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Examining the Role of Creative Problem-Solving in Supporting Academic Achievement and Reducing Study-life Conflict among Thai Undergraduate Students

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ABSTRACT

Creative problem-solving (CPS) is increasingly important in higher education because it may help students respond effectively to academic demands and competing life responsibilities. This study examined the role of CPS in academic achievement and study-life conflict among Thai undergraduate students from a behavioural science perspective grounded in Social Cognitive Theory. The participants were 620 undergraduate students from four universities in Thailand. Cross-sectional data were collected using six self-report questionnaires and analysed using partial least squares structural equation modelling. The results showed that CPS was positively associated with academic achievement and negatively associated with study-life conflict. Proactive personality emerged as the strongest predictor of CPS, followed by social and emotional learning (SEL). Multi-group analysis also indicated that the associations involving CPS varied across demographic groups. Students with part-time jobs showed a stronger positive association between CPS and academic achievement, whereas female students and students with higher GPAs showed a stronger negative association between CPS and study-life conflict. These findings extend the literature by positioning CPS as a behavioural pathway linking psychosocial resources with both academic and life-related outcomes. The results suggest that universities should support CPS through learning activities and student development systems that strengthen academic adaptation, study-life balance, and career readiness.

Keywords: Academic achievement, creative problem-solving, study-life conflict, Thai undergraduate students, quality education

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INTRODUCTION

Thailand's skilled workforce is shrinking, while challenges in higher education are becoming increasingly severe. University enrollment is experiencing a persistent decline, with projections indicating a reduction of at least 20.75% in undergraduate enrollment by 2026 (Kamsawas, 2019). Concurrently, student attrition rates have increased, with roughly 23%-26% of students discontinuing their studies prior to degree completion (Scott & Asavisanu, 2023). These developments necessitate a critical examination of students' academic adaptation and their capacity to navigate the demands of university life. Consequently, higher education institutions are compelled to not only broaden access and maintain enrollment figures, but also to furnish students with the requisite skills to effectively manage both academic and personal challenges (Thornhill-Miller et al., 2023). From a behavioural science perspective, identifying competencies that promote student success is essential because such competencies support degree completion and help align graduates with workforce expectations. Beyond academic performance, students' ability to balance academic responsibilities with other aspects of life has become increasingly important. As students face pressures related to coursework, relationships, finances, and well-being, the competencies that support adaptation remain a central concern in higher education research.

Among these competencies, creative problem-solving (CPS) is particularly important because it enables students to respond constructively to complex academic and personal challenges. CPS refers to a cognitive and behavioural process that integrates creativity and critical thinking to generate effective solutions to complex problems (Treffinger et al., 2006). Unlike reactive problem-solving, which relies on familiar strategies (Jonassen, 2000), CPS involves problem analysis, idea generation, evaluation of alternatives, and implementation of innovative strategies (Isaksen et al., 2011). In higher education, CPS may help students cope with academic uncertainty, adjust learning strategies, and respond more effectively to competing demands.

Creativity is a key component of CPS and can be understood as both a cognitive process and an individual capability expressed through ideas, behaviours, or tangible outcomes. Creative outcomes are typically characterised by their originality, usefulness, and practical value (Guilford, 1967; Runco & Jaeger, 2012). Previous research has identified several factors that influence creative problem-solving, including divergent thinking and coping flexibility (Peterson et al., 2013; Scott et al., 2004). These abilities, when combined, reflect students' capacity to adapt to complex and uncertain situations.

Empirical studies indicate that creative problem-solving (CPS) fosters enhanced performance and adaptability in various settings. Those exhibiting more robust CPS capabilities often achieve superior performance outcomes (Suryanto et al., 2021; Wang & Horng, 2002), exhibit greater innovative potential within fluctuating

environments (Kim et al., 2018), and attain higher academic success (Gajda et al., 2017). Furthermore, CPS has been linked to an augmented capacity to navigate multifaceted responsibilities and adjust to intricate circumstances (Ong & Jeyaraj, 2014). For undergraduate students, CPS may enhance academic achievement while reducing tensions between academic and personal responsibilities, thereby lowering study-life conflict and promoting academic well-being (Karwowski & Beghetto, 2019; Salmela-Aro & Upadyaya, 2014).

