

Article

Moderating the Association Between Perceived Academic Stressors and Active Coping: The Role of University Students' Good Practices

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Abstract

University students face academic demands that may be associated with reduced use of active coping when perceived as stressful. This study examined whether feedback seeking, cooperative work, time management, and active learning moderated the association between perceived academic stressors and active coping. A cross-sectional, non-experimental design was used with 1014 undergraduates from the University of Extremadura. Participants completed measures of perceived academic stressors (E-CEA), active coping (A-CEA), and good practices (IBPEU). Four separate moderation models were estimated using PROCESS Model 1 with 5000 bootstrap resamples, adjusting for age, gender, year of study, and field of study. Perceived academic stressors were negatively associated with active coping, whereas all four good-practice dimensions were positively associated with it. All interaction terms were positive and statistically significant ($B = 0.058\text{--}0.086$, $p = 0.017\text{--}0.046$), but each accounted for only 0.34–0.49% of additional explained variance. Across all four models, higher reported levels of the corresponding good-practice dimension were associated with a less pronounced negative association between perceived academic stressors and active coping. The findings may inform the development and evaluation of student-support and instructional initiatives focused on feedback literacy, cooperative skills, time planning, and active engagement with learning. They also point to the relevance of educational conditions that may facilitate these practices within university learning environments.

Keywords: perceived academic stressors; active coping; university students; good practices; feedback seeking; cooperative work; time management; active learning; moderation

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1. Introduction

Academic stress constitutes a particularly relevant experience in higher education, where students are required to respond to increasing demands related to organization, performance, autonomy, and adaptation. Task overload, assessment pressure, the accumulation of deadlines, difficulties in balancing academic life with personal or work responsibilities, and uncertainty regarding academic performance have been identified as recurrent sources of strain among university students (Barbayannis et al., 2022; Jirjees et

al., 2024). These demands are especially important because they may affect not only students' well-being and academic adjustment, but also the way they organize their resources, regulate their engagement, and mobilize strategies to respond to situations perceived as demanding (Majerová & Sokolová, 2025; Pérez-Jorge et al., 2025).

From a transactional perspective, stress does not arise automatically from the mere presence of demands, but from the individual's appraisal of their meaning and of the resources available to manage them (Lazarus & Folkman, 1984). This approach is particularly useful in the university context, where the same academic requirement may be experienced as manageable, challenging, or overwhelming depending on students' interpretation of the situation and their perceived resources (Lazarus, 1987). In the specific field of academic stress, the systemic-cognitive model conceptualizes this experience around three interrelated components: academic situations appraised as stressors, coping processes, and cognitive, emotional, behavioral, and physiological stress responses (Barraza Macías, 2006, 2018). Rather than forming a rigid causal sequence, these components operate within a dynamic person-environment system in which appraisals and coping efforts are continually updated as academic encounters unfold and circumstances change.

Within this process, active coping plays a relevant regulatory role, as it encompasses deliberate efforts to manage academic demands through positive reappraisal, planning, and social support seeking—that is, cognitive, behavioral, and interpersonal strategies reported when students confront problematic academic situations (González Cabanach et al., 2010; Cabanach et al., 2018; Lazarus & Folkman, 1984). Previous research has linked these strategies to more favorable academic and psychological adjustment and to lower levels of stress-related difficulties among university students (Freire et al., 2020; Gustems-Carnicer et al., 2019). Their mobilization, however, cannot be assumed to remain stable across academic conditions. When demands are appraised as intense, persistent, or difficult to control, students may perceive fewer viable courses of action and show a greater tendency toward passive or avoidant responses (MacCann et al., 2022; Shi et al., 2023; Swadiq, 2025). At the same time, the adaptive value of coping is contingent on the characteristics and controllability of the situation: strategies directed toward emotional regulation may be especially functional when the demand itself cannot be modified (Freire et al., 2020; Somerfield & McCrae, 2000). Active coping should therefore be understood as a context-sensitive regulatory process rather than as a uniformly adaptive response across academic situations.

Against this theoretical background, university students' good practices provide an educationally situated perspective on the habitual ways in which students engage with learning and the academic environment. Following the approach proposed by Gozalo Delgado and León del Barco (2014) and Gozalo Delgado et al. (2022), these practices are conceptualized as student-level academic behaviors through which students organize their activity, interact with others, and participate in the educational process. These behaviors encompass self-regulatory, relational, and engagement-related processes and occupy a distinctive position within the educational system: they are enacted by students, while their development and expression remain responsive to instructional and institutional conditions. In this way, good practices are situated at the interface between student agency and the learning environment. This student-centered conceptualization derives from Chickering and Gamson's (1987) principles for good practice in undergraduate education and is consistent with the European Higher Education Area's emphasis on students as active and co-responsible participants in their learning.

Although perceived academic stressors, active coping, and good practices all concern students' academic experience, they represent analytically distinct dimensions of that experience. Perceived academic stressors refer to the appraisal of specific demands in the university environment as sources of strain (Barraza Macías, 2006, 2018; Cabanach et al.,

2016). Active coping concerns the cognitive, behavioral, and interpersonal strategies mobilized when academic situations are experienced as problematic (González Cabanach et al., 2010; Lazarus & Folkman, 1984). Good practices, by contrast, capture relatively habitual but context-sensitive patterns of academic engagement through which students organize their learning, interact with others, and participate in the educational environment (Chickering & Schlossberg, 1995; Gozalo Delgado et al., 2020, 2022). Thus, the constructs differ in their primary referent, situational specificity, and functional emphasis: appraisal of demands, regulation of stressful encounters, and broader participation in academic life, respectively.

Viewed from a broader self-regulatory perspective, however, this analytical differentiation does not preclude conceptual convergence. Aspinwall and Taylor's (1997) proactive coping framework emphasizes anticipatory regulatory processes through which individuals identify potential demands, formulate goals, organize resources, and plan courses of action before stressful encounters fully develop. Good practices may draw on comparable regulatory capacities in the management of learning and the educational environment. Their common ground therefore lies in the self-regulatory processes they mobilize, whereas their distinction lies in the object and circumstances of their enactment. Good practices may thus be understood as educationally situated forms of academic action that recruit coping-relevant capacities without being reducible to coping itself.

