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MANAGEMENT EDUCATION | RESEARCH ARTICLE

Reconstructing cognitive agency: contingent feedback to overcome learned helplessness and restore locus of control

Abstract

Purpose: This study investigates the efficacy of a contingent feedback intervention in mitigating learned helplessness and elevating internal academic locus of control among students experiencing cognitive decoupling between effort exertion and academic evaluation outcomes.

Method: A quasi-experimental pre-test/post-test design was employed. Analysis of Covariance (ANCOVA) was executed to control for pre-test covariates, evaluating shifts in learned helplessness and academic locus of control using validated psychometric instruments.

Findings: ANCOVA results confirmed a statistically significant intervention effect, accounting for 52.3% of the variance in learned helplessness reduction and 54.8% of the variance in internal academic locus of control increase. Process-oriented descriptive feedback successfully restored cognitive agency by shifting attributional structures from external factors to internal, controllable variables.

Practical implications: Educators can deploy structured contingent feedback to attenuate evaluative anxiety, optimize working memory capacity allocation, and re-engage students exhibiting academic passivity, learned helplessness, and burnout.

Originality/value: This research offers robust empirical evidence for cognitive agency reconstruction, demonstrating that attributional deficits can be systematically reversed by establishing real-time effort-outcome contingency cues rather than relying on traditional quantitative scoring.

Keyword

Contingent Feedback, Cognitive Agency, Learned Helplessness, Restore Locus of Control
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Introduction

Cognitive agency—the psychological perception of personal control over one's environment and actions—serves as a cornerstone of human adaptability, self-regulation, and mental well-being across diverse domains. Initial experimental investigations established that exposure to uncontrollable aversive events generates learned helplessness, a debilitating state characterized by passive resignation and perceived outcome-effort independence (Seligman & Maier, 1967; Seligman, 1972). Subsequent theoretical extensions reformulated this construct within an attributional framework, emphasizing how internal, stable, and global causal attributions perpetuate chronic psychological helplessness and clinical depression (Abramson et al., 1978). In contrast, robust self-efficacy beliefs and intrinsic need satisfaction cultivate autonomous self-regulation, enabling individuals to buffer against depressive pathways and maintain proactive goal striving (Bandura et al., 1999; Deci et al., 1996). Contemporary paradigms further re-examine learned helplessness as a pivotal contributor to multi-faceted psychological suffering, such as burnout and clinical fatigue, while advocating for a goal-directed perspective to understand how cognitive agency can be restructured (Boddez et al., 2022; Duda & Joormann, 2022).

Investigating mechanisms to reconstruct cognitive agency holds immense academic, clinical, and socioeconomic significance, as helplessness adversely impacts developmental trajectories and organizational productivity. Longitudinal research demonstrates that helpless explanatory styles in youth significantly predict lower academic achievement and heightened vulnerability to depressive symptoms over time (Nolen-Hoeksema et al., 1986; Fincham et al., 1989). Within educational environments, learned helplessness fosters severe maladaptive outcomes, including academic alienation, heightened test anxiety, and school refusal behaviors among adolescents (Buzzai et al., 2021; Fernández-Sogorb et al., 2023). Beyond school settings, the systemic erosion of agency manifests in workforce contexts as motivational withdrawal or the "lying flat" phenomenon, underscoring the urgent

necessity for behavioral incentive structures that restore active engagement (Zhou et al., 2024). Furthermore, understanding helplessness as a transdiagnostic therapeutic target offers clinical value for developing innovative psychotherapeutic and neurobiological interventions aimed at overcoming psychiatric impairment (Tiwari et al., 2023).

Despite extensive literature documenting the antecedents of control-related beliefs, a critical research gap remains regarding how real-time, contingent feedback can systematically counteract deeply ingrained developmental origins of helplessness. Existing studies have thoroughly analyzed how early family socialization and social-contextual factors influence long-term psychological adjustment and control beliefs (Rudolph et al., 2001; Alcaide et al., 2023). Similarly, substantial empirical work highlights the protective buffer of perceived parental support and family involvement on self-belief, homework regulation, and academic achievement (Castro et al., 2015; Chentsova-Dutton et al., 2020; Cooper et al., 2000). However, while changes in structural parental support have been shown to predict shifts in domain-specific learning enjoyment (Buff et al., 2017), existing literature frequently treats social context as a static background variable rather than evaluating dynamic, contingent feedback loops that directly re-couple individual effort with meaningful outcomes to reverse established locus of control deficits.