Bandura's (1986) Social Cognitive Theory posits that competencies, including CPS, emerge through the interplay of personal attributes, actions, and environmental factors. Within educational contexts, students' psychological assets and learning environments cultivate adaptive behaviours, thereby equipping them to navigate academic obstacles effectively. Consequently, CPS can be conceptualised as a behavioural process that connects psychological resources and learning experiences to academic results (Chotratanakamol et al., 2023). Despite the increasing body of research on creativity and innovation, CPS remains relatively unexplored as a mechanism that links psychosocial resources, learning environments, and educational outcomes. Furthermore, studies that concurrently investigate academic achievement and study-life conflict are scarce.

Moreover, most existing research on CPS has been conducted in Western contexts, with relatively little evidence from Thai higher education. This study addresses this gap by examining the role of CPS in academic achievement and study-life conflict among Thai undergraduate students, while also considering subgroup differences and exploring how individual and contextual factors contribute to its development. By conceptualising CPS as a mediating behavioural mechanism linking psychosocial resources, learning environments, and educational outcomes, this study helps explain how adaptive cognitive and behavioural competencies support students' academic adjustment and life balance in higher education.

LITERATURE REVIEW

Academic Achievement and Creative Problem-Solving

Academic achievement (AA) refers to students' success in meeting educational goals, often reflected in examination scores and GPA. Higher academic achievement is associated with better educational and career outcomes (Sideridis & Alamri, 2023). Although cognitive ability remains an important predictor, recent studies suggest that adaptive competencies also contribute to academic success. CPS may enhance achievement by helping students analyse problems, generate alternative solutions, and respond flexibly to academic demands (Gajda et al., 2017; Wang & Horng, 2002). Students with stronger CPS are therefore more likely to manage academic tasks effectively and achieve better outcomes. Thus,

H1 : CPS positively influences academic achievement.

Study-life Conflict and Creative Problem-Solving

Study-life conflict (SLC) refers to the tension that occurs when academic responsibilities interfere with personal, social, or family roles (Richardson et al., 2012; Salmela-Aro & Read, 2017). Drawing from the idea of work-family conflict, it occurs when academic demands compete with personal or work-related obligations (Greenhaus & Beutell, 1985). High conflict levels reduce academic engagement, learning performance, and student well-being (Chotratanakamol et al., 2023; Häfner et al., 2015; Robotham & Julian, 2006). Therefore, maintaining balance between academic responsibilities and personal life is crucial for student well-being (Mohd Sham et al., 2025). Academic pressures can disrupt students' personal, family, or leisure time, increasing stress, and affecting mental health (Zainal Badri et al., 2021).

CPS may help lessen study-life conflict, as strong problem-solving skills support better stress management, task prioritisation, and handling competing role demands (Ong & Jeyaraj, 2014). It also promotes coping flexibility and cognitive control, which can help students manage multiple responsibilities without slipping into burnout or disengagement (Wang & Horng, 2002). As a result, students with stronger CPS abilities are generally better at managing academic pressures while maintaining their life balance. Thus,

H2 : CPS negatively influences the study-life conflict.

Causal Factors Related to Creative Problem-Solving in Higher Education

This study adopts Social Cognitive Theory (Bandura, 1986) to explain how CPS develops and influences student outcomes. The theory proposes that behaviour is shaped by reciprocal interactions among personal factors and environmental influences. In this study, SEL and proactive personality are treated as personal resources, whereas study workload represents an environmental demand. CPS is treated as a behavioural mechanism through which these personal and contextual factors are associated with adaptive outcomes, namely academic achievement and study-life conflict.

