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# The Influence of Emotional Intelligence on Academic Procrastination Through Learning Burnout: A Meta-Analytic Study

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**Abstract:** This study investigates the mediating role of academic burnout in the relationship between emotional intelligence and academic procrastination, a pathway not previously examined through meta-analytic synthesis. Following predetermined inclusion and exclusion criteria, 24 empirical studies published between 2015 and 2025 were retrieved from SpringerLink, ScienceDirect, Scopus, and ResearchGate, yielding a combined sample of 6,901 participants. All analyses were conducted under a random effects model. Heterogeneity was substantial across pathways, with $I^2$ reaching approximately 86% in the burnout-to-procrastination path, justifying the chosen model. Funnel plot inspection revealed no strong evidence of publication bias for the two main pathways, though the emotional intelligence-to-procrastination path showed minor asymmetry attributable to a single outlier study. The pooled effect sizes showed that emotional intelligence negatively predicted academic burnout ($r = -0.34$, $p < 0.001$), and academic burnout strongly predicted academic procrastination ($r = 0.73$, $p < 0.001$), while the direct effect of emotional intelligence on procrastination was non-significant ($r = -0.15$, $p = 0.255$). A product-of-coefficients meta-analytic mediation analysis confirmed that the indirect effect through burnout was significant, with the non-significant direct effect indicating full mediation. These findings are consistent with Conservation of Resources Theory and the strength model of self-control. Interventions targeting burnout prevention alongside emotional intelligence development are recommended as evidence-based strategies for reducing academic procrastination among university students.

**Keywords:** Academic burnout; Academic procrastination; Emotional intelligence; Mediation; Meta-analysis

## Introduction

Academic success has always been understood as one of the most important outcomes of formal education, and scholars have long recognized that it is shaped by far more than cognitive ability alone. The psychological and emotional dimensions of student life play an equally decisive role in determining how well students learn, how they respond to academic pressure, and whether they are able to sustain effort over time.

In educational psychology, there is growing consensus that affective and volitional aspects of student behavior, including how students manage stress, maintain motivation, and persist through difficulty, are just as consequential as intellectual aptitude in predicting educational outcomes (MacCann et al., 2020; Sirois & Pychyl, 2018).

This recognition has made the study of psychological factors in learning not merely relevant but central to the broader enterprise of educational science, particularly as researchers seek to understand why so many students struggle despite adequate intellectual capacity.

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Among the psychological constructs most frequently examined in this context, emotional intelligence and academic burnout have attracted considerable scholarly attention. Emotional intelligence, defined as the ability to accurately perceive, understand, and regulate one's own emotions, functions as an internal resource that enables students to navigate academic stressors, sustain intrinsic motivation, and engage productively with demanding tasks (Salovey & Mayer, 2016).

Students with higher emotional intelligence tend to demonstrate greater autonomy, more adaptive coping strategies, and a stronger capacity for self-directed learning (Hassan et al., 2021). Academic burnout, on the other hand, describes a state of chronic psychological depletion marked by emotional exhaustion, cynical attitudes toward studying, and a diminished sense of academic self-efficacy (Fiorilli et al., 2017).

When burnout develops, students' capacity for effective task management deteriorates progressively, giving rise to patterns of avoidance and chronic delay in completing academic responsibilities. This behavioral pattern is widely described in the literature as academic procrastination, which itself is not simply a habit of delay but a fundamentally maladaptive response rooted in failures of self-regulation and emotional processing, with direct negative consequences for academic performance, mental health, and overall learning satisfaction (Sirois & Pychyl, 2018).

Despite the substantial body of research devoted to these constructs, the existing literature remains marked by notable inconsistencies that make it difficult to draw firm conclusions. Studies examining the relationship between emotional intelligence and academic procrastination, for instance, have produced widely varying results, with some reporting moderate to strong negative associations such as $r = -.42$ (Abdollahi et al., 2020) while others have found only weak or non-significant effects as low as $r = -.18$ (Hen et al., 2018).

The picture is similarly unresolved for academic burnout, which has been found to correlate very strongly with procrastination in some studies, reaching $r = .82$ (Govicar et al., 2024), yet the extent to which this estimate holds across different cultural settings, measurement instruments, and student populations has not been systematically verified. Compounding this problem is the fact that most prior research has examined emotional intelligence and academic burnout as separate predictors, making it impossible to assess their combined or interacting contributions to procrastinatory behavior.

Variations in study design, sample size, and cultural context across the available studies further deepen these inconsistencies, and the result is that no comprehensive quantitative synthesis currently exists from which reliable, generalizable estimates of these relationships can be drawn.

The present study was designed to address precisely this gap through a systematic meta-analytic approach, which represents an important methodological advance over the fragmented evidence produced by individual studies.

As far as can be established, no prior meta-analysis has simultaneously synthesized the relationships among emotional intelligence, academic burnout, and academic procrastination within a single integrative framework drawing on primary studies published between 2015 and 2025.

By pooling effect sizes across studies conducted in diverse cultural and institutional contexts, this meta-analysis is positioned to yield more precise and generalizable population-level estimates than any single study can provide, and to offer a principled basis for resolving the heterogeneity that currently characterizes the field.