Within this broader repertoire, feedback seeking, cooperative work, time management, and active learning represent theoretically differentiated forms of academic action. Feedback seeking enables students to obtain relevant information about their performance, clarify expectations, identify areas for improvement, and adjust their learning strategies (Carless & Young, 2024; Khuder, 2025). Cooperative work promotes peer support, shared responsibility for tasks, access to alternative perspectives, and socially shared regulation of learning (Greisel et al., 2024; Järvelä et al., 2015). Time management contributes to planning, prioritizing, and distributing academic responsibilities, thereby increasing predictability and perceived control when workload and deadlines accumulate (Aeon et al., 2021; Patzak et al., 2025). Finally, active learning involves initiative in applying, connecting, and extending course content and is closely linked to engagement and self-regulation in the learning process (Bintz et al., 2024; Chi & Wylie, 2014). Taken together, these differentiated functions suggest that the association between perceived academic stressors and active coping may not be uniform across levels of students' good practices.

Despite their relevance to learning and self-regulation, students' good practices have been examined less frequently within models of academic stress. Available research has primarily addressed isolated practices or their direct associations with stress, well-being, engagement, and academic adjustment, whereas their potential conditional role remains insufficiently understood. A previous analysis based on the same dataset examined whether these practices moderated the association between active coping and stress responses (Ruiz-Camacho et al., 2025). However, the complementary stressor–coping association remains insufficiently examined: it is still unclear whether the negative association between perceived academic stressors and active coping differs according to students' habitual academic practices. Addressing this question may extend current accounts of academic coping by incorporating educationally situated patterns of engagement alongside the demands students appraise as stressful.

Therefore, the aim of the present study was to examine whether four good practices reported by university students—feedback seeking, cooperative work, time management, and active learning—moderated the association between perceived academic stressors and active coping. In line with the hypothesized model (see Figure 1), the negative association between perceived academic stressors and active coping was expected to be less

pronounced with greater feedback seeking (H1a), cooperative work (H1b), time management (H1c), and active learning (H1d).

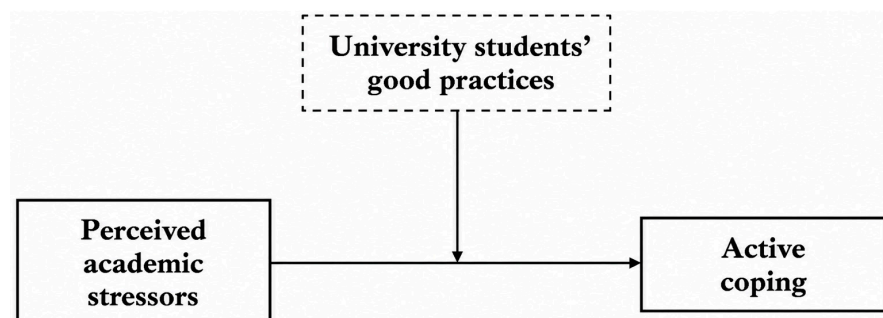


Figure 1. Hypothesized model.

2. Methodology

2.1. Design

A quantitative, non-experimental study was conducted using a cross-sectional, ex post facto design, in accordance with the methodological classification proposed by Ato et al. (2013).

2.2. Participants

The reference population comprised approximately 18,000 students enrolled in official face-to-face undergraduate degree programs at the University of Extremadura, a single public university in Spain, during the 2024/2025 academic year. Recruitment followed a non-probability sampling procedure in which existing academic groups were used as natural access units. Because the number of students approached and the number who chose not to participate were not systematically recorded within those groups, an exact response rate could not be determined. For sample-planning purposes, an a priori estimate based on the reference population, a 95% confidence level, a 3% margin of error, and maximum variability ($p = 0.50$) indicated a target of at least 1008 participants.

The final analytical sample comprised 1014 undergraduate students. Participants ranged in age from 17 to 63 years ($M = 20.56$, $SD = 3.50$). Women represented 64.5% of the sample ($n = 654$), while men accounted for 35.5% ($n = 360$).

Students from all academic years were represented. The largest proportion was enrolled in the second year (28.8%, $n = 292$), followed by the first year (27.9%, $n = 283$), the fourth year (23.3%, $n = 236$), and the third year (20.0%, $n = 203$). Regarding field of study, most participants belonged to Social and Legal Sciences (43.0%, $n = 436$), followed by Health Sciences (22.6%, $n = 229$), Sciences (17.2%, $n = 174$), Engineering and Architecture (8.8%, $n = 89$), and Arts and Humanities (8.5%, $n = 86$).

The inclusion criteria were: (a) being enrolled in an official face-to-face undergraduate degree program at the University of Extremadura during the 2024/2025 academic year; (b) having received information about the study; and (c) voluntarily agreeing to participate. Although the study was primarily intended for students aged 18 years or older, first-year students aged 17 were also eligible, provided that they met the same inclusion criteria and that the additional consent requirements specified in the approved ethical protocol were met.

2.3. Measures

Perceived academic stressors and active coping were assessed using two scales from the Academic Stress Questionnaire (CEA; Cabanach et al., 2008).

Academic Stressors Scale (E-CEA; Cabanach et al., 2016). This instrument consists of 54 items rated on a 5-point Likert scale ranging from 1 (“*never*”) to 5 (“*always*”). It assesses the frequency with which students perceive different situations in the university context as stressful. The scale comprises eight dimensions: methodological deficiencies of teaching staff, academic overload, beliefs about academic performance, public interventions, negative social climate, lack of value of course content, examinations, and participation difficulties. Example items include “*I get nervous when the teacher does not clearly explain what we have to do*” and “*I feel uneasy when exam dates are approaching*”. In the present study, the overall E-CEA score was used, with higher scores indicating greater perceived academic stressors. In the current sample, confirmatory factor analysis indicated an acceptable fit for the original eight-factor model, $\chi^2(1349) = 4241.37$, $p < 0.001$, CFI = 0.941, TLI = 0.937, RMSEA = 0.046, 90% CI [0.044, 0.048], and SRMR = 0.058. The overall score showed high internal consistency (Cronbach’s $\alpha = 0.910$).

