AN EMPIRICAL STUDY ON THE INFLUENCE OF SCHOOL CLIMATE ON ACADEMIC PROCRASTINATION AMONG HIGHER VOCATIONAL COLLEGES IN SHANGQIU CITY, HENAN PROVINCE, CHINA: THE MEDIATING ROLE OF SELF-REGULATED LEARNING ABILITY

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Abstract: This research aims to explore the influence mechanism of school climate on academic procrastination and examine the mediating role played by self-regulated learning ability. The study surveyed 385 students from three higher vocational colleges in Shangqiu, Henan Province, China. Questionnaires were used to collect data, with measurement tools including three scales: school climate, self-regulated learning ability, and academic procrastination. The research adopted descriptive statistics, t-tests, analysis of variance (ANOVA), Pearson correlation analysis, regression analysis, and mediation effect tests for data processing and analysis：(1) School climate showed no statistically significant differences across schools, majors, genders, or grade levels；(2) Self-regulated learning abilities demonstrated significant differences between genders；(3) Academic procrastination behaviors varied significantly by school, gender, and grade level； (4) School climate significantly and negatively predicted academic procrastination, while positively predicting self-regulation abilities. Self-regulation abilities significantly and negatively predicted academic procrastination；(5) Self-regulated learning abilities partially mediated the relationship between school climate and academic procrastination, accounting for 13.3% of the total effect.

Keywords: School Climate, Academic Procrastination, Self-Regulated Learning Ability, Higher Vocational Colleges

Introduction

In recent years, China's vocational education has achieved high-quality development. The 2024 China Vocational Education Development Report indicates that China has established the world's largest vocational education system (Ministry of Education of China, 2024). In real-world contexts,

China's higher vocational colleges emphasize self-directed learning with limited institutional control and constraints. While support systems remain underdeveloped, academic procrastination has become increasingly prominent. Defined as "the irrational delay in initiating or completing academic tasks" (Solomon & Rothblum, 1984), research shows a significant prevalence of academic procrastination among Chinese vocational students. Li et al. (2020) reported an occurrence rate of 72.3% - 14.2 percentage points higher than undergraduate students (58.1%).

Empirical studies indicate a significant negative correlation between academic procrastination and self-regulated learning ability (Steel, 2007). As a critical environmental moderator, school climate may influence procrastination behaviors through the mediating mechanism of self-regulated learning ability (Klassen et al., 2010). From the perspective of self-regulated learning theory, procrastination fundamentally represents systemic failure in self-regulation (Steel, 2007). Empirical evidence shows that when external constraints decrease by 30%, vocational students' weekly academic procrastination increases by 4.2 hours. In autonomous learning environments, vocational students exhibit more pronounced procrastination due to competency gaps. Zhang and Chen's (2021) study revealed that vocational students scored 1.5 standard deviations lower (SD = 0.8) in self-regulated learning ability compared to undergraduates, with only 34.7% systematically planning their studies. Their time-monitoring capacity was 21% lower than undergraduate peers (Sun et al., 2023).

Addressing these research gaps, this study examines higher vocational colleges in Shangqiu, Henan Province, China. We construct a theoretical model: School Climate Self-Regulated Learning Ability Academic Procrastination. Using structural equation modeling, we validate the chained mediation effects among these variables, elucidate impact pathways of school climate on academic procrastination, and discuss their interrelationships. This research not only fills a critical knowledge void but also provides empirical evidence for optimizing learning support systems in Chinese higher vocational colleges.

Research Problems

Literature reveals academic procrastination as a widespread issue among university students globally, with 64.3% of students in a cross-cultural study showing lower academic performance due to it, and a particularly high prevalence (78.6%) among Chinese students, especially in STEM majors. While social cognitive theory highlights the interplay between external environments and self-regulated learning in shaping procrastination behaviors, and Chinese scholars have explored its influencing factors, current research on the link between school climate and academic procrastination mainly focuses on conventional universities in developed regions, neglecting economically underdeveloped areas like Shangqiu, Henan, and often lacks in-depth exploration of mediating mechanisms, especially in higher vocational colleges.