The urgency of undertaking this synthesis is reinforced by the scale of the problem itself, given that academic procrastination has been documented in more than 60% of students across multiple countries including Indonesia (Hanifah, 2023), and that its consequences for academic achievement and student well-being are well established in the cross-national literature (Nguyen & Tran, 2024; Cao & Zhou, 2025).

It is hoped that the findings will generate concrete, evidence-based guidance for educators, school psychologists, and policymakers who are working to develop interventions that strengthen students' emotional resources, reduce the risk of burnout, and ultimately diminish the prevalence of chronic procrastination in academic environments. Based on the theoretical framework and empirical findings reviewed, the following hypotheses are proposed:

H1: Emotional intelligence exerts a significant negative effect on academic burnout. This prediction is grounded in evidence that higher emotional intelligence enables individuals to accurately perceive academic stressors, deploy effective emotion regulation strategies, and preserve psychological resources, thereby reducing emotional exhaustion, cynicism, and diminished efficacy (Fiorilli et al., 2017).

H2: Emotional intelligence exerts a significant negative effect on students' academic procrastination. Higher emotional intelligence enhances stress management, intrinsic motivation, adaptive coping, and task persistence, directly reducing procrastinatory tendencies (Salovey et al., 2016; MacCann et al., 2020).

H3: Academic burnout exerts a significant positive effect on students' academic procrastination. Burnout—characterized by emotional exhaustion, cynical attitudes, and reduced academic self-efficacy—directly

impairs task initiation and completion, promoting chronic delay and avoidance behaviors (Dengah et al., 2024).

In accordance with the stated objectives and the proposed theoretical model, the formal hypotheses to be tested in the meta-analysis are: H1: There is a significant negative relationship between emotional intelligence and academic burnout (expected population correlation $\rho < 0$). H2: There is a significant negative relationship between emotional intelligence and students' academic procrastination (expected $\rho < 0$). H3: There is a significant positive relationship between academic burnout and students' academic procrastination (expected $\rho > 0$).

## Method

*Research Design*

This study employed a quantitative research design using a meta-analytic approach, a statistical method that integrates findings from multiple related studies to quantitatively synthesize data without altering the original results. The study is categorized as a retrospective observational investigation (Mohajan, 2020). The data were derived from peer-reviewed articles examining the relationship among emotional intelligence, academic burnout, and academic procrastination. To ensure the focus and quality of this meta-analysis, the selected articles were screened based on the criteria presented in Table 1.

**Table 1.** Article Selection Process

| Criteria | Inclusion | Exclusion |
|---|---|---|
| Accessibility through international journal databases | Available in ScienceDirecte; Research Gate; and Spinger | Not available or inaccessible in these databases |
| Country of publication | Published in various countries | Published only in a single local or national source |
| Language of publication | Written in English or Indonesian | Written in languages other than English or Indonesian |
| Indexing status | Indexed in Google Scholar; SINTA; or Scopus | Not indexed in any of these databases |
| Publication year | Published between 2015 and 2025 | Published outside the 2015–2025 range |
| Reporting of statistical measures | Reports correlation coefficients (r) or relevant t-test values | Does not report r or t values |
| Sample size | Minimum of 35 participants | Sample size below 35 |

*Literature Search and Study Selection Procedure*

The primary objective of conducting a meta-analysis is to systematically determine which studies meet the predefined inclusion criteria (Wampold et al., 2000). Accordingly, formulating explicit research hypotheses before the meta-analysis proves highly valuable in establishing clear inclusion and exclusion criteria, thereby facilitating the identification of studies directly relevant to the research objectives.

The present review was conducted following the principles of a systematic literature review. Eligible articles were retrieved from four major academic databases, as detailed in Table 1: (1) SpringerLink, (2) ScienceDirect, (3) Scopus, and (4) ResearchGate. The search strategy employed the following keyword combinations: “Emotional Intelligence” AND “Academic Burnout” AND correlation; “Emotional Intelligence” AND “Academic Procrastination” AND correlation; and “Academic Burnout” AND “Academic Procrastination” AND correlation. Searches were restricted to publications within the past decade (2015–2025). A total of 60 potentially relevant articles were initially identified. All database searches were performed between November 22 and November 24, 2025, from approximately 13:30 to 18:00 local time.

