International Journal of Humanity, Social Science & Legal Research Vol.2 No.1 2025
ISSN: 3078-8749

EXPLORING THE CORRELATION BETWEEN PERSONAL EMOTIONS, IMPLICIT THEORIES OF INTELLIGENCE, AND ACADEMIC PERFORMANCE AMONG COLLEGE STUDENTS

Yundong Wu[1], Weijian Kong[2], Ruofan Lin[3], Xiaoqing Xi[4], Tingting Lv[5]

[1] Yundong Wu, Graduate School, Dongshin University, Jeollanam do, Luoju, South Korea

[2] Weijian Kong, Ocean Training School, Quanzhou Ocean Institute, Fujian, Quanzhou, China

[3] Ruofan Lin, School of Continuing Education , Liming Vocational University, Fujian, Quanzhou, China

[4] Xiaoqing Xi, Graduate School, Dongshin University, Jeollanam do, Lohju, South Korea

[5] Tingting Lv, Information Engineering School, Quanzhou Ocean Institute, Fujian, Quanzhou, China

Submitted: 2024-12-27 Revised: 2025-02-01 Accepted: 2025-02-27

ABSTRACT

This study delves into the complex relationship between positive emotions, negative emotions, implicit theories of intelligence, and academic performance among college students. Using questionnaires, this study collected data from 126 students at twenty four-year universities in Wuhan, Hubei Province, China, and carefully analysed the correlations between these variables. The findings revealed a significant negative correlation between negative emotions and academic performance, indicating that higher levels of negative emotions are associated with lower academic performance. This highlights the detrimental effects of negative

emotions on students' motivation, learning strategies and overall performance. However, no significant relationship was observed between positive emotions, theory of intelligence and academic achievement. This implies that positive emotions and theories of intelligence may not directly affect academic performance, but can play a role through mediating variables such as motivation and learning strategies. The insights from this study contribute to a more comprehensive understanding of the multifaceted effects of academic emotions and theories of intelligence on the academic performance of college students. The findings emphasise the importance of addressing negative emotions and fostering positive emotions in students in order to improve their learning efficiency and overall academic success.

Keywords: Implicit theories of intelligence; Academic performance; Negative emotions; Positive emotions; College students

1. INTRODUCTION

In the era of rapidly developing knowledge economy, high-quality talents cultivated by higher education institutions are regarded as the key to national competitiveness. As an important part of this group, the academic performance of college students is not only related to their future career development, but also has a far-reaching impact on the talent pool and scientific and technological progress of the whole society. However, the academic performance of college students does not exist in isolation; it is affected by a variety of internal psychological factors and external environmental factors (Qureshi, Khaskheli, Qureshi, Raza& Yousufi, 2023). Among the many influencing factors, two psychological variables, personal emotions and implicit theories of intelligence, have attracted much attention.

University life is a challenging stage in which students face multiple pressures such as academic pressure, interpersonal relationship management, and future career planning. These pressures often lead to fluctuations in college students' personal emotions, which, as an important part of an individual's psychological state, have a direct and significant impact on cognitive processes, behavioural choices and academic performance (Ramón-Arbués et al., 2020). Studies have shown that positive emotional states contribute to academic efficiency,

while negative emotional states can be an obstacle to academic success (Abdullah, Ameen, Sadeeq& Zeebaree,2021). Therefore, understanding the relationship between emotional states and academic performance among college students is important for promoting their psychological health and academic progress.

Meanwhile, implicit theories of intelligence, as a system of individuals' internal beliefs about the nature and development of intelligence, shape students' attitudes, motivation, and self-efficacy for learning to some extent (Scherer, Campos, 2020). College students who hold different implicit theories of intelligence may adopt different learning strategies that may affect their academic performance. For example, students holding a growth mindset tend to believe that intelligence can be improved through hard work, a belief that may motivate them to face academic challenges more positively, leading to better academic performance. On the contrary, students with a fixed mindset may believe that intelligence is inherent and unchangeable, which may limit their learning efforts and academic achievement (Woon Chia Liu, 2023).

The goal of this study is to reveal the specific pathways through which personal emotions and implicit theories of intelligence affect academic performance, as well as the interactions between these psychological variables, by analysing data from 126 university students from Wuhan, Hubei Province, China. Through a deeper understanding of these relationships, this study expects to provide higher education practitioners with effective intervention strategies to help college students better manage their emotions and develop positive implicit theories of intelligence, thereby improving their academic performance and overall educational quality.

