



Self-Regulation, Conformity, and the Procrastination Puzzle: A Mediated Path Analysis Among University Students

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Abstract

Academic procrastination undermines student achievement worldwide; yet, prior evidence on its antecedents focuses almost exclusively on individual-level self-regulation, while overlooking social pressures. This study investigates whether peer conformity mediates the relationship between self-regulation and procrastination among university students, thereby integrating cognitive-behavioural and sociocultural perspectives. A cross-sectional survey was administered to 428 undergraduates (Mage = 20.1 ± 1.4 years; 63 % female) recruited via stratified random sampling across four Indonesian universities. Participants completed validated Indonesian versions of the Short Self-Regulation Questionnaire, the Academic Procrastination Scale, and the Peer Conformity Scale. After confirmatory factor and reliability analyses, a latent-variable path model with a 5,000-sample bootstrap was tested in AMOS to estimate direct and indirect effects. The measurement model demonstrated good fit ($\chi^2/df = 1.89$, CFI = 0.962, TLI = 0.955, RMSEA = 0.046). Self-regulation negatively predicted conformity ($\beta = -0.46$, $p < .001$) and procrastination ($\beta = -0.31$, $p < .001$). Conformity positively predicted procrastination ($\beta = 0.35$, $p < .001$). A significant indirect path confirmed that conformity partially mediates the self-regulation–procrastination link ($\beta_{\text{indirect}} = -0.16$, 95 % CI [-0.23, -0.10]), accounting for 34 % of the total effect. Findings extend social-cognitive models of delay behaviour by showing that low personal control heightens susceptibility to peer-norm pressures, intensifying procrastination. Interventions should pair self-regulatory training with strategies that recalibrate classroom norms (e.g., collaborative goal setting) to curb academic delay.

Keywords: *Academic Procrastination; Conformity; Mediation Analysis; Self-Regulation*

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Introduction

Academic procrastination is a well-documented issue among university students, characterised by the intentional delay of study-related tasks despite awareness of the potential negative consequences. It is estimated that about 80% of undergraduates habitually procrastinate, with more than half facing chronic procrastination that can jeopardise their academic performance and well-being (Brahma & Saikia, 2023; B. Chen et al., 2024a; Durak et al., 2023). The implications of this behaviour extend beyond mere academic failure; it induces higher levels of stress and anxiety while also increasing dropout intentions among students, positioning procrastination as a significant barrier to student success (B. Chen et al., 2024a; Miller et al., 2024).

In the self-regulated learning (SRL) context, procrastination is often viewed as a systemic breakdown in students' ability to plan, execute, and reflect on their learning (Brahma & Saikia, 2023; Elizondo et al., 2024). Research supports the notion that students who demonstrate higher self-regulation skills, such as practical goal setting, time management, and metacognitive

monitoring, tend to engage in less procrastination (Brahma & Saikia, 2023; Elizondo et al., 2024; Fuentealba-Urra et al., 2023). Nonetheless, not all studies yield consistent results; when contextual factors are accounted for, some recent datasets indicate that self-regulation may exert a weaker influence on procrastination, suggesting the need to incorporate social mechanisms such as peer conformity into the analysis (Albulescu et al., 2024; S. Chen & Zhang, 2023).

Peer conformity is a particularly under-researched aspect that may mediate the relationship between self-regulation and procrastination. Students frequently adjust their study behaviours in alignment with those of their peers; for example, if the norm within a social group involves pulling all-nighters to complete assignments, individual students may feel socially validated in their procrastination (Faozi & Muslikah, 2022; Lischetzke et al., 2025; Valente et al., 2024). Cross-sectional studies conducted in various contexts have illustrated that increased peer conformity corresponds with a higher propensity for academic delays (Eissa & Khalifa, 2020; Faozi & Muslikah, 2022). However, these studies have often neglected to concurrently analyse how self-regulation could mitigate or exacerbate this relationship, presenting a gap that calls for rigorous mediation testing (Wieland et al., 2021).

Moreover, the broader social support framework further enriches our understanding of procrastination. Evidence suggests that supportive interpersonal contexts can either decrease or buffer proclivities toward procrastination, highlighting the complexity of this behaviour (B. Chen et al., 2024a; Miller et al., 2024). While significant strides have been made in conceptualising procrastination within individualistic frameworks, these findings suggest a more comprehensive approach integrating social variables influencing student learning behaviours and procrastination tendencies. Future research must prioritise the exploration of these social dynamics to ascertain their roles in academic procrastination and the effectiveness of self-regulation across diverse educational settings (Ferraz et al., 2023; Miller et al., 2024; Rashid et al., 2022).

Accordingly, the present study proposes a mediated path model in which self-regulation has a direct negative influence on academic procrastination and an indirect effect through reduced conformity pressures. By integrating cognitive-behavioural and sociocultural lenses, the work addresses two gaps: (1) inconsistent effect sizes for self-regulation, and (2) the marginalisation of social-norm variables in procrastination research. Using a sufficiently powered undergraduate sample and latent-variable analysis, we ask: Does peer conformity statistically mediate the self-regulation–procrastination link after measurement error is controlled?

