The Development of a Self-leadership Model for Students' Creativity at Universities in Yunnan Province, China

Yi Dan* and Nathara Mhunpiew

Educational Administration and Leadership Program,
Graduate School of Human Sciences, Assumption University,
Bangkok 10240, Thailand

***Corresponding author's e-mail: danyi19890810@foxmail.com**

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Abstract

In a knowledge-based economy, creativity is important for maintaining a country's competitiveness. As the main educational institution that provides fresh blood to the nation's talent pool, universities need to find appropriate ways to nurture creative minds to enhance the nation's competitiveness. The purpose of this study was to develop a self-leadership model to increase students' creativity at universities in Yunnan Province, China. The research methodologies used in this study were literature synthesis, descriptive statistics, regression analysis, focus group discussion, and paired-samples *t* test. Through such a combination of qualitative and quantitative research, this model was developed with students' self-leadership skills as the key, with activities for creativity, supervisor leadership and organizational structure as supporting factors for creativity development. After a four-week intervention, the model was proven to be effective in enhancing students' creativity. The researcher recommends that university administrators in Yunnan Province, China, consider using this model as a means of increasing students' creativity.

Keywords: Self-leadership, College students' creativity, Model development, Yunan province, China

Introduction

Social development and economic transformation cannot be achieved without creativity, especially in the era of the knowledge economy, in which people are the masters and creators of knowledge who creatively receive, process, and transmit information (Puccio, 2017). In this context, the availability of a large number of highly qualified human resources with a creative spirit and the ability to innovate largely determines a country's international competitiveness. Universities, as the main educational settings that provide the country's talent pool with fresh blood, have the important task of fostering creativity in students, which is why many countries have incorporated creativity development into their university curricula (Mahdi

et al., 2015), and China has also launched a firestorm of innovation and entrepreneurship education for university students. In this trend, the role of creativity is self-evident. As the basis for innovation (Amabile, 2012), it needs to be nurtured in a proven way. Self-leadership is defined as a process of total self-influence that emphasizes self-direction and self-motivation to achieve goals (Manz, 1986). It is a science-based competency that can be learned (Bryant & Kazan, 2012) and is becoming increasingly important. Self-leadership and creativity have been positively correlated in the literature (Bryant & Kazan, 2012; DiLiello & Houghton, 2006; Stewart et al., 2019), however, these studies have mainly focused on the business sector, and there is a paucity of research that explores self-leadership in depth in higher education institutions specifically for the purpose of creativity among university students, and this study is intended to fill this gap, using the example of universities in Yunnan Province, China. As both self-leadership and creativity are popular research topics in their own right and are important to university students, it would be beneficial to provide an integrated approach to the development of creativity from a self-leadership perspective, both for research in these two fields and for students' development after graduation.

Literature review

Self-leadership

The development of leadership theories has undergone several great changes, from trait theories, to behavioral theories, to contingency theories, up to the transformational leadership theory, where leadership has shifted from purely leader-centred to follower-centred, with a focus on the personal management and self-actualization of organizational members gradually becoming a contemporary trend in leadership research (Stewart et al., 2019), thereby stimulating faster decision-making and creativity in response to rapid change and helping people to self-regulate quickly in the midst of chaos and disorder (Maykrantz & Houghton, 2020). This competency, which is increasingly important in the new normal, is self-leadership.

Born out of a paradigm shift in leadership, self-leadership is defined as a process of total self-influence, focusing on how people consciously manage and motivate themselves to achieve tasks that are naturally motivated (internally motivated) and goals that are not naturally motivated (externally motivated) (Manz, 1986). In short, unlike reliance on external forces, self-leadership emphasizes the development of self-direction and self-motivation to help people perform the behaviors required to achieve goals in the desired manner (Houghton & Neck, 2002). Since the concept was introduced by Manz (1986), it has been proven by a large number of scholars to be a science-based competency that can be learned (Bryant & Kazan, 2012), and its importance has grown as people realize that they need to master how to lead themselves before they can develop the ability to lead others (Stewart et al., 2019).

