

A Structural Relationship among Mindfulness, Self-Concept Clarity and Learning Engagement

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Abstract: This research examines the structural relationship among mindfulness practices, clarity of self-concept, and learning engagement. Focusing on Chinese college students as the subjects, this research adopted a stratified random sampling method and administered the Five-Factor Mindfulness Questionnaire, the Self-Concept Clarity Scale, and the Learning Engagement Scale to 420 college students across four universities. Statistical findings demonstrated significant bidirectional positive associations between mindfulness and both learning engagement and self-concept clarity. Furthermore, the research identified self-concept clarity as playing a partial mediating role in the connection between mindfulness and learning engagement. These results elucidate how mindfulness enhances learning engagement through strengthening self-concept clarity. Such evidence offers valuable guidance for teaching practitioners to enhance student involvement and elevate instructional effectiveness.

Keywords: Mindfulness; Self-Concept Clarity; Learning Engagement; College Students

1. Introduction

As a crucial predictor of academic success and a core indicator of learning quality, student engagement significantly impacts academic development and lifelong growth[1]. This multi-dimensional concept involves sustained cognitive, emotional, and behavioral engagement[2]. Boosting student engagement can reduce academic negative emotions and dropout rates. More importantly, it offers students positive learning experiences, laying a foundation for lifelong learning. Given its vital role in educational practice, the internal influence mechanism of student engagement has long been a research focus.

Derived from Eastern Buddhism, mindfulness was introduced into psychology by Kabat-Zinn and has evolved into an evidence-based psychological intervention. Research shows it effectively alleviates depression and boosts happiness in clinical settings[3], and has extended to educational contexts, improving academic burnout, attention, and mental health[4]. Notably, Minkos et al. suggested mindfulness might enhance educational engagement by improving environmental perception[5], offering a new view on the mindfulness-student engagement link. However, most current studies explore mindfulness' impact on student engagement via motivation and emotions, with limited systematic research on self-regulation mechanisms.

Self-concept clarity, a key element of the self-cognition system, reflects the internal consistency and certainty of an individual's self-concept [6]. It is regarded as a crucial determinant of behavioral choices in achievement motivation theory[7]. Empirical studies indicate that this variable not only significantly predicts academic performance[8] but is also closely related to mindfulness. Mindfulness training may enhance meta-cognitive abilities, thereby promoting the integration and reconstruction of self-concept and influencing an individual's learning engagement patterns. This theoretical logic provides a new research avenue for uncovering the internal mechanism through which mindfulness affects student engagement.

While prior studies have examined mindfulness' links with student engagement and self-concept clarity separately, research on their integrated relationships remains underdeveloped. Grounded in expectancy-value theory, this study aims to construct a "mindfulness-self-concept clarity-student engagement" model. Using the Five Facet Mindfulness Questionnaire, the Self-Concept Clarity Scale, and the Student

Engagement Instrument, we'll empirically test this model on college students. Our findings will shed light on the cognitive mediation pathway through which mindfulness affects student engagement, offering a theoretical basis for better learning interventions and holding significant practical value for improving higher education quality.

2. Research Design

2.1 Research Model and Hypothesis

This research examines the structural relationships between three key variables: mindfulness as the predictor variable, learning engagement as the outcome variable, and self-concept clarity as the potential mediator. The study specifically investigates whether the influence of mindfulness on learning engagement operates through the mechanism of self-concept clarity. The proposed conceptual framework for this investigation is presented in Figure 1.

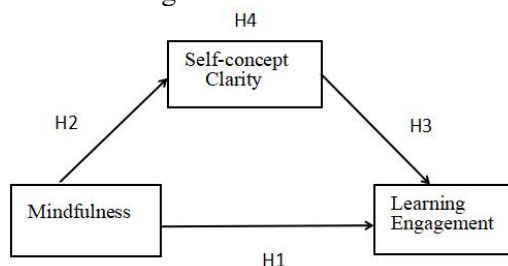


Figure 1. Research Model

Based on the previous discussion of the relationships among mindfulness, self-concept clarity, and learning engagement, this research proposes the following hypotheses:

H1: Mindfulness significantly enhances learning engagement.

H2: Mindfulness significantly enhances self-concept clarity.

H3: Self-concept clarity significantly enhances learning engagement.

H4: Self-concept clarity mediates the relationship between mindfulness and learning engagement.