The Influence of Social and Emotional Learning on Creative Problem-Solving, Academic Achievement, and Study-life Conflict

Social and emotional learning (SEL) refers to a set of competencies that support students' cognitive and emotional development, including emotional regulation, self-awareness, social understanding, and responsible decision-making. From the perspective of Social Cognitive Theory, SEL is a personal resource that shapes how students interpret and respond to academic challenges. Strong SEL helps students manage emotions, stay engaged, and work well with others, which in turn supports creative problem solving. Previous studies show that SEL enhances CPS by improving emotional regulation, cognitive flexibility, and interpersonal collaboration (Brackett et al., 2011; Isen, 2009).

Some evidence suggests that stronger social-emotional competence may, under certain conditions, be associated with greater pressure to perform. For example, Chou and Sun (2026) found that pressure to perform was positively related to interpersonal dimensions of social and emotional competence and argued that socially competent students may be more sensitive to peer expectations and social comparison. In this sense, students with higher SEL may become more actively involved in academic, social, or extracurricular roles, which can increase role complexity and, under demanding conditions, heighten study-life conflict.

H3a : SEL positively influences CPS.
H3b : SEL positively influences academic achievement.
H3c : SEL positively influences study-life conflict.

Proactive Personality and Its Effects on CPS, Academic Achievement, and Study-life Conflict

Proactive personality (PP) refers to a tendency to take initiative, anticipate challenges, and actively shape one's environment rather than respond passively (Bateman & Crant, 1993). In terms of Social Cognitive Theory, it reflects a personal tendency toward taking action. Proactive students often anticipate problems, seek opportunities, and, before problems escalate, make this trait pertinent to CPS (Fuller & Marler, 2009).

People with a proactive personality typically show greater resilience when confronting obstacles and are more likely to engage in problem-based learning, entrepreneurial activity, and innovative thinking (Crant, 2000; Parker et al., 2010). They also succeed in their education because they set clear goals, manage their learning strategies, and reflect on their progress (Zimmerman, 2011). A proactive personality further supports behaviours linked to academic and career success, such as building networks, speaking up, preventing problems, and taking initiative (Parker et al., 2010). However, proactive people may experience negative consequences. When students take on too many roles or responsibilities, they may experience stress, overload, role conflict, and difficulty stepping away from tasks (Grant & Ashford, 2008; Sonnentag & Fritz, 2007).

H4a : Proactive personality positively influences CPS.
H4b : Proactive personality positively influences academic achievement.
H4c : Proactive personality negatively influences study-life conflict.

Study Workload and Its Effects on Creative Problem-Solving, Academic Achievement, and Study-life Conflict

Study workload (SW) refers to the time, effort, and mental resources students invest in academic tasks. Within Social Cognitive Theory, it is considered an environmental factor that shapes behaviour. Perceived workload reflects not only task quantity but also students' interpretations of academic demands, which are influenced by factors

such as goals, self-confidence, task value, and personal interest (Pintrich, 2004). It is also shaped by contextual conditions, including teaching style, task difficulty, assessment methods, and relationships with instructors and peers (Kember, 2004).

Previous studies have reported mixed effects of study workload on CPS. Early models suggested that low workload combined with limited autonomy may constrain opportunities for problem-solving (Karasek, 1979), whereas later research showed that excessive workload can impair creativity by increasing stress and reducing cognitive flexibility (Amabile et al., 1996). These findings suggest that the workload does not have a simple linear relationship with CPS. When demands become excessive, students may rely more on routine coping than on creative strategies. Heavy workload is also associated with surface-level learning and greater study-life conflict, particularly when academic demands interfere with personal roles (Baik et al., 2015; Kember & Leung, 2006).

H5a : Study workload negatively influences CPS.

H5b : Study workload negatively influences academic achievement.

H5c : Study workload positively influences study-life conflict.