Based on the intersection of psychology and education, this study takes a unique perspective to deeply analyse the complex correlation between college students' personal emotions, implicit theories of intelligence and academic performance. This study not only focuses on the internal mechanisms of college students' psychological states, but also explores how these psychological factors play a role in the actual learning process, which in turn affects the performance of academic achievement. The goal of this study is to reveal the interactions and influence pathways between these three in an all-round and multi-angle

manner, aiming to provide a series of useful insights and lessons for the reform and development of higher education. This study helps to deepen the understanding of the relationship between college students' emotion management and academic performance, thus guiding educational practitioners to carry out mental health education and emotion counselling more scientifically. Second, this study's exploration of the implicit theory of intelligence will help educators recognise the importance of students' internal belief systems, and thus cultivate students' growth mindset and stimulate their learning potential through educational and teaching reforms. Finally, the results and findings of this study are expected to provide an empirical basis for the formulation and adjustment of higher education policies, and to promote the innovation of education systems and teaching methods to meet the needs of talent cultivation in the new era.

2. THEORETICAL BACKGROUND

Emotion, a complex and multidimensional psychological phenomenon, can be precisely defined as a series of closely interconnected and interwoven psychological processes. These processes encompass not only the specific emotional responses that an individual produces in a given situation, but also the related cognitive appraisal, intrinsic motivation, and psychological make-up, among other elements (Pekrun, 2024). Together, they constitute the large and delicate system of emotion, which enables human beings to experience rich and varied emotional changes in different life scenarios.

In recent years, with the continuous deepening and development of psychological research, the role played by emotion in various situations has received increasing attention from academics. Numerous scholars have devoted themselves to research in this field in an attempt to reveal the impact of emotion on human behaviour, cognition, and mental health. Among them, the studies of Zheng Lian et al. (2021), Drigas et al. (2021), Van Kleef and Côté (2022), and Barrett and Westlin (2021) are particularly notable. Through different experimental designs and research methods, they have made important contributions to the development of emotion research by thoroughly exploring the mechanisms of emotion in

different contexts.

In the academic field, Pekrun et al. (2002) introduced the concept of academic mood as a phenomenon that is prevalent in academic settings. They argued that academic mood is closely related to students' learning activities, educational experiences, and academic outcomes, and has a profound impact on an individual's academic development and psychological well-being. In order to gain a deeper understanding of academic emotions, Pekrun et al. further introduced the concept of achievement emotions, which specifically refers to those emotional experiences that are directly related to successful academic activities or outcomes. These emotions not only reflect students' expectations and pursuit of academic achievement, but also play an important role in moderating their learning behaviours, cognitive strategies, and learning outcomes.

In Pekrun's theoretical framework, achievement emotions are further subdivided into two main categories: one is closely related to the current learning activity being carried out, such as the emotions of interest, curiosity, and engagement that students feel during the learning process; and the other is closely linked to the results achieved by the learning activity, such as the emotions of pride, satisfaction, and accomplishment that students feel after achieving excellent results. These two types of emotions are intertwined and work together to form an important psychological foundation for students' academic success.

In addition, Pekrun's theory introduces two dimensions, value and activation, to categorise academic emotions. The value dimension is used to differentiate between positive and negative emotions, reflecting students' subjective evaluations of different academic situations and outcomes, while the activation dimension divides emotions according to their level of activation, revealing the effects of different emotional states on students' behavioural responses and cognitive processes. Based on this categorisation, Pekrun (2006) proposed four categories of academic emotions: positive activating emotions (e.g., fun, hope, and pride), negative activating emotions (e.g., anxiety, anger in the face of difficulties), and negative deactivating emotions (e.g., despair and boredom in the academic classroom). These clusters of emotions not only provide a clear categorisation framework for the study of academic

emotions, but also provide useful insights and guidance for educational practice.

Positive emotional experiences play a pivotal role in an individual's path to ultimate success, especially in the academic realm, and have a profound impact on a student's academic performance (Pekrun, 2009). In this area, Fredrickson (2001) suggests that positive emotions are not only a catalyst for psychological growth, but also an important way to improve physical and mental health over time, which is further elaborated by Fredrickson's broaden-and-build theory, which suggests that the accumulation of positive emotions broadens the scope of an individual's thinking and action, and builds a rich psychological profile. It is believed that the accumulation of positive emotions can broaden an individual's scope of thinking and action, and build up rich psychological resources, which enable an individual to cope with high-pressure situations with greater ease. (Stanley, Schutte, 2023).

