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From Emotions to Achievement: The Role of Cognitive Control and Teacher Support in Academic Performance

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ABSTRACT. This study explores the impact of emotions such as interest, joy, anger, and fear on high school students' academic achievement, focusing on the mediating role of cognitive control and the moderating effect of perceived social support. Based on educational psychology theories concerning emotion and motivation, the research investigates how positive and negative emotional states—such as interest and joy, alongside anger and fear—affect students' cognitive control abilities, which in turn influence their academic performance. The study also examines how support from teachers can buffer the negative effects of emotions like anger and fear on cognitive control. The findings reveal a dual pathway through which emotions impact academic performance: directly, by disrupting cognitive processes, and indirectly, by reducing cognitive control. Moreover, the results indicate that higher levels of perceived social support enhance students' ability to maintain cognitive control despite the presence of negative emotions. These insights underscore the significance of fostering supportive educational environments and implementing strategies that boost both cognitive control and emotional well-being. The study provides valuable implications for educators, school psychologists, and policymakers focused on improving academic outcomes by promoting emotional resilience and enhancing students' cognitive capabilities.

Keywords: negative emotions, cognitive control, academic performance, perceived social support, high school students

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1. INTRODUCTION

In recent decades, research has increasingly focused on understanding how cognitive control influences learning processes and academic performance. Cognitive control, encompassing abilities such as attention regulation, working memory, and inhibitory control, plays a pivotal role in managing emotions and behaviors, which are essential for academic success. Understanding the interplay between cognitive control and emotions provides valuable insights into optimizing educational outcomes. Recent studies have highlighted the bidirectional relationship between cognitive control and emotional regulation. For instance, research by Soltani, Nezhad and Delroba (2024) found a significant relationship between executive functions, emotion regulation, and academic achievement among students. Similarly, findings by Camacho-Morles et al. (2021) suggest that positive activating emotions, such as enjoyment and hope, can enhance academic outcomes by promoting engagement and motivation. Furthermore, individual differences in cognitive control processes, such as working memory updating, response inhibition, and set shifting, have been shown to impact emotion regulation strategies. A study by Yakimova, Maintenant, and Taillandier-Schmitt (2020) examined how positive and negative emotions influence cognitive performance in secondary schools, highlighting the role of emotion regulation in academic contexts. These findings suggest that enhancing cognitive control can improve emotion regulation, thereby supporting academic performance.

The Influence of Positive and Negative Emotions on Academic Performance

Emotions play a pivotal role in shaping students' academic journeys, influencing their motivation, engagement, and overall performance. Positive emotions such as interest and joy, which were specifically chosen for this study, have been consistently linked to enhanced learning experiences and academic success. For example, research by Pekrun et al. (2017) demonstrated that positive emotions not only predict subsequent academic achievement but are also reinforced by it, highlighting a reciprocal relationship. Similarly, recent studies have confirmed the beneficial effects of positive emotions on academic performance, with positive emotions fostering creativity and problem-solving abilities (Fredrickson, 2009; Isen, 2017).

Conversely, negative emotions such as anger and fear, which were also included in this study, can impede academic progress. A study involving medical students revealed that negative emotions were inversely related to academic performance, underscoring the detrimental effects of such feelings on learning outcomes (LeBlanc, 2017). Likewise, research by Arsenio and Loria

(2014) found that adolescents' negative academic affect and disengaged coping strategies were associated with lower GPAs, emphasizing the negative impact of unmanaged negative emotions. Recent work by O'Reilly et al. (2020) has also emphasized the significant negative impact of chronic stress on cognitive performance and academic outcomes, highlighting the importance of emotional regulation strategies in academic settings.

The interplay between positive and negative emotions further complicates this dynamic. While positive emotions like interest and joy can enhance cognitive functions such as attention and memory (Kool, 2018), negative emotions such as anger and fear may disrupt these processes, leading to decreased academic engagement (Zeidner et al., 2019). This complex relationship suggests that fostering emotional well-being is crucial for optimizing academic performance. Integrating emotional intelligence training and coping strategies into educational curricula could be beneficial in this regard (Goleman, 2018).

Moreover, individual differences in emotional regulation abilities can influence how students experience and respond to academic challenges. Students with higher emotional intelligence are better equipped to manage stress and maintain motivation, leading to improved academic outcomes (Brackett et al., 2019). This highlights the importance of not only addressing the emotional climates of educational settings but also promoting individual skills in emotional regulation.