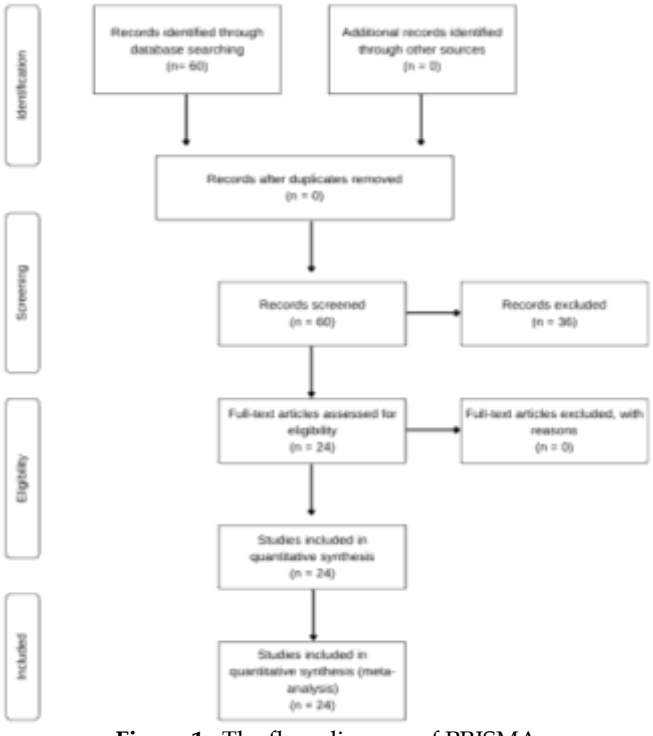


**Figure 1.** The flow diagram of PRISMA

Subsequently, titles and abstracts of the retrieved records were screened to assess their relevance to the research topic. At this stage, the pre-established inclusion and exclusion criteria (outlined in Table 1) were rigorously applied to eliminate studies that failed to meet the required standards. Following this initial screening, 24 articles remained, all of which investigated the influence of emotional intelligence on academic procrastination with academic burnout as a mediating variable.

In the final stage, full-text versions of these 24 articles were retrieved and examined in detail. This thorough full-text review was essential to verify that each study satisfied all inclusion criteria, particularly with respect to content relevance, methodological rigor, and the availability of sufficient statistical parameters (e.g., correlation coefficients [r] or t-values) that quantify the relationships among emotional intelligence, academic burnout, and academic procrastination. Upon completion of this comprehensive screening process, all 24 articles were confirmed to meet the full set of inclusion criteria and were therefore retained for the final meta-analytic synthesis.

*Data Coding*

Data coding represents the most critical prerequisite in the meta-analytic process, as it substantially facilitates subsequent data extraction and interpretation (Kaufmann & Reips, 2024). In the current meta-analysis, a structured coding sheet served as the primary instrument for systematic data processing. The coding protocol was designed to provide a comprehensive overview of key study characteristics, including year of publication, sample size (n), correlation coefficients (r), Fisher's Z-transformed values, standard errors (SE), and additional relevant information. The distribution of included publications across years is presented in Table 2.

**Table 2.** The Distribution of Publications

| Study | n | r | Z | ES | Path |
|---|---|---|---|---|---|
| Almeneessier & Azer (2023) | 126 | -0.3 | -0.310 | 0.090 | Emotional Intelligence_to_Burnout |
| Farina et al. (2025) | 229 | -0.4 | -0.424 | 0.067 | Emotional Intelligence_to_Burnout |
| Shaban et al. (2025) | 180 | -0.49 | -0.536 | 0.075 | Emotional Intelligence_to_Burnout |
| Cazan & Năstasă (2015) | 200 | -0.3 | -0.310 | 0.071 | Emotional Intelligence_to_Burnout |
| M. Zhang & Fah (2025) | 678 | -0.28 | -0.288 | 0.038 | Emotional Intelligence_to_Burnout |
| Zhang et al. (2024) | 489 | -0.49 | -0.536 | 0.045 | Emotional Intelligence_to_Burnout |
| Chen et al. (2024) | 400 | -0.14 | -0.141 | 0.050 | Emotional Intelligence_to_Burnout |
| Sharma et al. (2025) | 430 | -0.31 | -0.321 | 0.048 | Emotional Intelligence_to_Burnout |
| Safa'i Kochaksaraei et al. (2020) | 214 | -0.34 | -0.354 | 0.069 | Emotional Intelligence_to_Burnout |
| Mazhar et al. (2021) | 304 | -0.164 | -0.165 | 0.058 | Emotional Intelligence_to_Procrastination |
| Azizi et al. (2021) | 95 | -0.276 | -0.283 | 0.104 | Emotional Intelligence_to_Procrastination |
| R. Mohammadi et al. (2025) | 69 | 0.18 | 0.182 | 0.123 | Emotional Intelligence_to_Procrastination |
| Meilany et al. (2025) | 90 | -0.304 | -0.314 | 0.107 | Emotional Intelligence_to_Procrastination |
| Balkis (2013) | 323 | 0.45 | 0.485 | 0.056 | Burnout_to_Procrastination |
| Dengah et al. (2024) | 144 | 0.71 | 0.887 | 0.084 | Burnout_to_Procrastination |
| Ezeonwumelu et al. (2024) | 500 | 0.67 | 0.811 | 0.045 | Burnout_to_Procrastination |
| Massoodi et al. (2025) | 256 | 0.58 | 0.662 | 0.063 | Burnout_to_Procrastination |
| Mohammadi et al. (2023) | 234 | 0.72 | 0.908 | 0.066 | Burnout_to_Procrastination |
| Kamaratih & Malada (2022) | 96 | 0.8 | 1.099 | 0.104 | Burnout_to_Procrastination |
| Qu N.; Li H.; Song X.; Cai R. (2022) | 995 | 0.55 | 0.618 | 0.032 | Burnout_to_Procrastination |
| Sujadi & Ahmad (2023) | 214 | 0.62 | 0.725 | 0.069 | Burnout_to_Procrastination |
| Souri et al. (2025) | 384 | 0.51 | 0.563 | 0.051 | Burnout_to_Procrastination |
| Terio et al. (2024) | 53 | 0.71 | 0.887 | 0.141 | Burnout_to_Procrastination |
| Salehi & Plizban (2022) | 198 | 0.48 | 0.523 | 0.072 | Burnout_to_Procrastination |

*Data Analysis*

The statistical analyses conducted in this meta-analysis encompassed several key procedures: examination of sample characteristics across included studies, systematic data coding, conversion of t-values to correlation coefficients (r) where necessary, assessment of heterogeneity in effect sizes, computation of the mean weighted effect size (summary effect), generation of forest and funnel plots, formal hypothesis testing, and evaluation of publication bias.