Academic Stress Coping Scale (A-CEA; González Cabanach et al., 2010). This instrument was used to assess the active coping strategies employed by university students when dealing with stressful academic situations. It includes 23 items rated on a 5-point Likert scale ranging from 1 (“*never*”) to 5 (“*always*”) and comprises three dimensions: positive reappraisal, social support seeking, and planning. Example items include “*When faced with a problematic situation, I forget the unpleasant aspects and focus on the positive*” and “*When faced with a problematic situation, I ask for advice from a family member or a close friend*”. In the present study, the overall A-CEA score was used, with higher scores reflecting greater use of active coping strategies. In the current sample, confirmatory factor analysis indicated an acceptable fit for the original three-factor model, $\chi^2(227) = 779.11$, $p < 0.001$, CFI = 0.958, TLI = 0.953, RMSEA = 0.049, 90% CI [0.045, 0.053], and SRMR = 0.045. The overall score showed high internal consistency (Cronbach’s $\alpha = 0.910$).

Because the hypotheses were formulated at the level of overall perceived academic stressors and overall active coping, the overall E-CEA and A-CEA scores were used in the moderation analyses. The aim was to examine the association between these broader constructs rather than the differential role of their individual subdimensions, which would have addressed a distinct and more granular research question.

Inventory of University Students’ Good Practices (IBPEU; Chickering & Schlossberg, 1995; Spanish version adapted by Gozalo Delgado et al., 2012). This instrument evaluates the extent to which university students engage in behaviors and attitudes consistent with the principles of good practice in higher education. It consists of nine seven-item subscales rated on a 5-point Likert scale ranging from 1 (“*never*”) to 5 (“*always*”). The present study examined four subscales—feedback seeking, cooperative work, time management, and active learning—selected a priori because they corresponded directly to the study’s theoretically derived moderation hypotheses. Feedback seeking refers to students’ tendency to seek, value, and use information from teaching staff and peers to improve their academic performance (e.g., “*I revise my work when necessary and seek feedback from my instructors to do so*”); cooperative work captures students’ involvement in collaborative academic activities and shared learning with peers (e.g., “*Outside the classroom, I study or work in groups with other students*”); time management assesses students’ ability to organize, plan, and allocate study time effectively in response to academic demands (e.g., “*I complete assignments within the established deadlines*”); and active learning reflects students’ initiative to expand, apply, and deepen course content beyond classroom requirements (e.g., “*I look for new readings and/or research projects related to my courses and/or my degree*”). Higher scores indicate more frequent use of each good practice. In the current sample, confirmatory factor analysis indicated an acceptable fit for the four-factor model corresponding to the four subscales examined in the study, $\chi^2(344) = 1286.25$, $p < 0.001$, CFI = 0.943, TLI = 0.937, RMSEA = 0.052, 90% CI [0.049, 0.055], and SRMR = 0.054. Internal

consistency coefficients were $\alpha = 0.953$ for feedback seeking, $\alpha = 0.747$ for cooperative work, $\alpha = 0.714$ for time management, and $\alpha = 0.739$ for active learning.

Sociodemographic and academic covariates. Age, gender, year of study, and field of study were collected through brief self-report items included in the online survey and entered as covariates in all four moderation models. Age was entered as a continuous variable expressed in years. Gender was coded as 0 = men and 1 = women. Year of study was coded as 0 = early-year students (first and second years) and 1 = later-year students (third and fourth years). Field of study was coded as 0 = social sciences and humanities and 1 = science, technology, engineering, architecture, and health disciplines.

2.4. Procedure

Before recruitment began, faculties representing different fields of knowledge at the University of Extremadura were contacted through official institutional channels. The information provided described the aims of the study, the content of the questionnaire, and the estimated completion time. Once the corresponding institutional permissions had been obtained, access to undergraduate classrooms was coordinated with teaching staff.

Data collection took place during the second semester of the 2024/2025 academic year, outside examination periods, to minimize potential assessment-related bias. Members of the research team attended the scheduled class sessions and invited students to participate within their existing academic groups. Teaching staff facilitated access to the classrooms but did not take part in the consent process and had no access to individual responses.

At the beginning of each session, the research team explained the purpose of the study, the exclusively scientific use of the information collected, and the voluntary nature of participation. Students were informed that they could decline to participate or withdraw before submitting the questionnaire without any consequences and that their decision would not affect their course assessment or academic standing. Anonymity and confidentiality were guaranteed, and no personally identifying information was requested. Participants were also reminded that there were no right or wrong answers, in order to reduce social desirability bias. Adult participants provided digital informed consent before accessing the questionnaire. For students aged 17, consent from a parent or legal guardian and the student's own assent were required before participation, in accordance with the approved ethical protocol.

Students who agreed to participate accessed the questionnaire through a QR code and completed it individually using Google Forms. All measures were integrated into a single online form, with an estimated completion time of approximately 20 min. Members of the research team remained present throughout the session to answer any procedural questions.

The online form required a response to every item; therefore, incomplete questionnaires could not be submitted. Once data collection had been completed, the database was screened for possible inconsistencies and out-of-range values. Cases containing evident response errors or inconsistencies were excluded during data screening and represented fewer than 1% of the submitted questionnaires. The study was conducted in accordance with the principles of the Declaration of Helsinki and the Ethical Code of the University of Extremadura.

2.5. Data Analysis

Analyses were conducted using IBM SPSS Statistics 26.0, IBM SPSS Amos 26.0, and the PROCESS macro, version 3.4. Confirmatory factor analyses were conducted using maximum likelihood estimation to examine the factorial structure of the measures. Model fit was evaluated using the chi-square statistic (χ^2), comparative fit index (CFI), Tucker–

Lewis index (TLI), root mean square error of approximation (RMSEA) with its 90% confidence interval, and standardized root mean square residual (SRMR). These indices were interpreted jointly following commonly used guidelines (Hu & Bentler, 1999).

Descriptive statistics, including means and standard deviations, Cronbach's alpha coefficients, and bivariate Pearson correlations, were calculated for the main study variables. Four separate moderation models were estimated by ordinary least squares regression using PROCESS Model 1 (Hayes, 2018). Perceived academic stressors were entered as the predictor, active coping as the outcome, and each good-practice dimension was examined as a moderator in a separate model. Each model was adjusted for age, gender, year of study, and field of study. The predictor and the corresponding moderator were mean-centered prior to constructing the interaction term.