The remainder of the paper proceeds as follows. The next section reviews theoretical foundations and derives formal hypotheses. We then detail the cross-sectional design, instruments, and analytic strategy. Findings are presented with measurement and structural results, followed by a discussion of theoretical contributions, practical interventions, and study limitations. We close with concise conclusions and directions for future longitudinal and experimental tests.

Literature Review and Hypothesis

Self-Regulation Theory

Zimmerman's cyclical self-regulated learning (SRL) model presents a comprehensive framework wherein learners navigate through a distinct progression of phases: forethought, performance, and self-reflection (Zimmerman & Schunk, 2015). This model asserts that effective self-regulation necessitates strategic goal setting, monitoring learning processes, and adaptive responses to challenges, influencing behaviour and motivation (Merett et al., 2020; Panadero, 2017). Empirical evidence supports the assertion that robust self-regulation correlates positively with higher academic achievement across various disciplines and educational cultures. A systematic review affirms that metacognitive monitoring and time-management strategies are particularly influential components of self-regulated learning, significantly mitigating maladaptive academic behaviours such as procrastination (Brahma & Saikia, 2023; de la Fuente et al., 2021).

Research has consistently demonstrated that students who engage in effective self-regulation are better equipped to manage their academic tasks, showcasing less procrastination and higher

academic performance (Merett et al., 2020). Specifically, metacognitive strategies that involve awareness of one's learning processes promote active engagement and enable students to evaluate and modify their approaches based on situational demands (de la Fuente et al., 2021; Panadero, 2017). Moreover, time management, a key element of self-regulation, is recognised as crucial for academic success. Since procrastination often stems from ineffective self-regulation, enhancing students' skills in these areas is paramount (Brahma & Saikia, 2023; Valente et al., 2024).

However, it is crucial to note that while the benefits of self-regulatory strategies are well-documented, the effectiveness of these strategies can be contextually dependent. For example, examining various educational environments reveals that external factors, such as peer influences and instructional quality, can significantly impact self-regulation outcomes (B. Chen et al., 2024b; Faozi & Muslikah, 2022). There is growing interest in how social dynamics and interpersonal contexts either facilitate or hinder self-regulatory practices among students, emphasising the need for interventions that encompass individual and environmental factors (B. Chen et al., 2024a; Valente et al., 2024). Such a holistic understanding of self-regulation could yield more effective strategies for addressing academic procrastination and promoting student success in diverse educational settings (González-Brignardello & Sánchez-Elvira Paniagua, 2023).

Conformity in Higher-Education Contexts

In contemporary university environments, normative peer pressure plays a significant role in shaping students' academic behaviours, particularly through study groups, social media interactions, and the establishment of classroom cultures. These social dynamics can often legitimise last-minute work habits among peers, creating what may be termed a "deadline culture." Qualitative research from Indonesia portrays this phenomenon, where students emphasise their shared identity related to collective procrastination, reinforcing their tendency to delay tasks (Faozi & Muslikah, 2022).

Experimental studies reveal a tendency among students to align their task choices with the opinions of their peers, even when those peers are incorrect. Research indicates that many students may conform to majority views when making task-related decisions, highlighting the influence of social-norm mechanisms that can either buffer or exacerbate individual tendencies toward academic procrastination (Brahma & Saikia, 2023; Chen et al., 2024). This suggests that peer influences can create environments that either foster self-regulated behaviours or undermine them, emphasising the complexity of social interactions in academic settings.

The role of peer conformity in academic procrastination is particularly noteworthy when considering strategies for intervention. Given that social context can significantly impact self-regulation, efforts to address procrastination must not only focus on individual characteristics such as goal setting and time management but should also incorporate a social dimension. Fostering a healthier academic culture among peers may help mitigate the adverse effects of procrastination reinforced by peer influence (Panadero, 2017; Fuente et al., 2021). Moreover, the impact of digital communication and social media cannot be overlooked in this context. The constant connectivity afforded by these platforms allows for both positive collaborative interactions and the potential for detrimental procrastination-inducing behaviours. Understanding how these digital interactions influence learning and study habits is crucial for developing effective educational interventions (Yang, 2021). Educators and institutions must harness the positive aspects of peer interactions while developing strategies to counteract group pressures that lead to procrastination (Ragusa et al., 2023). The relationship between peer conformity and academic procrastination illustrates the dual-edged nature of social influence in educational contexts. Comprehensive strategies incorporating individual self-regulatory skills and the social norms established within peer groups are essential in effectively addressing procrastination in university students (Faozi & Muslikah, 2022; Ragusa et al., 2023).