Using Social Cognitive Theory as a guideline, proactive personality and SEL can be seen as personal strengths, while studying workload represents the pressures in a student's environment. Within this framework, CPS is the process that connects these factors to outcomes like academic achievement and study-life conflict. Students with stronger personal resources are more likely to develop and employ CPS when they face academic challenges. Effective use of CPS can improve their academic performance and reduce the disruption of personal life from academic responsibilities. Therefore, the mediating role of CPS was hypothesised as follows:

H6a : CPS mediates the relationship between SEL and academic achievement.

H6b : CPS mediates the relationship between proactive personality and academic achievement.

H6c : CPS mediates the relationship between SEL and study-life conflict.

H6d : CPS mediates the relationship between proactive personality and study-life conflict.

METHODS

Research Design

This study employed a quantitative cross-sectional design to examine the role of CPS in academic achievement and study-life conflict among Thai university students. The proposed model also included SEL, proactive personality, and study workload as antecedent variables. Data were analysed using partial least squares structural equation modelling (PLS-SEM).

Sample and Sampling Procedures

Sample size was determined using SEM criteria and power analysis. In line with Hair

et al. (2022), sample size in PLS-SEM should reflect model complexity and the maximum number of structural paths directed at an endogenous construct. G*Power analysis (Faul et al., 2009) indicated a minimum of 420 participants (effect size = 0.05, $\alpha = 0.05$, power = 0.90). Using multistage sampling, data was collected from second- and third-year undergraduates in four universities across four academic fields. A total of 620 valid responses were obtained, exceeding the required minimum. The study received ethical approval from the Human Research Ethics Committee of Thammasat University, Social Sciences (SSTU-EC 151/2567; No. 111/2567).

Instruments

Data were collected using a self-report questionnaire with a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). The instruments were adapted from established scales for the Thai context. Harman's single-factor test indicated that the first unrotated factor accounted for 27.05% of the variance, below the 50% threshold, suggesting that common method bias was not a serious concern (Fuller et al., 2016; Podsakoff et al., 2003). All scales were previously validated through exploration and confirmatory factor analyses and showed satisfactory internal consistency, with Cronbach's alpha coefficients ranging from 0.833 to 0.964.

Data Analysis

Data were analysed using SmartPLS 4.1.0.3 in two stages: measurement model assessment and structural model assessment. The measurement model was evaluated for convergent validity, discriminant validity, and internal consistency reliability using indicator loadings, average variance extracted (AVE), composite reliability (CR), rho-A, Cronbach's alpha, the Fornell-Larcker criterion, and the HTMT ratio (Fornell & Larcker, 1981; Hair et al., 2021; Henseler et al., 2015). The structural model was assessed using path coefficients, t-values, *p*-values, and R^2. Bootstrapping with 5,000 resamples was used to test the hypothesised relationships (Hair et al., 2022). Mediation effects were also examined. Before comparing subgroups by gender, GPA, and part-time employment, measurement invariance of composite models (MICOM) was assessed to establish group comparability, followed by multi-group analysis (Henseler et al., 2016).

RESULTS

Respondent Characteristics

The final dataset comprised 620 university students, most of whom were female (73.4%). The GPA distribution was relatively balanced, with 47.6% reporting a GPA of 3.10 or below and the remainder reporting a GPA of 3.11 or above. Most students (76.0%) were enrolled in social sciences and humanities programmes, while the rest were in science and business fields. In addition, 66.3% were 20.60 years old or younger, and 23.4% reported having a part-time job. Table 1 summarises the personal and demographic characteristics of the study sample.