The most widely used approach to helping individuals achieve self-leadership comes from Manz's (1986) strategies, which consist of three dimensions: behaviour-focused strategies, natural reward strategy, and constructive thought pattern strategies, from which organizations can train their members. Subsequently, some researchers have created questionnaires based on this theory to assess individual self-leadership (Houghton & Neck,

2002), making this competency measurable and targetable for improvement. Although the concept of self-leadership originated in the business world (Manz, 1986), it has also received attention in higher education because of its benefits to both individuals and organizations. For example, an empirical study by Marshall et al. (2012) found that self-leadership training, which included a range of cognitive and behavioral strategies, was beneficial to the self-efficacy and organizational commitment of university teachers, thereby further improving organizational performance; Maykrantz and Houghton's (2020) study showed that self-leadership can regulate students' emotional stress, similar to the findings of an investigation by Houghton et al. (2012) in China. All of this evidence suggests the validity of self-leadership as a distinct theory in a variety of organizations, including universities.

Creativity

In the social sciences, creativity is often considered a thinking ability (Puccio, 2017), for example, Amabile (2012) argued that creativity is the ability of individuals to generate valuable and novel ideas or processes in complex social systems. Hulme et al. (2014) concluded that creativity can be defined as a way of behaving in which a creative person will consciously avoid prior assumptions and create a new approach that is perceived as valuable. And Morrison and Johnston (2003) believed that creativity is about people using their flexible minds to reorganize existing knowledge and phenomena to imagine and think of new and different ideas. This definition can be traced back to 1967, when Guilford proposed the Three Dimensional Structure Model of Intelligence, which defined creativity as the ability to think divergently, characterized by fluency, flexibility, and originality (Guilford, 1967). He then applied this theory to educational practice, turning the development of creative thinking into an operational teaching process (Guilford, 1973). Guilford's ideas ushered in a new era in the study and application of creativity. Since the late 1980s, many theorists in the field of creativity have begun to make a number of new claims, for instance, Amabile (2012) emphasized that domain-relevant skills, creativity-relevant skills, task motivation, and the social environment determine the level of creativity of individuals. Sternberg (2006) believed that creativity is the product of a combination of intelligence, knowledge, thinking style, personality, motivation, and environment, and that the activities used to enhance creativity are centred on problem solving.

As creativity research continues to grow, a consensus has emerged that creativity is not an innate characteristic of individuals, but can be developed through practice (Lee, 2018). This understanding has had a profound impact on the higher education community, with many researchers and educators proposing a range of pedagogical measures to enhance students' creativity, such as resource support, team work (Wood & Bilsborow, 2014), field trip (Seechaliao, 2017), observational learning (Yeh et al., 2012), cognitive modeling (Cheung et al., 2006), negotiated assessment (Marquis et al., 2017), and knowledge sharing (Lee, 2018). Although external interventions can help individual creativity to some extent, all these teaching practices are essentially about motivating students intrinsically (Wood & Bilsborow, 2014; Seechaliao, 2017), meaning that it is the students themselves who should take the lead in

helping them to be more creative, with the teacher only providing guidance when appropriate (Yeh et al., 2012).

Self-leadership and creativity

Among the possible outcomes of self-leadership, creativity is mentioned frequently. Proponents of self-leadership argue that introducing self-leadership into research in the area of personal creativity is a meaningful practice both from an academic and professional perspective (Kern et al., 2017). Some researchers believe that creativity can be fostered through changes in organizational climate and management style (Bryant & Kazan, 2012), but these external forces need to be mediated by individual self-leadership to be effective (DiLiello & Houghton, 2006), because a self-leader actively thinks about the ways in which problems can be viewed and solved from multiple perspectives, a mindset that maximizes the individual's creative potential (Neck & Houghton, 2006). However, it cannot be denied that support from the workplace can accelerate the growth of individual creativity, for example, when leaders use empowering leadership behaviors, members are given full self-determination and thus tend to lead themselves, giving them the freedom to be more creative (Kern et al., 2017).

In the field of higher education, there is a lack of adequate literature on the relationship between self-leadership and creativity specifically among university students, but a large body of research on college students' creativity has pointed out that those instructional practices that aim to improve students' creativity have as their primary aim the stimulation of student autonomy (Wood & Bilsborow, 2014; Seechaliao, 2017), meaning that the most effective motivators for students to take the initiative to enhance their creativity are the students themselves (Yeh et al., 2012). The purpose of self-leadership is to help individuals consciously motivate and guide themselves to achieve goals (Stewart et al., 2019), from this perspective, therefore, self-leadership as a means of developing creativity is consistent with the development of creativity in university students.