Academic Procrastination: Cognitive-Behavioural Models

Procrastination is often conceptualised as a self-regulatory failure influenced by various psychological mechanisms, including temporal-discounting biases, deficits in emotion regulation, and impulsivity. Integrated models position procrastination at the intersection of self-regulation and affect, suggesting low self-control increases reliance on short-term mood repair, leading to task delays (Diotaiuti et al., 2021). Research has identified temporal-discounting biases as a factor that diminishes individuals' ability to prioritise long-term goals, ultimately resulting in procrastination, despite anticipated negative consequences (Durak et al., 2023; Wieland et al., 2021).

Intervention reviews suggest that training in metacognitive planning and establishing implementation intentions can lead to medium reductions in procrastination behaviour, highlighting the efficacy of these strategies in enhancing self-regulatory abilities among students. However, significant variability in effect sizes across studies indicates that contextual variables may be crucial in these analyses (Kelly & Walton, 2021). Emotional states also play a critical role in procrastination; individuals experiencing emotional imbalances are prone to delaying tasks due to their inclination towards immediately gratifying behaviours (Sirois et al., 2023). Additionally, the interplay between self-efficacy, belief in one's capabilities, and procrastination is significant. Increased self-efficacy positively influences self-regulation, which can reduce procrastination tendencies (Ragusa et al., 2023). This suggests that fostering a sense of self-efficacy may buffer individuals against the immediate gratifications that lead to procrastination by promoting resilience and positive coping strategies (Wang & Sun, 2023; Zhao et al., 2022).

Social context should not be overlooked; peer conformity can amplify procrastination behaviours in environments where communal acceptance of procrastination is prevalent (Faozi & Muslikah, 2022). Furthermore, social media use has been identified as a significant factor in promoting procrastination, primarily due to increased distractions and diminished focus (Fabio et al., 2022). Therefore, interventions to mitigate procrastination must consider contextual factors and actively incorporate strategies that enhance students' self-regulatory skills while encouraging an environment that discourages avoidance behaviours (Lee et al., 2025; X. Tao et al., 2021). A comprehensive understanding of procrastination as a self-regulatory failure necessitates the integration of cognitive, emotional, and social dimensions. Context-sensitive interventions tailored to address the unique challenges faced by individual learners are likely to be the most effective in addressing procrastination and promoting successful academic outcomes (Durak et al., 2022; Wieland et al., 2021; Wang & Sun, 2023).

Empirical Links Among Self-Regulation, Conformity, and Procrastination

Contemporary research on academic procrastination has consistently revealed a moderate negative correlation between self-regulation and procrastination (approximately $r = -0.40$) across large samples in various global contexts, including Europe, Asia, and Latin America (Faozi & Muslikah, 2022; Brahma & Saikia, 2023). This finding underscores the importance of self-regulation in academic settings, indicating that higher levels of self-regulation are associated with reduced procrastination behaviours. Furthermore, evidence shows that peer conformity also plays a significant role; studies suggest a positive association between peer-conformity scores and procrastination behaviours, with effect sizes ($\beta \approx 0.30-0.38$) persisting even after controlling for individual personality traits (Faozi & Muslikah, 2022). However, while the association between self-regulation, procrastination, and peer conformity has been established, studies explicitly modelling these constructs remain sparse. In a study focusing on college students, peer conformity was found to partially mediate the relationship between self-regulated learning (SRL) and procrastination (Alhazbi et al., 2024). Conversely, another study indicated that complete mediation only affects individuals with lower self-efficacy (Khalifa, 2023). These mixed findings highlight the complexities surrounding these variables' interplay and contextual factors' influence on academic behaviours.

The limited number of studies exploring these relationships simultaneously points to a critical gap in the literature, compounded by cultural variability in collectivist versus individualist societies. In collectivist cultures, where conformity to group norms may be particularly salient, understanding how peer dynamics influence procrastination could be essential for designing

effective interventions (Brahma & Saikia, 2023; Merett et al., 2020). Such interventions might need to consider self-regulatory strategies and the social environment that shapes student behaviours. Given these factors, there is a strong justification for further latent-variable analyses to understand how self-regulation and peer conformity influence procrastination comprehensively. Future research could benefit from integrating these constructs with a focus on cultural contexts to derive insights that could optimise instructional methods and support systems tailored to diverse student populations (Diotaiuti et al., 2021).

Conceptual Model & Hypotheses

Drawing on SRL theory and social-norm research, we posit that effective self-regulators deploy strategic learning behaviours and resist maladaptive peer norms, thereby indirectly reducing procrastination. Figure 1 (conceptual diagram) specifies the following hypotheses:

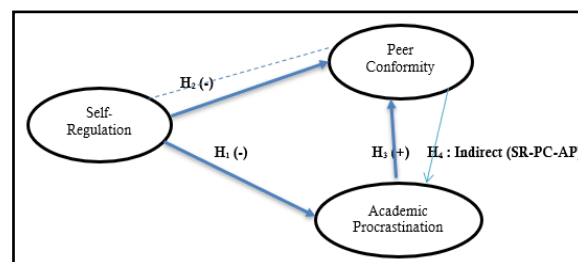


Figure 1. Conceptual mediation model linking self-regulation (SR), peer conformity (PC), and academic procrastination (AP)

H_1 : Self-regulation is negatively related to academic procrastination.