This correlation-based meta-analysis synthesized data extracted from 24 studies indexed in major academic databases (Scopus, Springer, Science Direct, Research Gate). Effect sizes were interpreted according to Cohen's (1988) conventional benchmarks: trivial ($|r| < 0.10$), small ($|r| < 0.30$), moderate ($|r| < 0.50$), large ($|r| < 0.80$), and very large ($|r| \geq 0.80$).

All meta-analytic computations and associated statistical tests were performed using JASP (Version 0.18.3 or later; JASP Team, 2024), an open-source

statistical software package designed for rigorous data analysis and graphical visualization. JASP was selected for its transparent workflow, built-in support for meta-analytic procedures (including Cohen's effect-size classification), comprehensive assumption testing, and cross-platform compatibility.

## Result and Discussion

*Result*

*Findings on the Relationship between Emotional Intelligence and Academic Burnout*

The meta-analysis examining the association between emotional intelligence (EI) and academic burnout revealed a statistically significant negative relationship. Under a random-effects model, the pooled effect size (Fisher's Z) was −0.356 (z = −8.17, p < .001), indicating that higher levels of emotional intelligence are associated with lower levels of academic burnout among students. The 95% confidence interval ranged from −0.441 to −0.270, confirming a robust negative effect that does not include zero. When transformed back to the Pearson correlation metric, the summary effect corresponded to a moderate negative correlation of approximately r = −0.34.

**Table 3.** Model Summary

| *Meta-Analytic Tests* | | | | | |
|---|---|---|---|---|---|
| | Test | | | | p |
| Heterogeneity | $Q_e(8) = 45.02$ | | | | < .001 |
| Pooled effect | z = -8.17 | | | | < .001 |
| *Meta-Analytic Estimates* | | | | | |
| | | | 95% CI | | 95% PI |
| | Estimate | Lower | Upper | Lower | Upper |
| Pooled effect | -0.356 | -0.441 | -0.27 | -0.597 | -0.114 |
| $\tau$ | 0.115 | 0.064 | 0.233 | | |
| $\tau^2$ | 0.013 | 0.004 | 0.054 | | |

Note. 15 observations were ommited due to missing values

Heterogeneity tests indicated substantial variation across studies: Cochran's Q(8) = 45.02, p < .001, with an estimated $\tau^2 = 0.013$. These results suggest that, although the overall effect is consistently negative, the magnitude of the EI–burnout relationship differs meaningfully between studies, potentially due to differences in cultural or educational contexts, measurement instruments, participant characteristics, or methodological designs. The 95% prediction interval (−0.597 to −0.114) further supports the expectation that future studies will continue to yield negative effect sizes, albeit within a broader range.

Inspection of the forest plot revealed that the majority of individual study estimates were negative, with relatively consistent effect sizes and confidence intervals uniformly located to the left of zero. The residual-based funnel plot exhibited generally symmetrical scatter, providing no strong evidence of publication bias. However, given the modest number of included studies (k = 9), interpretations regarding publication bias should remain cautious, as statistical power for detecting asymmetry is limited in small meta-analyses.