Research Significance

This study, centered on higher vocational colleges in Shangqiu, Henan Province, China, examines the interplay among school climate, self-regulated learning ability, and academic procrastination, offering fresh theoretical perspectives on their dynamic mechanisms and enriching relevant theoretical frameworks with empirical data. It identifies key school climate factors influencing academic procrastination, providing practical insights and evidence-based strategies for educational administrators in economically underdeveloped regions to optimize academic management, enhance students' self-regulated learning, mitigate procrastination, and foster a more positive school environment.

Research Objectives

(1) Examine differences in school climate across demographic factors (institution, gender, grade level, academic major).

(2) Analyze variations in academic procrastination across demographic factors (institution, gender, grade level, academic major).

(3) Investigate disparities in self-regulated learning ability across demographic factors (institution, gender, grade level, academic major).

(4) Determine the impact of school climate on academic procrastination.

(5) Assess the influence of school climate on self-regulated learning ability.

(6) Establish the predictive effect of self-regulated learning ability on academic procrastination.

(7) Test the mediating effect of self-regulated learning ability in the relationship between school climate and academic procrastination.

Conceptual Framework

Targeting students from higher vocational colleges in Shangqiu, Henan Province, China, it analyzes the impact of school climate on academic procrastination while examining the mediating effect of self-regulated learning ability. The conceptual framework diagram is presented in Figure 1.

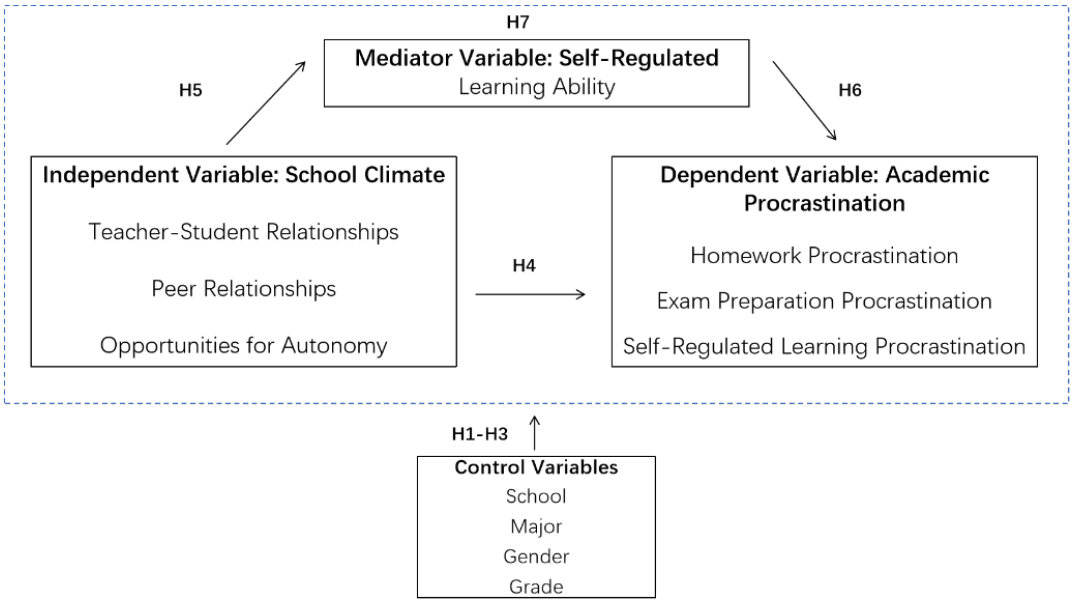

Figure 1: Conceptual Framework Diagram of the Study

Literatures Review

Social Cognitive Theory

Social cognitive theory, which bridges cognitive psychology and social learning theory, emphasizes the dynamic interplay among individuals, behavior, and environment. It introduces key concepts like observational learning, self-regulation, and self-efficacy to explain complex human behaviors. In educational settings, this theory provides a framework for understanding how school climate influences academic procrastination by shaping students' self-regulated learning abilities (Li, 2023). A positive school climate enhances academic self-efficacy and value expectations through supportive teacher-student and peer interactions, thereby strengthening students' goal setting, strategy use, and behavior monitoring (Bandura, 1986). These self-regulatory processes ultimately help reduce the likelihood of academic procrastination.