Table 1
Respondent demographic data (n=620)

Criterion	Category	Frequency	Percentage
Gender	Female	455	73.40%
	Male	165	26.60%
GPA	≤3.10	295	47.60%
	≥3.11	325	52.40%
Faculties	Science/Business	149	24.00%
	Social Sciences/ Humanities	471	76.00%
Age in years	≤20.60	411	66.30%
	≥20.61	209	33.70%
Part-time employment	Yes	145	23.40%
	No	475	76.60%

Measurement Model Assessment

Convergent Validity

Convergent validity and construct reliability were assessed using Cronbach's Alpha (CA), Dijkstra-Henseler's rho-A (ρA), Composite Reliability (CR), and average variance extracted (AVE), following Hair et al. (2021). The results indicated satisfactory construct reliability across all constructs, with factor loadings ranging from 0.659 to 0.902, CA values from 0.848 to 0.964, CR values from 0.872 to 0.969, and ρA values from 0.834 to 0.964. Convergent validity was supported for academic achievement, creative problem-solving, proactive personality, social and emotional learning, and study-life conflict. Although the AVE for study workload was slightly below the recommended threshold (AVE = 0.461), its CR and ρA values remained acceptable, and the construct was therefore retained with caution (Fornell & Larcker, 1981; Hair et al., 2021).

Discriminant Validity

Discriminant validity was supported by both the Fornell-Larcker criterion and the heterotrait-monotrait ratio (HTMT). The square root of the AVE for each construct exceeded its inter-construct correlations, and all HTMT values were below 0.85, confirming adequate discriminant validity and empirical distinctiveness among the constructs (Fornell & Larcker, 1981; Henseler et al., 2015). Although the highest HTMT value was found between academic achievement and social and emotional learning, it remained within the acceptable range.

Model Fit

Model fit was assessed using the standardised root mean square residual (SRMR), geodesic discrepancy (d_G), unweighted least squares discrepancy (d_ULS), chi-square, and the normed fit index (NFI). As shown in Table 2, the

SRMR values for both the saturated model (0.030) and the estimated model (0.034) were below the recommended cutoff of 0.08, while the corresponding NFI values (0.939 and 0.938) exceeded the recommended threshold of 0.90, indicating acceptable model fit.

According to Table 2, the data demonstrated acceptable model fit, as indicated by the NFI and SRMR values. Although chi-square was relatively high, this is common in large-sample SEM models (Hair et al., 2016). Furthermore, d_G and d_ULS values suggested that the saturated model fit better than the estimated model, while both remained within an acceptable range (Henseler et al., 2016). These findings confirmed that the PLS-SEM model met the required goodness-of-fit criteria.

Structural Model Results and Hypothesis Testing

After validating the measurement model, the structural model was assessed by examining the relationships between latent variables and the model's predictive capability. The results enable estimation of path coefficients and the coefficient of determination (R^2). As illustrated in Figure 1, the structural equation model explained 36.90% of the variance in study-life conflict, 44.70% in CPS, and 45.80% in academic achievement. The path coefficients, t-values, and *p*-values for each hypothesis are presented in Figure 1 and Table 3, indicating that most hypotheses were supported.

Table 3
Structural model results in PLS-SEM

Hypothesis	Relationship	Path Coefficient	T-value	*p*-values	Result
H1	CPS → AA	0.282	6.772	< .001	Supported
H2	CPS → SLC	-0.226	5.889	< .001	Supported
H3a	SEL → CPS	0.319	8.258	< .001	Supported
H3b	SEL → AA	0.352	9.053	< .001	Supported
H3c	SEL → SLC	0.147	4.158	< .001	Supported
H4a	PP → CPS	0.421	11.948	< .001	Supported
H4b	PP → AA	0.106	2.843	0.004	Supported
H4c	PP → SLC	-0.185	5.242	< .001	Supported
H5a	SW → CPS	0.009	0.266	0.791	Not supported
H5b	SW → AA	-0.171	5.246	< .001	Supported
H5c	SW → SLC	0.556	20.498	< .001	Supported
H6a	SEL → CPS → AA	0.102	5.950	< .001	Supported
H6b	PP → CPS → AA	0.135	6.260	< .001	Supported
H6c	SEL → CPS → SLC	-0.072	4.749	< .001	Supported
H6d	PP → CPS → SLC	-0.095	5.004	< .001	Supported