In fact, a growing number of researchers have argued that positive emotions have a positive impact on learning and performance. studies by Zhongxi Lu et al. (2021) as well as Felsman et al. (2020) have shown that positive emotions enhance divergent thinking, promote flexible problem solving, and enhance cognitive performance. studies by Alexander (2021) have also shown that positive emotions can facilitate information processing.

A study by Duca et al. (2023) found that positive emotions like hope were positively associated with the use of strategic processing methods, in contrast to negative emotions. Other researchers have also found that academic emotions are strongly related to academic outcomes.Xuehong Yin's (2021) study showed that positively activated emotions such as hope and pride were significantly positively related to students' test scores, whereas both activated and inactivated negative emotions (e.g., anger, anxiety, shame, despair, and boredom) were negatively related to test scores.Mercadante et al. (2021) and Shengji Li et al. (2024) also found that amusement and pride were positive predictors of college student achievement. Together, these studies suggest that the role of positive emotions in academics cannot be ignored, and that they not only affect students' psychological states, but also directly correlate with their academic achievement.

Emotions, whether expressed positively or negatively, play a pivotal role in an

individual's daily life and have a significant impact on students' academic performance. These emotional states may not only diminish individuals' motivation to learn, but may also lead them to adopt more stereotypical learning strategies, such as relying on simple tests and algorithmic procedures. In particular, negative emotions, such as anger, anxiety, and boredom, are widely recognised as weakening an individual's cognitive abilities and inhibiting their capacity for self-directed learning (Brown, Fredrickson, 2021; Tzafilkou, Perifanou& Economides, 2021). When learning activities are riddled with anxiety or boredom, students tend to be willing to invest significantly less effort and time.

This is supported by evidence from experimental studies.Zandi et al. (2021), by examining test anxiety in students, found that this emotional state depletes a large amount of working memory resources, which can lead to impaired performance in those complex or difficult activities that depend on these resources. As a result, test anxiety tends to be negatively correlated with academic outcomes (Putwain, Wood, Pekrun, 2022). Similarly, boredom is also associated with an increased risk of negative academic outcomes, which is often measured through a student's grade point average (GPA) (Sharp, Sharp & Young, 2020). Notably, some students may experience both positive and negative emotions. For students who tend to interpret any physiological activation as a negative signal, their academic performance may be more impeded compared to students who are able to differentiate levels of arousal in terms of markers of positive and negative emotions (Sjouwerman , Scharfenort & Lonsdorf, 2020).

Existing literature provides ample evidence for the important role of emotions in the academic domain and suggests that emotions have significant predictive power in explaining students' academic performance (Camacho-Morles et al., 2021). These studies not only reveal the profound impact of emotions on students' learning processes, but also provide educators with insights to develop more effective teaching strategies aimed at fostering positive emotions in students while helping them effectively manage negative emotions to promote better academic achievement.

Positive emotions, such as fun, hope, and pride, have a significant positive impact on an

individual's motivation and self-regulation. This idea is widely confirmed by research in the academic field that has reasonably established a strong link between academic emotions and learning variables such as motivation and cognition. In recent years, a growing body of research has begun to explore the relationship between positive mood and a range of variables related to motivation, including beliefs about competence, the value of tasks and achievements (Forsblom, Pekrun, Loderer & Peixoto, 2022), learning goals (Dubovi, 2022), mastery and performance methods goals, intrinsic motivation (Holzer et al., 2021) as well as interest in learning and more sophisticated self-regulated learning strategies (de la Fuente et al., 2020). Therefore, it is crucial to consider academic mood when investigating student learning (Camacho-Morles et al., 2021).A study by Hayat et al. (2020) explored whether school mood affects the learning strategies adopted by students. The results showed that students who regularly felt a sense of fun, hope and pride were more likely to use a variety of cognitive and metacognitive strategies to optimise their learning process. This suggests that positive academic mood can stimulate students' strategy use, which in turn promotes their academic performance.

Pekrun's cognitive-affective model (1992) proposes the hypothesis that the effects of academic mood on outcomes are mediated through motivational and cognitive variables (Camacho-Morles et al., 2021). These effects involve multiple mediating processes, including the allocation of cognitive resources, the choice of learning strategies, self-regulatory strikes, and motivation to learn. Positive emotions are thought to facilitate learning and encourage the adoption of multiple regulatory styles, including regulations that target external adjustments. In addition, emotions are also believed to influence students' intrinsic motivation to learn, which in turn positively affects academic performance. Therefore, it can be hypothesised that the overall impact of emotions on academic outcomes is a product of these different processes working together, and that the interplay between these processes and task demands determines the final learning outcomes.