In summary, both positive and negative emotions significantly influence academic performance through their effects on motivation, engagement, and cognitive processes. Recognizing and addressing the emotional dimensions of learning can lead to more effective educational practices and better student outcomes.

Cognitive Control as a Mediator of Emotional Influence on Academic Performance

Building upon the foundational understanding of how emotions shape academic performance, it becomes evident that emotional experiences do not act in isolation but are intertwined with cognitive mechanisms that enable or hinder academic success. One such mechanism, cognitive control, has gained increasing attention in recent years as a critical factor in managing the impact of emotional states on learning outcomes (Dreisbach & Fischer, 2022). Cognitive control and emotional regulation, though distinct, are deeply interconnected; both influences how students interpret challenges, manage stressors, and sustain academic effort in the face of adversity.

In this study, we specifically focus on two dimensions of cognitive control: *Shift*, which assesses the ability to transition between activities or thoughts, and

Emotional Control, which measures the ability to regulate emotional responses. These dimensions are central to understanding how students adapt their cognitive strategies in response to emotional challenges. Research has shown that the ability to shift attention and regulate emotional responses is crucial in academic settings, as these skills allow students to better manage disruptions and maintain focus (Diamond, 2013; Ochsner & Gross, 2005). Cognitive control, particularly in the form of Shift and Emotional Control, allows students to maintain performance even when faced with intense emotional states, such as anger or fear, that could otherwise impair learning.

Research in cognitive-affective neuroscience indicates that executive functions involved in cognitive control, such as inhibition and task-switching, are often mobilized in contexts of emotional conflict (Ochsner & Gross, 2005; Schmeichel, 2018). This perspective aligns with integrative frameworks, such as the Emotion-Cognition Interaction Model (Pessoa, 2008), which propose that cognitive control mediates the influence of affective stimuli on behavior, particularly in learning environments. In this framework, cognitive control serves as a mediator, enabling students to regulate their emotions and manage the cognitive demands of learning tasks effectively, especially in emotionally charged situations.

Understanding the dynamics of cognitive control offers a more nuanced perspective on how students cope with the emotional demands of academic life. Cognitive control helps students navigate the emotional turbulence that often accompanies learning, particularly in high-stakes or stressful academic situations (Diamond, 2013). This shift in focus—from emotion as a direct influencer of learning to cognitive control as a regulatory buffer—highlights the need for educational interventions that target both emotional and executive functioning. Such interventions can help students better manage their emotions and optimize their cognitive resources, leading to improved academic outcomes.

Considering this, the role of cognitive control in mediating emotional responses illustrates its central importance in academic performance. While emotions inevitably affect learning, students' ability to exert control over these emotions through cognitive control mechanisms, specifically Shift and Emotional Control, can mitigate their adverse impact and support sustained academic effort.

Social Support as a Contextual Moderator of Emotional Impact

Considering the role of cognitive control, it is equally important to explore the interaction between cognitive control and other external factors, such as social support, which also plays a significant role in academic success. While cognitive control is essential in regulating emotional responses and maintaining focus, the presence of a supportive social network can further

buffer the negative impact of emotions on learning. In this study, we specifically focus on teacher support as a form of social support, recognizing the unique and influential role that teachers play in students' emotional and academic development. Teacher support can help buffer the effects of both positive and negative emotions, particularly in challenging academic environments. In this context, teacher support acts as a moderator of the relationship between emotions and academic performance.

Research indicates that higher levels of perceived teacher support are associated with better cognitive functioning and enhanced emotional regulation (Gonzalez et al., 2020). This finding is consistent with studies showing that teacher support can help students manage stress, enhance motivation, and maintain focus, which in turn supports academic achievement (Wentzel, 2009; Rimm-Kaufman & Sandilos, 2016). Furthermore, teacher support has been shown to play a protective role, particularly in mitigating the adverse effects of negative emotions, such as anger and fear, on cognitive performance. This protective effect suggests that teacher support amplifies the positive impact of cognitive control on academic performance and helps students navigate emotional challenges more effectively.

Moreover, the role of teacher support as a moderator is crucial because it influences how cognitive control and emotional regulation are expressed in real-life academic settings. For example, students with higher levels of teacher support are better equipped to manage stress and negative emotions, which can otherwise overwhelm their cognitive resources (Koukouvelas et al., 2016). Teacher support provides emotional validation, encouragement, and guidance, which enable students to remain focused and overcome challenges more effectively. This highlights the importance of fostering strong teacher-student relationships within educational environments, as teachers not only help students cope with emotional challenges but also enhance their cognitive control abilities, ultimately leading to better academic outcomes.

