem mentality, thus losing confidence in learning, not confident in themselves.” “Moderate stress can promote academic research progress; however, excessive stress can overwhelm one's mind and make it impossible to work properly. Having a proper sense of urgency can produce good results, but still, one should not be overly stressed, or it will easily lead to poor research results or even academic misconduct due to the rush for quick success.” “Appropriate tension can maintain focus, but excessive tension can interfere too much with the mind before the exam, thus making it difficult to quietly play at the right level.” Those three comments are from three separate grade-level participants, and after reading all of their responses, the research found that their opinions were quite similar to those of the aforementioned three examples. It is simple to discover that they all believe that the correct amount of tension might enhance learning and focus. However, excessive stress can have more detrimental impacts on learning, such as lowering self-esteem, performing poorly on exams, or acting improperly to achieve the desired results. And the article written by Hayat supports this theory as well: the appropriate amount of stress can help students succeed in their studies, but too much stress can have a detrimental impact on students' learning and can lead to a deterioration in performance or even dropping out of school. Good pressure can boost student productivity, but unrealistic expectations can be extremely unpleasant, impair student concentration, and raise anxiety and fear of learning [19].

In RQ2, this question wants to determine why positive emotions can contribute to academic success, so the questions in survey asked participants which feelings can help them earn excellent grades and why. The majority of participants responded with words such as calm, enjoy, happy, and relax. And few individuals write about unpleasant emotions such as tension. A few responses were randomly chosen from all participants at random to present in this study. “Maintaining a happy, relaxed state of mind before the exam helps the exam to play well, minimizes anxiety, and helps the exam to play normally or exceedingly well.” “A relaxed mind allows me to get good grades because a calm mood allows me to immerse myself in the test questions, focus more, and recall what I've learned well, so I can get better grades.” “A happy mood can help me get better results in the exams because a happy mood can make me more relaxed and prevent me from being too nervous to play well.” After going through all of the responses to this question, it seems like some keyword is coming up and relating to this. Positive emotions can help people become more resilient in the face of difficulties in our studies and more steadfast in our pursuit of our objectives. In addition, the findings of the research conducted by Rowe, Fitness, and Wood (2015) lend support to this conclusion. In this study, teachers and students were asked to discuss how they felt about emotions and learning. Participants believed that positive emotions improved their attention and memory while learning and helped them make connections between emotions and learning, which sparked their interest in the subject matter and increased their engagement and commitment [20].

3 Conclusion

This study examines how epistemic emotions affect students' academic performance with the goal of exploring and illuminating the positive and negative emotions that can have a good or negative impact on how well students learn. In summary, both the research and the literature review reached the conclusion that having positive emotions has a beneficial impact on one's ability to learn. Students who exhibit positive emotions while they are learning not only increase their overall academic performance, but they will also have brighter employment opportunities in the future to come if they continue to demonstrate these feelings [21]. And students who are experiencing negative emotions typically suffer from memory problems and a lack of drive to study new material. Students who have persistently negative feelings have a greater risk of being dissatisfied with their academic work and, as a consequence, of not achieving satisfactory academic results [8].

However, emotions are not inherently uncontrollable. And there may be solutions to assist students in regulating their emotions, which, if they can reduce the impact of unpleasant emotions on their academic performance, can further improve academic performance. Negative emotions can arise when students are unsatisfied with what they are doing, resulting in a drop in motivation to learn in all subject areas. However, if students discover that what they are doing is valuable, this may soothe their negative emotions and restore their motivation to study. In their study from 2020, Obergruesser and Stoeger investigate the influence of two different emotions. According to the findings of this study, people frequently experience both pleased and dull feelings while they are learning new things. According to the findings, positive emotions have a beneficial impact on the learning tactics and effectiveness of students, but monotonous activities can initially induce feelings of boredom in people. However, the experience that students have does not become less valuable over the course of their education provided they consistently engage in activities that are designed to enhance their capacity for learning [18].

References

1. Vogl, E., Pekrun, R., Murayama, K., Loderer, K., & Schubert, S. (2019). Surprise, Curiosity, and Confusion Promote Knowledge Exploration: Evidence for Robust Effects of Epistemic Emotions. *Frontiers in Psychology*, 10. <https://www.frontiersin.org/articles/10.3389/fpsyg.2019.02474>
2. Adolphs, R. (2010). Emotion. *Current Biology*, 20(13), R549–R552. <https://doi.org/10.1016/j.cub.2010.05.046>
3. Kok, B. E., Coffey, K. A., Cohn, M. A., Catalino, L. I., Vacharkulksemsuk, T., Algoe, S. B., Brantley, M., & Fredrickson, B. L. (2013). How Positive Emotions Build Physical Health: Perceived Positive Social Connections Account for the Upward Spiral Between Positive Emotions and Vagal Tone. *Psychological Science*, 24(7), 1123–1132.
4. MA C. E. A. (2019, April 27). *What are Positive and Negative Emotions and Do We Need Both?* PositivePsychology.com. <https://positivepsychology.com/positive-negative-emotions/>