Dweck (2013) and others have provided us with a fundamental approach to understanding motivation that focuses on how implicit theories of intelligence shape an individual's

behaviours, emotions, and perceptions in a given context.The social-cognitive theory of motivation proposed by Dweck offers insights into the profound impact that students' intrinsic understandings of the nature of intelligence can have on their motivation to learn. There are two distinct theoretical orientations to intelligence among students: the progressive theory, which views intelligence as a malleable quality that can be enhanced through effort, and the entity theory, which views intelligence as fixed and unchanging and difficult to control. Students who hold the progressive theory tend to believe that they can enhance their intellectual abilities through unremitting efforts, so they are more willing to adopt positive learning strategies, face challenges and improve themselves. On the other hand, students with the entity theory believe that their intelligence level is innately determined and cannot be changed, which often leads them to use fewer learning strategies and give up more easily when facing difficulties.

Implicit theories of intelligence are not only a key component of self-concept, but also an important factor in students' academic success (Braten & Stromso, 2004). Research suggests that students with a progressive theoretical perspective are more inclined to use positive strategies to control and regulate their academic learning, whereas students holding a solid theory may reduce the level of strategy use, which in turn affects their academic success (Peña-Ayala, Cárdenas-Robledo, 2019). In addition, fixed conceptions of intelligence may also weaken students' long-term academic motivation, hindering their persistence and endeavour in the face of difficult but necessary tasks (Benden, Lauermann, 2022).

It is worth noting that even students with comparable intellectual skills can react very differently to academic challenges due to differences in the intellectual theories they hold. Students who hold fixed and uncontrollable notions of intelligence are more likely to doubt their abilities and tend to give up or reduce their efforts when faced with negative evaluations. Conversely, students who believe that intelligence can be improved through effort are more likely to persevere in improving their skills and face challenges (Ismail et al., 2022)

At the same time, academic mood has received a lot of attention as an important variable affecting student learning. Positive academic emotions enhance student engagement and

promote learning commitment, which in turn leads to superior academic outcomes (Carmona-Halty, Salanova, Llorens& Schaufeli, 2021). For example, students who are proud of their academic performance attempt to reinforce this positive emotion by becoming more engaged in their studies (Rodríguez-Muñoz, Antino, Ruiz-Zorrilla, & Ortega, 2021). Conversely, negative academic emotions may limit students' motivation to learn and prevent them from achieving better grades (Feraco, Resnati, Fregonese, Spoto & Meneghetti, 2023)

3. RESEARCH

3.1 Objectives and assumptions

In exploring the academic emotions (Pekrun, 2006, 2009) and Dweck's elaboration on implicit theories of intelligence (Dweck, 2011), despite both being proposed and outlined during the same period, the ideological trends between them have remained clear and have progressed in parallel without forming a genuine opposition. The central logic driving this study is to delve into the potential synergistic effects that may exist between these two theoretical paradigms and to scrutinize how this synergy manifests in academic expectations.

The individual differences observed in implicit theories of intelligence seem to offer a plausible rationale for understanding the premises underlying various academic emotions. By integrating these two theories, researchers of implicit theories of intelligence can gain deeper insights into how differing viewpoints influence individual emotional outcomes and how these emotional consequences are internalized and translated into enhanced academic competence.

Hence, the primary objective of this study is to explore the intricate relationship among implicit theories of intelligence, positive and negative emotions, and academic performance. This research endeavor sets its foundation on a model of implicit theories of intelligence, which suggests that students hold diverse "theories" regarding the nature of intelligence: some perceive intelligence as an immutable and fixed "entity" (entity theory), while others view it as a developable and malleable quality (incremental theory) (Smiley et al., 2016).

Based on the previous literature review, the following main hypotheses were formulated

for this study:

(1) Incremental theories of intelligence are positively correlated with positive academic emotions and negatively correlated with negative academic emotions. This means that students who hold an incremental theory perspective are more likely to experience positive academic emotions and less likely to experience negative emotions.

(2) There is a positive correlation between the incremental theory of intelligence and academic performance. This suggests that students who believe that intelligence can be improved through hard work tend to perform better academically.

(3) Positive emotions have a positive impact on academic performance while negative emotions have a negative impact on academic performance. This implies that academic mood is a significant predictor of academic performance and that positive mood promotes students' engagement in learning while negative mood may hinder the learning process.