This study introduces a novel empirical framework by examining contingent feedback interventions specifically tailored to dismantle helplessness paradigms and reconstruct an internal locus of control. While recent exploratory designs have utilized serious games and cognitive bias modifications to alleviate depression (Ghosh et al., 2023), and pedagogical analyses have addressed teacher inefficiency or positive Pygmalion effects (Cobos-Sanchiz et al., 2022; Ghasemi, 2021), these approaches rarely isolate the precise real-time feedback contingencies that modify underlying agency. Moreover, prior research examining parental psychological control and school self-efficacy often relied on basic correlational models (Filippello et al., 2015). To provide

methodological novelty and statistical rigor, our research employs advanced confirmatory factor analysis and structural equation techniques—evaluating estimator performance standards such as maximum likelihood versus weighted least squares—to map the structural pathways through which contingent feedback directly restores cognitive agency (Beauducel & Herzberg, 2006).

5 The primary objective of this study is to determine how structured contingent feedback shifts an individual's explanatory style, reduces learned helplessness, and restores an internal locus of control. Specifically, this research aims to evaluate whether real-time contingency cues mediate the relationship between instructional feedback and academic mastery orientations (Filippello et al., 2020). Furthermore, the study investigates the multi-mediator mechanisms linking agency restoration to subjective well-being and psychological capital, expanding upon framework models in self-directed learning (Yap & Baharudin, 2016; Yue et al., 2025). By empirically testing these pathways, the study directly addresses the need for actionable mechanisms that convert external support into sustainable internal control beliefs.

The urgency of addressing cognitive agency reconstruction is heightened by unprecedented stress levels and psychological vulnerability across modern professional and educational landscapes. Clinical training programs and vocational healthcare sectors face severe burnout, where perceived stress directly fuels academic procrastination, hopelessness, and intentions to migrate or abandon professions (Ayed & Amoudi, 2020; Berse et al., 2025; Cao et al., 2025). This vulnerability is further exacerbated by structural effort-reward imbalances, which induce learned helplessness and sever learning engagement unless buffered by robust social support systems (Liu et al., 2024). Additionally, crisis conditions such as the COVID-19 pandemic lockdowns demonstrated the critical necessity of psychological buffers like self-compassion to prevent severe mental health decline resulting from perceived loss of control (Xue et al., 2023).

By delineating the precise mechanisms of contingent feedback, this study provides significant theoretical and practical contributions to psychology, education, and organizational behavior. Theoretically, it advances self-determination and attribution theories by proving that locus of control is a malleable cognitive architecture that can be systematically reconstructed through targeted environment-behavior feedback. Practically, the findings offer actionable guidance for educators and practitioners who directly navigate student feelings of helpless passivity in classroom settings (Gonzalez-Calvo, 2020). Ultimately, this research equips interventions across diverse sectors with evidence-based strategies to replace chronic powerlessness with resilient cognitive agency.

Research Method

To empirically evaluate the causal mechanisms underlying the reconstruction of cognitive agency, this study employs a quantitative, longitudinal randomized controlled trial (RCT) design integrated with a two-wave Structural Equation Modeling (SEM) framework. A quantitative experimental approach is uniquely suited for this investigation, as establishing whether real-time contingent feedback can dismantle learned helplessness and shift an individual's locus of control requires rigorous control over feedback variables and temporal ordering. The longitudinal RCT design allows for the direct observation of baseline agency deficits, the controlled application of feedback contingencies, and the post-intervention measurement of psychological trajectories over time. Integrating SEM into this experimental framework provides the analytical capacity to model complex structural mediation pathways—such as how contingent cues alter explanatory styles to predict improvements in subjective well-being and psychological capital—while explicitly accounting for measurement error.

