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Emotion Regulation and Academic Stress in Adolescents: The Role of Cognitive Reappraisal and Expressive Suppression

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ABSTRACT

Academic stress is a leading contributor to deteriorating mental health in adolescents, yet limited evidence examines this using adolescent-specific validated measures. This study addresses this gap by testing the relationship between cognitive reappraisal (CR) and expressive suppression (ES) and perceived academic stress in adolescents. It was hypothesised that greater use of expressive suppression and lower use of cognitive reappraisal would be associated with higher academic stress.

A cross-sectional design was employed with 63 participants aged 10 to 19 ($M = 13.70$, $SD = 2.30$; 63.49% female) and recruited via volunteer sampling. Academic stress was measured using the Educational Stress Scale for Adolescents (ESSA), and emotion regulation was measured using the Emotional Regulation Questionnaire for Children and Adolescents (ERQ-CA). Pearson correlations and a hierarchical multiple regression were conducted.

Expressive suppression significantly correlated with total ESSA score ($r = .364$, $p = .003$) and predicted academic stress above and beyond demographics ($\beta = 0.987$, $p = .014$; $\Delta R^2 = .099$, $p = .016$). Cognitive reappraisal did not significantly predict academic stress ($\beta = -0.551$, $p = .132$).

Expressive suppression consistently predicted greater academic stress, particularly despondency. The null result for cognitive reappraisal may reflect developmental constraints implied in the Dual Systems Model (Steinberg, 2008), where a sample's young mean age may limit the effectiveness of the use of cognitive reappraisal. These findings contribute to the limited literature on emotional regulation and academic stress and provide information for the clinical and educational interventions aimed at reducing academic stress in adolescents.

INTRODUCTION

Academic Stress in Adolescents

Academic stress is the emotional and physical strain arising from social and self-imposed pressure in a school environment. This response has regained attention as one of the leading contributors to deteriorating mental health in adolescents. Research using the Educational Stress Scale for Adolescence (ESSA) associated it with depression, suicidal tendencies, and lower academic grades (Sun et al. 2011). Academic stress is multidimensional in nature. It encompasses varied sources of stress, including workload, self-expectations, worries about grades, and feelings of despondency (Sun et al. 2011).

To explain why adolescents experience heightened academic stress with limited ability to moderate it, the Dual System model, made known by Laurence Steinberg, stands out among others. The model proposes that two systems are responsible for this phenomenon: the socioemotional system (Amygdala) for emotional reactions and the cognitive control system (Prefrontal Cortex) for emotional regulation (Steinberg, 2008). During adolescence, the amygdala develops considerably earlier than the prefrontal cortex. This maturity imbalance may allow children between the ages of 12 and 18 to experience intense emotional reactions with insufficient regulatory control to moderate them. Although this model may be explaining the relationship between academic stress and emotional regulation from a reductionistic perspective, it remains a useful framework for explaining adolescents' responses to stress. In addition, it reveals the demand for adaptive emotional regulation techniques to make up for the deficiency of the prefrontal cortex.

Emotional Regulation

Emotional regulation (ER) is a cognitive strategy that involves the process of monitoring and moderating emotional reactions to achieve a goal. ER encompasses both conscious (explicit ER) and unconscious (implicit ER) strategies often used to regulate negative emotions and promote positive ones (Gross & Thompson, 2007, cited in Gullone & Taffe, 2012). Within emotional regulation strategies, cognitive reappraisal (CR) and expressive suppression (ES) have been operationalized and extensively researched. More specifically, the Emotional Regulation Questionnaire for Children and Adolescents (ERQ-CA) is used to measure the application of these strategies. ***Cognitive reappraisal involves reframing or shifting the perspective from a potentially emotion-eliciting situation, which in turn alters the emotional reaction.*** Whereas ***expressive suppression involves inhibiting outward emotional expression (Gullone & Taffe, 2012).*** These represent opposite ends of an adaptive spectrum.

Research Gap and Objective

Among most studies investigating ER and academic stress outcomes, Cognitive Emotion Regulation Questionnaire (CERQ) is predominantly employed as a wide-ranged measure of strategies. However, the ERQ-CA, despite being validated for adolescents, is underutilized in academic stress research. As a result, there is limited evidence for the relationship between poor emotional regulation and academic stress, particularly among adolescents and children.

