American Journal of Advanced Multidisciplinary Innovation and Research (AJAMIR)

E-ISSN: XXXX-XXXX ● Website: www.ajamir.com ● Email: editor@ajamir.com

Metacognitive Coaching for Reducing Academic Procrastination

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Abstract

Academic procrastination is frequently interpreted as a problem of deficient motivation or ineffective time management, yet contemporary research increasingly identifies it as a multidimensional failure of self-regulation involving planning, monitoring, emotional regulation, effort control, self-efficacy, and metacognitive judgment. This study examines metacognitive coaching as a structured educational approach for helping university students recognize and modify the thinking and behavioral patterns that sustain academic delay. Steel's foundational meta-analysis conceptualized procrastination as a major self-regulatory failure, while Zhou, Lam, and Zhang's subsequent meta-analysis of 59 studies involving 23,627 participants identified a significant negative relationship between metacognitive processes and passive procrastination.

The present study develops a coaching model organized around goal clarification, task diagnosis, implementation planning, self-monitoring, emotional awareness, strategy evaluation, and adaptive reflection. Because no genuine student intervention dataset was supplied, the quantitative component is explicitly simulation-based. A synthetic sample of 240 hypothetical university students was divided equally among comparison, planning-support, and metacognitive-coaching conditions. Mean simulated academic-procrastination scores declined from 64.4 to 40.5 in the metacognitive-coaching condition, compared with a decline from 66.5 to 54.0 under planning support and from 65.1 to 62.0 in the comparison condition.

The post-intervention synthetic group difference was substantial ($F = 103.14$, $p < .001$), although this statistic describes the constructed dataset rather than an observed population effect. The study argues that metacognitive coaching can be conceptually distinguished from simple scheduling advice because it teaches students to identify why they delay, monitor emerging avoidance, evaluate strategy effectiveness, and deliberately modify responses to difficult academic tasks. The proposed framework offers a transparent foundation for future controlled intervention research while emphasizing that procrastination should be addressed through learner agency and self-regulatory development rather than moral judgment.

Keywords: academic procrastination; metacognitive coaching; self-regulated learning; metacognition; university students; academic self-efficacy; goal setting; learning strategies

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E-ISSN: XXXX-XXXX ● Website: www.ajamir.com ● Email: editor@ajamir.com

1. Introduction

Academic procrastination involves unnecessary or maladaptive delay of intended academic activities despite an expectation that postponement may create negative consequences. It is particularly relevant in higher education because university students frequently work within environments characterized by flexible deadlines, independent study, complex assignments, competing responsibilities, and reduced direct supervision. Steel's influential theoretical and meta-analytic review characterized procrastination as a quintessential failure of self-regulation rather than simply a lack of intention. His analysis integrated hundreds of correlations across the procrastination literature and established a major theoretical foundation for understanding delayed action through motivational and regulatory processes. Kim and Seo's later meta-analysis further established that procrastination is negatively associated with academic performance, although the magnitude of this relationship varies according to the measures used for both procrastination and achievement.

A self-regulatory interpretation is important because a student who procrastinates may genuinely intend to study and may understand the consequences of delay. The difficulty arises in converting intention into sustained goal-directed action when tasks appear unpleasant, ambiguous, demanding, emotionally threatening, or insufficiently rewarding in the immediate present. Research increasingly connects procrastination with planning, metacognitive self-regulation, effort regulation, self-efficacy, emotional processes, and effective use of study time. Tao, Hanif, and Lieqin's 2025 university study found that metacognitive strategies, effort regulation, and time management were negatively associated with academic procrastination, reinforcing the position that delay is embedded within a broader self-regulatory system.

Metacognition is particularly relevant because it concerns individuals' awareness and regulation of their own cognitive and learning processes. Zhou, Lam, and Zhang synthesized 59 studies involving 23,627 participants and reported a significant negative association between metacognition and passive procrastination. Their analysis identified metacognitive beliefs and metacognitive regulation as particularly relevant dimensions, although the relationship was not equivalent for forms described as active procrastination. Ziegler and Opdenakker similarly linked the development of procrastination with metacognitive self-regulation, self-efficacy, and effort regulation, indicating that the behavior can evolve dynamically rather than functioning as an immutable personal characteristic.

