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CULTIVATING CREATIVITY: A PSYCHOSOCIAL MODEL FOR SUSTAINABLE PROBLEM-SOLVING IN THAI UNIVERSITY STUDENTS

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Abstract

This study explores the psychosocial factors influencing creative problem-solving (CPS) among Thai university students, crucial for academic success, personal growth, and addressing sustainability challenges. It investigates the direct and indirect effects of psychological traits and situational factors on CPS behaviors. Data from 480 Thai university students were analyzed using path analysis, confirming a good model fit ($x2 = 32.826$, $df = 22$, $p = 0.0644$, RMSEA = 0.032, CFI = 0.997, TLI = 0.991, SRMR = 0.047). Results indicate that both psychological traits and situational factors significantly influence CPS behavior through psychological state, explaining 86.60% of its variance. Key factors identified include perceived behavioral control, core self-evaluation, and perceived problem-solving modeling. These findings highlight the need for higher education institutions to foster psychological traits and create supportive environments for creative and systematic sustainability problem-solving. This study offers insights for educational policies aimed at cultivating creative and sustainable problem-solving skills among university students in Thailand and similar contexts.

Keywords: Creative Problem-Solving, Psychosocial Model, Sustainability, University Students, Thailand

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Introduction

The challenges encountered by individuals, organizations, and society in the 21st-century workplace have markedly increased due to advancements in digital technology, global interconnectedness, and economic and environmental instabilities (World Economic Forum, 2020). These ongoing developments have reshaped the nature of work, leading labor markets to increasingly value skills that are flexible, analytical, and creative in problem-solving. This trend is especially relevant for higher education students poised to enter the labor market (Koen et al., 2012; Grant-Vallone & Donaldson, 2001).

However, the challenges of the 21st century are not restricted to economic or technological aspects. They also include sustainability-related issues that are especially relevant within the Asian context, such as economic and social inequality, climate change, and insecurity regarding food and natural resources. Thus, creative problem-solving is now important for sustainable development, not merely an employment talent.

Therefore, understanding the factors influencing creative problem-solving behaviors is crucial—not only to prepare students to successfully enter the labor market but also to foster citizens capable of effectively engaging with and addressing social and environmental challenges in a sustainable manner. This study aims to analyze the psychological and situational causal factors influencing creative problem-solving behaviors among Thai university students, with the goal of generating knowledge that can be utilized to effectively design educational policies and learning activities at the higher education level.

Literature Review

Creative Problem-Solving: Definition and Components

Problem-solving is an intellectual process that helps people lessen, remove, or transform challenging situations (Huitt, 1992). It can be considered both psychological and behavioral (Chand & Runco, 1993). Scholars evaluate creative thinking and problem-solving from different angles. According to Guilford (1959), creative problem-solving involves systematic thinking, starting with problem recognition, then generating various solutions, evaluating them, and drawing conclusions. Many other researchers recommended problem discovery (Jay & Perkins, 1997), logical or scientific thinking/reasoning (McComas, 2014), and hypothesis creation for comparison or testing (Csikszentmihalyi, 1996).

Furthermore, individuals who fail after attempting to solve problems often encounter them through traditional methods. They tend to address issues using their immediate thoughts. Therefore, individuals with the ability to think creatively in problem-solving possess several outstanding characteristics. These individuals often have a sensitive awareness or quick thinking that allows them to recombine past knowledge (Cheng et al., 2008; Rietzschel et al., 2007). This expertise can be based on their past direct experiences in solving similar problems or receiving information and methods for solving these types of problems from others in various ways, such as through storytelling, teaching, or observing role models. This understanding enables individuals to connect the dots, leading to solving the original problem with a new and better approach or smoothly addressing a new but similar problem. Therefore, thinking and taking action that connects knowledge to solving problems is another key aspect of creative problem-solving.

International scholars widely acknowledge another important characteristic of individuals with creative problem-solving abilities, which is the ability to solve problems in diverse ways (Kirana et al., 2021). These individuals exhibit fluency in considering solutions from various perspectives, demonstrating mental flexibility, and may possess creative divergent thinking or convergent thinking (Wang et al., 2023; Sakdapat et al., 2024). Such thinking enables them to identify opportunities for work and successfully solve various problems.