Given that significant academic stress imposes great risks on adolescents and comes with little to no benefits, it is important to understand the factors that shape how children experience and respond to academic stress.

This study addresses this gap by directly testing the relationship between ER and academic stress using ERQ-CA and ESSA in an adolescent sample aged 10-19. It is hypothesized that poorer emotion regulation, particularly greater use of expressive suppression and lower use of cognitive reappraisal, will be associated with higher perceived academic stress in adolescents.

LITERATURE REVIEW

Maladaptive vs Adaptive Emotional Regulation Strategies and Academic Stress

In the study validating ERQ-CA, 827 participants aged 10 to 18 were asked about their emotional regulation strategies and psychological well-being. Findings showed that CR is associated with higher psychological well-being, while ES was associated with depressive symptoms. This finding was consistent across age groups and sexes (Gullone & Taffe, 2012). The difference between these strategies is further supported by research conducted on university students, where CR has a negative relationship with negative affect, and ES has a positive relationship. Academic achievements displayed no significant association with either strategy (Vally et al., 2020). These findings suggest that the specific emotional regulation strategy an adolescent relies upon will have significant consequences for their psychological well-being.

Similar to expressive suppression, other maladaptive Cognitive Emotional Regulation Strategies (CERS) such as rumination and catastrophizing have a positive correlation with academic burnout ($r = 0.37$) and were found to moderately predict future burnouts ($\beta = 0.28$). The negative impacts of maladaptive CERS also extend beyond academic burnout, where rumination in particular was associated with psychopathological symptoms such as depression and anxiety (Vinter et al. 2021). Such impact is also supported by a network study that demonstrated catastrophizing as the most central strategy among the network between CERS and burnout factors. This means catastrophizing has the most significant influence on outcomes, including exhaustion and cynicism (Iuga et al. 2025). Research using the Challenge and Hindrance Stress Framework found that maladaptive CERS mediates to worsen the negative impact of stress on depression (Xiaoyan Bi et al. 2025).

By contrast, adaptive CERS demonstrate an opposite pattern. Cognitive reappraisal was shown to weaken the relationship between academic stress and anxiety. Practically, adaptive CERS can act as a buffer that prevents academic stress from escalating to more severe psychological outcomes (Xin Liu et al. 2025). When compared, expressive suppression was associated with higher self-reported stress-related symptoms, including anxiety and depression, whereas cognitive reappraisal demonstrated lower stress-related symptoms across undergraduate and trauma-exposed samples (Moore et al., 2008).

Limitations in Current Literature

These sources are combined to demonstrate the difference between adaptive and maladaptive strategies. However, most studies explore the relationship between CERS and anxiety, life satisfaction, and depression, rather than academic stress directly. In addition, the samples rarely target adolescents, who have been identified as the population most in need of adaptive CERS. Validated measures are commonly self-reported, leaving bias and subjectivity present among most interpretations of findings. There is also a lack of longitudinal studies, which limits the ability to establish a causal relationship between ER and academic stress and the extent to which ER can be utilized as a long-term solution for heightened academic stress. The samples across these studies are largely drawn from specific cultural contexts, including China, Estonia, and Romania, which limits the overall generalizability of findings. Results may therefore be difficult to apply to Western individualistic cultures, where social norms around emotional expression could encourage greater use of expressive suppression. There is, therefore, limited direct evidence examining the association between emotion regulation and academic stress using adolescent-specific validated measures, which the current study aims to address.

METHODS

The study was conducted with a sample of 63 participants, of which 22 were male, 40 were female, and 1 preferred not to say. The target age range was 10 to 19 years old (Mean = 13.70, SD = 2.30), who are currently enrolled in education. Participants were recruited through a volunteer sampling method, where surveys were distributed via WeChat to parents, who then passed it to their children to complete. This process obtained parental consent for their children who are under 18 years old. Participants were also required to read and accept an informed consent statement before completing the survey: "I understand the purpose of this study and agree to participate voluntarily. I know I can withdraw at any time." The aim of the study is debriefed in the end, and anonymity is established throughout. To ensure accessibility for participants based in China, where Google Forms is inaccessible, the survey was created and distributed with Google Forms and 金数据 (Jinshuju).