3.2 Research tools

The sample of this study was composed of 126 college students, aged between 19 and 30, with a mean age of 22.92 years and a standard deviation of 2.3 years. Among them, there were 30 male students and 96 female students, reflecting a gender distribution that is predominantly female. These students hailed from twenty-four universities located in Wuhan, Hubei Province, China, providing a diverse yet localized sample. Specifically, the sample was stratified by academic level: 64 students were enrolled in undergraduate programmes, 38 students were pursuing master's degrees, and the remaining 24 students were engaged in doctoral education. This stratification allowed for a nuanced examination of how different academic pursuits might influence the variables under study.

In terms of measurement tools, the study employed two primary questionnaires to gather data:

Firstly, a belief questionnaire developed by De Beni (2014) was utilized to assess students' theories of intelligence. This questionnaire was specifically tailored to explore students' perceptions regarding the growth or fixation of intelligence. It comprised eight items, each designed to tap into students' beliefs about the malleability or immutability of

intelligence (for instance, "To what extent do you believe that intelligence is a trait that is virtually unchangeable?"). Participants responded to these items using a Likert scale ranging from 1 (strongly agree) to 6 (strongly disagree), allowing for a nuanced understanding of their beliefs. To calculate the total score for the fixed view of intelligence (also known as the entity theory), the scores for the four relevant items were summed. Higher scores indicated a stronger inclination towards holding a fixed view of intelligence.

Secondly, the study employed the Self-Assessment of Learning-Related Emotions Questionnaire, developed by Mega et al. (2007). This questionnaire was designed to measure the emotions experienced by students during the learning process. It contained a scale with 20 entries, evenly divided between 10 positive emotions (such as joy, contentment, and pride) and 10 negative emotions (including anxiety, anger, and frustration). Participants were instructed to assess how frequently they experienced these emotions while learning, using a 5-point Likert scale that ranged from 1 (never) to 5 (always). In the original validation study, the questionnaire demonstrated robust reliability indices, with a Cronbach's alpha of 0.87 for positive emotions and 0.90 for negative emotions, indicating its suitability for use in the current study.

4. Findings

In order to fully assess the potential relationship between incremental and entity theories of intelligence, positive emotions, negative emotions, and average academic performance, we calculated Pearson correlations between all of these variables and summarised the results in Table 4.1.

The results of the analyses revealed a significant negative correlation between positive emotions and average academic performance only ($r = -0.40$, $p < .001$). This implies that as students' positive emotions increased, their average academic performance tended to decrease, although the exact explanation for this negative correlation may vary depending on the context of the study and the characteristics of the sample. It is worth noting that the negative correlation here may reflect the potential impact of some complex psychological process, such as overconfidence or poor emotional regulation, on academic performance, but this needs to

be confirmed by further inquiry.

For the correlations between all other variables, we did not find any significant associations ($p > .05$). In addition, the absolute values of these correlations are all less than .12, indicating that the linear relationship between them is very weak or non-existent. This result implies that the incremental theory of intelligence did not show a significant linear correlation between the incremental theory of intelligence and the entity theory of intelligence (if their contrasts are considered), negative emotions, and average academic performance in the sample and context of this study.

Table 4.1 Correlation between Positive Emotions, Negative Emotions, Theory of Intelligence and Academic Achievement

	1	2	3	4
positive emotions	-			
negativity	0.00	-		
intelligence theory	0.12	-0.04	-	
Academic average	0.09	-0.40***	0.12	-

Note: *P<0.05 **P<0.01 ***P<0.001

Prior to embarking on the regression analysis, standardised scores were processed for all variables under consideration in this study. This step was intended to ensure a fair and consistent comparison of the effects of all variables, allowing for a more accurate assessment of their potential impact on the dependent variable.

Subsequently, we conducted multiple linear regression analyses aimed at exploring the specific effects of one or more independent variables (including positive emotions, negative emotions, and incremental theories of intelligence) on the dependent variable (i.e., average test scores). This analytical framework allowed us to gain a deeper understanding of the complex relationships that may exist between these variables and to reveal their potential

contribution to academic performance.

From the results of the multiple linear regression analyses, we found a significant phenomenon: negative emotions had a significant effect on average test scores ($p < 0.01$), with a coefficient β of -0.41. This result indicates that there is a significant negative correlation between an increase in negative emotions and a decrease in average test scores. In other words, the more negative emotions students experience during exams, the lower their average grades tend to be.