Conclusion and Hypotheses

Taken together, the integration of emotional, cognitive, and social dimensions underscores the value of a holistic approach to academic performance. The subsequent section delves into the role of cognitive control as a pivotal mechanism for adapting to academic stressors, exploring how it interacts with perceived social support, self-assessment accuracy, and locus of control.

Based on the preceding discussion, the following hypotheses are proposed to examine the intricate relationships between cognitive control, negative emotions, and academic performance:

H1: Higher cognitive control (specifically in the subdimensions of Shift and Emotional Regulation) is associated with better academic performance, as individuals with stronger cognitive control can more effectively manage academic demands and regulate their emotions, leading to higher achievement.

H2: Negative emotions (specifically anger and fear) adversely affect academic performance, with higher levels of negative emotionality leading to reduced focus and engagement in academic tasks, ultimately hindering achievement.

H3: Cognitive control moderates the impact of negative emotions on academic performance, such that individuals with stronger cognitive control experience a weaker negative impact of these emotions on their academic outcomes.

H4: Perceived teacher support moderates the relationship between cognitive control and academic performance. Students who receive greater teacher support are better able to leverage their cognitive control abilities, particularly in emotionally challenging situations, resulting in enhanced academic performance. These hypotheses aim to examine the intricate interactions between cognitive control, negative emotions, and academic performance, while also considering the potential moderating effect of social support. Exploring these relationships offers valuable insights into how emotional and cognitive factors combine to influence academic success.

2. METHODOLOGY

Participants

This study involved high school students from the Cluj-Napoca area in Romania, with a total of 200 students participating. Their ages ranged from 15 to 18 years. A stratified random sampling method was used to ensure a diverse representation based on gender, socioeconomic background, and academic performance. Among the 221 students originally selected, 90 were male and 131 were female, with an average age of 16.5 years. The participants were enrolled in both public and private high schools, with 84% from public schools and 16% from private institutions. Prior to participation, informed consent was obtained from both the students and their legal guardians. Students with known mental health issues or learning disabilities were excluded to maintain sample homogeneity in terms of cognitive and emotional functioning.

Measures

Emotional Experiences

To assess emotional experiences, the study employed the Differential Emotions Scale (DES) developed by Izard (1997). This 30-item self-report questionnaire evaluates ten fundamental emotions: interest, joy, surprise, sadness, anger, disgust, contempt, fear, shame/shyness, and guilt. Participants were asked to rate the frequency with which they experienced each emotion in the past week on a 5-point Likert scale, ranging from 0 ("never") to 4 ("very often"). The study specifically focused on the subscales measuring interest, joy, anger, and fear due to their relevance in educational contexts. The DES has shown strong internal consistency, with Cronbach's alpha values between 0.70 and 0.90 for various subscales. Additionally, factor analyses confirm the construct validity of the scale by showing the distinctiveness of each emotion.

Cognitive Control

Cognitive control was assessed using the Behavior Rating Inventory of Executive Function, Second Edition (BRIEF-2) developed by Gioia et al. (2015). This tool evaluates executive function behaviors, particularly emotional regulation. For the purposes of this study, the Emotional Regulation Index, which includes two subscales - Shift (assessing the ability to transition between activities or thoughts) and Emotional Control (measuring the ability to regulate emotional responses) - was used. The BRIEF-2 is a widely recognized instrument for evaluating executive function in children and adolescents, aged 5 to 18 years. In this study, the self-report version was employed, allowing participants to assess their own emotional regulation abilities. The BRIEF-2 has demonstrated strong psychometric properties, including high internal consistency (Cronbach's alpha above 0.85) and test-retest reliability, making it a trustworthy tool for assessing cognitive control in educational settings.

Social Support

In the present study, the Multidimensional Scale of Perceived Social Support (MSPSS), developed by Zimet et al. (1988), was adapted to measure perceived social support specifically in the context of teacher support. While the original scale assesses support from three sources -family, friends, and other significant individuals - the current study focused only on the subscale related to "significant individuals," with a particular emphasis on the role of teachers. To align with the objectives of the study, the items related to family

and friends were excluded, and only the items that could be directly associated with the support provided by teachers were retained. Participants rated their perception of teacher support using the same 7-point Likert scale (ranging from 1, "strongly disagree," to 7, "strongly agree"). The scores derived from these items reflected the participants' sense of emotional, academic, and motivational support they received from their teachers.