These findings suggest that interventions should not be restricted to telling students to create schedules or “start earlier.” Planning can be useful, but a schedule has limited value when students do not recognize task avoidance, unrealistic planning, perfectionistic standards, attentional distraction, low perceived competence, or ineffective study strategies. Ghadampour and Beiranvand tested an eight-session cognitive and metacognitive learning-strategy program using a pretest-posttest control-group design and reported reductions in academic procrastination together with improvements in self-efficacy. Research on academic coaching also indicates that coaching can contribute to student success and the development of self-regulatory competencies, although the higher-education coaching evidence base remains heterogeneous in intervention design and outcome measurement. Campbell and Mogashana's systematic review synthesized academic-coaching interventions in higher education and emphasized the need for greater methodological consistency.

Against this background, the present study develops metacognitive coaching as a structured educational intervention targeting the processes that occur before, during, and after academic delay. Coaching is conceptualized as guided reflection rather than directive surveillance. Students learn to identify procrastination triggers, distinguish intentions from executable actions, anticipate obstacles, monitor their behavior, evaluate whether chosen strategies are working, and adjust future actions. Since authentic intervention data were not supplied, the quantitative section uses a transparent synthetic experiment involving 240 hypothetical university students. The purpose is to demonstrate how metacognitive coaching could be evaluated empirically without representing generated outcomes as actual student findings.

2. Objectives of the Study

2.1 To Examine Procrastination as a Metacognitive and Self-Regulatory Problem

The first objective is to examine academic procrastination beyond a narrow time-management perspective by integrating task interpretation, self-monitoring, planning accuracy, effort regulation, self-efficacy, emotional avoidance, and strategy evaluation.

The study treats procrastination as a dynamic pattern that may be influenced through deliberate regulation rather than as a fixed personal deficit. Existing meta-analytic and university-based evidence supports meaningful relationships between metacognitive regulation, self-regulated learning, and procrastination.

2.2 To Evaluate the Potential Effect of Metacognitive Coaching

The second objective is to demonstrate, through simulation, how a structured metacognitive-coaching intervention could be compared with conventional planning support and a comparison condition. The primary outcome is change in an Academic Procrastination Score between baseline and post-intervention assessment.

2.3 To Develop a Sustainable Coaching Framework for Higher Education

The third objective is to translate metacognitive theory into a practical educational approach that can be implemented through academic-support centers, mentoring programs, learning-skills courses, or student-success initiatives.

The intended outcome is not permanent dependence on a coach but progressively greater student capacity for autonomous planning, monitoring, evaluation, and strategy adjustment. Evidence from first-year self-regulated-learning interventions demonstrates that structured planning and reflective activity can develop self-regulation within relatively short periods of higher-education study.

3. Review of Literature

3.1 Academic Procrastination as Self-Regulatory Failure

Steel's theoretical and meta-analytic work substantially shaped modern procrastination research by integrating procrastination with self-regulatory processes, impulsiveness, task characteristics, expectancy, and motivational value. The central theoretical implication is that procrastination cannot be explained merely by weak intention: individuals may genuinely intend to act but fail to protect long-term

goals from immediate competing rewards or aversive emotions. This distinction makes procrastination particularly suitable for intervention through self-regulatory training.

Kim and Seo subsequently synthesized 33 studies involving 38,529 participants and found a negative relationship between procrastination and academic performance. Their analysis also demonstrated that methodological choices influence the observed strength of the relationship, including whether procrastination is measured through self-report and which academic-performance indicators are selected. This finding is methodologically important because intervention studies should avoid measuring success solely through student perceptions of procrastination. Behavioral evidence such as assignment-start dates, learning-platform activity, deadline adherence, or documented study sessions could provide stronger validation.

Longitudinal evidence also suggests that procrastination and self-regulatory beliefs can reinforce each other over time. Wäschle and colleagues followed university students through repeated self-monitoring and investigated reciprocal relationships among procrastination, perceived goal achievement, and self-efficacy. Their work supports the view that poor progress can contribute to unfavorable regulatory cycles, whereas successful self-regulation can support more adaptive patterns. This is directly relevant to coaching because repeated reflection can interrupt cycles in which delayed action reduces perceived achievement, which then further undermines confidence and future initiation.

A recent systematic review published in 2026 synthesized empirical research on academic procrastination and highlighted multiple causal or maintaining factors, including fear of failure, perfectionism, and emotional-regulation difficulties. Such evidence reinforces the need to distinguish procrastination from ordinary scheduling error. Two students who postpone the same assignment may require entirely different interventions: one may misjudge the task's complexity, while another may avoid beginning because starting creates anxiety about performance.