The research design is cross-sectional, and quantitative data is collected in a single point in time through ESSA and ERQ-CA, both of which are self-reported questionnaires. This is appropriate for the exploratory correlational question, since the correlation can be established between two variables. The predictor variables are cognitive reappraisal and expressive suppression, as measured by the ERQ-CA subscales, and the outcome variable is perceived academic stress, as measured by the ESSA total score. However, since none of the variables are being manipulated, this study establishes a correlational relationship between ER strategies and academic stress. A causal relationship cannot be concluded.

The ERQ-CA is a self-reported questionnaire containing 10 items, of which 6 measure the use of cognitive reappraisal and 4 measure the use of expressive suppression. Each item is answered on a scale of 1 (strongly disagree) to 5 (strongly agree). A score out of 30 is obtained for the CR subscale, and a score out of 20 for the ES subscale, with higher scores indicating greater usage of the strategy. The ERQ-CA was validated by Gullone and Taffe (2012) with a sample of 827 adolescents aged 10 to 18,

which demonstrated reliable internal consistency (CR: α = .83, ES: α = .75). In the current study, internal consistency was acceptable for the CR subscale (α = .709) and good for the ES subscale (α = .805).

Similar to the ERQ-CA, the ESSA is a self-reported questionnaire containing 16 items divided into 5 subscales: Pressure from study, Workload, Worry about grades, Self-expectation, and Despondency. Each item is answered on a scale of 1 (Never) to 5 (Always), with a total score out of 80 calculated by summing all items. A higher score indicates greater perceived academic stress. The ESSA was validated by Sun et al. (2011) with a sample of over 2,000 Chinese adolescents, demonstrating good internal consistency (α = .81), as well as concurrent and predictive validity. In the current study, internal consistency was excellent (α = .911).

As previously described, two platforms were used to create and distribute the survey: Google Forms and 金数据 (Jinshuju). The survey was distributed via WeChat by teachers to parents. The structure of the survey is as follows: Consent, demographic information, ESSA, ERQ-CA, feedback, and debrief. The debrief covers the aim of the study and reminds participants of their anonymity. The survey takes approximately 5-15 minutes to complete. Anonymity is ensured throughout and is reminded at the start and end of the survey.

A total of 63 complete responses were used for analysis. Each response was reviewed to ensure that any outliers or responses showing deliberate skewing were removed. Pearson correlation was used to establish the relationship between CR, ES, and ESSA total score. A hierarchical multiple regression was conducted, with demographic variables (age and gender) entered for Step 1 and emotional regulation strategies (CR and ES) entered for Step 2. The use of hierarchical multiple regression explains how much variance in academic stress was influenced by ER beyond demographic factors. The significance threshold was set at $p < .05$.

RESULTS

Descriptive analysis

The sample consisted of 63 participants. Participants ranged in age from 10 to 19 years (M = 13.70, SD = 2.30), representing a predominantly early to mid-adolescent sample. Of the 63 participants, 22 were male (34.92%), 40 were female (63.49%), and 1 participant chose not to disclose their gender (1.59%). Regarding their educational level, the majority of participants were in Grades 6-10 (n = 46, 73%), with Grade 8 the most represented (n = 20). Fewer participants were from the lower (Grades 4-5) and upper Grades (Grades 11-12).

Academic stress was measured using ESSA (16 items, 5-point scale; range = 16-80). The mean ESSA score was M = 44.90 (SD = 12.50). This indicates a moderate level of academic stress in the sample in relation to the scale midpoint.

Emotional regulation strategies were measured using ERQ-CA (10 items, 5-point scale). Cognitive reappraisal (6 items; range = 6-30) had a mean of M = 21.54 (SD = 3.69). Expressive suppression (4 items; range = 4-20) had a mean of M = 11.52 (SD = 3.47).

Bivariate Analysis

Internal consistency reliability was measured using Cronbach's alpha. ESSA demonstrated excellent reliability (α = 0.911), Cognitive reappraisal demonstrated acceptable reliability (α = 0.709), and Expressive suppression demonstrated good reliability (α = 0.805).