Standard regression diagnostics were examined for each model. Linearity and homoscedasticity were assessed using residual-versus-fitted plots, whereas departures from residual normality were examined using Q–Q plots. Multicollinearity was evaluated using variance inflation factors and tolerance values. Potentially influential observations were assessed using Cook's distance, and cases with unusually large residuals were identified using studentized residuals. To assess the robustness of the findings, the models were re-estimated after excluding observations with absolute studentized residuals greater than 3.

Heteroscedasticity-consistent standard errors (HC3) were used throughout the moderation analyses. Percentile bootstrap 95% confidence intervals based on 5000 resamples were obtained for the regression coefficients and conditional effects. Interaction magnitude was summarized using the standardized interaction coefficient and the additional variance explained by the interaction term (ΔR^2), with the significance of this increment evaluated using the corresponding F-change statistic. The Benjamini–Hochberg procedure was applied to the four interaction p values to control the false discovery rate (Benjamini & Hochberg, 1995).

Statistically significant interactions were probed by estimating the conditional effect of perceived academic stressors on active coping at low ($M - 1$ SD), mean, and high ($M + 1$ SD) levels of the moderator. Moderator values were reported on their original scales. Simple-slope plots and the Johnson–Neyman technique were used to examine the interaction patterns and regions of significance. Statistical significance was set at $p < 0.05$.

3. Results

3.1. Initial Analyses

Table 1 presents the descriptive statistics and bivariate Pearson correlations for the main study variables. Perceived academic stressors were negatively correlated with active coping ($r = -0.181$, $p < 0.01$) and with each of the four good-practice dimensions: feedback seeking ($r = -0.242$), cooperative work ($r = -0.205$), time management ($r = -0.283$), and active learning ($r = -0.164$), all $p < 0.01$. Active coping was positively correlated with all four dimensions, with the strongest correlation observed for active learning ($r = 0.442$), followed by feedback seeking ($r = 0.270$), cooperative work ($r = 0.253$), and time management ($r = 0.191$), all $p < 0.01$.

Table 1. Descriptive Statistics and Bivariate Pearson Correlations Among the Variables.

Variable	M (SD)	1.	2.	3.	4.	5.	6.
1. Perceived academic stressors	2.700 (0.670)	1					
2. Active coping	2.822 (0.474)	−0.181 **	1				
3. Feedback seeking	2.443 (0.731)	−0.242 **	0.270 **	1			
4. Cooperative work	3.625 (0.553)	−0.205 **	0.253 **	0.064	1		

5. Time management	4.012 (0.561)	−0.283 **	0.191 **	0.012	0.191 **	1	
6. Active learning	2.941 (0.632)	−0.164 **	0.442 **	0.023	0.341 **	0.336 **	1

Note. M = mean; SD = standard deviation. Scores ranged from 1 to 5. ** $p < 0.01$.

3.2. Moderation Analysis

Before interpreting the moderation results, standard regression diagnostics were examined. Residual-versus-fitted plots showed no systematic patterns, and Q–Q plots revealed no marked departures from normality. Across the four models, variance inflation factors ranged from 1.00 to 1.18 and tolerance values ranged from 0.85 to 1.00, indicating no problematic multicollinearity. The maximum Cook's distance was 0.061. Four unique observations had absolute studentized residuals greater than 3; however, sensitivity analyses excluding these observations yielded substantively unchanged results.

As summarized in Table 2, all four moderation models were statistically significant and explained between 11.8% and 24.6% of the variance in active coping, with the active-learning model accounting for the largest proportion. Across the four models, perceived academic stressors were negatively associated with active coping ($B = -0.137$ to -0.094 , $p \leq 0.004$), whereas each good-practice dimension was positively associated with active coping ($B = 0.123$ to 0.319 , $p \leq 0.002$).

All four interaction terms were positive and statistically significant ($B = 0.058$ – 0.086 , $\beta = 0.062$ – 0.118 , $p = 0.017$ – 0.046), and their percentile bootstrap 95% confidence intervals excluded zero. The interactions indicated that the negative association between perceived academic stressors and active coping became progressively weaker as each good-practice dimension increased. All four interactions remained statistically significant after the Benjamini–Hochberg correction ($p_{BH} = 0.035$ – 0.046). Nevertheless, their incremental effects were small ($\Delta R^2 = 0.0034$ – 0.0049), accounting for an additional 0.34–0.49% of explained variance. Gender showed a small positive association with active coping across the four models, whereas age, year of study, and field of study were not statistically significant. Thus, the interaction patterns remained after adjustment for the sociodemographic and academic covariates.

Table 2. Results of the Four Moderation Models.

Panel (a): Feedback seeking							
Variable	B (SE HC3)	β	t	p	95% CI [LL, UL]	R^2	
Age	0.001 (0.003)	0.007	0.333	0.739	[−0.005, 0.007]		
Gender	0.061 (0.030)	0.062	2.026	0.043	[0.002, 0.120]		
Year of study	0.025 (0.029)	0.026	0.862	0.389	[−0.032, 0.083]		
Field of study	−0.028 (0.029)	−0.030	−0.966	0.334	[−0.084, 0.028]		
Perceived academic stressors	−0.118 (0.041)	−0.167	−2.886	0.004	[−0.202, −0.039]		
Feedback seeking	0.153 (0.031)	0.236	4.936	<0.001	[0.094, 0.215]		
Perceived academic stressors × Feedback seeking	0.058 (0.029)	0.062	1.995	0.046	[0.002, 0.117]		
ΔR^2 interaction term [$F_{\text{change}}(1, 1006) = 3.98$, $p = 0.046$]							0.0034
Total R^2 [$F(7, 1006) = 23.59$, $p < 0.001$]							0.141
Panel (b): Cooperative Work							
Variable	B (SE HC3)	β	t	p	95% CI [LL, UL]	R^2	
Age	0.001 (0.003)	0.007	0.311	0.756	[−0.005, 0.007]		
Gender	0.060 (0.030)	0.061	1.998	0.046	[0.002, 0.121]		
Year of study	0.022 (0.029)	0.023	0.759	0.448	[−0.035, 0.080]		
Field of study	−0.026 (0.029)	−0.027	−0.897	0.370	[−0.082, 0.030]		
Perceived academic stressors	−0.109 (0.038)	−0.158	−2.871	0.004	[−0.186, −0.035]		
Cooperative work	0.162 (0.039)	0.189	4.154	<0.001	[0.088, 0.240]		
Perceived academic stressors × Cooperative work	0.066 (0.032)	0.079	2.098	0.036	[0.003, 0.131]		