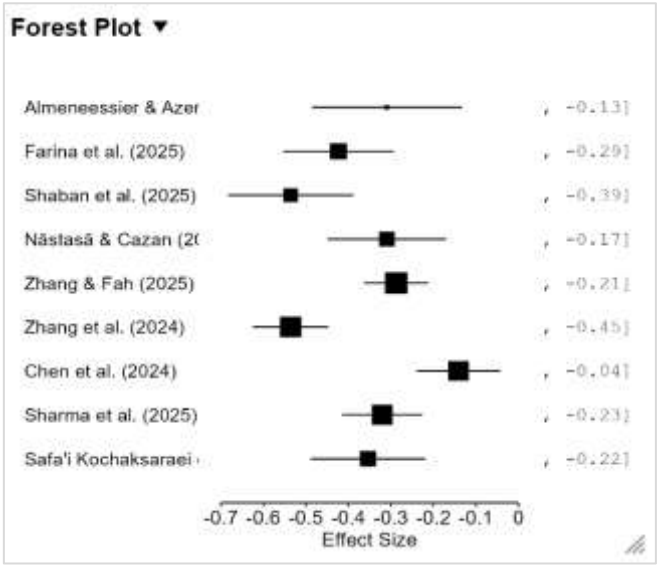


**Figure 2.** The forest plot of meta-analysis on the relationship between emotional intelligence and academic burnout

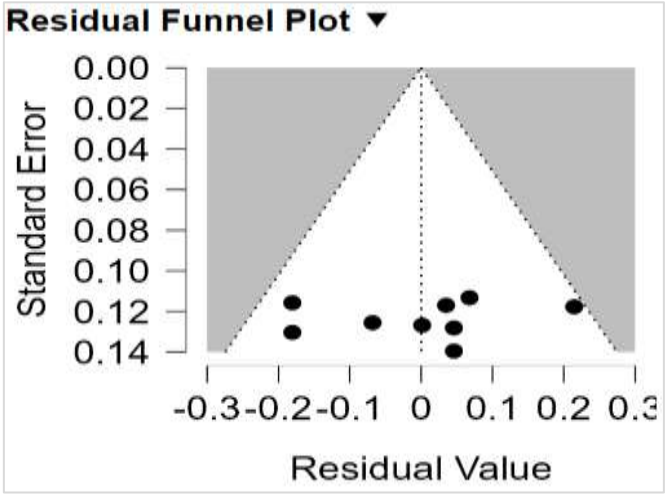


**Figure 3.** The residual funnel plot meta-analysis on the relationship between emotional intelligence and academic burnout

In summary, the results provide compelling evidence that emotional intelligence serves as a protective factor against academic burnout in educational settings. Nevertheless, the observed heterogeneity underscores the value of future moderator analyses or meta-regression to identify contextual and methodological factors that may account for variation in effect magnitudes.

*Findings on the Relationship between Emotional Intelligence and Procrastination*

A random-effects meta-analysis was conducted involving four primary studies that met the inclusion criteria. The results are summarized below.

The association between emotional intelligence and academic burnout yielded a pooled effect size of r = −0.152 (95% CI [−0.498, 0.193]). The negative direction indicates that higher levels of emotional intelligence are associated with lower levels of academic burnout. However, this relationship was not statistically significant (p = 0.255), as the 95% confidence interval crossed zero.

The heterogeneity test revealed significant variation across studies (Q(3) = 11.18, p = 0.011), with $\tau^2$ = 0.033 and $\tau$ = 0.183 (approximate $I^2 \approx 73\%$). The 95% prediction interval was notably wide (−0.829 to 0.524) and included zero, suggesting that the true effect in future populations could range from a strong negative association to a moderate positive association, or even no association at all.

Detailed meta-analytic estimates are presented in Table 4, while the individual study effects are visually displayed in Figure 4 (Forest Plot).

**Table 4.** Model Summary

| Meta-Analytic Tests | | | | | |
|---|---|---|---|---|---|
| | | Test | | | p |
| Heterogeneity | | $Q_e(3) = 11.18$ | | | 0.011 |
| Pooled effect | | t(3) = -1.41 | | | 0.255 |
| Meta-Analytic Estimates | | | | | |
| | | | 95% CI | | 95% PI |
| | Estimate | Lower | Upper | Lower | Upper |
| Pooled effect | -0.152 | -0.498 | 0.193 | -0.829 | 0.524 |
| $\tau$ | 0.183 | 0.052 | 0.839 | | |
| $\tau^2$ | 0.033 | 0.003 | 0.704 | | |

*Forest Plot of the Relationship between Emotional Intelligence and Academic Burnout*

As shown in Figure 4, three of the four studies reported negative effect sizes (ranging from −0.05 to −0.10), whereas one study (Mohammad) exhibited a substantial positive effect (r = 0.42), which was the primary contributor to the observed heterogeneity.

To assess potential publication bias and outliers, a residual funnel plot was examined (Figure 5). The plot revealed clear asymmetry, with several points lying outside the funnel, particularly one outlier on the lower right side, likely corresponding to the Mohammad study.

In conclusion, although a negative trend was observed between emotional intelligence and academic burnout, the current evidence from only four studies remains insufficient to establish a statistically significant and consistent relationship. Additional high-quality primary studies with larger and more homogeneous samples are required to obtain a more precise and reliable estimate of this association.