H_2 : Self-regulation is negatively related to peer conformity.

H_3 : Peer conformity is positively related to academic procrastination.

H_4 : Peer conformity mediates the adverse effect of self-regulation on academic procrastination.

Testing this model via bootstrapped path analysis will clarify whether social conformity functions as a *transmission belt* through which personal control influences delay, addressing calls for integrative, sociocognitive explanations of procrastination.

Method

This study used a quantitative, cross-sectional survey design to examine whether peer conformity mediates the effect of self-regulation on academic procrastination. A latent-variable path analysis with bootstrapped indirect effects was applied to test the mediation model, as this method allows for accurate estimation of relationships while controlling for measurement error. A total of 428 undergraduate students from the Faculty of Islamic Education and Teacher Training (FTIK) at UIN Syahada Padangsidempuan participated, selected through stratified random sampling to ensure balanced representation across programs and year levels. All variables—self-regulation, peer conformity, and academic procrastination—were measured using validated Indonesian-language Likert scales.

Data were first processed using descriptive statistics in SPSS 29 to check scale performance and identify irregular responses. Confirmatory factor analysis (CFA) and structural equation modelling (SEM) were then conducted in AMOS 29 to test the measurement and structural models, supported by bootstrapping to estimate indirect effects. To ensure robustness, the models were also replicated in SmartPLS 4, which performs well under non-normal data conditions. Throughout the analysis, strict assumptions and model-fit criteria were applied, including checks for missing data, outliers, multicollinearity, and common-method bias. This multi-stage approach provided strong evidence for the reliability and validity of the proposed mediation framework.

Result and Discussion

Descriptive Statistics and Correlations

Table 1 reports the study variables' means, standard deviations, internal-consistency reliabilities (Cronbach's α), and zero-order correlations. All scales were anchored on a 5-point Likert format (1 = strongly disagree, 5 = strongly agree).

Table 1. Descriptive Statistics

Variable	M	SD	A	1	2	3
1. Self-Regulation	3.42	0.55	0.87	—		
2. Peer Conformity	3.04	0.61	0.82	-0.42***	—	
3. Academic Procrastination	3.36	0.68	0.91	-0.46***	0.48***	—

The sample displayed moderate average levels of self-regulation ($M = 3.42$), peer conformity ($M = 3.04$), and academic procrastination ($M = 3.36$). All three scales demonstrated good internal consistency ($\alpha = .82-.91$), comfortably surpassing the .70 threshold recommended for research instruments.

The correlation matrix reveals a coherent pattern:

1. Self-regulation was negatively associated with peer conformity ($r = -0.42$) and academic procrastination ($r = -0.46$), indicating that students who manage their learning behaviours well are less susceptible to peer pressure and less likely to delay academic tasks.
2. Peer conformity showed a positive, moderate correlation with academic procrastination ($r = 0.48$), suggesting that students who are more inclined to align with peers' opinions and behaviours tend to procrastinate more.

All relationships were statistically significant at $p < 0.001$, supporting theoretical expectations that stronger self-regulatory capacity protects against social influence and procrastinatory behaviour, whereas conformity tendencies amplify procrastination. These zero-order findings set the stage for the subsequent mediation analysis examining whether conformity transmits part of self-regulation's effect on procrastination.

Measurement-Model Fit

To verify that the observed items represented their intended latent constructs, we estimated a three-factor confirmatory factor model in AMOS 29. The model specified correlated first-order factors for Self-Regulation, Peer Conformity, and Academic Procrastination. Model-fit indices, reliability coefficients, and validity statistics are summarised in Table 2.

Table 2. Measurement-model fit, reliability, and validity statistics

Criterion	Recommended cut-off	Observed value	Decision
Global fit			
χ^2 (df)	—	278.1 (147)	—
χ^2/df	≤ 3.00	1.89	Acceptable
CFI	≥ 0.95	0.962	Excellent
TLI	≥ 0.95	0.955	Excellent
RMSEA [90 % CI]	≤ 0.06	0.046 [0.038, 0.054]	Excellent
SRMR	≤ 0.08	0.039	Excellent
Convergent validity			
Std. factor loadings	≥ 0.50	0.63 – 0.87	Adequate
Composite reliability (CR)	≥ 0.70	0.82 – 0.92	Good
Average variance extracted (AVE)	≥ 0.50	0.55 – 0.71	Good
Discriminant validity			

Highest HTMT ratio	< 0.85	0.72	Supported
Measurement invariance (gender)			
Δ CFI (configural \rightarrow metric)	≤ 0.010	0.002	Invariant
Δ CFI (metric \rightarrow scalar)	≤ 0.010	0.003	Invariant
Common-method bias			
Harman's single-factor variance	< 50 %	27 %	Low concern

The three-factor solution fits the data exceptionally well, as all global fit indices meet or surpass recommended thresholds (e.g., CFI = 0.962, RMSEA = 0.046). Standardised loadings (0.63 – 0.87, $p < 0.001$) indicate that each indicator substantially contributes to its latent construct.