These documents summarize three significant categories of creative problem-solving behaviors identified in the research, as follows: 1) causal problem-solving behavior, 2) knowledge integration behavior, and 3) divergent problem-solving behavior.

Important Psychological Traits on Psychological States and Behavior

Psychological traits are enduring and relatively stable internal characteristics that have been inculcated from childhood through experiences and environments, such as family, school, and community. This research aims to study three important psychological traits, namely, core self-evaluation, openness to experiences, and mental health.

Core self-evaluation (CSE) is a personality trait often used to predict success in life. It consists of four components: self-esteem, generalized self-efficacy, emotional stability, and locus of control (Judge et al., 1998). Previous research has indicated a relationship between CSE or its components and positive attitudes towards various behaviors (Kong et al., 2025; Uansa-ard & Wannamakok, 2022), as well as desirable behaviors such as critical thinking (Tangchitprattanar et al., 2019), adaptation (Chen et al., 2023), and creative problem-solving (Sakdapat, 2024).

Being open to new experiences (OEX) is one of the important characteristics of the new generation of students. It demonstrates their willingness and enthusiasm to learn and participate in activities related to diverse thoughts and perspectives in society (McCrae & Costa, 2008). In this study, OEX consists of three components: 1) an open attitude toward learning, 2) comfort in facing differences in thought or the ability to adapt, and 3) participation in activities related to differences in thought or traditional perceptions. Open-minded individuals tend to have a positive attitude and value solving problems through different methods. They are also more likely to have confidence in their ability to handle new situations (Sung & Choi, 2009; Shalley et al., 2004). They also tend to have flexible thinking, face problems, and can adapt to challenges more effectively (Antinori et al., 2017; Roberts & Woodman, 2017). These traits foster the growth of innovative thinking and various problem-solving abilities (Matz & Harari, 2021).

Mental health (MH) refers to a person's emotional well-being, which enables them to manage daily life problems with less excessive anxiety, anger, or excitement. Research conducted by Carson et al. (2003) on the relationship between good mental health and creative problem-solving behavior found that individuals with good mental health are more likely to solve problems creatively compared to those with mental health issues. Furthermore, it was found that a person with good mental health tends to have a positive attitude towards behavior (Bhanthumnavin, 2024).

Important Situational Factors on Psychological States and Behavior

Situational factors refer to both living and non-living environments surrounding an individual that influence their actions, potentially promoting or hindering behavior. This study aims to consider three situational factors, namely, perceived problem-solving modeling, past experience, and activities in educational institutions.

One of the most effective influences on human behavior is modeling. Especially university students, they are often influenced by role models in three groups, namely: 1) family members, such as parents, relatives, and siblings; 2) significant others in educational institutions, such as teachers, seniors, and friends; and 3) famous individuals in society, such as businesspeople, celebrities, singers, and influencers. By perceiving problem-solving modeling (MOD), students can learn and imitate ways to cope with new problems, as well as gain ideas for application. Previous research has found that observing appropriate reactions and behaviors from surrounding individuals is related to desirable behaviors, e.g., health behavior (Mekkhachorn et al., 2024) and problem-solving behavior (Yang & Lu, 2024). Perceiving models from significant others can predict attitudes and judgments toward behaviors, e.g., entrepreneurial attitude (Maulida et al., 2020) and safe driving attitude (Namoos et al., 2025). Recent evidence

indicates that significant others, especially family, have an influence on younger people's psychological control (e.g., more confidence, less rumination, and less depression) as well.

It has long been suggested that students who have had opportunities to engage in activities or receive direct experiences from significant others in the past may help stimulate and develop creativity, such as analytical thinking, knowledge integration, and the use of various methods. Two main types of experience (PEX) could be 1) self-directed learning and 2) direct or indirect training received from family members. Therefore, students who have overcome obstacles and difficulties in childhood tend to be resilient and can quickly adapt to different situations. They are willing to try new ways and learn from mistakes, which enhances their creativity and effective problem-solving. Research related to this topic has found that past experiences in self-directed learning and problem-solving promoted analytical thinking skills, knowledge integration, and the ability to create diverse options for problem-solving (Runco, 2014). Additionally, receiving training and experiential learning from family, such as engaging in creative activities together, also contributes to the long-term development of creativity and problem-solving skills (Vygotsky, 1978).