5. Pekrun, R., Goetz, T., Frenzel, A. C., Barchfeld, P., & Perry, R. P. (2011). Measuring emotions in students' learning and performance: The Achievement Emotions Questionnaire (AEQ). *Contemporary Educational Psychology*, *36*(1), 36–48. <https://doi.org/10.1016/j.cedpsych.2010.10.002>
6. Osika, A., MacMahon, S., Lodge, J., & Carroll, A. (2022, March 18). *Emotions and learning: What role do emotions play in how and why students learn?* THE Campus Learn, Share, Connect. <https://www.timeshighereducation.com/campus/emotions-and-learning-what-role-do-emotions-play-how-and-why-students-learn>
7. Niculescu, A. C., Tempelaar, D. T., Dailey-Hebert, A., Segers, M., & Gijsselaers, W. H. (2016). Extending the change–change model of achievement emotions: The inclusion of negative learning emotions. *Learning and Individual Differences*, *47*, 289–297. <https://doi.org/10.1016/j.lindif.2015.12.015>
8. Wortha, F., Azevedo, R., Taub, M., & Narciss, S. (2019). Multiple Negative Emotions During Learning with Digital Learning Environments – Evidence on Their Detrimental Effect on Learning From Two Methodological Approaches. *Frontiers in Psychology*, *10*. <https://www.frontiersin.org/articles/10.3389/fpsyg.2019.02678>
9. Tyng, C. M., Amin, H. U., Saad, M. N. M., & Malik, A. S. (2017). The Influences of Emotion on Learning and Memory. *Frontiers in Psychology*, *8*. <https://www.frontiersin.org/articles/10.3389/fpsyg.2017.01454>
10. [Shors, T. J. (2004). Learning During Stressful Times. *Learning & Memory (Cold Spring Harbor, N.Y.)*, *11*(2), 137–144. <https://doi.org/10.1101/lm.66604>
11. Vogel, S., & Schwabe, L. (2016). Learning and memory under stress: Implications for the classroom. *Npj Science of Learning*, *1*(1), 1–10. <https://doi.org/10.1038/npjscilearn.2016.1>
12. Hobson N. (2018, April 2). *Why Your Brain on Stress Fails to Learn Properly*. <https://www.psychologytoday.com/us/blog/ritual-and-the-brain/201804/why-your-brain-stress-fails-learn-properly>
13. Rudland, J. R., Golding, C., & Wilkinson, T. J. (2020). The stress paradox: How stress can be good for learning. *Medical Education*, *54*(1), 40–45. <https://doi.org/10.1111/medu.13830>
14. Kulakow, S., & Raufelder, D. (2020). Enjoyment benefits adolescents' self-determined motivation in student-centered learning. *International Journal of Educational Research*, *103*, 101635. <https://doi.org/10.1016/j.ijer.2020.101635>
- Obergriesser, S., & Stoeger, H. (2020). Students' emotions of enjoyment and boredom and their use of cognitive learning strategies – How do they affect one another? *Learning and Instruction*, *66*, 101285. <https://doi.org/10.1016/j.learninstruc.2019.101285>
15. Shukla A. (2019, October 22). Why Fun, Curiosity & Engagement Improves Learning: Mood, Senses, Neurons, Arousal, Cognition. *Cognition Today*. <https://cognitiontoday.com/why-fun-improves-learning-mood-senses-neurons-arousal-cognition/>
16. Saito, K., Dewaele, J.-M., Abe, M., & In'nami, Y. (2018). Motivation, Emotion, Learning Experience, and Second Language Comprehensibility Development in Classroom Settings: A Cross-Sectional and Longitudinal Study. *Language Learning*, *68*(3), 709–743. <https://doi.org/10.1111/lang.12297>
17. Finch, D., Peacock, M., Lazdowski, D., & Hwang, M. (2015). Managing emotions: A case study exploring the relationship between experiential learning, emotions, and student performance. *The International Journal of Management Education*, *13*(1), 23–36. <https://doi.org/10.1016/j.ijme.2014.12.001>
18. Obergriesser, S., & Stoeger, H. (2020). Students' emotions of enjoyment and boredom and their use of cognitive learning strategies – How do they affect one another? *Learning and Instruction*, *66*, 101285. <https://doi.org/10.1016/j.learninstruc.2019.101285>

19. Hayat, A. A., Shateri, K., Amini, M., & Shokrpour, N. (2020). Relationships between academic self-efficacy, learning-related emotions, and metacognitive learning strategies with academic performance in medical students: A structural equation model. *BMC Medical Education*, 20(1), 76. <https://doi.org/10.1186/s12909-020-01995-9>
20. Rowe, A. D., Fitness, J., & Wood, L. N. (2015). University student and lecturer perceptions of positive emotions in learning. *International Journal of Qualitative Studies in Education*, 28(1), 1–20. <https://doi.org/10.1080/09518398.2013.847506>
21. Williams, K. H., Childers, C., & Kemp, E. (2013). Stimulating and Enhancing Student Learning Through Positive Emotions. *Journal of Teaching in Travel & Tourism*, 13(3), 209–227. <https://doi.org/10.1080/15313220.2013.813320>

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