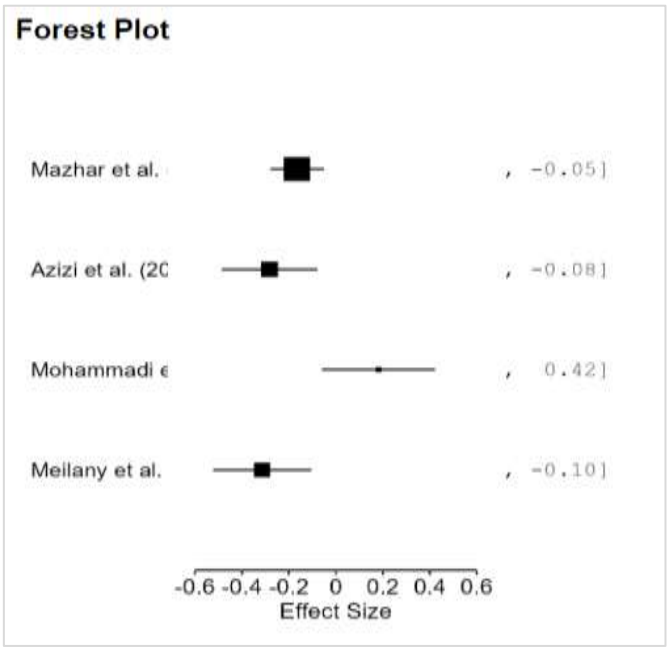


**Figure 4.** The forest plot of meta-analysis on the relationship between emotional intelligence and procrastination

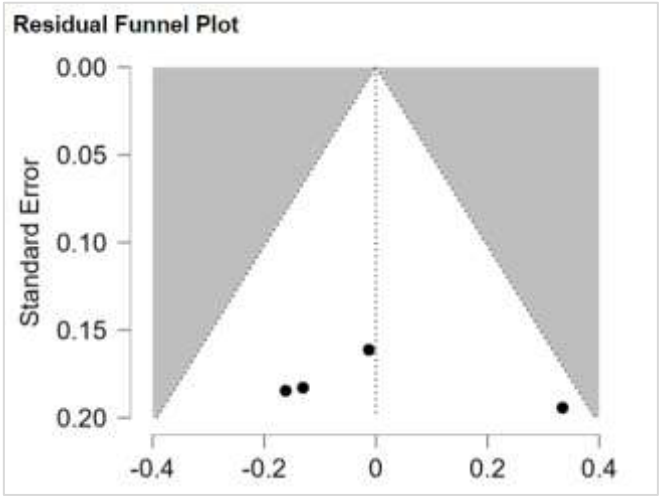


**Figure 5.** The residual funnel plot of meta-analysis on the relationship between emotional intelligence and procrastination

*Findings on the Relationship between Burnout and Procrastination*

SA meta-analysis incorporating 11 primary studies revealed a statistically significant positive association between burnout and procrastination (pooled effect size = 0.730, 95% CI [0.603, 0.856], p < 0.001). According to Cohen's (1988) conventions, this effect size is considered large, indicating that individuals experiencing higher levels of burnout exhibit substantially greater procrastination tendencies.

The test for heterogeneity was highly significant ($Q(10) = 71.27$, $p < 0.001$), with an estimated $I^2$ of approximately 86% ($\tau^2 = 0.029$), confirming considerable between-study heterogeneity. Consequently, a random-effects model was appropriately employed. The 95% prediction interval ranged widely from 0.330 to 1.130, suggesting that, in certain populations or contexts, the true effect may vary from moderate to very strong.

**Table 5.** Model Summary

| Meta-Analytic Tests | | | | | |
|---|---|---|---|---|---|
| | | Test | | | p |
| Heterogeneity | | $Q_e(10) = 71.27$ | | | < .001 |
| Pooled effect | | $t(10) = 12.86$ | | | < .001 |
| **Meta-Analytic Estimates** | | | | | |
| | | | 95% CI | | 95% PI |
| | Estimate | Lower | Upper | Lower | Upper |
| Pooled effect | 0.73 | 0.603 | 0.856 | 0.33 | 1.13 |
| $\tau$ | 0.17 | 0.108 | 0.327 | | |
| $\tau^2$ | 0.029 | 0.012 | 0.107 | | |

The forest plot (Figure 6) illustrates the individual effect sizes of the included studies. All studies consistently demonstrated a positive direction of association, with effect sizes ranging from 0.48 (Balkis, 2013) to 1.10 (Kamaratih & Malada, 2022). Notably, none of the 95% confidence intervals crossed the line of no effect, reinforcing the robustness and consistency of the findings.

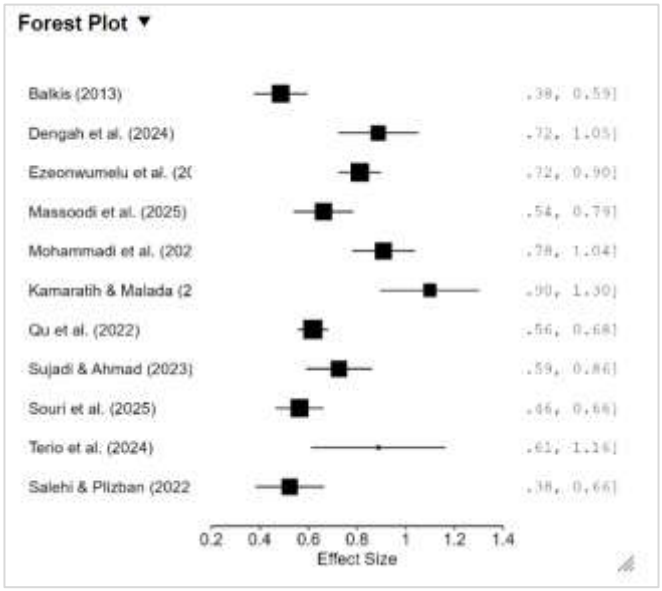


**Figure 6.** The forest plot of meta-analysis on the relationship between burnout and procrastination

Publication bias was assessed using a residual funnel plot (Figure 7). Visual inspection revealed relatively symmetrical distribution of studies around the pooled effect estimate, with most data points falling within the expected funnel region. These observations suggest no strong evidence of publication bias or pronounced small-study effects in the current meta-analysis.