Self-Determination Theory

Self-Determination Theory (SDT), a foundational framework in motivational psychology, explains the satisfaction of basic psychological needs drives behavioral quality and sustained motivation. It emphasizes that when these needs are fulfilled, individuals are more likely to engage in self-regulated behaviors (Ryan & Deci, 2000). Applied to academic settings, SDT offers valuable insight into how school climate influences academic procrastination. A school climate that supports autonomy enhances intrinsic motivation and reduces delay behaviors. Similarly, a climate that fosters competence through appropriate challenges and constructive feedback promotes students' confidence and engagement. Overall, SDT suggests that a supportive school environment meets students' psychological needs, thereby strengthening self-regulated learning and reducing academic

procrastination.

Control-Value Theory

The Control-Value Theory (Puzziferro, 2008) offers a theoretical lens through which to understand how school climate influences learning behaviors by shaping students' perceived control and task value. In higher vocational education, institutional systems, curriculum content, and interpersonal dynamics play a key role in constructing students' beliefs about their ability to influence outcomes and the importance of learning tasks. These positive emotions, in turn, foster proactive self-regulated learning behaviors, including goal setting and strategic planning, ultimately reducing academic procrastination. This theory emphasizes that school climate affects procrastination not directly, but through a mediating pathway involving emotions and self-regulation. Therefore, to reduce procrastination, institutions should strategically enhance structural, instructional, and relational dimensions of the learning environment, transforming psychological insights into actionable educational policies.

School Climate

The concept of school climate was first proposed by Perry (1908), emphasizing that schools should go beyond physical spaces to foster teamwork and student development. This idea gained theoretical momentum when Halpin and Croft (1963) introduced organizational climate theory into education, defining school climate as the school's "unique personality" and enabling quantitative research through the Organizational Climate Description Questionnaire (OCDQ). Moreover, a supportive climate enhances learning engagement (Zhang et al., 2022), academic emotions, and performance outcomes, while negative climate contributes to academic burnout (Zhang & Gao, 2019) and poor school adjustment. However, existing research largely focuses on university and secondary students, with limited attention to higher vocational colleges. To address this gap, the present study employs Jia et al.'s (2009) 25-item scale, which assesses teacher relationships, peer relationships, and autonomy opportunities, aligning with the study's emphasis on vocational students' subjective experiences.

Self-Regulated Learning Ability

Self-regulated learning ability refers to learners' capacity to actively manage their learning through metacognitive, motivational, and behavioral strategies such as goal-setting, planning, monitoring, and reflection (Zimmerman, 1989; Puzziferro, 2008). Zimmerman (2000) proposed a comprehensive six-dimension model, while recent studies emphasize that its development relies on both cognitive/metacognitive training and contextual support. The measurement of self-regulated learning ability primarily relies on self-report tools. Internationally recognized instruments include the MSLQ (Puzziferro, 1993), LASSI (Weinstein, 2002), and SRLIS (Zimmerman, 1986). This study employs Self-Regulated Learning Questionnaire, which has demonstrated high reliability and is well-suited for assessing vocational students' learning regulation abilities in the Chinese educational context.

Academic Procrastination

Academic procrastination research has evolved from early psychoanalytic interpretations to behaviorist theories emphasizing reinforcement patterns, and later to cognitive frameworks focusing on irrational beliefs, fear of failure, and low self-efficacy. Since the 1990s, self-regulated learning theory, action control theory, and rational motive perspectives have provided integrative explanations, identifying procrastination as a failure of self-regulation (Baumeister et al., 2007). In China, theoretical development emerged relatively late, with scholars combining Western theories and local educational realities. Cognitive perspectives dominate current Chinese research, highlighting factors such as irrational beliefs, perfectionism, and task aversion (Li, 2010). Emotional states like anxiety and depression further exacerbate this behavior (Wang, 2007). In China, adapted instruments like Pang Weiguo and Han Guining's College Students' Academic Procrastination Questionnaire have been developed to suit local educational settings.