2.2 Research Participants

This research selected undergraduate students from four higher education institutions in Zhejiang Province, China, as the research subjects. According to the principle of stratified random sampling, students from the first to the fourth year were chosen, and all participants took part in this study with

informed consent. From the initial distribution of 480 printed surveys, 60 were discarded due to incompleteness or inconsistencies, yielding 420 usable responses with an 87.5% validity rate. Table 1 presents the demographic composition of the collected samples.

As presented in Table 1, 244 females constituted 58.1% of the sample, compared to 176 males representing 41.9%. Regarding grade distribution, the first year comprised the largest group with 167 students, accounting for 39.8% of the total; the second year has 102 students, accounting for 24.3%; the third year has 77 students, accounting for 18.3%, and the fourth year has the fewest students with 74, accounting for 17.6%. Regarding the major, there are 249 students in the humanities and social sciences, accounting for 59.3%; and 171 students in the natural sciences, accounting for 40.7%, with relatively more students in the humanities and social sciences majors. Overall, the basic composition ratio of the subjects in this study is relatively balanced, and the obtained data is more authentic and reliable.

Table 1. Demographic Characteristics of the Sample

Variable	Item	N	%
Gender	Male	176	41.9
	Female	244	58.1
Grade	the first year	167	39.8
	the second year	102	24.3
	the third year	77	18.3
	the fourth year	74	17.6
Major	Humanities and Social Sciences	249	59.3
	Natural Sciences	171	40.7

2.3 Research Tools

1) The five facet mindfulness questionnaire, developed by Baer et al. [9] and revised by Deng[10], consists of 39 items and uses a 5-point Likert scale. Elevated scores on the mindfulness questionnaire reflect greater mindfulness in respondents. The instrument assesses mindfulness through five facets: Observing, Describing, Acting with Awareness, Non-judging, and Non-reacting. As presented in Table 2, the questionnaire demonstrated excellent internal consistency (Cronbach's $\alpha = .889$), with dimension-level α coefficients ranging from .862 to .871. These results confirm its high reliability in the current study.

2) The self-concept clarity scale was developed

by Campbell et al. [6] and revised by Niu et al.[11]. The 12-item Self-Concept Clarity Scale employs a 7-point Likert format. Notably, all items except numbers 6 and 11 require reverse scoring. Elevated total scores reflect greater self-concept clarity, consistent with prior validation of the Chinese version's robust psychometric properties[12]. In the current sample, the scale achieved a Cronbach's α of 0.923, confirming its measurement reliability.

Table 2. Reliability Analysis of the Five Facet Mindfulness Questionnaire

Vairable	Dimension	N	Cronbach's α
Five Facet Mindfulness Questionnaire	Observing	8	.871
	Describing	8	.862
	Acting with Awareness	8	.868
	Non-judging	8	.862
	Non-reacting	7	.870
	Total	39	0.889

3) The Learning Engagement Scale was developed by Skinner et al.[13]and Lam et al.[14]. This scale assesses three key aspects: behavioral, emotional, and cognitive engagement. Responses are recorded on a 5-point Likert scale, where higher ratings reflect greater levels of learning engagement. In the current research, the scale demonstrates strong internal consistency, with an overall Cronbach's α of .893. The subscales also show good reliability: the α coefficient for the behavioral engagement dimension is .833, the α coefficient for the emotional engagement dimension is .802, and the α coefficient for the cognitive engagement dimension is .872, as presented in Table 3.

Table 3. Reliability Analysis of the Learning Engagement Scale

Vairable	Dimension	N	Cronbach's α
Learning Engagemen t	Behavioral Engagement	5	.833
	Emotional Engagement	4	.802
	Cognitive Engagement	5	.872
	Total	14	.893

2.4 Data Analysis

The research employed SPSS 26.0 software to examine the complete dataset, which included both scale measurements and questionnaire responses. Four primary statistical methods were implemented: descriptive analysis,

Pearson correlation assessment, regression modeling, and mediation testing, adopting $p < .05$ as the significance criterion.

3. Research Results

3.1 Descriptive Statistics

3.1.1 Mean, standard deviation, and normal distribution

To better understand the levels or degrees of the research subjects in different variables, this study analyzed mindfulness, self-concept clarity, and learning engagement by calculating their means (M), standard deviations(SD), skewness, and kurtosis. As presented in Table 4, the overall mean values for mindfulness, self-concept clarity, and learning engagement are 3.132, 3.991, and 3.412, respectively, with SD values of .434, 1.060, and .524. When examining the skewness values that measure the symmetry of the distribution, the observed values range from .317 to .537. The absolute values of these variables do not show skewness greater than 2, indicating that the distributions are approximately symmetric.