Table 1. Pearson Correlations between ESSA Subscales and Emotional Regulation Strategies

r	Pressure from study	Workload	Worry about grades	Self-expectation	Despondency
Cognitive Reappraisal	-0.070	-0.075	-0.114	-0.040	-0.174
Expressive Suppression	0.301	0.262	0.207	0.308	0.406

A non-significant negative relationship was revealed between cognitive reappraisal and the five ESSA sub-scales of ESSA (pressure from study, workload, worry about grades, self-expectation, and despondency). However, none of these relationships were statistically significant ($p > .05$). The correlation between cognitive reappraisal and ESSA total score was also weak and non-significant ($r = -.112$, $p > .05$).

In contrast, a significant positive correlation was found between expressive suppression and total ESSA score, $r = .364$, $p = .003$. Significant positive correlations were also observed between expressive suppression and pressure from study ($r = .301$, $p < .05$), workload ($r = .262$, $p < .05$), self-expectation ($r = .308$, $p < .05$), and despondency ($r = .406$, $p < .05$). However, the correlation between expressive suppression and worry about grades was not significant.

Regression Analysis

A hierarchical multiple regression model was employed to examine whether emotional regulation strategies predicted academic stress. The overall regression model was found to be significant ($R^2 = .353$, $F(4,58) = 7.92$, $p < .05$). The demographic (age and gender) explained 25.3% of variance in academic stress ($R^2 = .253$, $p < .05$), with age being a significant predictor ($\beta = 2.538$, $p < .001$) while gender was not. Introducing CR and ES explained an additional 9.9% of variance in academic stress ($\Delta R^2 = .099$, F change $(2, 58) = 4.44$, $p < 0.05$). Expressive suppression was a significant predictor of academic stress ($\beta = 0.987$, $p = 0.014$), while cognitive reappraisal was not ($\beta = -0.551$, $p = 0.132$).

Table 2. Regression Coefficients for Emotion Regulation Predicting ESSA Subscales

β/p	Cognitive Reappraisal	Expressive Suppression
Pressure from study	-0.124 (p > 0.05)	0.216 (p > 0.05)
Workload	−0.085 (p > 0.05)	0.182 (p > 0.05)
Worry about grades	-0.126 (p > 0.05)	0.123 (p > 0.05)
Self-expectation	-0.075 (p > 0.05)	0.207 (p > 0.05)
Despondency	-0.143 (p > 0.05)	0.260 (p = 0.003)

In the sub-cales, expressive suppression was a significant predictor of despondency ($\beta = .260$, $p = .003$), while its effect on the remaining subscales was not significant. Cognitive reappraisal did not significantly predict any of the five sub-scales (Table 2)

DISCUSSION

The study examines whether poorer emotion regulation is associated with higher academic stress in adolescents, using ERQ-CA and ESSA as measures. The findings partially support the hypothesis. A significant positive correlation between expressive suppression and total ESSA score was demonstrated ($r = .308$, $p < .05$). Expressive suppression was also shown to be a significant predictor of overall academic stress ($\beta = 0.987$, $p = 0.014$). This indicates that adolescents who employ expressive suppression as their

emotional regulation strategies tend to report a greater perceived academic stress. The suppression of emotions could contribute to unprocessed emotions, which may sustain or intensify academic stress, which could lead to worse symptoms such as depression and anxiety. This is consistent with Gullone and Taffe (2012), who found ES to be associated with depressive symptoms across the adolescent age range. These findings suggest that suppressing emotions does not reduce academic stress, and in fact, it may amplify it. This also aligns with the current literature (Moore et al., 2008), which identifies expressive suppression as a maladaptive strategy.

Contrary to the hypothesis, cognitive reappraisal did not significantly predict academic stress in the regression analysis ($\beta = -0.551$, $p = .132$), nor did it demonstrate a significant correlation with any of the five ESSA subscales ($r = -.112$, $p > .05$). This result may be explained by the Dual Systems Model (Steinberg, 2008). Cognitive reappraisal can be cognitively demanding, as it engages the prefrontal cortex to actively reframe negative emotions. However, the sample has a relatively young age (M=13.70), and their prefrontal cortex may not yet be sufficiently mature to employ this strategy effectively under stress. This interpretation is supported when the findings are compared with research on older age groups. Undergraduate students (typically aged 18-22) have been found to demonstrate a significant negative relationship between cognitive reappraisal and negative affect (Vally & Ahmed , 2020) and stress-related symptoms such as anxiety and depression (Moore et al., 2008). This could suggest that cognitive reappraisal is more effectively utilized by older students whose matured prefrontal cortex may allow them to perform cognitive reappraisal in a way that leads to meaningful reduction in negative affects and psychological distress. However, current literature demonstrates CR's buffering effects on anxiety or depression as outcome variables rather than academic stress specifically, which is flagged in the literature review of the current study. It is therefore possible that CR may act as a buffer against anxiety and depression (Xin Liu et al. 2025) without directly reducing the experience of academic stress measured by ESSA.