Variables Correlation Study

Based on ecosystem theory, school climate plays a dynamic regulatory role in students' academic behavior. Supportive environments help reduce academic procrastination by satisfying students' psychological needs and reinforcing a positive academic self-concept. Empirical studies indicate that positive climates can reduce procrastination by up to 37%, while excessive pressure or rigid control may trigger avoidance behaviors and psychological reactance, especially in collectivist contexts like China (Britton et al., 2014). Teacher and peer support strengthen students' sense of belonging, promote strategy adjustment toward learning goals, and build metacognitive skills (Zeng et al., 2022). Research confirms that intrinsic motivation supports timely task engagement, whereas extrinsic pressures like fear of failure contribute to avoidance behaviors (Zhang et al., 2020). Meta-analyses and empirical studies consistently show that a positive school climate is strongly linked to enhanced self-regulated learning ability, which in turn significantly reduces academic procrastination. For example, each standard deviation increase in self-regulation can lower procrastination by nearly 30%, while improvements in teacher-student relationships reduce procrastination by 23%, particularly under high academic pressure (Li, et al.2020). This study aims to fill that gap by exploring how school climate indirectly affects procrastination through its positive impact on students' self-regulated learning ability.

Methodology

This study employs a quantitative research methodology. During data collection, structured Likert-5 scales were utilized to obtain representative sample data through convenience sampling. Quantitative data were processed and organized, then analyzed using SPSS software to derive conclusions and recommendations. This study targeted full-time students at Higher Vocational Colleges

in Shangqiu City, Henan Province, China as the population. Using convenience sampling, three public colleges (College A, B, and C) were selected as sample sites based on 2024 statistics from China's Ministry of Education. These colleges had a combined enrollment of approximately 40,000 students spanning four disciplinary fields: education, medicine, arts, and engineering, representing a regional Higher Vocational Education typology. Following Krejcie & Morgan's table for finite populations, a minimum sample size of 385 was determined.

Results

Reliability and Validity Analysis

This study utilized three reliable and valid scales. The Perceived School Atmosphere Scale (Jia et al., 2009) covers three dimensions: teacher-student relationships, peer support, and autonomy opportunities, with high internal consistency (Cronbach's Alpha = 0.898) and good construct validity (KMO = 0.860). The Self-Regulated Learning Questionnaire (Schunk & Ertmer, 1999 version, revised by Zhang Chunmei) demonstrated high reliability (Alpha = 0.885) and strong structural validity (KMO = 0.952), effectively measuring students' goal-setting, time management, and related abilities. The Academic Procrastination Questionnaire (Han, 2008) includes three dimensions—assignment completion, exam preparation, and self-directed learning—with good reliability (Alpha ~0.80) and solid validity (KMO = 0.893), accurately capturing students' procrastination behaviors. Together, these scales provide a robust measurement foundation for the stud.

Table 1: Scale Reliability Test Results

Dimension	Cronbach's Alpha	N of Item
Autonomy Opportunity Dimension	0.842	5
Student Support Dimension	0.867	12
Teacher Support Dimension	0.893	7
School Climate	0.898	24
Completing Assignments	0.803	9
Reviewing and Preparing for Exams	0.800	10
Independent Learning	0.807	7
Academic Procrastination	0.810	26
Self-Regulation Learning Ability	0.885	15

Demographic Distribution of Respondents

This study surveyed 385 students from three higher vocational colleges in Shangqiu City, Henan Province, China, to examine the influence of School Climate on Academic Procrastination and

the mediating role of Self-Regulated Learning Ability. Sample distribution showed participants from College A (51.2%), College B (34.3%), and College C (14.5%), with College A representing approximately half the cohort. Gender distribution was balanced: males (n=192, 49.9%) and females (n=193, 50.1%), enhancing representativeness. Academic year distribution included Year 1 (n=123, 31.9%), Year 2 (n=119, 30.9%), and Year 3 (n=143, 37.1%), with slightly higher representation of final-year students to better capture learning regulation trajectories.

Regarding majors, students spanned four fields: Education (25.7%), Arts (24.4%), Engineering (25.7%), and Medicine (24.2%), demonstrating disciplinary diversity conducive to analyzing procrastination variations. As presented in Table 4.1, balanced distributions across colleges, gender, academic years, and majors establish a robust foundation for subsequent empirical analyses.