3.2 Metacognition and Self-Regulated Learning as Protective Processes

Metacognition can be described broadly through awareness of cognition and regulation of cognitive activity. Within academic learning, regulation involves planning how to approach a task, monitoring comprehension or progress, evaluating outcomes, and modifying strategy when necessary. Zhou, Lam, and Zhang's meta-analysis found a significant small negative association between metacognition and passive procrastination and showed that metacognitive regulation and metacognitive beliefs contribute differently to procrastination. This suggests that simply possessing knowledge of study strategies is insufficient; students must use regulatory processes at the moment decisions about action or avoidance are made.

Ziegler and Opdenakker examined the development of academic procrastination in relation to metacognitive self-regulation, self-efficacy, and effort regulation. Their findings support a dynamic understanding of procrastination and indicate that regulatory competencies are meaningfully connected with delay behavior. Safari and Yousefpoor likewise reported that metacognitive beliefs can predict academic procrastination, suggesting that students' beliefs about their own thinking may be relevant intervention targets.

Tao and colleagues' 2025 analysis among university students provides more recent evidence that metacognitive strategies, effort regulation, and time management are negatively related to academic

procrastination. Their structural model additionally connected procrastination with academic success. Although correlational evidence cannot independently establish causal direction, the convergence of findings across theoretical, longitudinal, and intervention research provides a reasonable basis for testing metacognitive coaching experimentally.

Technology-supported self-regulation provides another useful strand of evidence. Jaramillo, Salinas-Cerda, and Fuentes studied first-year university students using the 4Planning application and reported improvements in self-regulated learning, self-efficacy, and academic performance relative to comparison students. The intervention required students to clarify study purposes, define goals, organize time, prioritize tasks, monitor activity, and progressively reflect on goal-directed behavior. This evidence is relevant because many of these mechanisms can be incorporated into human coaching without requiring continuous external monitoring.

3.3 Coaching, Strategy Training, and Intervention Evidence

Intervention research indicates that procrastination can be reduced, although different approaches vary in effectiveness. Van Eerde and Klingsieck's meta-analysis of procrastination interventions reported overall beneficial effects and found cognitive-behavioral approaches particularly promising relative to several alternative formats. This is consistent with the idea that reducing procrastination requires changing not only scheduling behavior but also interpretations, behavioral routines, and self-regulatory responses.

Karas and Spada applied brief cognitive-behavioral coaching specifically to procrastination through a small replicated case-series design with follow-up. The study represents an early attempt to combine coaching principles with cognitive-behavioral methods for delayed action. Although its small sample limits generalization, it provides conceptual support for coaching as a structured mechanism through which students can explore and modify procrastination-maintaining beliefs and behaviors.

Ghadampour and Beiranvand provide more direct educational evidence. Their semi-experimental study delivered cognitive and metacognitive strategy training in eight 90-minute weekly sessions and reported reduced academic procrastination together with increased self-efficacy, with benefits maintained at follow-up. The intervention demonstrates that metacognitive processes are teachable and that academic delay can respond to structured educational support.

Academic coaching research extends beyond procrastination-specific interventions. Campbell and Mogashana's systematic review of higher-education academic coaching examined studies published between 2010 and 2023 and identified evidence of student-success benefits while also highlighting variation in coaching definitions, intensity, delivery, and evaluation. The research gap is therefore not whether coaching can be educationally useful, but which coaching processes matter most for procrastination and how they can be evaluated using stronger, behaviorally meaningful outcome measures.

The present study addresses this gap by defining metacognitive coaching around a specific regulatory sequence: students learn to plan intentionally, monitor emerging avoidance, evaluate progress and strategy effectiveness, and adapt subsequent action. The model is designed to create independence rather than continuous external accountability.

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4. Research Methodology

4.1 Research Design and Synthetic Intervention Conditions

The study adopts a simulation-based pretest-posttest comparative design. No real university students were recruited, no intervention sessions were conducted, and no student records were processed. All quantitative observations are synthetic and are used solely to demonstrate an empirically testable design.

The coaching process was conceptualized as a recurring four-stage cycle: Plan–Monitor–Evaluate–Adapt. Planning requires students to translate broad academic intentions into observable actions. Monitoring asks them to notice whether they actually begin, what distracts them, and what emotional or cognitive states precede delay. Evaluation requires comparison between intended and actual behavior. Adaptation then converts that evidence into a modified plan for the next academic task.