It is worth noting that although we included positive emotions and incremental intelligence theory as independent variables in our analyses, they did not have a significant effect on average test scores in this study. This could mean that the direct effect of these factors on academic performance was relatively small or non-existent in the sample and context of this study.

Table 4.2 Linear regression results and dependent variables for mean scores.

	β	standard error	t	p
intelligence theory	0.06	0.13	0.42	0.68
positive emotions	-0.03	0.14	-0.24	0.82
negativity	-0.41	0.15	-2.79	0.008**

Note: *P<0.05 **P<0.01 ***P<0.001

The results of the regression analyses validated the phenomenon revealed by the correlation analyses, pointing out that the only statistically significant influencing factor was the effect of negative emotions on the mean.

5. DISCUSSION

This study aims to deepen researchers' understanding of the relationship between academic

emotions and the implicit theories of intelligence and academic achievement based on Pekrun's the control-value theory of achievement emotions (2007) and Dweck's theory of intelligence (2011), focusing on the relationship between positive and negative emotions and the links between academic performance and implicit theories of intelligence and academic achievement.

Our findings only partially support the predictive link between academic mood, intelligence, and the implicit theory of performance. First, the results showed that students' negative emotions negatively impacted the mean of academic performance, i.e., the stronger the negative emotions, the lower the academic performance, which is consistent with the findings of previous research (Madigan, Curran, 2021), who noted that high levels of negative emotions impede a student's sense of self-efficacy, increase the threat of their falling into a rut, and impact academic success.

Secondly, regarding positive emotions, their contribution to academic performance was not supported by the data and no significant link was found between positive emotions and the notion of growth in intelligence or academic achievement, which is contrary to the research on the theory of intelligence (Shafait, Khan, Sahibzada, Dacko-Pikiewicz& Popp, 2021). The possible explanation is that other factors such as self-regulated learning and motivation mediate in the process of positive emotions affecting academic performance as shown by Mega et al. (2014), and the effect of positive emotions on academic performance may depend on these mediating factors. Therefore, positive emotions alone do not guarantee academic success, but need to be complemented by good self-regulation and motivation to learn.

These results suggest that the effects of emotions on academic performance are complex and multidimensional, and further in-depth research is needed to reveal how emotions shape students' academic performance. However, the present study also has limitations in that it mainly used self-report questionnaires to assess emotions and implicit theories of intelligence, which may be affected by response bias, and it is difficult to comprehensively capture the true picture of emotions as a dynamic and complex psychological phenomenon. Therefore, future research needs to explore more reliable and comprehensive assessment methods to more

accurately understand the impact of emotions on academic performance. The results of the analyses revealed only one significant inter-variable relationship, i.e., the negative impact of negative emotions on average performance, whereas no significant relationships were found between the progressive theories of intelligence and academic emotions, the progressive theories of intelligence and academic performance, and positive emotions and academic performance.

In order to more fully understand the complex relationship between emotions and academic performance, future studies should employ diverse research methods, including but not limited to longitudinal research designs, experimental studies, and qualitative studies. These diversified research methods will help to capture the dynamic process of mood changes and how mood interacts with other psychological factors (e.g., motivation, self-efficacy, learning strategies, etc.) to jointly influence academic performance. In addition, attention should be paid to the impact of individual differences on the relationship between emotions and academic performance. For example, factors such as students' personality traits, family backgrounds, and school environments may influence how and to what extent emotions act on academic performance. By examining these individual differences, researchers can further reveal the complexity of the emotion-academic performance relationship and provide more specific guidance for educational interventions.

REFERENCES

Qureshi, M. A., Khaskheli, A., Qureshi, J. A., Raza, S. A., & Yousufi, S. Q. (2023). Factors affecting students' learning performance through collaborative learning and engagement. Interactive Learning Environments, 31(4), 2371-2391.

Ramón-Arbués, E., Gea-Caballero, V., Granada-López, J. M., Juárez-Vela, R., Pellicer-García, B., & Antón-Solanas, I. (2020). The prevalence of depression, anxiety and stress and their associated factors in college students. International journal of environmental research and public health, 17(19), 7001.

Abdullah, S. M. S. A., Ameen, S. Y. A., Sadeeq, M. A., & Zeebaree, S. (2021). Multimodal

emotion recognition using deep learning. Journal of Applied Science and Technology Trends, 2(01), 73-79.