Educational institutions are places for developing and training creative problem-solving skills through activities in three areas: 1) classroom teaching activities, 2) extracurricular activities of faculties or departments, and 3) student development activities of the university. Assigning challenging tasks or projects in the subjects being studied will effectively promote the development of students' creative thinking and problem-solving skills (Sternberg, 2006; Treffinger & Isaksen, 2005). Additionally, activities in educational institutions (AEI), which are systematic and continuous organizations of teaching, projects, and assignments focused on practicing these skills, will enable students to enhance their problem-solving abilities and apply them effectively (Savery, 2006). Furthermore, students who participate in activities that promote problem-solving tend to have a positive attitude and confidence in their ability to solve problems in various ways (Cropley, 2015).

Important Psychological States on Creative Problem-Solving Behavior

Psychological states are dispositional characteristics that are specific to a particular context or situation, making them dynamic and changeable according to that situation or context. In this study, two psychological states are considered important predictors of creative problem-solving behavior: attitude toward creative problem-solving behavior and perceived behavioral control.

A positive attitude toward creative problem-solving behavior (ATT) was based on Krech et al. (1962), consisting of three components: cognitive, affective, and behavioral intention. An individual's actions closely correlate with these factors. For instance, a positive attitude towards behavior, e.g., attitude towards media consumption (Komanee et al., 2017) and attitude towards making discerning purchases (Tangchitprattanar et al., 2019), influenced the target behavior.

Students' perceptions of whether creative problem-solving behavior is easy or difficult and their belief in their ability to control it are related to perceived behavioral control (PBC). Ajzen (1991) stated that perceived behavioral control is a factor that directly determines both the intention and behavior of individuals. If students perceive that they can control and exhibit creative problem-solving behavior, it will affect their intentions and actual actions (Puente-Díaz & Cavazos-Arroyo, 2017).

Research Methodology

This study is a correlational comparative study. The sample in the study was senior undergraduates in business and social science from four universities in Thailand. Based on the

In the G*Power program, the minimum sample size was 420 students. Out of the distributed questionnaires, 523 students returned them. However, the data analysis only used completed data from 480 students. The Research Ethics Committee of Chiang Mai Rajabhat University granted ethical approval (Approval number IRBCMRU 2024/206.29.05). We clearly informed the participants about the study objectives and obtained their consent prior to data collection, ensuring their right to withdraw at any stage.

The instruments utilized in this study primarily consisted of summated rating scales. Each self-report instrument consisted of 12 items. Each item was attached with a 6-point Likert scale ranging from "absolutely true" to "absolutely not true." Although self-report questionnaires are effective for large-scale data collection, limitations exist, including response biases—particularly social desirability bias—and inaccuracies arising from self-perception that might not reflect reality (Podsakoff et al., 2003). Item quality and measurement quality were presented in Table 1. Statistical criteria of item quality were 1) item discrimination with critical values of the t-distribution greater than 2.00 (McMillan & Schumacher, 1997), and 2) the corrected item-total correlation value was equal to or above .20 (Streiner et al., 2015).

Path analysis was employed to investigate direct and indirect effects. The model fit was evaluated using these criteria (Bhanthumnavin, 2024): 1) a chi-square p-value that is not significant ($p > .05$), 2) a root mean square error of approximation (RMSEA) between .05 and .08, 3) a Comparative Fit Index (CFI) higher than .90, 4) a standardized root mean square residual (SRMR) below .08, and 5) a Tucker-Lewis Index (TLI) above .90.