4.2 Proposed Measurement Instrument

The primary empirical outcome in a future field study should preferably combine a validated procrastination measure with behavioral records. The recently developed short form of the Aitken Procrastination Inventory demonstrates that brief psychometrically evaluated measures can be used efficiently in university research, although instrument selection should depend on population and validation context.

For the coaching-specific component, the following five questions are proposed. They were not administered in the present study.

Table 1: Proposed Questionnaire for Metacognitive Procrastination Regulation

Item	Proposed Questionnaire Statement	Primary Construct
Q1	Before beginning an academic task, I identify the specific reason why I might delay starting it.	Metacognitive awareness
Q2	I convert broad academic goals into clearly defined actions with realistic starting points and deadlines.	Strategic planning
Q3	While working, I notice when distraction, anxiety, perfectionism, or task avoidance begins to interfere with progress.	Self-monitoring
Q4	After completing or delaying a task, I evaluate which strategies helped and which strategies were ineffective.	Strategy evaluation
Q5	I modify my next study plan based on what I learned from my previous pattern of action or delay.	Adaptive regulation

Recommended response scale: 1 = Strongly Disagree to 5 = Strongly Agree.
Source: Proposed by the author for future empirical validation. These five items are not presented as an established psychometric scale.

A full empirical study should examine internal consistency, factorial validity, convergent validity with validated metacognition and procrastination measures, and predictive relationships with behavioral indicators such as initiation time and deadline adherence.

4.3 Synthetic Data Generation and Statistical Analysis

Academic Procrastination Scores were represented on a 0–100 scale, where higher values indicate greater procrastination. Baseline scores were generated around similar means across all three groups to simulate approximate pre-intervention equivalence.

Post-intervention values were generated with different mean reductions representing the theoretical intervention hierarchy. The Comparison Condition was designed to exhibit only modest spontaneous improvement. Planning Support produced a larger reduction because students received explicit organizational structure. Metacognitive Coaching produced the strongest reduction because it combined planning with self-monitoring, strategy evaluation, emotional awareness, and adaptation.

One-way analysis of variance showed no statistically meaningful baseline difference among the synthetic conditions ($F = 1.32$, $p = .269$). Post-intervention scores differed substantially ($F = 103.14$, $p < .001$). Because these values are generated, significance indicates internal consistency of the simulation rather than empirical intervention efficacy.

A future real-world study should preferably use randomized allocation where feasible, pre-register the intervention protocol and analysis, assess intervention fidelity, report attrition, use intention-to-treat analysis where appropriate, and include follow-up measurement to determine whether any reduction in procrastination persists after coaching ends.

5. Analysis

5.1 Baseline and Post-Intervention Procrastination Outcomes

The three synthetic groups displayed broadly comparable baseline academic-procrastination scores. The Comparison Condition began with a mean of 65.14, Planning Support with 66.49, and Metacognitive Coaching with 64.44.

After the simulated intervention period, mean procrastination decreased to 61.97 in the Comparison Condition, 53.96 under Planning Support, and 40.49 under Metacognitive Coaching.

Table 2: Simulated Academic-Procrastination Outcomes

Intervention Condition	Simulated n	Baseline Mean	Post-Intervention Mean	Mean Reduction
Comparison	80	65.14	61.97	3.17
Planning Support	80	66.49	53.96	12.53
Metacognitive Coaching	80	64.44	40.49	23.95

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The simulated reduction produced by Metacognitive Coaching was nearly twice that produced by Planning Support and substantially greater than the change occurring in the Comparison Condition. This pattern illustrates the central proposition of the study: planning is useful, but students may obtain additional benefits when they learn to inspect and regulate the cognitive and behavioral mechanisms that determine whether plans are actually implemented.