By focusing solely on teacher support, we were able to examine the specific influence of educators on students' emotional experiences and cognitive control. This adaptation ensured that the scale was directly relevant to the study's focus on how teacher support interacts with students' emotions and academic performance. The modified version of the MSPSS retained the scale's strong psychometric properties, including its excellent internal consistency (Cronbach's alpha in the range of 0.88 to 0.92) and its demonstrated validity in previous research. This approach allowed us to tailor the MSPSS to better fit the educational context of the study while maintaining the integrity of the original scale's reliability and validity.

Academic Performance

Academic performance in this study was measured through two variables: annual grade averages and scores on the high school entrance examination. Participants' grade averages for the current academic year were collected from school records, and their scores on the high school entrance examination were obtained with consent from the participating students. These two measures were combined to form a cumulative academic average, which served as the dependent variable in the study. This approach provided a comprehensive measure of academic performance, reflecting both ongoing academic achievement and performance on an important standardized test.

Research Design

This study employed a predictive, correlational, cross-sectional, quantitative, and non-experimental design to examine the relationships between emotions, cognitive control, social support, and academic performance. Data were collected at the end of the academic year, allowing for a comprehensive assessment of academic performance alongside concurrent measures of emotions (predictor variable), cognitive control (criterion variable), and social support (moderator variable).

The predictor variable—emotions—was assessed using the Differential Emotions Scale (DES). Specifically, the subscales measuring interest, joy, anger, and fear were utilized to capture the range of emotional experiences relevant to the study's focus on academic performance.

The criterion variable—cognitive control—was assessed through the Behavior Rating Inventory of Executive Function (BRIEF-2), with particular emphasis on the Shift and Emotional Control subscales, which measure the flexibility and emotional regulation crucial for academic success.

The moderator variable—perceived social support—was evaluated using the Multidimensional Scale of Perceived Social Support (MSPSS), which assesses the perceived support students receive from their family, friends, and other significant social figures.

Statistical Analysis

Data analysis was performed using SPSS version 27.0. Descriptive statistics were first computed for all variables to understand the distribution of scores. Pearson's correlations were conducted to explore the relationships between emotions, cognitive control, social support, and academic performance. Additionally, regression analyses were performed to test the predictive power of emotions and cognitive control on academic performance, as well as the moderating effect of social support. Specifically, a hierarchical multiple regression analysis was used to examine the interaction effects between social support and emotional regulation on academic outcomes. The results will provide insights into how emotional and cognitive factors contribute to students' academic performance, as well as the potential role of social support in moderating these relationships.

The results from the correlation Table 1 reveal several important relationships between emotional states, cognitive control, and academic performance, as indicated by the correlation coefficients (r values).

Firstly, positive emotions such as Interest and Joy exhibit moderate positive correlations with academic performance ($r = 0.40$ for Interest and $r = 0.42$ for Joy), suggesting that students who experience these emotions tend to perform better academically. These positive emotions are also positively correlated with Teacher Support ($r = 0.35$ for Interest and $r = 0.26$ for Joy), indicating that students who feel more engaged and joyful in their studies are likely to benefit from stronger relationships with their teachers, which in turn can contribute to better academic outcomes.

The Bravais-Pearson correlation matrix, displayed in Table 1, highlights the relationships between variables.

Table 1. *Correlation Matrix for Positive Emotions, Negative Emotions, Cognitive Control, Teacher Support, and Academic Performance*

	Interest	**Joy**	**Anger**	**Fear**	**Shift**	**Emotional Regulation**	**Teacher Support**
Interest	-						
Joy	.43	-					
Anger	-.24	-.16	-				
Fear	-.38	-.52	.56	-			
Shift	.32	.23	-.26		-		
Emotional Regulation	.23	.14	-.17	-.23	.38	-	
Teacher Support	.35	.26	-.31	-.29	.25	.22	-
Academic Performance	.40	.42	-.35	-.42	.48	.45	.50

On the other hand, negative emotions such as Anger and Fear are negatively correlated with academic performance (r = -0.35 for Anger and r = -0.42 for Fear), reinforcing the idea that emotions like frustration and anxiety can hinder academic success. These negative emotions also show negative correlations with Teacher Support (r = -0.31 for Anger and r = -0.29 for Fear), suggesting that students who struggle with anger or fear may find it harder to form supportive relationships with teachers, potentially exacerbating the challenges they face academically.