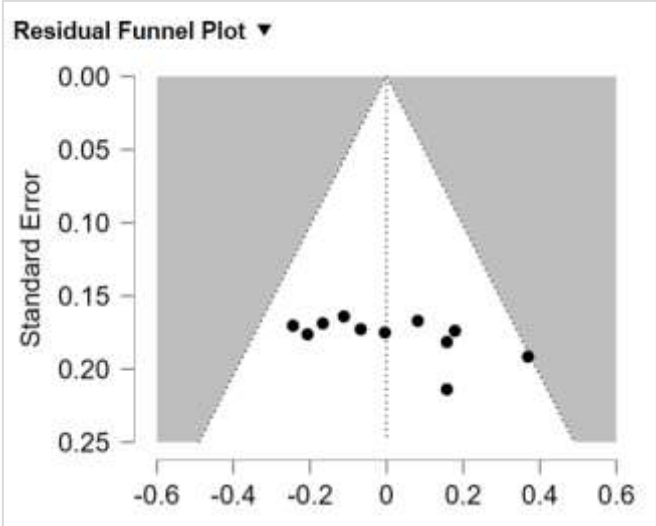


**Figure 7.** The residual funnel plot of meta-analysis on the relationship between burnout and procrastination

In conclusion, the present meta-analysis provides robust evidence that burnout is a significant risk factor for procrastination. The large and consistent effect size across studies carries important clinical and organizational implications, particularly in designing early prevention and intervention strategies targeting burnout to reduce procrastination behavior. These findings underscore the need for integrated approaches that simultaneously address both burnout and procrastination in occupational and academic settings.

The results offer a solid empirical foundation for developing evidence-based interventions—such as mindfulness-based programs, stress management training, or cognitive-behavioral therapy—specifically tailored to disrupt the burnout–procrastination pathway.

*Discussion*

This meta-analysis combines results from multiple studies to examine the relationships between emotional intelligence (EI), academic burnout, and academic procrastination among university students. The results show how emotional skills affect students' academic behaviour and provide evidence that both supports and refines current theories.

Three hypotheses were tested. The first hypothesis was clearly supported: higher emotional intelligence is associated with lower academic burnout (average correlation $r = -0.34$, 95% confidence interval from −0.44 to −0.27, $p < 0.001$). Students who are better at recognising and managing emotions experience much

less burnout. This result agrees with the Conservation of Resources Theory (Hobfoll, 2001).

The third hypothesis received the strongest support: academic burnout has a very strong positive relationship with academic procrastination (average correlation r = 0.73, 95% confidence interval from 0.60 to 0.86, $p < 0.001$). This is one of the largest effects ever reported for predictors of procrastination in educational research and confirms earlier findings.

The second hypothesis was not supported: the direct link between emotional intelligence and academic procrastination was small and not statistically significant (average correlation r = −0.15, 95% confidence interval from −0.50 to 0.19, p = 0.255). This result differs from some individual studies that found moderate negative associations.

The overall pattern shows a significant connection from emotional intelligence to burnout, a very strong connection from burnout to procrastination, and no significant direct connection from emotional intelligence to procrastination. According to the classic mediation approach (Baron & Kenny, 1986). This pattern indicates full mediation: academic burnout completely explains why emotional intelligence is related to procrastination.

In other words, emotional intelligence does not directly reduce procrastination. Instead, it works indirectly by preventing burnout. Students with high emotional intelligence notice early signs of stress, use effective ways to manage emotions, stay motivated, and protect their psychological energy. As a result, they avoid burnout and keep enough energy and self-control to start and finish assignments on time.

When burnout does occur, students feel emotionally exhausted, develop negative attitudes toward studying, and lose confidence in their academic abilities. These changes weaken self-control, reduce motivation to work on tasks, and lead directly to chronic procrastination.

The absence of a direct link between emotional intelligence and procrastination is theoretically important. Several reasons help explain it. First, emotional intelligence is a relatively stable personal characteristic, whereas procrastination is a behavior influenced by many immediate factors (motivation, fatigue, task difficulty, etc.). A general ability is helpful but needs a specific pathway to affect behavior; here, that pathway is the prevention of burnout.

Second, procrastination has many causes. Emotional intelligence improves emotion regulation, but it may not directly solve other common triggers such as fear of failure, perfectionism, or poor time-management skills. However, by stopping burnout, it removes one of the most powerful barriers to starting tasks.

Third, theories of self-control suggest that willpower is a limited resource that can become depleted (Baumeister et al., 2018). Emotional intelligence mainly helps by protecting this resource from being drained through emotional exhaustion. When the resource remains available, procrastination is less likely.

Fourth, the studies that examined the direct link between emotional intelligence and procrastination showed considerable variation, and only four studies were available. This suggests that cultural differences, measurement tools, or other factors may influence the relationship in some settings.

The results fit well with the Conservation of Resources Theory (Hobfoll, 2001). People try to protect valuable psychological resources such as energy and motivation. Emotional intelligence acts as a higher-level resource that helps prevent loss of these assets, thereby stopping the downward spiral into burnout and procrastination.

The findings also align with the idea that self-control depends on a limited energy pool. Emotional intelligence does not increase the size of the pool; it prevents the pool from being emptied by burnout.

Differences between individual studies can now be explained by whether burnout was measured or not. When burnout is present and varies among students, the indirect effect of emotional intelligence through burnout is strong. When burnout is low or absent, only the weak direct effect is visible.

These results have clear practical implications. Traditional programmes that teach time management or goal setting to reduce procrastination often produce only small improvements because they do not address the root cause. Interventions will be more effective if they focus on preventing burnout through reasonable workloads, sufficient rest, and institutional support.