Table 4. Descriptive Statistics (N=420)

Items	Min	Max	M
Mindfulness	1.15	4.67	3.132
self-concept clarity	1	7	3.991
learning engagement	1.93	5	3.412
Items	Min	Max	M
Mindfulness	1.15	4.67	3.132
self-concept clarity	1	7	3.991

3.1.2 Correlation analysis

To verify whether the variables involved in this study have intercorrelations, this study employed Pearson's correlation analysis method.

The Pearson correlation metric spans from -1.0 to +1.0, where higher positive values demonstrate stronger direct relationships between measured variables, while lower negative values reflect stronger inverse relationships. Table 5 reveals three statistically significant positive relationships: (a) mindfulness strongly associates with self-concept clarity ($r = .479$, $p < .01$), (b) mindfulness moderately correlates with learning engagement ($r = .452$, $p < .01$), and (c) self-concept clarity shows a weaker but still significant connection to learning engagement ($r = .347$, $p < .01$).

3.2 Regression Analysis

While correlational evidence establishes associations among variables, it cannot infer causation. Consequently, regression analysis was employed to examine directional relationships. As Table 6 indicates: (a) mindfulness significantly predicts learning engagement ($\beta=.545$, $p<.001$), supporting H1; (b) mindfulness strongly influences self-concept clarity ($\beta=1.169$, $p<.001$), confirming H2; and (c) in the combined model,

both mindfulness ($\beta=.448$) and self-concept clarity ($\beta=.084$) retain significant predictive effects on learning engagement (both $p<.001$), thereby validating H3.

Table 5. Correlation Analysis

Items	1	2	3
Mindfulness	1		
Self-concept Clarity	.479**	1	
Learning Engagement	.452**	.347**	1

Note: 1.Mindfulness 2.Self-concept Clarity 3.Learning Engagement ** $p<.01$

Table 6. Regression Analysis

Items	Model a		Model b		Model c	
	β	t	β	t	β	t
Mindfulness	.545	10.369***	1.169	11.157***	.448	7.568***
self-concept clarity					.084	3.448***
R ²	.205			.230		.227
F	107.507			124.485		61.098

Note: Model a: Mindfulness predicting learning engagement. Model b: Mindfulness predicting self-concept clarity. Model c: Mindfulness and self-concept clarity jointly predicting learning engagement. *** $p<.001$, ** $p<.01$, * $p<.05$.

3.3. Mediation Analysis

To rigorously test mediation, this study implemented bootstrapping (5,000 resamples, 95% CI) using the bias-corrected non-parametric percentile approach. Table 7 indicates: (a) a significant total effect of mindfulness on learning engagement (effect

= .545, 95% CI [.442, .649]), (b) a significant direct effect (.448, 95% CI [.331, .564]), and (c) a significant total indirect effect (.098, 95% CI [.036, .161]). The results demonstrate a partial mediation effect through self-concept clarity, with 17.92% of the total effect accounted for, thereby confirming Hypothesis 4.

Table 7. Mediation Effect Analysis of Self-Concept Clarity

	β	S.E	95% CI		Proportion of Total Effect
			LLCI	ULCI	
Total Effect	.545	.0526	.442	.649	17.92%
Direct Effect	.448	.0591	.331	.564	
Indirect Effect	.098	.0321	.036	.161	

4. Discussion and Conclusion

4.1 Discussion

4.1.1 Direct effect analysis of mindfulness on learning engagement

In this study, mindfulness is significantly and positively correlated with each dimension of learning engagement, and mindfulness can significantly predict learning engagement. That is, students with higher levels of mindfulness are more engaged in learning, which. The learning environment for college students is relatively relaxed and focuses more on students' autonomous learning. During the learning process, they are easily distracted by the surrounding environment. Mindfulness enhances students' capacity for

present-centered attention, enabling individuals with higher mindfulness proficiency to maintain study focus despite external distractions. At the same time, the attitudes of "acceptance" and "non-judgment" guided by mindfulness can help students face setbacks and difficulties in learning, treating them with a more ordinary mindset instead of avoiding difficulties and mistakes. In addition, elevated mindfulness levels positively correlate with students' perceived availability of personal resources, teacher support, and parental support. This allows their basic psychological needs to be met, and in order to pursue their own goals or to meet the expectations of teachers and parents, they often show greater engagement in learning. Therefore, schools should incorporate

mindfulness exercises into their curriculum. By engaging in mindfulness training, students can improve their focus, reduce stress and anxiety, and thus better cope with the challenges they face in their studies.