Research questions

The aim of this study was to develop a self-leadership model to increase students' creativity at universities in Yunnan Province, China. The basic idea was to enable students to self-improve their creativity by helping them to master self-leadership, as a self-leader has the ability to self-motivate and self-plan to accomplish goals. Therefore, the question of how to help students master self-leadership became the first issue to be addressed, and the second issue was which behaviors that students can do on their own could contribute to their creativity, and the researcher used the *self-leadership practices to increase students' creativity* to answer these two questions in a unified way. In order to arrive at the final model, the study needed to address the following questions in turn, which are interlinked.

Question 1: What are the self-leadership practices that increase students' creativity in higher education?

Question 2: What are the current self-leadership practices used to increase students' creativity at universities in Yunnan province, China?

Question 3: What is the self-leadership model currently employed for the development of students' creativity at universities in Yunnan province, China?

Question 4: What is the effectiveness of the self-leadership model currently employed for the development of students' creativity at universities in Yunnan province, China?

Research methodology

This study used a combination of quantitative and qualitative methods. As different research approaches were adopted for each of the questions, they are explained separately in this section.

Question 1

Research design

The researcher employed a literature synthesis approach to extract the required elements. A systematic literature synthesis (or literature review) is a method of examining a particular topic by drawing different information from various literature or theories, and the researcher ultimately develops a new perception of the topic based on his understanding of this extracted information (Earley, 2014). In this study, this step was centred around two keywords, self-leadership and creativity among university students, and the analysis of representative studies in each of these areas lead to the self-leadership practices to increase students' creativity.

Data collection and analysis

The literature on self-leadership among university students is limited and given that a university is an organization with educational purposes, the researcher identified key words relating to self-leadership as "self-leadership among university students" and "self-leadership of individuals within organization" to exclude other factors such as family and social environment from influencing it. The researcher then set a number of criteria to accurately screen the documents that matched Question 1, which were 1) Review articles were preferred as they are a collection of generalizations and commentaries by scholars and can help to quickly grasp the history of the development of the field, and 2) Books should have dedicated chapters to describe the required relevant content. As a result, the required literature was determined, for a total of 21.

After carefully reading and analyzing the selected literature, the following steps were followed to find the answer to Question 1. 1) Extracting keywords that fit the topic; 2) labeling each mentioned keyword by frequency; 3) analyzing the meaning of the keywords and naming those with similar connotations as a unified term; 4) selecting high frequency terms; and 5) grouping each term into different categories (variables) according to its meaning. Eventually, four variables were identified, which were s*elf-leadership skills*, *supervisor leadership, organizational structure*, and *activities for creativity*.

Question 2

Research design

While the previous step answered the question of what are the self-leadership practices to increase students' creativity in higher education in a global context, the second step used statistical tools to determine the current status of these factors in universities in Yunnan Province, China and the statistical relationship between them. It serves as a validation of the theoretical variables in Question 1 and also provides empirical support for Question 3.

Population and sample

Three universities in Yunnan Province (YXNU, DLU, and HHU) were selected as representatives of the study. This step targeted all senior students (approximately 8,500) as they were about to graduate and teaching them to acquire self-leadership and enhance their creativity would be beneficial to their competitiveness in the job market. According to Krejcie and Morgan's (1970) determining sample size for research activities, a random sample of 1030 students was selected to participate in the survey.

Research instrument

Based on the results of the previous step, the researcher used the Likert five-point scale to develop a questionnaire consisting of 39 items, which contained five sections, four of which were about the variables and sub-dimensions extracted from the literature synthesis, for which the researcher designed 33 items according to their meaning; one section was about a variable on creativity with three dimensions adopted from Guilford's (1967) theory that creativity is a divergent thinking ability that can be measured by fluency, flexibility, and originality. Based on this theory, the researcher created a six-item self-assessment questionnaire to identify the current state of students' creativity.