In terms of cognitive control, both Shift (r = 0.32 for Interest, r = 0.23 for Joy) and Emotional Regulation (r = 0.23 for Interest, r = 0.14 for Joy) play important roles. Shift is positively correlated with Interest and Joy, indicating that students who feel more engaged and joyful are also better at adapting to changing academic tasks. Furthermore, Emotional Regulation is positively correlated with academic performance (r = 0.45), suggesting that students who manage their emotions effectively are better positioned to succeed in academic settings.

Finally, Teacher Support is a crucial factor in enhancing academic performance (r = 0.50). The positive correlations with both positive emotions and cognitive control emphasize the importance of supportive teacher-student relationships in fostering emotional well-being and academic success. Conversely, the negative correlations with negative emotions highlight how teacher support can mitigate the detrimental effects of emotional struggles.

In conclusion, these results underscore the importance of fostering positive emotions, improving emotional regulation, and ensuring strong teacher support in promoting better academic outcomes, while addressing the negative impact of emotions like anger and fear.

Mediation Analysis for the Relationship Between Positive and Negative Emotions, Cognitive Control, and Academic Performance

The mediation analysis explores how positive emotions, negative emotions, and cognitive control impact academic performance, with significant findings that suggest both direct and indirect effects. Firstly, positive emotions (such as interest and joy) were found to have a significant positive effect on cognitive control (Shift), with a coefficient of 0.32 ($p < 0.01$). This means that students with higher levels of positive emotions are better able to manage cognitive flexibility and regulate their thoughts. Furthermore, cognitive control was positively related to academic performance, as indicated by a coefficient of 0.48 ($p < 0.01$), suggesting that students with greater cognitive control tend to perform better academically. Additionally, positive emotions were directly associated with academic performance, as shown by a coefficient of 0.40 ($p < 0.01$), highlighting the importance of emotional well-being in academic success.

For negative emotions (such as anger and fear), the analysis revealed a negative impact on both cognitive control and academic performance. Negative emotions were significantly associated with lower levels of cognitive control ($\beta = -0.26$, $p < 0.05$), indicating that students who experience higher levels of negative emotions tend to have difficulties regulating their thoughts and behaviors. Furthermore, negative emotions directly influenced academic performance, with a negative coefficient of -0.35 ($p < 0.01$), implying that emotional distress negatively affects academic outcomes. Importantly, both positive and negative emotions had indirect effects on academic performance through cognitive control. The indirect effect of positive emotions on academic performance through cognitive control was positive and significant ($\beta = 0.15$, 95% CI [0.05, 0.25]), while the indirect effect of negative emotions was negative ($\beta = -0.12$, 95% CI [-0.20, -0.03]). These findings suggest that cognitive control plays a critical role in mediating the relationship between emotions and academic performance, with positive emotions enhancing and negative emotions hindering students' academic success.

Moderation Analysis for the Relationship Between Emotions, Cognitive Control, Teacher Support, and Academic Performance

The moderation analysis examines the role of teacher support in moderating the relationships between emotions (positive and negative), cognitive control, and academic performance. Teacher support was found to significantly moderate these

relationships, acting as a buffer against the negative effects of negative emotions and enhancing the positive effects of positive emotions.

For positive emotions, the moderation analysis revealed that teacher support strengthens the positive relationship between positive emotions and cognitive control. The interaction term for teacher support × positive emotions → cognitive control was significant ($\beta = 0.25$, $p < 0.01$), meaning that students who receive higher levels of teacher support benefit more from their positive emotions in terms of improving cognitive control. This suggests that teacher support enhances the ability of students to regulate their thoughts and behaviors when they experience positive emotions.

Table 2. *Moderation Analysis for the Relationship Between Positive and Negative Emotions, Cognitive Control, Teacher Support, and Academic Performance*

Path	Coefficient (β)	Standard Error	t	p-value
a-path: Positive Emotions → Cognitive Control (Shift)	0.32	0.10	3.20	.00
b-path: Cognitive Control (Shift) → Academic Performance	0.48	0.12	4.00	.00
c-path: Positive Emotions → Academic Performance	0.40	0.09	4.44	.00
Interaction (Teacher Support × Positive Emotions → Cognitive Control)	0.25	0.10	2.50	.01
a-path: Negative Emotions → Cognitive Control (Shift)	-0.26	0.11	-2.36	.02
b-path: Cognitive Control (Shift) → Academic Performance	0.48	0.12	4.00	.00
c-path: Negative Emotions → Academic Performance	-0.35	0.10	-3.50	.00
Interaction (Teacher Support × Negative Emotions → Cognitive Control)	0.25	0.09	2.78	.01
Interaction (Teacher Support × Cognitive Control → Academic Performance)	0.22	0.08	2.75	.01
Indirect Effect (Positive Emotions → Cognitive Control → Academic Performance)	0.15			
Confidence Interval (Positive Emotions → Cognitive Control → Academic Performance)	[0.05, 0.25]			
Indirect Effect (Negative Emotions → Cognitive Control → Academic Performance)	-0.12			
Confidence Interval (Negative Emotions → Cognitive Control → Academic Performance)	[-0.20, -0.03]			
R-squared	0.42			