ΔR^2 interaction term [$F_{\text{change}}(1, 1006) = 4.40, p = 0.036$]	0.0038
Total R^2 [$F(7, 1006) = 21.86, p < 0.001$]	0.132

Panel (c): Time management

Variable	B (SE HC3)	β	t	p	95% CI [LL, UL]	R^2
Age	0.001 (0.003)	0.007	0.331	0.741	[-0.005, 0.007]	
Gender	0.061 (0.029)	0.062	2.103	0.036	[0.005, 0.120]	
Year of study	0.028 (0.029)	0.029	0.969	0.333	[-0.028, 0.086]	
Field of study	-0.031 (0.029)	-0.033	-1.069	0.285	[-0.089, 0.025]	
Perceived academic stressors	-0.137 (0.041)	-0.194	-3.341	0.001	[-0.220, -0.058]	
Time management	0.123 (0.039)	0.147	3.154	0.002	[0.050, 0.201]	
Perceived academic stressors $\times$ Time management	0.076 (0.032)	0.103	2.375	0.018	[0.015, 0.141]	
ΔR^2 interaction term [$F_{\text{change}}(1, 1006) = 5.64, p = 0.018$]						0.0049
Total R^2 [$F(7, 1006) = 19.23, p < 0.001$]						0.118

Panel (d): Active learning

Variable	B (SE HC3)	β	t	p	95% CI [LL, UL]	R^2
Age	0.001 (0.003)	0.007	0.290	0.772	[-0.005, 0.007]	
Gender	0.058 (0.029)	0.059	1.998	0.046	[0.003, 0.117]	
Year of study	0.020 (0.027)	0.021	0.740	0.460	[-0.032, 0.074]	
Field of study	-0.024 (0.027)	-0.025	-0.889	0.374	[-0.078, 0.028]	
Perceived academic stressors	-0.094 (0.033)	-0.136	-2.848	0.004	[-0.161, -0.032]	
Active learning	0.319 (0.032)	0.424	9.969	<0.001	[0.259, 0.384]	
Perceived academic stressors $\times$ Active learning	0.086 (0.036)	0.118	2.389	0.017	[0.018, 0.159]	
ΔR^2 interaction term [$F_{\text{change}}(1, 1006) = 5.71, p = 0.017$]						0.0043
Total R^2 [$F(7, 1006) = 46.89, p < 0.001$]						0.246

Note. B = unstandardized coefficient; β = standardized coefficient; SE HC3 = heteroscedasticity-consistent standard error; CI = percentile bootstrap 95% confidence interval based on 5000 resamples; LL = lower limit; UL = upper limit; R^2 = coefficient of determination; and ΔR^2 = additional variance explained by the interaction term.

Taken together, the four models showed statistically significant but small interaction effects, which were examined further through conditional-effect and Johnson–Neyman analyses.

3.3. Conditional Effects and Johnson–Neyman Regions of Significance

Conditional effects were estimated at low ($M - 1$ SD), mean, and high ($M + 1$ SD) levels of each moderator. As shown in Table 3, perceived academic stressors were negatively associated with active coping at low and mean levels of each moderator, and all corresponding conditional effects were statistically significant. The magnitude of this negative association decreased as moderator levels increased. At high moderator levels, the conditional effect remained statistically significant for cooperative work ($B = -0.073, p = 0.044, 95\% \text{ CI } [-0.145, -0.003]$) and time management ($B = -0.094, p = 0.017, 95\% \text{ CI } [-0.173, -0.018]$), whereas it did not reach statistical significance for feedback seeking ($B = -0.076, p = 0.053, 95\% \text{ CI } [-0.154, 0.003]$) or active learning ($B = -0.040, p = 0.253, 95\% \text{ CI } [-0.110, 0.031]$).

Table 3. Conditional Effects of Perceived Academic Stressors on Active Coping.

Variable	Level	Moderator Value	Conditional Effect (B)	SE HC3	t	p	95% CI [LL, UL]
Feedback seeking	Low ($M - 1$ SD)	1.712	-0.160	0.052	-3.079	0.002	[-0.265, -0.060]
	Mean	2.443	-0.118	0.041	-2.886	0.004	[-0.202, -0.039]
	High ($M + 1$ SD)	3.174	-0.076	0.039	-1.937	0.053	[-0.154, 0.003]
Cooperative work	Low ($M - 1$ SD)	3.072	-0.145	0.047	-3.091	0.002	[-0.240, -0.055]
	Mean	3.625	-0.109	0.038	-2.871	0.004	[-0.186, -0.035]

	High (M + 1 SD)	4.178	-0.073	0.036	-2.018	0.044	[-0.145, -0.003]
Time management	Low (M - 1 SD)	3.451	-0.180	0.049	-3.632	<0.001	[-0.280, -0.084]
	Mean	4.012	-0.137	0.041	-3.341	0.001	[-0.220, -0.058]
	High (M + 1 SD)	4.573	-0.094	0.039	-2.397	0.017	[-0.173, -0.018]
Active learning	Low (M - 1 SD)	2.309	-0.148	0.046	-3.217	0.001	[-0.240, -0.059]
	Mean	2.941	-0.094	0.033	-2.848	0.004	[-0.161, -0.032]
	High (M + 1 SD)	3.573	-0.040	0.035	-1.144	0.253	[-0.110, 0.031]

Note. B = unstandardized conditional effect of perceived academic stressors on active coping; SE HC3 = heteroscedasticity-consistent standard error; CI = percentile bootstrap 95% confidence interval based on 5000 resamples; LL = lower limit; and UL = upper limit.

Figure 2 provides a visual summary of these interaction patterns. Across the four models, the negative slope relating perceived academic stressors to predicted active coping was steeper at low levels of the corresponding moderator and flatter at high levels. The reduction in slope magnitude was numerically greatest for active learning, for which the conditional effect changed from $B = -0.148$ at low levels to $B = -0.040$ at high levels. Because the moderators were examined in separate models, this comparison is descriptive rather than inferential.