Table 1 Item quality and measurement quality

Measurement	items	t-distribution	CITC	ω	α	CFA						
						χ^2	df	p-value	RMSEA (≤0.06)	CFI (≥0.90)	TLI (≥0.90)	SRMR (≤0.08)
1) CPB*	12	4.81-7.05	0.40-0.63	0.84	0.84	67.00	51	0.07	0.05	0.96	0.95	0.07
2) KIB*	12	4.09-8.14	0.26-0.59	0.75	0.75	58.86	46	0.09	0.05	0.96	0.94	0.08
3) DPB*	12	3.47-6.39	0.30 -0.52	0.73	0.75	54.51	42	0.09	0.05	0.96	0.93	0.08
4) ATT*	12	3.47-7.99	0.27-0.72	0.86	0.85	54.97	42	0.09	0.05	0.98	0.96	0.05
5) PBC*	12	4.02-12.94	0.42-0.75	0.89	0.88	68.64	53	0.07	0.05	0.97	0.97	0.07
6) MOD*	12	2.17-7.18	0.20-0.50	0.76	0.76	63.79	49	0.08	0.05	0.95	0.93	0.07
7) PEX*	12	4.10-8.44	0.33-0.64	0.83	0.83	61.32	47	0.08	0.05	0.97	0.95	0.06
8) AEI*	12	3.98-7.94	0.38-0.67	0.80	0.80	58.15	44	0.08	0.05	0.96	0.94	0.08
9) CSE	12	4.03-8.44	0.21-0.61	0.83	0.82	57.82	44	0.08	0.05	0.97	0.95	0.07
10) OEX*	12	4.21-8.51	0.32-0.62	0.82	0.82	60.06	46	0.08	0.05	0.96	0.94	0.08
11) MH	12	4.08-9.73	0.36-0.73	0.88	0.87	44.04	34	0.12	0.05	0.98	0.97	0.06

Note: *Researcher constructed this measure. 1 Causal problem-solving behaviors (CPB), 2 Knowledge integration behavior (KIB), 3 Divergent problem-solving behaviors (DPB), 4 Attitude towards creative problem-solving behavior (ATT), 5 Perceived behavioral control (PBC), 6 Perceived problem-solving modeling (MOD), 7 Past experience (PEX), 8 Activities in educational institution (AEI), 9 Core self-evaluation (CSE), 10 Openness to experience (OEX), and 11 Mental health (MH).

Research Results

Demographic Characteristics

The total sample consisted of 480 Thai senior university students, with a majority being female (292 students, 60.80%). Students were evenly distributed across three faculties: Business Administration, Social Sciences, and Humanities (160 students in each, 33.30%). Most students were firstborn children (265 students, 55.20%) and primarily raised by their parents (382 students, 79.60%). The students' GPAs ranged from 1.70 to 4.00, with a mean of 2.96 (SD = 0.48).

Intercorrelation between Variables in the Study

In Table 2, the analyses revealed that the relationships between each pair of the independent variable and dependent variable ranged between 0.27 ($p < .01$) and 0.71 ($p < .01$). The highest correlation of 0.80 ($p < .01$) was found between CSE and MHealth. Additionally, the results showed that none of the correlation pairs between the observed variables exceeded 0.85, which would lead to multicollinearity (Hair et al., 2010; Kline, 2005).

Table 2 Descriptive Statistics and Intercorrelation Matrix of Variables in Total Sample (N = 480)

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11
CPB	50.16	7.41	1										
KIB	53.49	6.11	.63**	1									
DPB	50.56	6.91	.59**	.66**	1								
ATT	44.77	8.22	.57**	.57**	.67**	1							
PBC	49.74	8.18	.62**	.65**	.71**	.74**	1						
MOD	49.17	7.34	.43**	.42**	.44**	.47**	.49**	1					
PEX	56.18	7.99	.28**	.41**	.45**	.40**	.48**	.51**	1				
AEI	52.25	7.44	.27**	.36**	.34**	.33**	.39**	.51**	.47**	1			
CSE	48.72	7.89	.47**	.50**	.51**	.57**	.69**	.51**	.44**	.39**	1		
OEX	49.71	8.80	.46**	.50**	.58**	.62**	.65**	.50**	.47**	.38**	.56**	1	
MH	51.34	9.36	.45**	.44**	.42**	.48**	.61**	.49**	.38**	.34**	.80**	.54**	1

Note: *p < .05, **p < .01

Structural Equation Model of Creative Problem-Solving Behavior

The results of path analysis indicated that the model was consistent with the empirical data, with the goodness-of-fit indices ($\chi^2 = 32.826$, df = 22, p-value = 0.0644, RMSEA = 0.032, CFI = 0.997, TLI = 0.991, and SRMR = 0.047; see Figure 1). The parameter estimates and component weights related to the model of creative problem-solving behavior, as well as the various path coefficients, are presented in Table 3.