4.1.2 Direct effect analysis of mindfulness on self-concept clarity

The analysis reveals a statistically markedly positive correlation between mindfulness and self-concept clarity, with mindfulness demonstrating predictive validity for self-concept clarity. These findings suggest a dose-response relationship where increased mindfulness corresponds to enhanced clarity of self-concept.

Mindfulness, as a fundamental human capacity, enables individuals to fully engage in their present lives, to be aware of their whereabouts and actions, without being affected by changes in the surrounding environment. It can support and enrich our lives, and better inspire individuals to comprehensively improve themselves. Individuals with higher levels of mindfulness can often be mindful of events occurring within and around them, can obtain a comprehensive and integrated understanding of their internal and external world, and can maintain a curious, open, and accepting attitude towards current experiences, which fosters individuals' self-awareness and refinement of their self-concept, and maintains a well-defined self-concept in the individual.

In education and teaching, teachers can cultivate students' curiosity, openness, and acceptance towards their own experiences through mindfulness training. They can design activities that encourage self-reflection, exploration of personal values and beliefs, and the application of these in practice. This not only helps to enhance students' self-concept clarity but also strengthens their psychological well-being.

4.1.3 Direct effect analysis of self-concept clarity on learning engagement

In this study, self-concept clarity is significantly and positively correlated with learning engagement, and the clarity of one's self-concept shows significant predictive power for their level of learning engagement. Self-concept clarity reflects the individual's confidence and clarity in self-evaluation and self-perception, thus greatly influencing an individual's learning and life. As a dynamically evolving construct, self-concept clarity reflects

the integration of an individual's internal knowledge. Individuals with clearer self-concepts demonstrate better integrated internal knowledge systems, which in turn correlates with more positive psychological outcomes. Previous research indicates that student involvement in learning activities, including cognitive and emotional engagement, is driven by motivational characteristics such as self-concept [15]. Thus, the development of clear self-concepts appears to function as a motivational mechanism that enhances students' active participation in learning activities. In daily education and teaching, schools and teachers should place emphasis on fostering students' self-concept clarity and helping them establish a stable sense of self-identity, thereby enhancing their motivation to learn and persistence in their goals. Through courses and activities, students should be guided to explore the meaning of life, strengthening their intrinsic motivation to learn, and making them more willing to engage in their studies.

4.1.4 Mediation effect analysis of self-concept clarity

The path analysis reveals that mindfulness exerts its influence on learning engagement through the mediating pathway of self-concept clarity. This suggests that mindfulness can influence learning engagement by affecting individuals' self-cognition. On the one hand, more mindful individuals tend to develop more clearly defined self-concepts. This may be because individuals demonstrating heightened present-moment awareness often maintain a clear awareness of their inner thoughts and feelings, can intentionally make more consistent and conscious behavioral responses, thereby reducing self-uncertainty. At the same time, they can better label and express inner experiences, have higher introspection and self-monitoring capabilities, prompting individuals to increase self-trust and make effective behavioral choices, thus enhancing the degree of self-concept clarity. On the other hand, individuals possessing well-articulated self-schemas exhibit three hallmark characteristics: stable positive self-evaluations, clearly defined existential goals and a propensity for selecting situationally appropriate responses.

In academics, they exhibit purposefulness and planning, and are more confident and focused.

When individuals are clear about their learning goals, motives and strengths, they are more likely to devote more energy and enthusiasm to learning. Therefore, schools can incorporate mindfulness exercises into their curriculum to help students enhance their self-concept clarity. By doing so, students can become more aware of their learning objectives, and as a result, they are more likely to devote more energy and enthusiasm to their studies.

4.2 Conclusion

Learning engagement is an important measure of students' learning abilities and can significantly predict students' academic achievements, which is of great significance to students' academic development and growth. In addition to traditional approaches such as enhancing teacher support, improving parenting styles, and cultivating students' learning interests, this study found that increasing mindfulness levels is an effective way to improve students' levels of learning engagement. This study explores the self-mechanism by which mindfulness affects learning engagement and provides valuable insights into the structural relationship between mindfulness, self-concept clarity, and learning engagement. The results confirm that students' degrees of mindfulness are strongly and positively associated with their levels of learning engagement, revealing that mindfulness can significantly influence learning engagement by positively affecting individuals' self-concept clarity. These results help to enhance our comprehension of the elements that affect learning engagement and provide a theoretical basis and practical guidance for developing effective educational policies to improve college students' levels of learning engagement and uplift the caliber of higher education.

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