Age was revealed as a strong and consistent predictor of academic stress across both blocks of the hierarchical regression ($\beta = 2.538$, $p < .001$). This suggests that older adolescents in this sample experience greater perceived academic stress. One interpretation of this is that older adolescents face high-stakes academic demands, including national examples and entrance requirements. This may objectively increase the sources of stress. Another interpretation is that older adolescents have had greater cumulative exposure to academic stress over time, which could compound their perceived stress. Both are consistent with the finding that age accounts for variance in ESSA score. However, gender was not a significant predictor of academic stress, which suggests that the relationship between emotional regulation strategies and academic stress in this sample does not differ meaningfully by gender.

When looking at the subscales, expressive suppression was a significant predictor of despondency, while its effect on the remaining four subscales was not significant (Table 2). The Pearson correlation analysis of ES revealed a significant correlation with pressure from study ($r = .301$, $p < .05$), workload ($r = .262$, $p < .05$), self-expectation ($r = .308$, $p < .05$), and despondency ($r = .406$, $p < .05$), but not with worry about grades. This undermines ES's effectiveness. Worry about grades is arguably the most cognitively oriented subscale of ESSA. In contrast, despondency reveals more emotional load, such as hopelessness and low confidence. The fact that ES strongly predicted despondency but failed to demonstrate significant

correlation with worry about grades could suggest that expressive suppression may be more effective in reducing the emotional dimensions of stress than cognitive concerns. This aligns with the theoretical understanding of ES as an emotion-focused strategy, suggesting that its impact is more pronounced on stress dimensions such as despondency.

The current study also has several limitations that must be acknowledged. First, the sample size of 63 participants is relatively small for a regression analysis with 4 predictors, which reduces statistical power. The small sample could also contribute to the non-significant result for cognitive reappraisal. A larger sample may reveal a significant relationship between CR and academic stress that the current study was underpowered to detect. Second, participants were recruited through volunteer sampling via WeChat. Self-selection bias can hence limit the generalisability of the findings. Additionally, families who use WeChat are predominantly Chinese, which limits the generalizability again. Third, the cross-sectional design of the study reduces the causal claim and suggests that the findings can be bidirectional. While ES predicts academic stress, it is equally plausible that higher academic stress leads adolescents to rely more heavily on expressive suppression as a coping mechanism. Fourth, both ESSA and ERQ-CA are self-reported measures, which introduces the possibility of response bias, social desirability effects, and subjectivity in participants' interpretation of items. Fifth, the sample was drawn predominantly from a Chinese cultural context where collectivism may discourage emotional expression as they feel the need to confine to societal norms, which therefore normalises the use of expressive suppression to a greater extent than in Western individualistic cultures. This limits the generalisability of findings to other cultural populations. Sixth, the present study did not collect data on participants' socioeconomic status and race/ethnicity. As a result, it is not possible to examine whether emotional regulation strategies differ across socioeconomic status, or whether cultural or ethnic identity are linked to greater or lesser reliance on expressive suppression. Finally, the underutilisation of ERQ-CA in this field of research means there is limited evidence to compare current results to.

Future research should address these limitations by employing longitudinal designs to establish the direction of the relationship between emotion regulation and academic stress. Larger and more culturally diverse samples should be used to improve statistical power and generalisability. Method triangulation should be employed to reduce reliance on self-report data and provide a more objective assessment of stress levels. Methods include cortisol levels and heart rate variability. Future research should also collect data on socioeconomic status and race/ethnicity. This helps determine whether these factors influence the relationship between emotional regulation and academic stress, and allow findings to be better generalized across different socioeconomic and ethnic backgrounds. Considering the significant positive relationship observed in this study between expressive suppression and academic stress, future research could explore whether interventions that decrease the use of expressive suppression can reduce perceived academic stress in adolescents. The findings can be used in schools to reduce students' stress and overall mental health. The role of cognitive reappraisal should also be further explored in academic stress contexts, given that previous literature has demonstrated CR's buffering effects in anxiety.