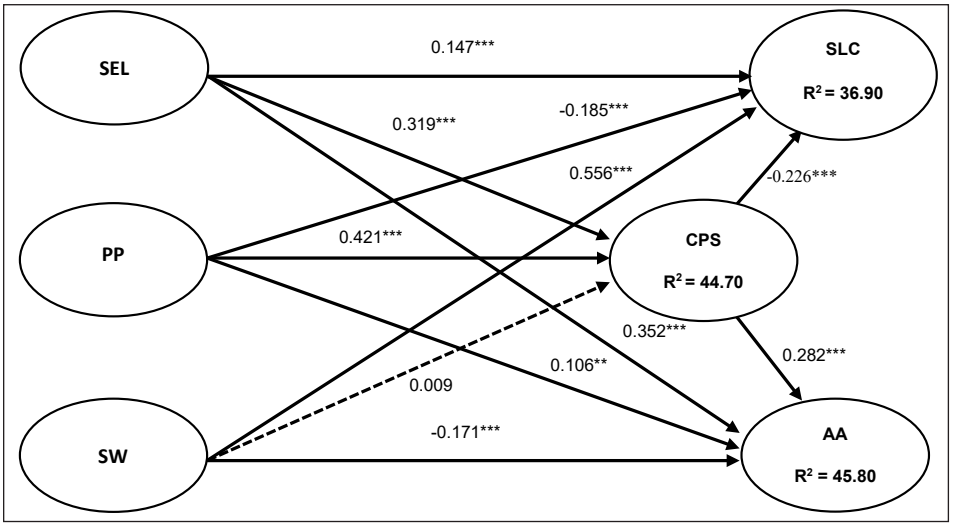

Figure 1. Hypothesis testing results
Note. $^{**}p < 0.01$, $^{***}p < 0.001$

Table 2
Model fit results

Model Fit Indicators	Saturated Model	Estimated Model
SRMR	0.030	0.034
d_ULS	1.259	1.619
d_G	0.465	0.472
Chi-square	1614.548	1633.213
NFI	0.939	0.938

Based on the data analysis, CPS had a significant negative effect on study-life conflict (β = -0.226, $p < 0.001$) and a significant positive effect on academic achievement (β = 0.282, $p < 0.001$), supporting H1 and H2. H3a and H4a were also supported, whereas H5a was not. SEL and PP significantly affected CPS ($\beta = 0.319, p < 0.001$ and $\beta = 0.421, p < 0.001$, respectively), whereas study workload had no statistically significant effect on CPS (β = 0.009, $p > 0.05$). In addition, H3b, H4b, and H5b were supported, as SEL, proactive personality, and study workload significantly affected academic achievement ($\beta = 0.352, p < 0.001$; $\beta = 0.106, p < 0.01$; and β = -0.171, $p < 0.001$, respectively). These variables also significantly affected study-life conflict (β = 0.147, $p < 0.001$; β = -0.185, $p < 0.001$; and β = 0.556, $p <$ 0.001, respectively), supporting H3c, H4c, and H5c.

Mediating Effects

The mediating role of CPS was tested under Hypothesis 6. The results showed that CPS partially mediated the relationships between SEL and academic achievement (H6a; indirect effect = 0.102, $p < 0.001$), proactive personality and academic achievement (H6b; indirect effect = 0.135, $p < 0.001$), SEL and study-life conflict (H6c; indirect effect = -0.072, $p < 0.001$), and proactive personality and study-life conflict (H6d; indirect effect = -0.095, $p < 0.001$). These findings support H6a-H6d and confirm CPS as a behavioural mechanism through which psychosocial resources influence both academic achievement and study-life conflict.

Multi-group Analysis

A multi-group analysis was conducted by gender, GPA, and part-time employment status to examine whether the effects of CPS varied across demographic groups. As shown in Table 4, for the relationship between CPS and academic achievement, a significant group difference was observed only by part-time employment status (difference = 0.254, $p < 0.05$), indicating that the positive effect of CPS was stronger among students with part-time jobs. No significant group differences were found for this relationship by gender or GPA.