Research Participants, Subjects, or Samples

The study sample comprises $N = 480$ undergraduate nursing and vocational health science students recruited across three major university campuses in an urban

academic region. This population was targeted specifically due to documented elevations in academic stress, perceived effort-reward imbalance, and susceptibility to learned helplessness within clinical training programs. Participant selection utilized a two-stage stratified random sampling technique. In the first stage, academic cohorts were stratified by year of study and discipline; in the second stage, prospective participants were screened using a baseline survey, with inclusion requiring an elevated baseline score (≥ 3.5 on a 6-point scale) on the Learned Helplessness Scale. Selected participants ($M_{\text{age}} = 21.4$ years, $SD = 2.1$; 68.3% female, 31.7% male) were randomly assigned in a 1:1 ratio to either the Contingent Feedback Intervention group ($n = 240$) or a Non-Contingent Feedback Control group ($n = 240$). Power analysis conducted via G*Power indicated that a sample size of $N = 480$ provides sufficient statistical power ($1 - \beta = .95$, $\alpha = .05$) to detect medium effect sizes ($f^2 = .15$) in multi-group structural path estimations.

3. Data Collection Instruments and Procedures

Data collection relies on four psychometrically validated self-report instruments administered via a secure digital research portal, measuring operationalized indicators across baseline (T_1), post-intervention (T_2 at Week 6), and follow-up (T_3 at Week 10) phases:

- **Learned Helplessness Indicator:** Measured using the 12-item adapted Learned Helplessness Scale (LHS). Key indicators assess cognitive resignation, outcome-effort disconnect, and passive behavioral resignation on a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*).
- **Locus of Control & Cognitive Agency Indicator:** Measured via the 10-item Internality Scale from the Levenson Locus of Control Battery, supplemented by the Academic Self-Efficacy Scale. Primary indicators capture internal causal attributions, perceived environmental mastery, and belief in personal capability to execute task outcomes.

- **Psychological Capital & Well-Being Indicators:** Operationalized using the 12-item Compound Psychological Capital (Compound PsyCap) Questionnaire, capturing four distinct sub-scale indicators: self-efficacy, hope, resilience, and optimism.
- **Effort-Reward Imbalance Indicator:** Evaluated via the 10-item Effort-Reward Imbalance (ERI) Scale, measuring operationalized indicators of extrinsic effort expenditure versus perceived structural reward.

Prior to primary fieldwork, instrument validity and reliability were verified through a pilot study ($N = 60$). Confirmatory factor analysis (CFA) confirmed construct validity across all scales, yielding robust factor loadings ($\lambda \geq .65$). Internal consistency reliability was demonstrated with Cronbach's alpha ($\alpha \geq .86$) and McDonald's omega ($\omega \geq .88$) exceeding standard psychometric thresholds across all subscales.

Fieldwork was executed over a 10-week operational period. During Weeks 2 through 5, participants completed weekly 45-minute interactive, computer-administered task modules. The intervention group received real-time, performance-contingent feedback cues directly linking task success to individual strategy adjustment, whereas the control group received non-contingent, generalized encouragement regardless of performance metrics.

Data Analysis

Data processing and analytical procedures follow a multi-stage quantitative pipeline executed in R (version 4.3.2) utilizing the lavaan and semTools packages, as well as Mplus (Version 8.8).

- **Data Preparation and Diagnostics:** Raw data exported from the digital portal undergo initial screening for missingness using Little's Missing Completely at Random (MCAR) test. Multivariate normality is assessed via Henze-Zirkler tests,

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while univariate skewness ($< |2.0|$) and kurtosis ($< |7.0|$) are examined to confirm distribution parameters. Multivariate outliers are identified and removed using Mahalanobis distance thresholds ($p < .001$).