Similarly, teacher support moderated the negative effects of negative emotions on cognitive control. The moderation effect was significant ($\beta = 0.25$, $p < 0.01$), showing that teacher support helps mitigate the detrimental impact

of negative emotions, allowing students to maintain better cognitive control despite their emotional challenges.

Furthermore, teacher support was found to significantly influence academic performance through its interaction with cognitive control. The interaction term for teacher support × cognitive control → academic performance was significant ($\beta = 0.22$, $p < 0.01$), indicating that teacher support strengthens the relationship between cognitive control and academic performance, enhancing the impact of cognitive control on academic outcomes.

Overall, the moderation analysis highlights that teacher support plays a crucial role in enhancing the positive effects of positive emotions on cognitive control and mitigating the negative effects of negative emotions on cognitive control. In addition, teacher support strengthens the relationship between cognitive control and academic performance, underscoring the importance of supportive teacher-student relationships in fostering academic success.

These analyses collectively emphasize the significance of emotional and social support in shaping students' cognitive and academic outcomes. Positive emotions enhance cognitive control and academic performance, while negative emotions have the opposite effect. However, the role of teacher support is paramount, as it not only helps students regulate their emotional experiences but also boosts their cognitive abilities, ultimately contributing to better academic achievement.

DISCUSSION

The aim of this study was to explore how positive emotions, such as interest and joy, and negative emotions, including anger and fear, impact cognitive control and academic performance among high school students. The findings supported all the proposed hypotheses, emphasizing the intricate interactions between these factors. The results underscore the crucial influence of cognitive control and teacher support in determining academic success.

Positive Emotions (Interest, Joy) and Academic Performance

Our findings underscore the significant role of positive emotions, particularly interest and joy, in enhancing academic performance. Interest has been shown to foster greater engagement with academic content, motivating students to explore and learn more effectively. When students are interested in the subject matter, they tend to dedicate more time and effort to their studies, which leads to improved academic outcomes. Similarly, joy contributes to

students' overall well-being, creating a positive emotional environment that encourages persistence and resilience in the face of academic challenges. Previous research has shown that positive emotions improve cognitive functions such as attention and memory, which are critical for academic success (Isen, 2000). In this study, students who reported experiencing higher levels of interest and joy in their academic work tended to perform better, as they were more motivated and engaged in the learning process. These findings align with the literature suggesting that positive emotions are essential for fostering intrinsic motivation, which is key to achieving long-term academic success (Diener et al., 2009). Thus, promoting positive emotions like interest and joy in educational settings can be a valuable strategy to enhance students' academic performance.

Negative Emotions (Anger, Fear) and Cognitive Control

The first hypothesis proposed that negative emotions, such as anger and fear, would reduce cognitive control. Our findings strongly support this hypothesis. Negative emotions like anger and fear are disruptive to cognitive processes, as they trigger physiological responses that impair attention, memory, and self-regulation. Anger can lead to impulsive behavior and distractibility, making it difficult for students to maintain focus during academic tasks. Similarly, fear often induces anxiety, which interferes with students' ability to concentrate and plan effectively. These negative emotional states undermine cognitive control by overwhelming the brain's executive functions, particularly in areas such as attention shifting and inhibition (Davidovich et al., 2016). Our results align with prior studies showing that adolescents experiencing negative emotions struggle with cognitive flexibility and attentional control, which are essential for academic achievement (Linnenbrink & Pintrich, 2003). Furthermore, fear and anger can lead to emotional dysregulation, making it even harder for students to manage their thoughts and actions during academic tasks. These findings highlight the need for interventions focused on helping students manage negative emotions to improve cognitive control and, by extension, academic performance.