Scherer, R., & Campos, D. G. (2022). Measuring those who have their minds set: An item-level meta-analysis of the implicit theories of intelligence scale in education.

Liu, W. C. (2021). Implicit theories of intelligence and achievement goals: A look at students' intrinsic motivation and achievement in mathematics. Frontiers in Psychology, 12, 593715.

Pekrun, R. (2024). Control-value theory: From achievement emotion to a general theory of human emotions. Educational Psychology Review, 36(3), 83.

Lian, Z., Liu, B., & Tao, J. (2021). CTNet: Conversational transformer network for emotion recognition. IEEE/ACM Transactions on Audio, Speech, and Language Processing, 29, 985-1000.

Drigas, A., Papoutsi, C., & Skianis, C. (2021). Metacognitive and metaemotional training strategies through the nine-layer pyramid model of emotional intelligence. International Journal of Recent Contributions from Engineering, Science & IT (iJES), 9(4), 58-76.

Van Kleef, G. A., & Côté, S. (2022). The social effects of emotions. Annual review of psychology, 73(1), 629-658.

Barrett, L. F., & Westlin, C. (2021). Navigating the science of emotion. In Emotion measurement (pp. 39-84). Woodhead Publishing.

Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. Educational psychologist, 37(2), 91-105.

Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. Educational psychology review, 18, 315-341.

Pekrun, R., Elliot, A. J., & Maier, M. A. (2009). Achievement goals and achievement emotions: Testing a model of their joint relations with academic performance. Journal of educational Psychology, 101(1), 115.

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. American psychologist, 56(3), 218.

Stanley, P. J., & Schutte, N. S. (2023). Merging the Self-Determination Theory and the Broaden and Build Theory through the nexus of positive affect: A macro theory of positive functioning. New Ideas in Psychology, 68, 100979.

Lu, Z., Luo, J., & Yang, H. (2021, August). Emotions behind divergent thinking. In 2021 8th International Conference on Dependable Systems and Their Applications (DSA) (pp. 566-571). IEEE.

Felsman, P., Gunawardena, S., & Seifert, C. M. (2020). Improv experience promotes divergent thinking, uncertainty tolerance, and affective well-being. Thinking Skills and Creativity, 35, 100632.

Alexander, R., Aragón, O. R., Bookwala, J., Cherbuin, N., Gatt, J. M., Kahrilas, I. J., ... & Styliadis, C. (2021). The neuroscience of positive emotions and affect: Implications for cultivating happiness and wellbeing. Neuroscience & Biobehavioral Reviews, 121, 220-249.

Duca, D. S., Ursu, A., Bogdan, I., & Rusu, P. P. (2023). Emotions and emotion regulation in family relationships. Revista Romaneasca Pentru Educatie Multidimensionala, 15(2), 114-131.

Yin, X. (2021). The interplay of EFL students ' enjoyment, hope, pride and self-regulation. Frontiers in Psychology, 12, 803476.

Mercadante, E., Witkower, Z., & Tracy, J. L. (2021). The psychological structure, social consequences, function, and expression of pride experiences. Current Opinion in Behavioral Sciences, 39, 130-135.

Li, S., Wu, H., & Wang, Y. (2024). Positive emotions, self-regulatory capacity, and EFL performance in Chinese senior high school students. Acta Psychologica, 243, 104143.

Brown, C. L., & Fredrickson, B. L. (2021). Characteristics and consequences of co-experienced positive affect: Understanding the origins of social skills, social bonds, and caring, healthy communities. Current Opinion in Behavioral Sciences, 39, 58-63.

Tzafilkou, K., Perifanou, M., & Economides, A. A. (2021). Negative emotions, cognitive load, acceptance, and self-perceived learning outcome in emergency remote education during COVID-19. Education and information technologies, 26(6), 7497-7521.

Zandi, H., Amirinejhad, A., Azizifar, A., Aibod, S., Veisani, Y., & Mohamadian, F. (2021). The effectiveness of mindfulness training on coping with stress, exam anxiety, and happiness to promote health. Journal of Education and Health Promotion, 10(1), 177.

Putwain, D. W., Wood, P., & Pekrun, R. (2022). Achievement emotions and academic achievement: Reciprocal relations and the moderating influence of academic buoyancy. Journal of Educational Psychology, 114(1), 108.

Sharp, J. G., Sharp, J. C., & Young, E. (2020). Academic boredom, engagement and the achievement of undergraduate students at university: A review and synthesis of relevant literature. Research Papers in Education, 35(2), 144-184.