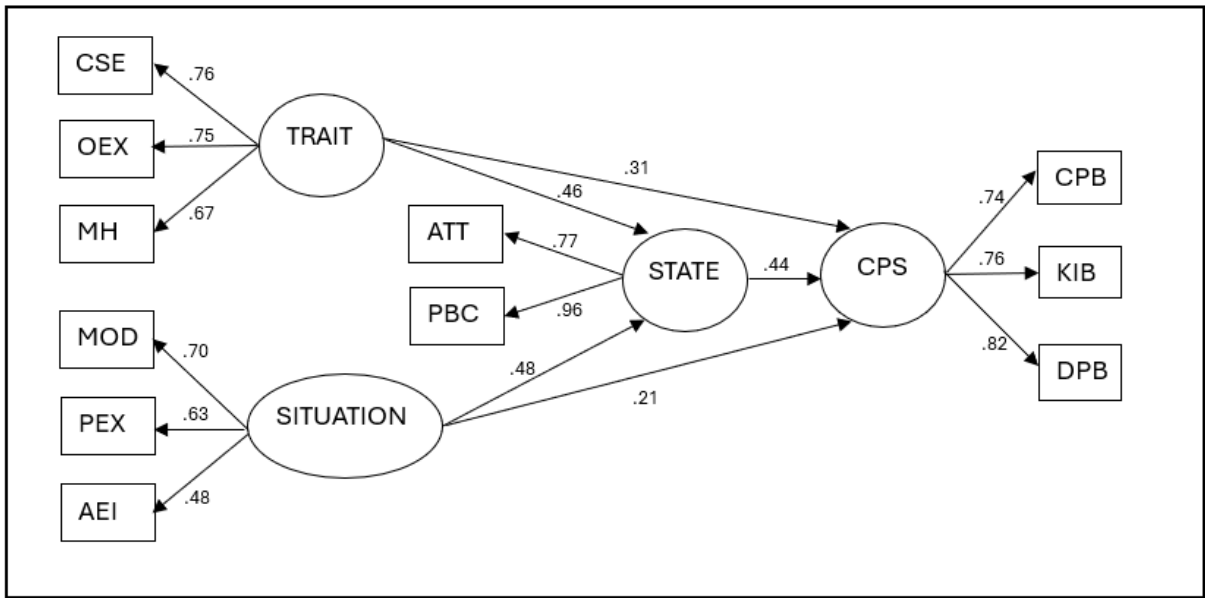

Figure 1 The antecedent model of creative problem-solving behaviors in Thai university students.

Table 3 Direct effect, indirect effect, total effect, and R-squared of the Model

Latent Construct		The effect of the latent construct in the model					
		Psychological State			Problem-solving Behavior		
		DE	IE	TE	DE	IE	TE
Psychological State	b	-	-	-	0.400	-	0.400
	S.E.	-	-	-	0.017	-	0.017
	β	-	-	-	0.436	-	0.436
Situational factor	b	0.590	-	0.590	0.240	0.236	0.476
	S.E.	0.033	-	0.033	0.000	0.000	0.000
	β	0.477	-	0.477	0.211	0.208	0.419
Psychological traits	b	0.491	-	0.491	0.300	0.196	0.496
	S.E.	0.043	-	0.043	0.000	0.025	0.025
	β	0.462	-	0.462	0.308	0.201	0.509
R^2		0.858			0.866		

Note: all coefficients are significant, DE = direct effect, IE = indirect effect, TE = total effect.