CONCLUSION

The present study provides evidence that expressive suppression is a significant positive predictor of perceived academic stress in adolescents. This effect is most pronounced for the despondency subscale. Cognitive reappraisal did not demonstrate a significant relationship with academic stress, which may reflect developmental constraints based on the Dual System Model. Age was a robust predictor of academic stress, likely due to the increase in academic stakes and the increasing stress exposure across adolescent development. These findings fill the gap in the current literature using validated measures for adolescents, more specifically, ERQ-CA and ESSA, to examine the relationship between emotional regulation strategies and academic stress. The results highlight the importance of targeting expressive suppression in future clinical and educational interventions aimed at reducing academic stress in adolescents.

REFERENCES

Bi, X., Ma, Y., Sun, X., Wu, J., Wang, X., & Zhang, L. (2025). Does stress help or harm? The mediating role of cognitive emotion regulation strategies in the relationship between stress, adolescent academic performance, and depression. Journal of Adolescence, 97(5), 1297–1313. https://doi.org/10.1002/jad.12497

Gross, J. J., & Thompson, R. A. (2007). Emotion regulation: Conceptual foundations. In J. J. Gross (Ed.), Handbook of emotion regulation (pp. 3–24). Guilford Press.

Gullone, E., & Taffe, J. (2012). The emotion regulation questionnaire for children and adolescents (Erq–ca): A psychometric evaluation. Psychological Assessment, 24(2), 409–417. https://doi.org/10.1037/a0025777

Iuga, I. A., Fodor, L. A., & David, O. A. (2025). Cognitive emotion regulation strategies and academic burnout dimensions in children and adolescents: A network analysis approach. Current Psychology, 44(7), 5480–5493. https://doi.org/10.1007/s12144-025-07537-0

Liu, X., Zhang, Y., Ran, F., Zeng, J., & Liu, Y. (2026). Longitudinal effects of academic stress on life satisfaction in Chinese adolescents: A moderated mediation model. *Children and Youth Services Review*, *180*, 108663. https://doi.org/10.1016/j.childyouth.2025.108663

Megreya, A. M., & Al-Emadi, A. A. (2024). The impact of cognitive emotion regulation strategies on math and science anxieties with or without controlling general anxiety. Scientific Reports, 14(1), 19726. https://doi.org/10.1038/s41598-024-70705-y

Moore, S. A., Zoellner, L. A., & Mollenholt, N. (2008). Are expressive suppression and cognitive reappraisal associated with stress-related symptoms? Behaviour Research and Therapy, 46(9), 993–1000. https://doi.org/10.1016/j.brat.2008.05.001

Salimzadeh, R., Hall, N. C., & Saroyan, A. (2020). Stress, emotion regulation, and well-being among canadian faculty members in research-intensive universities. Social Sciences, 9(12), 227. https://doi.org/10.3390/socsci9120227

Steinberg, L. (2008). A social neuroscience perspective on adolescent risk-taking. Developmental Review, 28(1), 78–106. https://doi.org/10.1016/j.dr.2007.08.002

Sun, J., Dunne, M. P., Hou, X., & Xu, A. (2011). Educational stress scale for adolescents: Development, validity, and reliability with chinese students. Journal of Psychoeducational Assessment, 29(6), 534–546. https://doi.org/10.1177/0734282910394976

Vally, Z., & Ahmed, K. (2020). Emotion regulation strategies and psychological wellbeing: Examining cognitive reappraisal and expressive suppression in an Emirati college sample. Neurology, Psychiatry and Brain Research, 38, 27–32. https://doi.org/10.1016/j.npbr.2020.09.001

Vinter, K., Aus, K., & Arro, G. (2021). Adolescent girls' and boys' academic burnout and its associations with cognitive emotion regulation strategies. Educational Psychology, 41(8), 1061–1077. https://doi.org/10.1080/01443410.2020.1855631