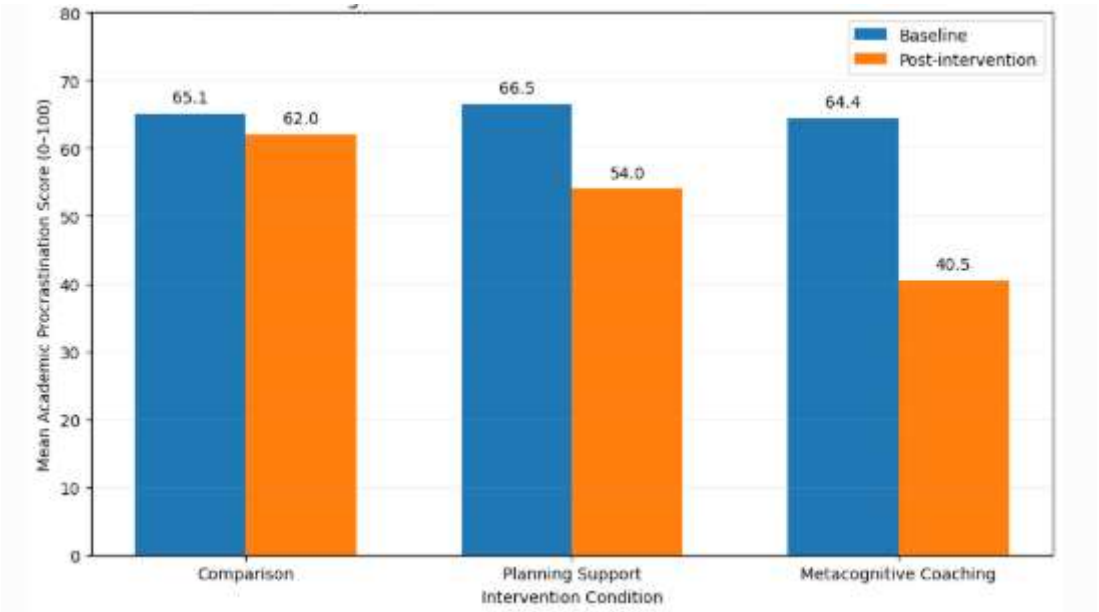
5.2 Comparative Intervention Effect

These values should not be interpreted as proof that an eight-week metacognitive-coaching intervention would produce the same outcome in an authentic university population. The simulation was intentionally structured to test a plausible theoretical hierarchy.

Nevertheless, the direction is consistent with prior intervention evidence. Ghadampour and Beiranvand reported that cognitive and metacognitive strategy training reduced academic procrastination compared with a control condition, while van Eerde and Klingsieck's intervention meta-analysis found that structured psychological interventions can meaningfully reduce procrastination.

5.3 Graphical Comparison of Change

Graph 1: Simulated Change in Academic Procrastination Across Intervention Conditions



Interpretation: All three groups show some reduction, but the magnitude differs markedly. Planning Support improves upon the Comparison Condition, while Metacognitive Coaching produces the largest simulated decline.

Key Finding: The graph illustrates the distinction between organizing tasks and learning to regulate one's response to tasks. The coaching condition combines organizational strategy with metacognitive monitoring and adaptive reflection, which produces the strongest simulated outcome.

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6. Discussion

6.1 Metacognitive Coaching Addresses the Process Behind Delay

The principal implication of the simulated findings is that procrastination reduction should focus on the regulatory process that occurs between intention and action. A student can possess a detailed weekly schedule but still avoid a task when it evokes uncertainty, boredom, anxiety, or low self-efficacy. Metacognitive coaching attempts to make this usually implicit process visible. Students learn to ask not simply "When will I complete this task?" but "What usually prevents me from beginning, how will I recognize that pattern, and what will I do when it appears?"

This interpretation is consistent with Zhou, Lam, and Zhang's meta-analysis showing meaningful relationships between metacognitive regulation and passive procrastination. It also aligns with Tao and colleagues' finding that metacognitive strategies, effort regulation, and time-management processes are negatively related to academic procrastination. Coaching therefore becomes a means of converting abstract metacognitive knowledge into repeated behavior.

The monitoring component is particularly important. Students often recognize procrastination only after substantial time has already been lost. A coaching process can teach earlier detection of warning signals such as repeated checking of unrelated applications, unnecessary preparation, continual revision of the task plan, avoidance of difficult sections, or waiting for an ideal emotional state before beginning. Once these patterns become observable, students can apply predefined alternative actions.

Evaluation then transforms completed experiences into future strategy. Instead of interpreting a delayed assignment as evidence that one is "a procrastinator," the student analyzes which conditions contributed to the delay and which interventions worked. This reduces identity-based interpretations of procrastination and supports an adaptive learning orientation.

6.2 Coaching Should Develop Autonomy Rather Than External Dependence

A second implication concerns the role of the coach. Poorly designed coaching can simply replace one form of external regulation with another. If students act only because a coach checks their progress each week, improved performance may disappear when coaching ends.