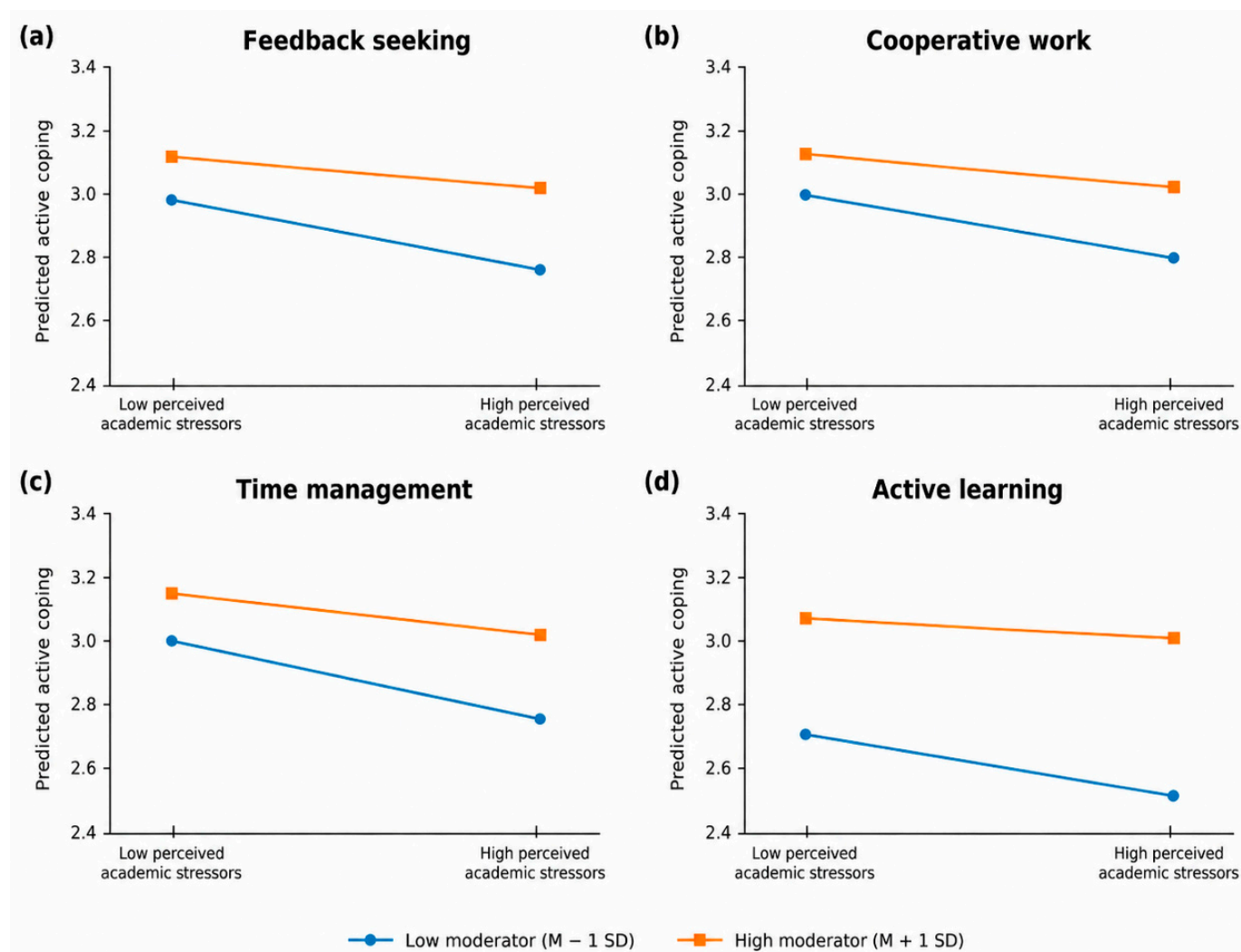


Figure 2. Simple-slope plots for the four moderation models. Note. Lines show predicted active coping at low and high levels of perceived academic stressors and the corresponding moderator; low and high values represent $M - 1$ SD and $M + 1$ SD, respectively.

Johnson–Neyman analyses were conducted to identify the moderator values delimiting the regions in which the conditional effect of perceived academic stressors on active coping was statistically significant. As illustrated in Figure 3, the negative conditional effect was statistically significant at moderator scores below 3.16 for feedback seeking (Figure 3a panel a), 4.33 for cooperative work (Figure 3b), 4.81 for time management (Figure 3c), and 3.37 for active learning (Figure 3d). At each transition point, the upper limit of the 95% confidence interval reached zero; at higher moderator scores, the interval included zero and the conditional effect was no longer statistically significant.