Sjouwerman, R., Scharfenort, R., & Lonsdorf, T. B. (2020). Individual differences in fear acquisition: multivariate analyses of different emotional negativity scales, physiological responding, subjective measures, and neural activation. Scientific reports, 10(1), 15283.

Camacho-Morles, J., Slemp, G. R., Pekrun, R., Loderer, K., Hou, H., & Oades, L. G. (2021). Activity achievement emotions and academic performance: A meta-analysis. Educational Psychology Review, 33(3), 1051-1095.

Forsblom, L., Pekrun, R., Loderer, K., & Peixoto, F. (2022). Cognitive appraisals, achievement emotions, and students' math achievement: A longitudinal analysis. Journal of Educational Psychology, 114(2), 346.

Dubovi, I. (2022). Cognitive and emotional engagement while learning with VR: The perspective of multimodal methodology. Computers & Education, 183, 104495.

Holzer, J., Korlat, S., Haider, C., Mayerhofer, M., Pelikan, E., Schober, B., ... & Lüftenegger, M. (2021). Adolescent well-being and learning in times of COVID-19—A multi-country study of basic psychological need satisfaction, learning behavior, and the mediating roles of positive emotion and intrinsic motivation. PloS one, 16(5), e0251352.

de la Fuente, J., Paoloni, P., Kauffman, D., Yilmaz Soylu, M., Sander, P., & Zapata, L. (2020).

Big five, self-regulation, and coping strategies as predictors of achievement emotions in undergraduate students. International journal of environmental research and public health, 17(10), 3602.

Camacho-Morles, J., Slemp, G. R., Pekrun, R., Loderer, K., Hou, H., & Oades, L. G. (2021). Activity achievement emotions and academic performance: A meta-analysis. Educational Psychology Review, 33(3), 1051-1095.

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, 1-11.

Dweck, C. S. (2013). Self-theories: Their role in motivation, personality, and development. Psychology press.

Bråten, I., & Strømsø, H. I. (2004). Epistemological beliefs and implicit theories of intelligence as predictors of achievement goals. Contemporary educational psychology, 29(4), 371-388.

Peña-Ayala, A., & Cárdenas-Robledo, L. A. (2019). A cybernetic method to regulate learning through learning strategies: A proactive and reactive mechanism applied in U–Learning settings. Computers in Human Behavior, 98, 196-209.

Benden, D. K., & Lauermann, F. (2022). Students' motivational trajectories and academic success in math-intensive study programs: Why short-term motivational assessments matter. Journal of Educational Psychology, 114(5), 1062.

Ismail, I., Putri, R. S., Zulfadhli, Z., Mustofa, A., Musfiana, M., & Hadiyani, R. (2022). Student Motivation to Follow the Student Creativity Program. Riwayat: Educational Journal of History and Humanities, 5(2), 351-360.

Carmona-Halty, M., Salanova, M., Llorens, S., & Schaufeli, W. B. (2021). Linking positive emotions and academic performance: The mediated role of academic psychological capital and academic engagement. Current psychology, 40(6), 2938-2947.

Rodríguez-Muñoz, A., Antino, M., Ruiz-Zorrilla, P., & Ortega, E. (2021). Positive emotions,

engagement, and objective academic performance: A weekly diary study. Learning and individual differences, 92, 102087.

Feraco, T., Resnati, D., Fregonese, D., Spoto, A., & Meneghetti, C. (2023). An integrated model of school students' academic achievement and life satisfaction. Linking soft skills, extracurricular activities, self-regulated learning, motivation, and emotions. European Journal of Psychology of Education, 38(1), 109-130.

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, 878-894.

Mega, C., Ronconi, L., & De Beni, R. (2014). What makes a good student? How emotions, self-regulated learning, and motivation contribute to academic achievement. Journal of educational psychology, 106(1), 121.

Pekrun, R. (2007). The control-value theory of achievement emotions: An integrative approach to emotions in education. Emotion in education/Academic Press.

Dweck, C. S. (2011). Implicit theories. Handbook of theories of social psychology, 1.

Madigan, D. J., & Curran, T. (2021). Does burnout affect academic achievement? A meta-analysis of over 100,000 students. Educational Psychology Review, 33, 387-405.

Shafait, Z., Khan, M. A., Sahibzada, U. F., Dacko-Pikiewicz, Z., & Popp, J. (2021). An assessment of students ' emotional intelligence, learning outcomes, and academic efficacy: A correlational study in higher education. Plos one, 16(8), e0255428.