Metacognitive coaching should therefore transfer regulatory responsibility progressively to the learner. Early sessions may involve substantial questioning and modeling, whereas later sessions should require students to conduct their own task analysis, predict obstacles, evaluate previous strategies, and formulate adaptations. The coach increasingly becomes a facilitator of reflective accuracy rather than a manager of deadlines.

This orientation is compatible with self-regulated-learning research. Jaramillo and colleagues found that structured self-regulatory activity among first-year university students could strengthen self-regulation, self-efficacy, and academic performance. Their intervention required students to plan, monitor, evaluate, and correct goal-directed activity—processes that overlap substantially with the proposed coaching cycle.

Academic coaching research also suggests that coaching outcomes depend heavily on how the intervention is defined and implemented. Campbell and Mogashana's systematic review identified positive evidence but substantial variation across higher-education coaching programs. Future

metacognitive-coaching studies should therefore describe session content, coach training, intensity, duration, fidelity, and student engagement precisely enough to permit replication.

6.3 Implications for Universities and Student-Support Systems

Universities frequently respond to procrastination through generic study-skills workshops, productivity advice, or deadline reminders. These resources may help students experiencing straightforward organizational difficulties, but they may be insufficient for students whose procrastination is sustained by repeated avoidance patterns, inaccurate beliefs about task demands, perfectionistic decision-making, or weak strategy monitoring.

A differentiated model of support may therefore be more appropriate. Students with mild organization difficulties might benefit from concise planning interventions, while persistent procrastination may justify structured coaching that incorporates metacognitive and cognitive-behavioral processes. The simulation's difference between Planning Support and Metacognitive Coaching illustrates this stepped-support principle rather than implying that every student requires intensive coaching.

Universities should also avoid presenting procrastination as evidence of laziness or moral weakness. The literature conceptualizes procrastination primarily through self-regulatory and motivational mechanisms, and intervention evidence indicates that these mechanisms can be modified. Stigmatizing explanations may discourage students from seeking academic support and can obscure the practical processes that actually need modification.

Evaluation should extend beyond workshop attendance and satisfaction. More meaningful institutional outcomes would include assignment-initiation patterns, missed deadlines, learning-platform behavior, perceived self-efficacy, academic performance, persistence, and maintenance of regulatory habits after coaching concludes. Longitudinal measurement is particularly important because a coaching intervention should ultimately demonstrate that students can regulate themselves without continuing external support.

7. Conclusion

Academic procrastination is better understood as a self-regulatory difficulty than as a simple failure to create schedules. Students may know what must be done and may genuinely intend to complete academic tasks, yet still delay when they encounter aversion, uncertainty, competing immediate rewards, emotional discomfort, or ineffective strategies. Meta-analytic and empirical evidence links procrastination with metacognitive regulation, self-efficacy, effort regulation, and academic performance, providing a strong theoretical basis for interventions that help learners understand and regulate their own behavior.

The present simulation illustrates how metacognitive coaching could be evaluated within a comparative intervention design. Among 240 hypothetical university students, average procrastination decreased by 3.17 points in the Comparison Condition, 12.53 points with Planning Support, and 23.95 points under Metacognitive Coaching. These numbers are synthetic and cannot be presented as observed intervention outcomes. Their purpose is to demonstrate a transparent research model capable of distinguishing ordinary organizational support from a deeper coaching intervention targeting planning, monitoring, evaluation, and adaptation.

The practical implication is that effective coaching should help students become increasingly capable of coaching themselves. A metacognitive coach should not simply tell a student what to do next. The stronger intervention teaches the student to recognize why action is being delayed, identify unrealistic assumptions, convert intentions into feasible actions, notice emerging avoidance, evaluate the success of strategies, and adjust future behavior. This process supports learner agency and potentially provides benefits beyond any single assignment because the regulatory skills can transfer across courses and academic tasks.

Future empirical research should test the proposed framework using randomized or strong quasi-experimental designs, validated procrastination and metacognition measures, objective behavioral indicators, intervention-fidelity measures, and follow-up assessments. Comparative research should determine whether coaching adds meaningful value beyond planning instruction alone and identify which students benefit most from different levels of support. Research should also examine emotional regulation, self-efficacy, perfectionism, task aversion, digital distraction, and implementation intentions as possible mechanisms of change. The appropriate long-term goal is not to eliminate every instance of delay, but to enable students to recognize maladaptive procrastination early and regulate their academic behavior deliberately, flexibly, and independently.

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