Cognitive Control and Academic Performance

The second hypothesis suggested that cognitive control would be positively related to academic performance, and our findings support this hypothesis. Cognitive control, particularly its two dimensions - shift and emotional regulation—is critical for managing academic demands. Shift refers to the ability to adjust one's focus between different tasks or respond flexibly to changing situations, while emotional regulation involves the ability to manage one's emotions, especially in challenging

academic contexts. Our results suggest that students with higher levels of cognitive control—both in shifting attention and regulating their emotions—tend to perform better academically. These students are better able to stay focused on their work, adapt to changes in academic tasks, and regulate their emotional responses to stress, all of which contribute to enhanced academic performance (Bandura et al., 1996; Theobald, 2021). Students with strong cognitive control are more likely to use self-regulated learning strategies, such as goal-setting, time management, and planning, which further support academic achievement (Theobald, 2021). Moreover, the ability to regulate emotions, particularly in response to stress or setbacks, is crucial in maintaining focus and perseverance, which directly affect academic outcomes. Our study confirmed that cognitive control plays a significant role in improving academic performance by enabling students to manage both cognitive and emotional demands effectively.

Mediating Role of Cognitive Control

Our study also investigated whether cognitive control mediates the relationship between negative emotions (anger, fear) and academic performance. The analysis showed that cognitive control partially mediates this relationship. In other words, negative emotions such as anger and fear directly reduce cognitive control, which in turn negatively impacts academic performance. This mediating effect suggests that cognitive control can buffer the negative impact of emotions on academic outcomes. For students who experience high levels of anger or fear, improving their cognitive control could mitigate the adverse effects of these emotions on their academic performance. This is consistent with research suggesting that enhancing cognitive control can protect students from the negative consequences of emotional distress on academic achievement (Davis et al., 2019). Therefore, interventions aimed at improving cognitive control, such as mindfulness training or executive function exercises, could be particularly effective in reducing the detrimental effects of negative emotions and improving academic outcomes.

The Moderating Influence of Teacher Support

This study also examined the moderating influence of teacher support in the relationships between emotions, cognitive control, and academic performance. The results indicate that teacher support significantly mitigates the negative impact of negative emotions, such as anger and fear, on both cognitive control and academic performance. Students who experience negative emotions but receive strong support from their teachers tend to perform better academically compared to those who lack such support. This aligns with previous

research indicating that teacher support fosters better emotional regulation and coping skills, which in turn improves cognitive control and academic performance (Silvia et al., 2021). Teachers can offer emotional validation, encouragement, and guidance, which help students manage negative emotions and remain focused on their academic objectives. Additionally, teacher support was found to enhance the positive effects of positive emotions like interest and joy on cognitive control. When students feel supported by their teachers, their positive emotions more effectively contribute to improved cognitive control, leading to better academic outcomes. These results highlight the crucial role of nurturing positive and supportive teacher-student relationships, as they foster emotional well-being and academic achievement. Teachers are pivotal in helping students regulate their emotions, build cognitive control, and navigate academic challenges with greater success.

Practical Implications

Our study offers several important practical implications for educators, parents, and policymakers aiming to improve students' academic outcomes and emotional well-being. The findings highlight the critical role that positive emotions (interest and joy), negative emotions (anger and fear), and cognitive control play in academic performance, emphasizing the need for targeted interventions and strategies that address these factors.

One primary implication is the importance of fostering and maintaining cognitive control throughout students' educational journey. As academic challenges become more complex, negative emotions, such as anger and fear, can emerge, potentially diminishing students' motivation and undermining their academic performance. Strengthening cognitive control, particularly through emotional regulation and attentional focus, is essential for students to manage these emotions and maintain high academic standards. Educators can support this by implementing strategies that promote self-regulation, such as goal-setting, time-management practices, and stress-coping mechanisms. By enhancing cognitive control, students will be better equipped to overcome emotional barriers and achieve academic success, particularly those who may be more prone to negative emotions. Thus, fostering a classroom environment that emphasizes the development of cognitive control and emotional regulation skills can significantly benefit students' academic performance.

Another critical implication relates to the emotional challenges faced by adolescents, who often experience heightened emotional responses due to physical, cognitive, and social changes. The adolescent years are particularly marked by significant emotional fluctuations, which can have a considerable impact on student's ability to focus and regulate their behavior. Given the

emotional complexity of this developmental stage, educators must provide both academic guidance and emotional support to help students manage negative emotions like anger and fear. Teaching emotional regulation strategies, such as mindfulness techniques or emotional awareness exercises, should become an integral part of the curriculum to help students manage their emotions effectively. Furthermore, creating a supportive and empathetic classroom environment will enable students to feel more secure and confident in their ability to handle academic challenges. When students feel that their emotions are understood and validated, they are more likely to manage academic stress and perform better academically.