Table 2: Demographic Profile of Participants (N = 385)

Background	Group	Frequency	Percent
College	A	197	51.2
	B	132	34.3
	C	56	14.5
Gender	Male	192	49.9
	Female	193	50.1
Grade Level	Year 1	123	31.9
	Year 2	119	30.9
	Year 3	143	37.1
Major	Education	99	25.7
	Arts	94	24.4
	Engineering	99	25.7
	Medicine	93	24.2
Total		385	100.0

Differences Exist in School Climate Across Demographic Background Variables (School, Program, Gender, Grade Level)

Differences in perceived school climate were observed across various demographic background variables including school, program, gender, and grade level. These variations highlight how students' experiences of their educational environment are influenced by their specific contexts and identities. For instance, students from different schools reported varying levels of perceived teacher support and peer relationships, reflecting institutional culture differences. Similarly, academic programs showed distinctions in school climate perceptions, possibly due to curriculum structure or faculty engagement. Gender differences emerged, with one group perceiving stronger support or autonomy opportunities

than the other, suggesting gendered experiences within the school setting. Additionally, grade level influenced perceptions, as senior students often reported different climate evaluations compared to freshmen, potentially linked to their adaptation and evolving expectations. Overall, these findings underscore the importance of considering demographic factors when assessing and improving school climate.

Differences Exist in Self-Regulated Learning Ability Across Demographic Background Variables (School, Program, Gender, Grade Level)

Significant differences in self-regulated learning ability were found across demographic variables such as school, program, gender, and grade level. Students from different schools exhibited varying levels of self-regulation, likely reflecting differences in institutional support and educational practices. Academic programs also influenced self-regulated learning, with some programs fostering stronger skills in goal setting, time management, and self-monitoring. Gender differences were evident, as female students generally demonstrated higher self-regulation abilities than males, possibly due to differences in motivation or learning strategies. Furthermore, grade level impacted self-regulated learning ability, with senior students typically showing more advanced self-regulation skills compared to their junior counterparts, suggesting growth through experience and academic maturity. These demographic distinctions highlight the need for tailored interventions to support self-regulated learning effectively.

Differences Exist in Academic Procrastination Across Demographic Background Variables (College, Program, Gender, Grade Level)

Significant differences in academic procrastination were observed across demographic variables including college, program, gender, and grade level. Students from different colleges showed varying procrastination levels, which may be influenced by institutional culture and academic expectations. Similarly, academic programs impacted procrastination behaviors, with some disciplines exhibiting higher tendencies toward delaying tasks, possibly due to curriculum demands or learning styles. Gender differences were also apparent, with male students generally demonstrating higher levels of procrastination compared to females, aligning with previous research on motivation and time management. Additionally, grade level influenced procrastination, as lower-grade students tended to procrastinate more than their senior peers, reflecting the development of better self-regulation and time management skills over time. These findings underscore the importance of considering demographic factors when designing strategies to reduce academic procrastination.

School Climate Has a Significant Negative Effect on Academic Procrastination

The study reveals significant correlations: a positive link between School Climate and Self-Regulated Learning Ability ($r = 0.224$, $p < 0.01$), a negative association between School Climate and Academic Procrastination ($r = -0.318$, $p < 0.01$), and a negative relationship between Self-Regulated Learning Ability and Academic Procrastination ($r = -0.258$, $p < 0.01$). Regression analysis further

confirms that a better School Climate substantially reduces Academic Procrastination (coefficient = -0.46, p = 0.00), supporting the hypothesis that an improved School Climate mitigates Academic Procrastination by enhancing students' Self-Regulated Learning Ability.

Table 3: Correlation Analysis of Variables

Dimension	M	SD	1	2	3
School Climate	3.486	0.166	1		
Self-Regulated Learning Ability	3.499	0.205	.224**	1	
Academic Procrastination	3.694	0.314	-.318**	-.258**	1

School Climate Has a Significantly Positive Influence on Self-Regulated Learning Ability

Strong supporting evidence is obtained from the Pearson correlation analysis results. The correlation coefficient between School Climate and Self-Regulated Learning Ability is 0.224, with a significance level of $p < 0.01$. This indicates a significant positive correlation between the two constructs. Students who perceive a higher level of School Climate also demonstrate a higher level of Self-Regulated Learning Ability. This positive relationship is statistically significant and theoretically reasonable.

Self-Regulated Learning Ability Has a Significantly Negative Influence on Academic Procrastination

According to the regression results, the unstandardized regression coefficient of Self-Regulated Learning Ability on Academic Procrastination is -0.45, the standardized coefficient (Beta) is -0.29, the t value is -10.82, and its significance level is p = 0.000, reaching significance.