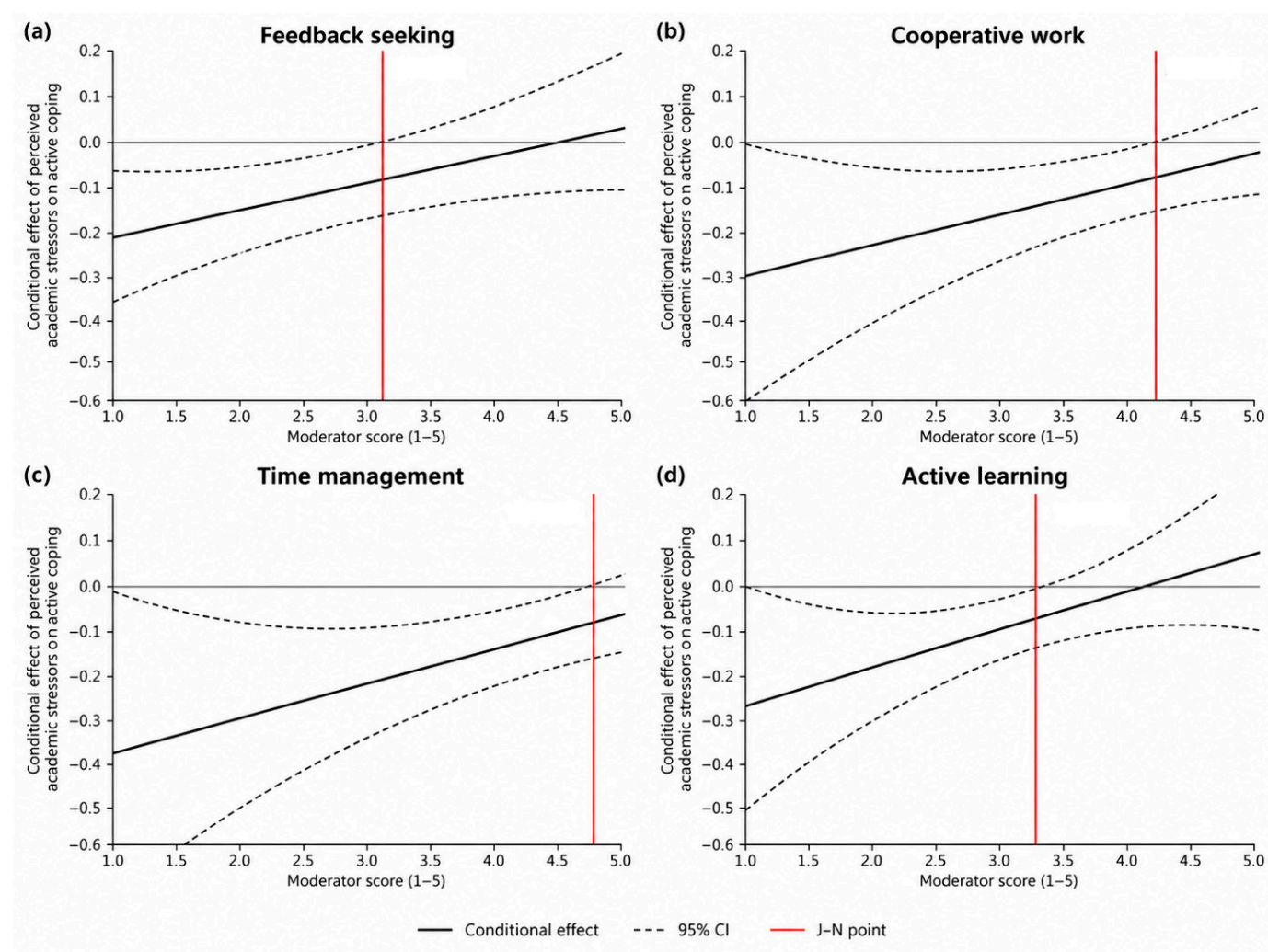


Figure 3. Johnson–Neyman regions of significance for the four moderation models. Note. Solid lines represent conditional effects, dashed lines represent the corresponding 95% confidence intervals, and red vertical lines indicate the Johnson–Neyman transition points.

Overall, the conditional-effect and Johnson–Neyman analyses indicated that higher levels of the good-practice dimensions progressively attenuated the negative association toward zero, with no evidence of a statistically significant positive association.

4. Discussion

The present study examined whether four good practices reported by university students—feedback seeking, cooperative work, time management, and active learning—moderated the association between perceived academic stressors and active coping. All four interaction terms were statistically significant, supporting the general hypothesis and the four specific subhypotheses (H1a–H1d). Consistent with the hypothesized pattern, the

negative association between perceived academic stressors and active coping was less pronounced as each good-practice dimension increased. However, the incremental contribution of the interactions was small, accounting for less than 0.5% of additional explained variance in each model. The interaction effects should therefore be interpreted as statistically significant but modest in magnitude. Given the cross-sectional design, they do not demonstrate that the good practices causally protect, preserve, or sustain active coping; rather, they indicate that the strength of the stressor–coping association varied according to students’ reported levels of these practices.

Feedback seeking showed an attenuation pattern in the association between perceived academic stressors and active coping. The negative association weakened as feedback seeking increased and no longer reached statistical significance at the high level. This pattern should not be interpreted as evidence that seeking feedback caused students to maintain active coping. Instead, students reporting greater feedback seeking also showed a less negative stressor–coping association. This interpretation is consistent with recent approaches to feedback literacy, which emphasize that the formative value of feedback depends on students’ capacity to seek, interpret, and translate information from teaching staff and peers into subsequent learning actions (Chong, 2021; Dawson et al., 2024; Joughin et al., 2021).

Cooperative work also moderated the association between perceived academic stressors and active coping. The negative association became weaker as reported cooperative work increased, although it remained statistically significant at the high level. This pattern is compatible with the possibility that students who collaborate more frequently with peers may also have greater access to shared information, alternative perspectives, and opportunities for joint problem solving (Johnson & Johnson, 2009; Kilpeläinen-Pettersson et al., 2025). Nevertheless, the study assessed students’ habitual self-reported cooperative behavior rather than experimentally structured cooperative learning. It therefore cannot establish whether cooperative work altered the stressor–coping association or whether students who mobilized active coping were also more likely to participate in cooperative academic activities.

Time management presented a similar attenuation pattern. The negative association between perceived academic stressors and active coping remained statistically significant across the examined levels, but its magnitude was smaller among students reporting higher levels of time management. Students who reported organizing their workload, meeting deadlines, and maintaining continuity in their coursework therefore also showed a less pronounced negative stressor–coping association. Recent studies have likewise linked time management with lower perceived stress, greater self-control, and better academic organization (Luceño-Moreno et al., 2025; Wong & Lai, 2025). These convergent findings support the relevance of time-related academic behavior, but they do not demonstrate that time-management practices themselves produced the moderation pattern observed here.

Among the four separate models, active learning showed the greatest numerical attenuation of the negative conditional association. The association between perceived academic stressors and active coping no longer reached statistical significance at the high level of active learning. However, this comparison is descriptive rather than inferential because the moderators were examined in separate models and no formal comparisons between interaction coefficients were conducted. This result also requires particular caution because active learning showed the strongest positive association with active coping in its corresponding regression model. The two constructs are conceptually related but distinct. Active learning refers to students’ proactive engagement with learning activities and course content, whereas active coping refers to the use of planning, positive reappraisal, and social support seeking in response to perceived academic stressors.

Nevertheless, both involve proactive, self-regulated, and goal-directed engagement. Their conceptual proximity, together with the use of self-report measures collected at the same time, may partly account for the comparatively strong association observed in this model. The pattern is broadly consistent with studies emphasizing the value of explicit self-regulatory processes, guided participation, structure, and opportunities for reflection in higher education (Marín & Salinas, 2022; Nyman, 2024; Russell et al., 2022).