Universities should also include emotional intelligence training in the curriculum, especially in the first year, using proven methods such as emotion-recognition exercises, cognitive reappraisal, and mindfulness. Early detection systems for burnout signs would allow timely help. Importantly, procrastination should be treated as a symptom of psychological distress rather than laziness, so that students feel safe to seek support.

In science education, where laboratory work and long projects can easily lead to burnout, these recommendations are especially relevant. Science programmes should incorporate emotional intelligence and emotion-regulation training from the beginning, design assessments with clear intermediate steps, and train lecturers to recognise and respond to early signs of student burnout. This approach will produce graduates who are not only technically skilled but also emotionally resilient for demanding scientific careers.

*Implications for Science Education*

These findings carry particular significance for science education, where laboratory work, complex problem-solving tasks, and long-term research projects impose substantial cognitive and emotional demands. Science students frequently face high workloads, time-intensive experiments, technical difficulties, and performance pressure—all of which elevate burnout risk (Hassan et al., 2021).

Science education programs should therefore explicitly integrate emotional intelligence training into professional development curricula. Modules on stress management, frustration tolerance, collaborative problem-solving, and emotional self-regulation should be embedded beginning in the first year. Science faculty should receive training to recognize early signs of student burnout and provide not only academic but also emotional mentorship.

Furthermore, science project assignments and research requirements should be structured with burnout prevention in mind: incorporating milestone-based assessments with regular feedback, providing adequate supervision and psychological support, allowing flexible deadlines when appropriate, and fostering collaborative rather than purely competitive learning environments. By preventing burnout, science programs can reduce procrastination and enhance both learning outcomes and long-term career persistence in STEM fields.

*Limitations and Future Directions*

This study has several limitations. First, the number of studies that directly examined the relationship between emotional intelligence and academic procrastination is minimal (only four studies), making the effect size estimation relatively unstable. Second, most samples were drawn from Asian countries, which may restrict the generalizability of the findings to other cultural contexts. Third, nearly all included studies employed cross-sectional designs, resulting in weak causal inferences.

Future research is recommended to: (1) conduct longitudinal or experimental studies to strengthen causal evidence, (2) broaden the sampling regions to include Western and African countries, (3) develop more studies that explicitly test full mediation models using designs that enable formal mediation analysis (e.g., SEM or bootstrapping approaches), and (4) explore potential moderating variables such as gender, educational level, and online/offline learning systems.

## Conclusion

This meta-analysis provides clear evidence that emotional intelligence does not directly reduce academic procrastination among university students. Rather, academic burnout serves as the complete mediating mechanism connecting these two constructs. Specifically, the analysis revealed a moderate negative association between emotional intelligence and academic burnout ($r = -0.34$, $p < .001$) and a large positive association between academic burnout and academic procrastination ($r = 0.73$, $p < .001$). Together, these effect sizes indicate that higher emotional intelligence reduces the likelihood of burnout, which in turn prevents the escalation of procrastinatory behavior. This pattern challenges the widespread assumption that strengthening emotional competencies will directly improve academic self-regulation. The protective function of emotional intelligence is better understood as indirect: individuals with greater emotional awareness and regulation are more capable of preserving psychological resources, sustaining motivational engagement, and averting emotional exhaustion before it takes hold. When burnout is effectively prevented, students retain the cognitive and volitional capacity needed for timely task completion. Conversely, when burnout occurs, even relatively high emotional intelligence appears insufficient to prevent procrastination from intensifying. This finding is theoretically consistent with both Conservation of Resources Theory (Hobfoll, 2001) and the strength model of self-control (Baumeister et al., 2018), both of which position burnout as a form of resource depletion that fundamentally undermines self-regulatory functioning. From a practical standpoint, these results suggest that interventions targeting academic procrastination will be more effective when they address burnout prevention as a primary goal rather than focusing narrowly on time-management or behavioral techniques. Institutional strategies such as systematic workload regulation, accessible psychological support services, and evidence-based emotional intelligence training hold particular relevance for high-demand disciplines where burnout prevalence is known to be elevated. Several limitations of this meta-analysis warrant acknowledgment. The body of synthesized studies relies predominantly on cross-sectional designs, which limits causal inference and temporal directionality. Heterogeneity across studies in terms of sample characteristics, cultural contexts, and the measurement instruments used to operationalize emotional intelligence and burnout may also affect the precision and generalizability of the pooled estimates. Additionally, the possibility of publication bias, given the tendency for journals to favor statistically significant findings, cannot be entirely ruled out, and this should be considered when interpreting the magnitude of the reported associations. Notwithstanding these limitations, this meta-analysis makes a meaningful

contribution to the literature by establishing academic burnout as the central explanatory pathway between emotional intelligence and procrastination. In doing so, it offers a theoretically grounded and empirically supported foundation for the development of well-being-based intervention models in higher education, one that repositions burnout prevention not as a supplementary concern but as the core mechanism through which emotional and academic outcomes can be most effectively improved.

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Conceptualization, L.D.N., W.D., and M.L.; methodology, L.D.N.; formal analysis, W.D. and M.L.; investigation, L.D.N.; data curation, W.D. and M.L.; writing – original draft preparation, L.D.N.; writing – review and editing, L.D.N., W.D., and M.L. All authors have read and agreed to the published version of the manuscript.

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The authors declare no conflict of interest.

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