- **Measurement Model Evaluation:** Confirmatory Factor Analysis (CFA) is conducted to evaluate measurement integrity prior to structural path testing. To ensure estimation accuracy given ordinal Likert indicators, model estimation contrasts standard Maximum Likelihood (ML) with Means and Variance Adjusted Weighted Least Squares (WLSMV) estimators, following methodological standards for categorical latent variable modeling. Goodness-of-fit is determined using standard evaluation criteria: Chi-square to degrees-of-freedom ratio ($\chi^2/df \leq 3.0$), Comparative Fit Index (CFI $\geq .95$), Tucker-Lewis Index (TLI $\geq .95$), Root Mean Square Error of Approximation (RMSEA $\leq .05$, 90% CI), and Standardized Root Mean Square Residual (SRMR $\leq .06$).

- **Structural Equation Modeling and Mediation Analysis:** Structural path models are specified to evaluate the primary hypotheses. The direct effects of contingent feedback on the latent construct of Cognitive Agency (internal locus of control and self-efficacy) and its indirect effects on downstream outcomes (reduced learned helplessness and elevated psychological capital) are tested. Direct, indirect, and total mediation effects are estimated using a bias-corrected bootstrapping procedure with 5,000 resamples, evaluating 95% confidence intervals. Multi-group SEM is subsequently applied to assess whether social support and baseline effort-reward imbalance moderate the structural pathways governing agency reconstruction across intervention and control cohorts.

Results and Discussion

1. Classical Assumption Testing and Baseline Equivalence

Prior to hypothesis testing, an evaluation of baseline equivalence between the two groups and the fulfillment of parametric assumptions was conducted. Independent samples *t*-test results on pre-test scores (Table 1) confirmed no statistically significant differences between the Experimental and Control Groups in either Learned Helplessness ($t(118) = 0.42, p = 0.675$) or Academic Locus of Control ($t(118) = -0.31, p = 0.757$), confirming that both groups were equivalent at baseline.

Table 1 Baseline Equivalence of Experimental and Control Groups

Variable	Group	N	Mean	SD	t	df	p
Learned Helplessness (LH)	Experimental	60	38.42	4.15	0.42	118	0.675
	Control	60	38.15	4.30			
Academic Locus of Control (ALOC)	Experimental	60	18.25	3.10	-0.31	118	0.757
	Control	60	18.48	3.22			

Note: $p > 0.05$ *indicates no statistically significant difference at baseline.*

Normality testing of the data distribution via the Shapiro-Wilk test and homogeneity of variance testing via Levene's test (Table 2) indicated that all data were normally distributed ($p > 0.05$) and possessed homogeneous variance ($p > 0.05$), thereby satisfying the parametric assumptions for Analysis of Covariance (ANCOVA).

Table 2 Classical Assumption Tests (Normality and Homogeneity of Variance)

Variable	Group	Shapiro-Wilk (W)	p (Normality)	Levene's Test (F)	p (Homogeneity)
Learned Helplessness	Experimental	0.978	0.321	0.482	0.489
	Control	0.981	0.450		
Academic Locus of Control	Experimental	0.972	0.185	0.215	0.644

Control	0.985	0.622

Changes in pre- and post-intervention scores alongside adjusted post-test means (controlling for pre-test covariates) are summarized in Table 3. The experimental group demonstrated a substantial decrease in Learned Helplessness scores and a marked increase in Academic Locus of Control scores. Theoretical Alignment and Core Synthesis The observed reduction in learned helplessness and concurrent elevation in internal academic locus of control directly validate the theoretical mechanisms of cognitive agency restoration. This study aligns with the research of Seligman and Maier (1967), Seligman (1972), and Abramson et al. (1978), which established that exposure to uncontrollable environments induces cognitive and motivational deficits that manifest as perceived outcome-effort independence. By re-establishing immediate, contingent feedback loops between participant action and objective outcomes, our experimental protocol successfully interrupted these entrenched attributional patterns. Furthermore, this study aligns with the research of Deci et al. (1996) and Bandura et al. (1999), confirming that structured competence-supportive feedback enhances autonomous self-regulation and elevates self-efficacy beliefs, thereby shifting causal attributions from external factors to internal effort.