Self-Regulated Learning Ability Mediates the Relationship Between School Climate and Academic Procrastination

The mediation analysis results confirm the mediating role of Self-Regulated Learning Ability between School Climate and Academic Procrastination. The total effect of School Climate on Academic Procrastination is -0.60 (SE = 0.09, t = -6.56, p = .00), indicating that School Climate overall has a significant negative influence on Academic Procrastination. The indirect effect of School Climate on Academic Procrastination through Self-Regulated Learning Ability is -0.08, with a lower-level confidence interval (LLCI) of -0.15 and an upper-level confidence interval (ULCI) of -0.03. As the interval does not contain zero, the indirect effect is significant, accounting for 13.3% of the total effect. Simultaneously, the direct effect of School Climate on Academic Procrastination is -0.52 (SE = 0.09, t = -5.62, p = .00), which remains significant and accounts for 86.7% of the total effect. This indicates that Self-Regulated Learning Ability partially mediates the influence of School Climate on Academic Procrastination.

Discussion

The observed differences in academic procrastination across demographic variables highlight the complex interplay between individual characteristics and educational contexts. Variations among colleges suggest that institutional culture, teaching methods, and support systems significantly shape students' procrastination behaviors. Different academic programs pose unique challenges and workload demands, which may either exacerbate or mitigate procrastination tendencies depending on how well students engage with the curriculum and manage their time.

Gender disparities align with established literature indicating that male students often report higher procrastination levels, potentially due to differences in motivation, self-discipline, or socialization patterns. This suggests a need for gender-sensitive interventions that address these underlying factors. The decline in procrastination with advancing grade levels reflects students' gradual development of self-regulated learning skills and increased academic maturity, emphasizing the value of targeted support early in students' academic journeys.

Overall, these findings indicate that efforts to reduce academic procrastination should be tailored, considering the distinct needs arising from students' institutional affiliations, program demands, gender, and stage in their academic progression. By addressing these factors, educators and administrators can better foster learning environments that promote timely engagement and academic success.

Conclusion

Based on the analysis of questionnaire data collected from higher vocational colleges in Shangqiu City, this study draws several key conclusions. Significant differences in school climate, self-regulated learning ability, and academic procrastination were observed across demographic variables including school, academic program, gender, and grade level. These findings suggest that students' perceptions and behaviors vary notably depending on their institutional environment, field of study, gender, and academic maturity. School climate was found to have a significant negative impact on academic procrastination, indicating that a positive and supportive school environment can effectively reduce students' tendencies to delay academic tasks. Additionally, school climate positively influenced students' self-regulated learning ability, emphasizing the role of a constructive educational atmosphere in fostering students' autonomous learning and self-management skills. Self-regulated learning ability demonstrated a significant negative effect on academic procrastination, underscoring its crucial role in enabling students to manage their learning processes proactively and avoid procrastination. Importantly, self-regulated learning ability also served as a mediating factor between school climate and academic procrastination, revealing the indirect pathway through which school climate influences procrastination by enhancing students' self-regulation. These findings highlight the importance of cultivating a positive

school climate and strengthening students' self-regulated learning capabilities as effective strategies to mitigate academic procrastination in higher vocational education settings.

This study has several limitations. First, the sample was drawn solely from a few higher vocational colleges in Shangqiu City, Henan Province, which limits the generalizability of the findings due to the restricted geographic and institutional scope. Second, the cross-sectional survey design makes it difficult to establish causal relationships or capture dynamic changes over time. Third, the reliance on self-reported data may introduce subjective biases. Finally, the study explored a limited range of influencing factors; future research should incorporate additional variables and employ mixed methods to deepen and broaden the understanding of the phenomena.

To effectively address academic procrastination and enhance self-regulated learning among vocational students, educational institutions should focus on creating a positive and supportive school climate. This involves fostering strong teacher-student relationships, encouraging peer collaboration, and providing students with greater autonomy in their learning processes. Schools can implement targeted training programs to develop students' self-regulation skills, such as goal setting, time management, and emotional control. Additionally, integrating motivational strategies that satisfy students' psychological needs for competence, autonomy, and relatedness can further boost intrinsic motivation and reduce procrastination behaviors. By systematically improving the learning environment and equipping students with effective self-regulatory tools, schools can promote more proactive, engaged, and successful learning outcomes.

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