A significant finding from this study is the moderating role of teacher support in the relationship between emotions and academic performance. Teacher support plays a crucial role in helping students manage the effects of negative emotions such as anger and fear, as well as enhancing the positive influence of positive emotions like interest and joy. Students who experience strong teacher support are better able to regulate their emotions, which improves their cognitive control and, consequently, their academic performance. Teachers can facilitate this by offering guidance, encouragement, and emotional validation, which are essential for helping students cope with emotional difficulties. In addition to academic support, teachers who create emotionally supportive environments help students thrive both academically and emotionally. By fostering strong teacher-student relationships built on trust and understanding, educators can significantly improve students' ability to manage emotions and perform well academically.

Considering these findings, educational institutions and policymakers must prioritize students' mental health and emotional well-being. Academic pressures, coupled with negative emotions like fear and anger, can hinder students' overall academic experience and success. Schools should implement comprehensive mental health programs that focus on emotional regulation, stress management, and coping strategies. These programs can help students navigate the emotional complexities of academic life and improve their ability to perform under pressure. In addition, cultivating a school culture that values emotional well-being as equally important as academic achievement will contribute to a more balanced and supportive environment for students. By integrating emotional support into the educational experience, schools can create a more conducive environment for academic success.

In summary, the practical implications of our study suggest that promoting emotional regulation, enhancing cognitive control, and leveraging teacher support are critical factors for fostering academic success in students. Addressing these aspects can help students overcome negative emotions and develop the resilience needed to excel in both their academic and personal lives.

Limitations and Future Directions

Our study has several limitations that should be considered when interpreting the findings and suggesting future research directions.

First, the cross-sectional design of our study limits our ability to capture changes over time, thus restricting our ability to infer causal relationships between the variables. Longitudinal studies would be more effective in tracking how positive emotions (interest, joy), negative emotions (anger, fear), cognitive control, and academic performance evolve. This would provide a more nuanced understanding of how these variables interact in the long term and their causal influence on academic outcomes.

Another limitation concerns the sample composition, which was limited to high school students in the 10th and 11th grades. As a result, the findings may not be representative of students in other grade levels, and the conclusions may not apply to the broader high school population. Future studies could include participants from 9th and 12th grades to ensure that the results reflect the diversity of students' academic experiences across grade levels. This would improve the generalizability of the findings to a wider age range.

Additionally, the self-report measures used in our study are subject to common method variance, which may impact the validity of the results. Participants may have provided socially desirable responses or misinterpreted the items on the questionnaires, leading to potential biases in the data. Although we adapted the instruments to ensure clarity, future studies should consider using multi-method approaches, such as behavioral observations or peer ratings, to supplement self-reports and strengthen the reliability of the findings.

Our study also focused on global scores for the variables involved, without delving into the individual components of each factor. Future research could provide a more detailed analysis by examining how specific dimensions of negative emotions (anger, fear) influence cognitive control and academic performance. It would be valuable to explore how particular aspects of positive emotions (interest, joy) and teacher support interact with these emotions to affect cognitive and academic outcomes. While psychological resilience was discussed in the study, it was not explicitly analyzed as a mediating or moderating variable. Given the potential role of resilience in buffering the effects of negative emotions on cognitive control and academic performance, future studies should examine how resilience may interact with these variables. Understanding the role of resilience could provide further insight into how students cope with emotional challenges and maintain their academic performance under stress.

Finally, while our study offers valuable insights into the relationships between emotions, cognitive control, and academic performance, addressing these limitations in future research will help refine our understanding of how

these factors interact. Expanding on these findings through longitudinal studies, multi-method approaches, and exploring additional factors like psychological resilience will further enhance the development of interventions aimed at supporting students' emotional and academic success.

3. CONCLUSION

In conclusion, this study emphasizes the significant role of positive emotions (Interest and Joy) in enhancing academic performance, as they are positively correlated with better cognitive control and teacher support. Conversely, negative emotions (Anger and Fear) negatively impact both cognitive control and academic performance, highlighting the importance of managing these emotions. Teacher support was found to buffer the negative effects of negative emotions while promoting better academic outcomes. Furthermore, emotional regulation plays a crucial role in academic success, suggesting that students who can regulate their emotions perform better academically. These findings underline the importance of fostering positive emotional experiences in students, as well as providing support systems that help mitigate the impact of negative emotions. Promoting emotional well-being alongside cognitive development can be key to improving academic outcomes. Moreover, interventions targeting both emotional and cognitive control could be beneficial in educational settings.

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