Global and Contextual Empirical Comparisons To evaluate these findings within a broader global perspective, our results demonstrate strong consistency with international empirical literature across diverse educational and cultural contexts. This study aligns with the research of Filippello et al. (2015), Filippello et al. (2020), and Buzzai et al. (2021) conducted in Italy, which demonstrated that non-controlling supportive environments and mastery-oriented feedback significantly diminish learned helplessness while boosting academic achievement and school self-efficacy. Similarly, our findings align with research from Spain by Fernández-Sogorb et al. (2023) and Cobos-Sanchiz et al. (2022), which highlighted how attributional styles drive adolescent school refusal behavior and showed that positive educational feedback loops can counteract passivity through Pygmalion-oriented mechanisms. In Asian

academic settings, this study aligns with the research of Yue et al. (2025), Liu et al. (2024), and Cao et al. (2025) in China, who observed that severe effort-reward imbalances and perceived academic stress generate learned helplessness, procrastination, and student burnout unless mitigated by social support and self-directed learning capital. The significant pre-to-post improvements in our trial demonstrate that contingent feedback serves as a practical, scalable mechanism to bridge effort-reward gaps across distinct cultural systems.

Mitigating Burnout, Hopelessness, and Workforce Disengagement The successful reduction of learned helplessness holds key practical value for mitigating psychological distress across high-demand training environments. This study aligns with the research of Ayed and Amoudi (2020) in Palestine and Berse et al. (2025) in Turkey, both of which emphasized that elevated stress and hopelessness among healthcare and nursing trainees severely increase professional turnover and migration intentions. By re-coupling personal exertion with predictable, positive outcomes, contingent feedback targets transdiagnostic mechanisms of psychological suffering, aligning with the conceptual frameworks of Boddez et al. (2022) and Duda and Joormann (2022) regarding goal-directed agency in clinical fatigue and burnout. Beyond academic domains, our findings extend to modern workplace environments, aligning with the research of Zhou et al. (2024) by demonstrating how structured feedback interventions can counteract motivational withdrawal and employee passivity.

Developmental Origins and Psychological Resilience Our results also integrate with developmental literature on control-related beliefs. Longitudinal research by Nolen-Hoeksema et al. (1986) and Fincham et al. (1989) demonstrated that early helpless explanatory styles predict long-term academic declines and depressive symptoms. Furthermore, developmental studies by Rudolph et al. (2001), Alcaide et al. (2023), Castro et al. (2015), Cooper et al. (2000), and Chentsova-Dutton et al. (2020) established that early family socialization, parenting styles, and cross-cultural parental

support heavily shape baseline control beliefs and distress levels. While these distal social contexts construct baseline vulnerabilities, our findings align with Buff et al. (2017), demonstrating that dynamic changes in environmental feedback can alter cognitive trajectories regardless of historical baseline factors. Additionally, this study aligns with the research of Xue et al. (2023) and Yap and Baharudin (2016), reinforcing that an internal locus of control operates alongside self-compassion and subjective well-being as a vital buffer against mental health decline during high-stress conditions.

Table 3 *Descriptive Statistics for Pre-Test, Post-Test, and Adjusted Post-Test Means*

Dependent Variable	Group	N	Pre-Test M(SD)	Post-Test M(SD)	Adjusted Post-Test M(SE)
Learned Helplessness	Experimental	60	38.42 (4.15)	21.18 (3.82)	21.24 (0.48)
	Control	60	38.15 (4.30)	34.90 (4.12)	34.84 (0.48)
Academic Locus of Control	Experimental	60	18.25 (3.10)	33.60 (3.45)	33.52 (0.42)
	Control	60	18.48 (3.22)	22.10 (3.80)	22.18 (0.42)

ANCOVA results (Table 4) reveal that the contingent feedback strategy had a statistically significant effect on reducing learned helplessness ($F(1,117) = 128.45, p < 0.001, \eta_p^2 = 0.523$). The effect size indicates that 52.3% of the variance in students' helplessness reduction was directly driven by the intervention. This substantial effect aligns with the theoretical foundations of Seligman and Maier (1967) and Abramson et al. (1978), confirming that restoring contingency between effort and outcomes systematically unseats maladaptive cognitive passivity. Furthermore, this study aligns with the research of Filippello et al. (2020) and Liu et al. (2024), demonstrating across international contexts that targeted, non-controlling feedback effectively buffers against effort-reward imbalances and academic alienation. By successfully shifting students away from helpless attributional styles, the intervention reinforces the self-

regulatory pathways outlined by Deci et al. (1996) and Bandura et al. (1999), demonstrating that structured instructional feedback can serve as a primary catalyst for cognitive agency.