For the relationship between CPS and study-life conflict, significant group differences were observed across gender (difference = 0.249, $p < 0.05$) and GPA (difference = 0.365, $p < 0.05$). Specifically, the negative association between CPS and study-life conflict was stronger among female students and students with higher GPAs. No significant group difference was found by employment status.

DISCUSSION

This study examined the effects of creative problem-solving (CPS) on academic achievement and study-life conflict among Thai undergraduates using PLS-SEM. It also investigated whether SEL, proactive personality, and study workload function as antecedents of CPS and related student outcomes, as well as whether the effects of CPS vary across demographic groups. Overall, the findings identify CPS as an important adaptive skill in higher education that supports academic performance while reducing study-life conflict.

Table 4
Multi-group analysis results

Path Effects	Demographics		
	Difference (Gender)	Difference (GPA)	Difference (Part-time employment)
CPS → AA	-0.136	0.118	0.254*
CPS → SLC	0.249*	0.365*	0.107

Note: *$p < 0.05$

The Role of Creative Problem-Solving in Academic Achievement and Study-life Conflict

The positive association between CPS and academic achievement suggests that students who can analyse problems, generate alternatives, and adjust strategies are better able to manage complex academic demands. This finding is consistent with prior studies showing that problem-solving and creativity-related skills contribute to stronger performance outcomes (Suryanto et al., 2021; Wang & Horng, 2002). It indicates that adaptive problem-solving may help students translate effort and flexibility into stronger academic performance. The negative relationship between CPS and study-life conflict further suggests that its value extends beyond academic tasks. Students with stronger CPS skills may be better able to prioritise responsibilities, adapt strategies, and respond constructively to competing demands, thereby reducing tensions between academic and personal roles. This interpretation is consistent with evidence that problem-solving supports adaptive functioning and effective role management under pressure (Ong & Jeyaraj, 2014). Together, these findings position CPS as a competency that supports both academic performance and adaptation in university life.

Antecedents of Creative Problem-Solving

Among the predictors, proactive personality was the strongest predictor of CPS, followed by SEL. This suggests that CPS is shaped not only by cognitive ability but also by dispositional and psychosocial resources. Students with proactive tendencies may be more likely to take initiative, anticipate challenges, and engage actively in problem-solving, consistent with prior research linking proactivity to innovation, problem-solving confidence, and adaptive action (Fuller & Marler, 2009; Şener, 2019). SEL also positively predicted CPS, indicating that effective problem-solving is supported not only by initiative and goal-directed behaviour but also by emotional regulation, interpersonal understanding, and responsible decision-making. This aligns with previous research showing that social and emotional competencies enhance adaptive coping, collaboration, and creative thinking (Brackett et al., 2011; Domitrovich et al., 2017). In contrast, study workload did not significantly predict CPS, suggesting that academic demands alone may not explain differences in adaptive problem-solving. Instead, students' responses may depend more on how they interpret and manage those demands, consistent with mixed findings in prior research (Bergman et al., 2012; Derakhshanrad et al., 2019; Karasek, 1979).

Effects of the Antecedent Variables on Academic Achievement and Study-life Conflict

Proactive personality and SEL positively predicted academic achievement, whereas study workload negatively predicted it. These findings suggest that psychosocial competencies may support academic

success beyond CPS, while excessive workload may undermine performance. For study-life conflict, study workload showed the strongest positive effect, reinforcing the view that high academic demands intensify tension between academic and non-academic roles (Karasek, 1979; Kember, 2004). SEL also positively predicted study-life conflict, suggesting that stronger social and emotional competencies do not always reduce strain and may, under demanding conditions, be associated with greater role complexity. (Chou & Sun, 2026). In contrast, proactive personality negatively predicted study-life conflict, indicating that proactive students may be better able to anticipate demands, organise responsibilities, and manage multiple roles effectively (Grant & Ashford, 2008).