Conclusion and Discussion

The objective of this research was to investigate the direct and indirect influences of causal factors related to personality traits and situations on creative problem-solving behavior among Thai undergraduates. The research results supported the interactionist model (Endler & Magnusson, 1976), which shows that both original personality traits and situations have direct and indirect influences through situational personality traits on behavior.

The analysis results also show in detail that the causal latent variables influencing the behavioral latent variables were ranked from most to least important, namely the psychological state latent variables, followed by the psychological trait latent variables, and situational latent variables. This interpretation is consistent with the research findings of Sakdapat (2024) and highlights the relevance of psychosocial factors in understanding CPS across diverse cultural settings. In the Asian context, where challenges such as educational inequality, environmental vulnerability, and economic transitions are prominent, enhancing CPS among youth can play a strategic role in supporting the Sustainable Development Goals (SDGs). In Asia, CPS is

shaped by cultural norms and social expectations (Hofstede, 2011; Chen et al., 2020). Cultural factors such as power distance, collectivism, and conflict avoidance may influence how students express creativity and respond to problems. These cultural dynamics are essential when designing interventions to foster CPS in Asian educational systems.

Additionally, the research results in terms of the measurement models revealed three significant findings: 1) Divergent problem-solving behavior was the most important component in the behavioral latent variable; 2) the key components of the psychological trait latent variable were CSE and OEX; and 3) the key components of the situational latent variable were MOD and PEX. Furthermore, the research also indicated that the PBC was more important than ATT, which supported the TPB theory.

Implications

The results of this study are beneficial for applications in behavioral science and management. From a theoretical perspective, this study indicates that both personality traits and situational factors can explain individual behavior. The result will lead to a comprehensive and multifaceted explanation of behavior, thus encouraging researchers to use this approach in studying the causal factors of individual behavior in the future.

Additionally, the research findings highlight critical management implications for fostering creative problem-solving behaviors among undergraduates, especially by enhancing their perceived behavioral control (PBC). Firstly, universities should integrate realistic problem-solving activities into classroom instruction or small-group workshops by peers and instructors, helping students progressively build confidence in their abilities. Secondly, universities should foster psychological traits and supportive situations that enhance students' perceived behavioral control (PBC) and positive attitudes (ATT) toward creative problem-solving. It can be achieved in various ways, such as perceiving positive role models, such as teachers and family, or by providing examples of problem-solving methods from both the past and present to discuss with students to train them to think of diverse and contemporary problem-solving approaches. Students should gain or practice creative problem-solving experiences both in the classroom and through activities like writing reports, working on social and management group projects, or participating in internships.

Contribution to Practices

Research findings indicate that various social institutions can help stimulate and cultivate creative problem-solving skills. The family institution is especially important for nurturing students' minds and behaviors, who will become vital human resources for the country in terms of economic competition and peaceful living. Therefore, the development of creative problem-solving skills is an urgent necessity that requires parents to recognize their importance and act. Additionally, educational institutions should establish strategic alliances with industry and public sectors to develop experiential learning programs, including senior-student mentoring, management trainee initiatives, and cooperative education models. These programs provide students with authentic business experiences beyond academics, enhancing their creative problem-solving skills and financial self-support while preparing them for real-world professional responsibilities after graduation.

At the policy level, the government should integrate CPS development into national education plans and provide structural support through targeted funding, promotion of hands-on learning, incentives for internship collaboration, and investment in community-based learning resources. These efforts align with key Sustainable Development Goals (SDGs), particularly Goal 4 (Quality Education), Goal 8 (Decent Work and Economic Growth), and Goal 10 (Reduced Inequalities). Promoting CPS is thus not only an educational imperative but also a strategic investment in human capital, helping reduce opportunity gaps and enhance the resilience of Thai youth in the face of economic, social, and environmental challenges.

Limitations and Future Research

This study relies on self-reported data, which may introduce common method bias (Podsakoff et al., 2003). Future research could mitigate this by employing techniques such as Harman's single-factor test to assess the extent of bias from a single measurement source. Additionally, longitudinal experimental designs could clarify the causal relationships, especially focusing on specific interventions such as leadership styles, learning-oriented organizational culture, and innovation and design-thinking training programs. Such an approach will enhance the practical application and theoretical soundness of findings.

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