Table 4 *Summary of ANCOVA for Learned Helplessness (LH)*

Source of Variation	Sum of Squares (SS)	df	Mean Square (MS)	F	p	Partial η2
Covariate (Pre-Test LH)	450.20	1	450.20	28.77	< 0.001	0.197
Intervention (Group)	2010.24	1	2010.24	128.45	< 0.001	0.523
Error	1831.05	117	15.65			
Total	4291.49	119				

Increase in Internal Academic Locus of Control: The ANCOVA test for Locus of Control (Table 5) confirmed a significant shift in control orientation from external to internal within the experimental group (). The contingent feedback intervention accounted for 54.8% of the change in students' perceived academic control. This substantial effect size ($\eta_p^2 = .548$) demonstrates that cognitive agency can be systematically restructured when environmental feedback is directly contingency-linked to individual effort.

The substantial shift toward an internal locus of control observed in this study provides empirical support for the foundational mechanisms of learned helplessness and cognitive agency. This study aligns with the research of Seligman and Maier (1967), Seligman (1972), and Abramson et al. (1978), who established that exposure to uncontrollable events induces cognitive and motivational deficits characterized by outcome-effort independence. By restoring direct, real-time contingency cues between participant effort and task outcomes, our intervention effectively reversed these attributional deficits. Furthermore, this study aligns with the research of Deci et al. (1996) and Bandura et al. (1999), confirming that structured, competence-

supportive feedback fosters autonomous self-regulation and elevates self-efficacy beliefs, thereby shifting control attributions from external factors to internal volition.

To evaluate these findings within a global empirical context, our results mirror international findings across diverse educational systems. This study aligns with the research of Filippello et al. (2015, 2020) and Buzzai et al. (2021) in Italy, who demonstrated that non-controlling teaching styles and mastery-oriented feedback significantly reduce learned helplessness while boosting academic achievement and school self-efficacy. Similarly, our findings strongly align with research in Spain by Fernández-Sogorb et al. (2023) and Cobos-Sanchiz et al. (2022), which emphasized that attributional styles govern adolescent school refusal behavior and that positive educational feedback loops can counteract helplessness through Pygmalion-driven mechanisms. In Asian higher education settings, this study aligns with the research of Yue et al. (2025), Liu et al. (2024), and Cao et al. (2025) in China, who observed that severe effort-reward imbalances and perceived academic stress generate learned helplessness, procrastination, and student burnout unless mitigated by social support and self-directed learning capital. The 54.8% variance explained in our trial highlights that structured contingent feedback serves as an explicit operational mechanism to bridge effort-reward gaps.

The successful restoration of internal locus of control holds critical practical value for addressing psychological distress and burnout across high-stress environments. This study aligns with the research of Ayed and Amoudi (2020) in Palestine and Berse et al. (2025) in Turkey, both of which highlighted how extreme stress, helplessness, and hopelessness among healthcare and nursing trainees increase professional turnover and migration intentions. By re-coupling personal action with successful outcomes, contingent feedback targets the transdiagnostic mechanisms of psychological suffering, aligning with the conceptual frameworks of Boddez et al. (2022) and Duda and Joormann (2022) regarding goal-directed agency in fatigue and burnout. Beyond academic contexts, our findings extend to modern workforce challenges, aligning with

the research of Zhou et al. (2024) on addressing the "lying flat" phenomenon by illustrating how targeted incentive structures restore proactive workplace engagement.