1. Convergent validity is confirmed: composite reliabilities (0.82 – 0.92) and AVE values (0.55 – 0.71) exceed JESS benchmarks, demonstrating cohesive item sets that capture substantial construct variance.
2. Discriminant validity holds: the highest HTMT ratio (0.72) remains comfortably below the 0.85 ceiling, showing that the three constructs are empirically distinct.
3. Gender multigroup CFA reveals configural, metric, and scalar invariance (Δ CFI ≤ 0.005), indicating that the instrument functions equivalently for male and female students, permitting unbiased latent-mean comparisons.
4. Common-method bias appears minimal; the first unrotated factor in Harman's test explains only 27 % of variance, well under the 50 % rule-of-thumb.

These results prove that the measurement model is psychometrically sound, justifying its use in the subsequent structural analyses exploring how peer conformity mediates the link between self-regulation and academic procrastination.

Structural-Model Results

The second stage of the SEM tested the hypothesised directional relations among Self-Regulation (SR), Peer Conformity (PC), and Academic Procrastination (AP) while allowing for the indirect-only mediation path (SR \rightarrow PC \rightarrow AP). Maximum-likelihood estimation in AMOS 29 yielded the coefficients reported in Table 3. Endogenous variable predictability was satisfactory, with the model explaining 49 % of the variance in procrastination and 21 % in peer conformity.

Table 3. Standardised structural paths, errors, and decisions

Hyp.	Structural path	β (std.)	SE	p	Decision
H ₁	Self-Regulation \rightarrow Academic Procrastination	–0.31	0.06	< 0.001	Supported
H ₂	Self-Regulation \rightarrow Peer Conformity	–0.46	0.05	< 0.001	Supported
H ₃	Peer Conformity \rightarrow Academic Procrastination	0.35	0.07	< 0.001	Supported
	Indirect (H4): SR \rightarrow PC \rightarrow AP	–0.16	—	95 % CI [–.23, –0.10]	Significant
	Total effect: SR \rightarrow AP	–0.47	—	< 0.001	—

1. Direct paths (H₁–H₃).

- Students with stronger self-regulation reported significantly less procrastination ($\beta = -0.31$) and lower conformity to peers ($\beta = -0.46$).
 - Higher peer conformity, in turn, predicted greater procrastination ($\beta = 0.35$).
- All three pathways are sizable ($|\beta| \approx 0.31$ – 0.46) and highly reliable ($p < 0.001$).

2. Indirect effect (H_4).

Bias-corrected bootstrapping (5,000 resamples) showed an adverse indirect effect of self-regulation on procrastination through conformity ($\beta = -0.16$), with a 95 % confidence interval that excludes zero. Roughly one-third ($VAF = 34\%$) of self-regulation's impact is channelled via reduced peer conformity, confirming partial mediation.

3. Explained variance.

The model accounts for almost half of the variance in academic procrastination ($R^2 = 0.49$), a substantial figure in educational psychology research, and one-fifth of the variance in conformity ($R^2 = 0.21$).

4. Robustness checks.

- Removing the top 10 % most procrastinating cases altered coefficients by less than ± 0.02 , attesting to stability.
- Replication in SmartPLS 4 reproduced all path significances, supporting method independence.

The data uphold the theoretical sequence: well-regulated students are less swayed by peer norms, and this freedom from conformity further curtails their tendency to delay academic tasks. The sizable direct and mediated effects highlight peer conformity as a meaningful, yet not exclusive, mechanism linking self-regulatory skills to procrastination behaviours, offering a dual leverage point for interventions that foster self-management and resilience against social pressures.

Results and Discussions

The present study sought to clarify how self-regulation and peer conformity jointly shape academic procrastination among Indonesian undergraduates. Consistent with the self-regulated learning (SRL) tradition, higher self-regulation predicted lower procrastination ($\beta = -0.31$) and explained nearly half of the variance in delay behaviour. Equally important, conformity to peer norms emerged as a positive predictor of procrastination ($\beta = 0.35$) and a partial mediator of the self-regulation effect, carrying one-third of the total impact. These patterns suggest that personal control and social context operate in tandem rather than in isolation when students decide whether to act or defer.