Taken together, the four models showed a common pattern: the negative association between perceived academic stressors and active coping became progressively weaker as students reported higher levels of the corresponding good practice. The results indicate a consistent, although small, variation in the stressor–coping association across four theoretically differentiated forms of student academic behavior.

Theoretically, the findings extend the analysis of academic stress by introducing a conditional perspective on the association between perceived stressors and active coping. Viewed through a study demands–resources lens, the observed patterns are compatible with the proposition that educational and self-regulatory resources are related to how students experience and respond to demanding academic conditions (Bakker & Mostert, 2024). The results suggest that student academic practices are relevant correlates of heterogeneity in the stressor–coping association, rather than isolated protective mechanisms. They also support the value of considering academic behaviors situated within the educational environment—seeking useful information, cooperating with peers, organizing time, and engaging actively with learning—when examining variation in coping. This framing is consistent with approaches that emphasize reciprocal relations between personal self-regulation and external regulatory conditions in university learning (de la Fuente-Arias, 2017), as well as with psychoeducational perspectives that call for instructional and organizational variables to be incorporated into the study of academic stress (Román Collazo & Hernández Rodríguez, 2011).

The direction of the observed associations may also be inverse or reciprocal. Students who habitually use active coping strategies may be more likely to seek feedback, cooperate with peers, manage their time, and engage actively with course content, and these behaviors may reinforce one another over time. The observed interactions may also partly reflect unmeasured individual characteristics, such as general self-regulation, conscientiousness, motivation, and academic self-efficacy, as well as contextual conditions, including workload, assessment scheduling, teaching quality, and socioeconomic resources. These alternative explanations limit any interpretation of the four moderators as specific causal mechanisms.

The applied implications of these findings should be interpreted with a clear distinction between student-level practices and institutional conditions. Because the variables examined captured self-reported student-level practices, the analyses do not directly test the effects of teaching arrangements, institutional policies, or interventions. Nevertheless, institutional and instructional conditions may facilitate or constrain students' opportunities to seek useful feedback, cooperate with peers, organize their study time, and engage actively with learning (Muñoz, 2004; Román Collazo & Hernández Rodríguez, 2011). Accordingly, the findings may inform future research examining both student-level practices—such as feedback seeking, cooperative work, time management, and active learning—and the educational conditions that may support them, including accessible feedback, structured cooperative activities, support for workload planning, and progressive active-learning designs. This combined focus on student-level practices and institutional conditions is consistent with health-promoting university frameworks that seek to integrate well-being into academic culture, teaching practices, and learning environments (Bannigan et al., 2025; Okanagan Charter, 2015). These implications remain tentative,

however, because the present study did not evaluate any training program, intervention, or institutional change.

Overall, the principal contribution of the present study lies in providing evidence that the negative association between perceived academic stressors and active coping was not uniform, but varied systematically according to students' reported levels of four theoretically differentiated academic practices. By examining feedback seeking, cooperative work, time management, and active learning in separate moderation models, the study moves beyond the analysis of direct associations and identifies student-level academic practices linked to variation in the stressor–coping relationship.

Limitations and Future Research

Several limitations require careful consideration. First, the cross-sectional design is a central limitation because it prevents causal conclusions and does not establish the direction or temporal ordering of perceived academic stressors, good-practice behaviors, and active coping. Reciprocal pathways remain plausible, and the moderation models should not be interpreted as demonstrating that the reported practices preceded, protected, or produced changes in coping. Second, all variables were assessed through self-report measures completed by the same participants at the same time. This design increases the risk of common-method variance, social desirability, consistency motifs, and overlap in respondents' subjective interpretations. The conceptual proximity between active learning and active coping further warrants caution and should be examined using discriminant validity analyses and alternative measurement approaches.

Third, the study did not include objective, behavioral, or contextual indicators that could corroborate the self-reported variables. No data were available on actual workload, assessment calendars, academic performance, attendance, institutional support, or direct behavioral evidence of feedback seeking, cooperative work, time management, and active learning. Fourth, the study assessed habitual student behaviors rather than the effects of a training program or intervention; therefore, no conclusions can be drawn about whether strengthening these practices would change active coping under academic demands. Fifth, the sample was drawn from a single university and only from face-to-face undergraduate programs, which limits generalizability to other institutions, educational modalities, degree structures, and university systems. Finally, although the interaction effects were statistically significant, they were small, and their practical relevance should not be inferred from statistical significance alone.

Future research should employ longitudinal, cross-lagged, and intensive repeated-measures designs to clarify temporal and reciprocal relations among perceived stressors, good practices, and active coping. Experimental and quasi-experimental approaches are also needed to determine whether interventions targeting specific student practices produce changes in coping under academic demands. Multilevel studies across universities could distinguish student behavior from conditions at the course, teaching, and institutional levels, while incorporating objective indicators alongside self-reports. Finally, studies should examine whether active learning and active coping are sufficiently distinct, evaluate the four moderators jointly or formally compare their interaction estimates, and assess whether broader personal and contextual factors account for the observed patterns.

5. Conclusions

The present study provides evidence that the association between perceived academic stressors and active coping varied according to students' reported levels of feedback seeking, cooperative work, time management, and active learning. Across the four models, higher reported levels of these practices were associated with a less pronounced negative association between perceived academic stressors and active coping, although

the interaction effects were small. By examining the four practices in separate moderation models, the study moves beyond the analysis of direct associations and provides a conditional perspective on the relationship between academic stressors and active coping. However, because the moderators were examined in separate models, differences among the practices should be interpreted descriptively rather than as evidence that one practice is more effective than another.

The applied implications of these findings should be regarded as tentative. The results may inform future research examining student-level practices related to feedback seeking, cooperative work, time management, and active learning, together with the educational conditions that may facilitate these behaviors. Nevertheless, the cross-sectional design, reliance on self-report measures, and single-university sample preclude causal conclusions and do not establish the effectiveness of training programs or institutional interventions. Longitudinal and multilevel studies, together with experimental or quasi-experimental designs, are therefore needed to clarify the direction of the observed associations and determine whether changes in these practices are accompanied by changes in active coping under academic demands.

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