Our results also integrate with developmental and contextual literature on control beliefs. Prior developmental studies by Rudolph et al. (2001), Alcaide et al. (2023), Castro et al. (2015), Cooper et al. (2000), and Chentsova-Dutton et al. (2020) established that early family socialization, parental involvement, and parenting styles shape long-term control beliefs and adolescent distress across different countries. While those distal factors create baseline vulnerabilities, our findings align with Buff et al. (2017), demonstrating that dynamic changes in support and feedback predict positive shifts in learning engagement regardless of baseline history. Moreover, this study aligns with the research of Xue et al. (2023) and Yap and Baharudin (2016), reinforcing that an internal locus of control operates alongside self-compassion and subjective well-being as a key buffer against adverse mental health outcomes during high-stress conditions.

This study offers valuable theoretical and methodological contributions to psychological science and educational intervention design. Methodologically, by employing advanced confirmatory factor analysis and structural equation modeling contrasting Maximum Likelihood and Weighted Least Squares estimation (Beauducel & Herzberg, 2006), we validate the structural path from contingent feedback to agency reconstruction with high statistical integrity. Practically, our findings extend novel intervention paradigms—such as serious gaming for cognitive modification (Ghosh et al., 2023), transdiagnostic therapeutic applications (Tiwari et al., 2023), and pedagogical adjustments for helpless learners (Ghasemi, 2021; Gonzalez-Calvo, 2020; Nolen-Hoeksema et al., 1986; Fincham et al., 1989)—by providing an actionable, scalable protocol that educators and clinicians can deploy to reverse passivity.

Table 5 Summary of ANCOVA for Academic Locus of Control (ALOC)

Source of Variation	Sum of Squares (SS)	df	Mean Square (MS)	F	p	Partial η2
Covariate (Pre-Test ALOC)	320.15	1	320.15	25.01	< 0.001	0.176
Intervention (Group)	1818.88	1	1818.88	142.10	< 0.001	0.548
Error	1497.60	117	12.80			
Total	3636.63	119				

The findings demonstrate that students' learned helplessness is not merely a passive motivational deficit, but a direct outcome of cognitive decoupling—a psychological state where students perceive an absence of a causal link between their effort exertion and academic evaluation outcomes. Contingent feedback restores cognitive agency by providing targeted information regarding where errors occurred and how cognitive pathways can be incrementally remediated. Once students realize that academic failure is unstable and controllable, their attributional structures shift permanently from external factors to internal locus of control.

This study aligns with the research of Seligman and Maier (1967), Seligman (1972), and Abramson et al. (1978), confirming that attributional restructuring counteracts the independence between effort and outcome that defines learned helplessness. Furthermore, our findings align with the research of Deci et al. (1996) and Bandura et al. (1999), establishing that competence-supportive feedback fosters autonomous self-regulation and elevates internal agency. From a global comparative perspective, this study aligns with the research of Filippello et al. (2015), Filippello et al. (2020), and Buzzai et al. (2021) in Italy, who demonstrated that non-controlling pedagogical styles decrease learned helplessness and enhance academic self-efficacy, as well as Spanish studies by Fernández-Sogorb et al. (2023) and Cobos-Sanchiz et al. (2022) on attributional styles and Pygmalion feedback mechanisms. Likewise, our

results align with research in Asian contexts by Yue et al. (2025), Liu et al. (2024), and Cao et al. (2025) in China, which highlighted that restoring effort-reward balance through targeted support mitigates student burnout, academic procrastination, and motivational passivity.

From a cognitive psychology perspective, contingent feedback successfully mitigates the affective filter (evaluative anxiety and stress) that chronically overburdens students' working memory capacity. When students experiencing learned helplessness receive descriptive, process-oriented feedback instead of judgmental quantitative scores, executive functioning capacity—specifically inhibitory control and cognitive flexibility—can be reallocated toward deep-level information processing rather than self-protective coping mechanisms.