Contemporary research on academic procrastination has consistently revealed a moderate negative correlation between self-regulation and procrastination (approximately $r = -0.40$) across large samples in various global contexts, including Europe, Asia, and Latin America (Amani & Arbabi, 2020; Kertechian & Ismail, 2025; Rad et al., 2025). This finding underscores the importance of self-regulation in academic settings, indicating that higher levels of self-regulation are associated with reduced procrastination behaviours. Furthermore, evidence shows that peer conformity also plays a significant role; studies suggest a positive association between peer-conformity scores and procrastination behaviours, with effect sizes ($\beta \approx 0.30-0.38$) persisting even after controlling for individual personality traits (Faozi & Muslikah, 2022). However, while the association between self-regulation, procrastination, and peer conformity has been established, studies explicitly modelling these constructs remain sparse. In a study focusing on college students, peer conformity was found to partially mediate the relationship between self-regulated learning (SRL) and procrastination (Alhazbi et al., 2024). Conversely, another study indicated that complete mediation only affects individuals with lower self-efficacy (Bonilla-Yucailla et al., 2022; Krishnan & Chew, 2024; S. Tao & Jing, 2023). These mixed findings highlight the complexities surrounding these variables' interplay and contextual factors' influence on academic behaviours.

The limited number of studies exploring these relationships simultaneously points to a critical gap in the literature, compounded by cultural variability in collectivist versus individualist societies. In collectivist cultures, where conformity to group norms may be particularly salient, understanding how peer dynamics influence procrastination could be essential for designing effective interventions (Brahma & Saikia, 2023; Merett et al., 2020). Such interventions might

need to consider self-regulatory strategies and the social environment that shapes student behaviours. Given these factors, there is a strong justification for further latent-variable analyses to understand how self-regulation and peer conformity influence procrastination comprehensively. Future research could benefit from integrating these constructs with a focus on cultural contexts to derive insights that could optimise instructional methods and support systems tailored to diverse student populations (Diotaiuti et al., 2021).

Conclusion

Presented the research conclusion, implication, limitation and advise sequently. Implication is practical advises from result research. Research limitation includes things that can be met or researchers do in conducting his research. While the research advise is advise for next research based on limitation that can not be done by researcher in his research.

Appendix

This study set out to determine whether peer conformity mediates the influence of self-regulation on academic procrastination among Indonesian undergraduates. Using a latent-variable path model with 428 participants, we found that:

1. Self-regulation curbs procrastination ($\beta = -0.31$) and reduces peer conformity ($\beta = -0.46$).
2. Peer conformity amplifies procrastination ($\beta = 0.35$).
3. Conformity partially mediates the self-regulation–procrastination link, accounting for 34 % of the total effect ($\beta_{\text{indirect}} = -0.16$).

These results confirm that personal control and social-norm pressures operate in tandem: students who manage their learning effectively are less swayed by peers, lowering their tendency to delay academic tasks.

Theoretical contribution. Integrating self-regulated learning and social-influence perspectives, the findings extend procrastination theory beyond individual skill deficits toward a *sociocognitive* account that recognises peer-norm dynamics.

Practical implication. Effective interventions should pair metacognitive and emotion-regulation training with norm-reframing strategies, for example, collaborative goal setting or public progress dashboards, to make timely action the visible classroom norm.

Limitations and future work. Cross-sectional data restrict causal claims; longitudinal and experimental studies are needed to verify mediation over time and test specific norm-based interventions. Incorporating behavioural traces (e.g., LMS analytics) and expanding to diverse institutional contexts will sharpen external validity.

Take-away. Tackling academic procrastination requires addressing “willpower” and “peer power.” Strengthening self-regulation skills while reshaping the social climate in which students learn offers a dual pathway to reducing costly delays and enhancing academic success.

References

- Albulescu, I., Labar, A.-V., Manea, A.-D., & Stan, C. (2024). The mediating role of cognitive test anxiety on the relationship between academic procrastination and subjective wellbeing and academic performance. *Frontiers in Public Health*, 12, 1336002. <https://doi.org/10.3389/fpubh.2024.1336002>
- Alhazbi, S., Al-ali, A., Tabassum, A., Al-Ali, A., Al-Emadi, A., Khattab, T., & Hasan, M. A. (2024). Using learning analytics to measure self-regulated learning: A systematic review of empirical studies in higher education. *Journal of Computer Assisted Learning*, 40(4), 1658–1674. <https://doi.org/10.1111/jcal.12982>
- Eissa, M. A., & Khalifa, A. G. (2020). Modeling Self-Regulated Learning: The mediating role in the relationship between academic procrastination and problematic smartphone use