Mediating Role of Creative Problem-Solving

The mediation analyses showed that CPS partially mediated the relationships of SEL and proactive personality with academic achievement and study-life conflict. This suggests that CPS is one mechanism through which these psychosocial resources are associated with student outcomes. Students with higher SEL and proactive personality may achieve better academic and life-related outcomes partly because these characteristics support more effective creative problem-solving. At the same time, the direct effects remained significant, indicating that CPS explains only part of these relationships. These findings are consistent with Social Cognitive Theory. Personal characteristics and psychosocial competencies may shape students' behaviour, and that behaviour, represented here by CPS, is related to academic achievement and study-life conflict (Bandura, 1986). However, the partial mediation results also suggest that other processes may be involved. Factors such as self-regulation, motivation, and social support may provide additional pathways linking student resources to these outcomes and should be examined in future research.

Demographic Differences in the Effects of Creative Problem-Solving

The multi-group analysis showed that CPS effects varied across demographic groups. Students with part-time jobs benefited more from CPS in academic achievement, suggesting that CPS is especially valuable for managing multiple responsibilities. Students who combine study and work often face greater demands in time management and role coordination, making adaptive problem-solving particularly advantageous under these conditions (Baik et al., 2015; Puccio et al., 2011; Scott et al., 2004). The analysis also showed that female students and students with higher GPAs benefited more from CPS in reducing study-life conflict, indicating that these groups may apply CPS more effectively to manage competing demands. The stronger effect among high-GPA students suggests that academically successful students are better able to translate problem-solving skills into

practical strategies for balancing academic and personal responsibilities, consistent with evidence linking creative thinking to academic performance (Gajda et al., 2017; Yang & Zhao, 2021). The gender difference may reflect variation in how students mobilise cognitive and emotional resources under pressure, although this interpretation should be made cautiously given that findings on gender differences in creative thinking remain context-dependent (Mariani et al., 2025).

Contribution to the Literature

This study extends prior to CPS research in three ways. First, it conceptualises CPS as a behavioural mechanism linking psychosocial resources to educational outcomes. Second, it integrates academic achievement and study-life conflict within a single framework, addressing outcomes that are often examined separately. Third, it shows that students' adaptive functioning is shaped not only by cognitive processes but also by proactive personality and SEL, which foster CPS. Together, these contributions provide a more integrated understanding of how psychosocial resources and adaptive competencies influence student adjustment in higher education.

CONCLUSION

This study indicates that CPS is an important adaptive resource for Thai undergraduate students. CPS was positively associated with academic achievement and negatively associated with study-life conflict, suggesting that students with stronger CPS skills tend to show better academic performance and more effective management of academic and personal demands. Proactive personality and SEL were significant positive predictors of CPS, whereas study workload was not. In addition, CPS partially mediated the effects of proactive personality and SEL on both academic achievement and study-life conflict, supporting its role as a behavioural mechanism linking psychosocial resources to student outcomes. The benefits of CPS were stronger among students with part-time jobs, females, and high-GPA students.

Implications of the Study

These findings provide practical guidance for higher education. CPS should be recognised as a key undergraduate skill because it is associated with academic performance and study-life conflict. Universities can foster CPS through problem-based learning, collaborative projects, and reflective activities. Because CPS is linked to proactive personality and social-emotional competencies, its development should also be supported through mentoring, co-curricular programmes, and student services. The subgroup differences further suggest the need for more targeted support for students facing different academic and personal demands. At the policy level, the findings support integrating soft skills and adaptive competencies into higher education reform. Theoretically, they suggest that, within Social Cognitive Theory, CPS functions as a behavioural pathway through which psychosocial strengths influence student outcomes.

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

This study has several limitations. Although the sample included four Thai universities, uneven gender distribution may have affected representativeness. Only three predictors were examined, which may not capture all factors shaping CPS, performance, or study-life conflict. Given CPS's dynamic nature, its underlying causes require further study. Although subgroup differences were identified, the mechanisms behind them were not explored. Future research should examine these mechanisms and assess whether different student groups would benefit from more targeted support or intervention.

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