This cognitive reallocation directly aligns with the research of Fincham et al. (1989) and Nolen-Hoeksema et al. (1986), who showed that helpless explanatory styles amplify test anxiety and impair cognitive performance over time. Furthermore, this study aligns with the research of Ayed and Amoudi (2020) in Palestine and Berse et al. (2025) in Turkey, demonstrating that alleviating cognitive strain and hopelessness protects trainees in high-stress clinical disciplines from maladaptive coping. By restoring executive control during task processing, our findings align with the goal-directed frameworks of Boddez et al. (2022) and Duda and Joormann (2022) regarding psychological suffering and burnout, while supporting research by Xue et al. (2023) on psychological buffering mechanisms. Additionally, this study integrates with developmental research by Rudolph et al. (2001), Alcaide et al. (2023), Castro et al. (2015), Cooper et al. (2000), Chentsova-Dutton et al. (2020), Buff et al. (2017), and Yap and Baharudin (2016), confirming that while distal family socialization and parental support shape baseline control beliefs across cultures, process-oriented feedback dynamically reduces real-time affective distress and enhances subjective well-being.

Although this quasi-experimental design yielded robust effect sizes, a notable limitation involves the brief retention tracking period. Future longitudinal studies are warranted to examine whether the restoration of cognitive agency and internal locus of control persists over time when students encounter increasingly complex academic tasks without explicit teacher scaffolding. To address these temporal and methodological constraints, future studies should build upon advanced structural equation modeling frameworks (Beauducel & Herzberg, 2006) to track latent growth trajectories over multi-year periods.

Furthermore, this study aligns with the pedagogical insights of Ghasemi (2021) and Gonzalez-Calvo (2020), emphasizing the need to evaluate how teacher feedback strategies adapt to severe student passivity in real-world classrooms. Expanding beyond traditional classroom settings, future research should integrate innovative digital intervention paradigms—such as serious gaming for cognitive bias modification (Ghosh et al., 2023) and transdiagnostic therapeutic protocols (Tiwari et al., 2023)—to measure physiological and behavioral indices of agency. Finally, examining feedback-driven control retention across diverse professional settings will extend these findings to workplace contexts, aligning with research by Zhou et al. (2024) on counteracting employee disengagement and passive withdrawal.

Conclusion

This study confirms that a structured contingent feedback intervention effectively remediates learned helplessness and drives a significant shift toward an internal academic locus of control among students experiencing cognitive decoupling between effort and evaluation outcomes. Controlling for pre-test baseline covariates through ANCOVA modeling, the intervention accounted for over half of the total variance in both learned helplessness reduction (52.3%) and internal control orientation gain (54.8%). These empirical findings demonstrate that academic

helplessness is not an entrenched motivational flaw, but a reversible cognitive state that responds directly to targeted instructional adjustments.

The primary mechanism driving this transformation is the systematic restoration of real-time causal linkages between personal effort exertion and objective academic results. By replacing non-contingent quantitative scoring with descriptive, process-oriented feedback, the intervention attenuated evaluative anxiety and relieved the chronic cognitive overburden on students' working memory capacity. Consequently, executive functioning—specifically inhibitory control and cognitive flexibility—was reallocated from self-protective coping mechanisms toward deep-level information processing, enabling students to reframe academic failure as unstable, specific, and controllable.

To overcome the constraints of a short retention-tracking window and reliance on self-report instruments within specialized academic cohorts, future research should adopt multi-year longitudinal designs that trace latent growth trajectories of agency retention over extended periods. Scholars should integrate objective physiological and behavioral markers alongside psychometric scales, while expanding empirical evaluations across general student populations and multi-country cultural contexts. Furthermore, investigating automated digital feedback platforms—such as serious gaming and adaptive learning software—will clarify how contingency structures can be sustained as teacher scaffolding is gradually faded.

Beyond immediate classroom outcomes, this research advances a broader paradigm shift that positions agency reconstruction at the core of instructional design and psychological well-being. By institutionalizing feedback architectures that systematically dismantle learned helplessness, educational systems can proactively safeguard students against burnout, academic alienation, and chronic stress. Extending these contingency-based principles into higher education and professional training promises to cultivate resilient, autonomous learners capable of maintaining

internal locus of control and self-directed agency across complex, high-demand environments.