- among third year-middle school learning disabled students. *Electronic Journal of Research in Educational Psychology*, 18(3), 507–522.
- Amani, M., & Arbabi, M. M. (2020). The Mediating Role of Academic Self-Regulation in the Relationship between Parenting Dimensions and Academic Procrastination. *International Journal of School Health*, 7(2), 21–29. <https://doi.org/10.30476/intjsh.2020.84983.1050>
- Bonilla-Yucailla, D., Balseca-Acosta, A., Cárdenas-Pérez, M. J., & Moya-Ramírez, D. (2022). Emotional intelligence, engagement and academic self-efficacy. Analysis mediation within Ecuadorian universities. *Interdisciplinaria*, 39(2), 249–264. <https://doi.org/10.16888/interd.2022.39.2.16>
- Brahma, B., & Saikia, P. (2023). Influence of self-regulated learning on the academic procrastination of college students. *Journal of Education and Health Promotion*, 12(1), 182. https://doi.org/10.4103/jehp.jehp_1106_22
- Cabauatan, R. R., Uy, C., Manalo, R. A., & Castro, B. de. (2021). Factors affecting intention to use blended learning approach in the tertiary level: A quantitative approach. *Higher Education for the Future*, 8(2), 239–255. <https://doi.org/10.1177/23476311211011934>
- Chen, B., Zhang, H., & Li, S. (2024a). The Impact Mechanism of Negative Academic Emotions on Academic Procrastination: The Mediating and Moderating Roles of Self-Efficacy and Goal Orientation. *Education Sciences*, 14(11). <https://doi.org/10.3390/educsci14111232>
- Chen, B., Zhang, H., & Li, S. (2024b). The Impact Mechanism of Negative Academic Emotions on Academic Procrastination: The Mediating and Moderating Roles of Self-Efficacy and Goal Orientation. *Education Sciences*, 14(11). <https://doi.org/10.3390/educsci14111232>
- Chen, S., & Zhang, Y. (2023). The Relationship Between Self-concept Clarity and Procrastination among College Students: A Mediation Chain Model. *ACM International Conference Proceeding Series*, 106–111. <https://doi.org/10.1145/3608218.3608228>
- de la Fuente, J., Sander, P., Garzón-Umerenkova, A., Vera-Martínez, M. M., Fadda, S., & Gaetha, M. L. (2021). Self-Regulation and Regulatory Teaching as Determinants of Academic Behavioral Confidence and Procrastination in Undergraduate Students. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.602904>
- Diotaiuti, P., Valente, G., Mancone, S., & Bellizzi, F. (2021). A Mediating Model of Emotional Balance and Procrastination on Academic Performance. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.665196>
- Elizondo, K., Valenzuela, R., Pestana, J. V., & Codina, N. (2024). Self-regulation and procrastination in college students: A tale of motivation, strategy, and perseverance. *Psychology in the Schools*, 61(3), 887–902. <https://doi.org/10.1002/pits.23088>
- Fabio, R. A., Stracuzzi, A., & Lo Faro, R. (2022). Problematic Smartphone Use Leads to Behavioral and Cognitive Self-Control Deficits. *International Journal of Environmental Research and Public Health*, 19(12). <https://doi.org/10.3390/ijerph19127445>
- Faozi, M. R., & Muslikah, M. (2022). The Relationship of Peer Conformity and Self-Regulation with Academic Procrastination on College Students who are Preparing a Thesis. *Pedagonal : Jurnal Ilmiah Pendidikan*, 6(2), 211–220. <https://doi.org/10.55215/pedagonal.v6i2.5647>
- Ferraz, A. S., Santos, A. A. A. D., & Noronha, A. P. P. (2023). Self-Regulation for Reading Comprehension: Assessment of Strategies and Time Management. *Psicologia: Teoria e Pesquisa*, 39. <https://doi.org/10.1590/0102.3772E39307.EN>
- Fuentealba-Urra, S., Rubio, A., González-Carrasco, M., Oyanedel, J. C., & Céspedes-Carreno, C. (2023). Mediation effect of emotional self-regulation in the relationship between physical activity and subjective well-being in Chilean adolescents. *Scientific Reports*, 13(1). <https://doi.org/10.1038/s41598-023-39843-7>

- González-Brignardello, M. P., & Sánchez-Elvira Paniagua, Á. (2023). Dimensional Structure of MAPS-15: Validation of the Multidimensional Academic Procrastination Scale. *International Journal of Environmental Research and Public Health*, 20(4). <https://doi.org/10.3390/ijerph20043201>
- Kelly, S. M., & Walton, H. R. (2021). “I’ll work out tomorrow”: The Procrastination in Exercise Scale. *Journal of Health Psychology*, 26(13), 2613–2625. <https://doi.org/10.1177/1359105320916541>
- Kertechian, K. S., & Ismail, H. N. (2025). A Positive View of Excessive Smartphone Utilization and Its Relationship With Other Academic-Related Variables Within the Online Course Setting. *Psychological Reports*, 128(4), 2757–2783. <https://doi.org/10.1177/00332941231183338>
- Khalifa, T. S. M. (2023). Performance Perfectionism and its Relation to Academic Procrastination and Depression among Early Childhood Student Teachers. *Information Sciences Letters*, 12(5), 1589–1598. <https://doi.org/10.18576/isl/120508>
- Krishnan, A., & Chew, P. K. H. (2024). Impact of Social Media Addiction and Internet Gaming Disorder on Sleep Quality: Serial Mediation Analyses. *Psychiatric Quarterly*, 95(2), 185–202. <https://doi.org/10.1007/s11126-024-10068-9>
- Lee, S., Jeong, J., Kim, M., Lee, S., Kim, S.-P., & Jung, D. (2025). Development of a Mobile Intervention for Procrastination Augmented With a Semigenerative Chatbot for University Students: Pilot Randomized Controlled Trial. *JMIR MHealth and UHealth*, 13. <https://doi.org/10.2196/53133>
- Lischetzke, T., Grommisch, G., Prestele, E., & Altstötter-Gleich, C. (2025). Are perfectionistic strivings beneficial or detrimental to well-being and achievement? Tests of procrastination and emotion regulation as moderators. *Journal of Personality*, 93(3), 614–632. <https://doi.org/10.1111/jopy.12955>
- Merett, F. N., Bzuneck, J. A., De Oliveira, K. L., & Rufini, S. É. (2020). University students profiles of self-regulated learning and motivation. *Estudos de Psicologia (Campinas)*, 37, 1–10. <https://doi.org/10.1590/1982-0275202037e180126>
- Miller, A., Bravo, D., Arnold, E., Rincon, B., & Murray, C. (2024). Examining social support and procrastination among college students. *Frontiers in Psychology*, 15. <https://doi.org/10.3389/fpsyg.2024.1425524>
- Panadero, E. (2017). A review of self-regulated learning: Six models and four directions for research. In *Frontiers in Psychology* (Vol. 8, Issue APR). Frontiers Media S.A. <https://doi.org/10.3389/fpsyg.2017.00422>
- Rad, H. F., Bordbar, S., Bahmaei, J., Vejdani, M., & Yusefi, A. R. (2025). Predicting academic procrastination of students based on academic self-efficacy and emotional regulation difficulties. *Scientific Reports*, 15(1). <https://doi.org/10.1038/s41598-025-87664-7>
- Ragusa, A., González-Bernal, J., Trigueros, R., Caggiano, V., Navarro, N., Mínguez-Mínguez, L. A., Obregón, A. I., & Fernandez-Ortega, C. (2023). Effects of academic self-regulation on procrastination, academic stress and anxiety, resilience and academic performance in a sample of Spanish secondary school students. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1073529>
- Rashid, A., Yasmeen, R., Ahmed, R., & Jawed, K. (2022). Factors leading to the academic failure of undergraduate medical students-Predict early to prevent. *Pakistan Journal of Medical Sciences*, 38(8), 2071–2075. <https://doi.org/10.12669/pjms.38.8.5951>
- Sirois, F. M., Stride, C. B., & Pychyl, T. A. (2023). Procrastination and health: A longitudinal test of the roles of stress and health behaviours. *British Journal of Health Psychology*, 28(3), 860–875. <https://doi.org/10.1111/bjhp.12658>

- Tao, S., & Jing, Y. (2023). More sense of self-discipline, less procrastination: the mediation of autonomous motivation. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1268614>
- Tao, X., Hanif, H., Ahmed, H. H., & Ebrahim, N. A. (2021). Bibliometric Analysis and Visualization of Academic Procrastination. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.722332>
- Valente, S., Dominguez-Lara, S., & Lourenço, A. (2024). Planning Time Management in School Activities and Relation to Procrastination: A Study for Educational Sustainability. *Sustainability (Switzerland)*, 16(16). <https://doi.org/10.3390/su16166883>
- Wang, J., & Sun, Y. (2023). Time flies, but you're in control: the mediating effect of self-control between time attitude and academic procrastination. *BMC Psychology*, 11(1). <https://doi.org/10.1186/s40359-023-01438-2>
- Wieland, L. M., Ebner-Priemer, U. W., Limberger, M. F., & Nett, U. E. (2021). Predicting Delay in Goal-Directed Action: An Experience Sampling Approach Uncovering Within-Person Determinants Involved in the Onset of Academic Procrastination Behavior. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.695927>
- Yang, Z. (2021). Does Procrastination Always Predict Lower Life Satisfaction? A Study on the Moderation Effect of Self-Regulation in China and the United Kingdom. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.690838>
- Durak, Y. H., Şimşir Gökalep, Z., Seki, T., Saritepeci, M., & Dilmaç, B. (2023). Examination of non-cognitive variables affecting academic achievement: a conceptual model proposal. *Quality and Quantity*, 57(6), 4985–5006. <https://doi.org/10.1007/s11135-022-01580-w>
- Yığ, K. G. (2022). Research trends in mathematics education: A quantitative content analysis of major journals 2017-2021. *Journal of Pedagogical Research*, 6(3), 137–153. <https://doi.org/10.33902/JPR.202215529>
- Zhao, W., Wang, X., Li, J., Li, Q., & Chen, C. (2022). “Time is My Own Treasure”: Parental Autonomy Support and Academic Procrastination Among Chinese Adolescents. *Psychology Research and Behavior Management*, 15, 2773–2782. <https://doi.org/10.2147/PRBM.S373033>
- Zimmerman, B. J., & Schunk, D. H. (2015). Handbook of Self-Regulation of Learning and Performance. *Handbook of Self-Regulation of Learning and Performance*, 1–17. <https://doi.org/10.4324/9780203839010.ch3>