To ensure the validity of the questionnaire, the researcher invited five higher education experts to score the Item Objective Congruence (IOC) of the questionnaire, which is a tool used to assess the validity of questionnaire content, in which experts are asked to rate all questionnaire items on a scale of -1 to +1, where 1 = meets the measure, -l = does not meet the measure, 0 = questionable, and items with a final score between 0.5 and 1 can be retained (Rovinelli & Hambleton, 1977). The validity of the questionnaire was assured as all 39 items tested achieved a score of 0.5 or above. In addition, the researcher used Cronbach's alpha from SPSS to test the reliability and scored 0.972, which indicates that the questionnaire has excellent reliability.

Data collection and analysis

The questionnaire was distributed to the students via an online platform, and the data collected was analysed in two stages: the first stage was to use descriptive statistics in SPSS to analyse the current status of the variables; the second stage was to use Pearson correlation coefficient and regression analysis to determine the statistical association between the variables in order to lay the foundation for model development.

Question 3

Research design

This step took the form of a focus group discussion, which is a method of gathering material for a specific topic developed by the researcher through an exchange of dialogue between the group members (Rabiee, 2004). The researcher drew a draft model based on the findings of the previous step and then invited a focus group to discuss around it until a final model was developed.

Data collection and analysis

The researcher sent invitations to a total of 18 higher education experts, who unanimously suggested that the draft model be evaluated in the form of a letter to allow enough time for independent reflection. The researcher then emailed the results of the first two steps and the draft model with design ideas to the 18 experts, asking them to suggest changes to the shape, structure, and content of the model. Of the feedback received, more than half of the suggestions were accepted and applied. Subsequently, in order to finalize the model, the researcher invited these experts for a focus group discussion, with seven eventually joining. This discussion took place online, during which the researcher presented the adjusted model, and after discussion with the experts present, the model was finalized with minor adjustments to match the intended objectives of the study.

Question 4

Based on the model developed in the previous step, of all the variables, students' self-leadership skills were the most central factor in their creativity enhancement and were a direct predictor of creativity levels. The researcher therefore designed a training to enhance students' self-leadership skills, and the model was validated if there was a significant difference in students' creativity before and after the training. The training was conducted over a four-week period, during which students were taught about self-leadership and how to use self-leadership skills to enhance their creativity.

Data collection and analysis

The researcher recruited 30 students to participate in an online course on self-leadership and the self-leadership skills section and creativity section of the questionnaire already created in Question 2 were used to collect data. The students were asked to complete the questionnaire before and after the training, and the paired-samples *t* test in SPSS was used to identify if the students' creativity had increased.

Results

The first step in this study was to answer the question of what are the self-leadership practices to increase students' creativity in higher education, by synthesizing the literature four variables were derived, which were;

1) Supervisor leadership, including six sub-dimensions.

2) Organizational structure, including two sub-dimensions.

3) Activities for creativity, including seven sub-dimensions.

4) Self-leadership skills, including behavior-focused strategies (consisting of five sub-dimensions), natural reward strategy, and constructive thought pattern strategies (consisting of three sub-dimensions). All dimensions and components of this variable were adopted from Manz's (1986) theory of self-leadership.

Among the above variables, supervisor leadership, organizational structure, and students' self-leadership skills are factors that contribute to students' development of self-leadership, and activities for creativity are behaviors that need to be performed by students on their own. Table 1 shows the interpretation of these four variables and their sub-dimensions.

Table 1 Variables derived from a literature synthesize

Variables & examples of literature sources		**Explanations**
Supervisor leadership	Lead by example (Bryant & Kazan, 2012; Houghton & Yoho, 2005)	The supervisor is a self-leader who influences others by regulating his/her own words and actions.
	Encourage all voices (Houghton & Yoho, 2005; Stewart et al., 2019)	The supervisor is not the sole decision-maker, each student is encouraged to express their views on the events around them.
	Empowerment (Stewart et al., 2019; Neck & Houghton, 2006)	The supervisor delegates the management of group matters to the students, who coordinates and solves problems independently.
	Care for individual development (Marshall et al., 2012; Blanchard, 2005)	The supervisor is concerned with students' individual development, encouraging their self-improvement.
	Set and deliver goals (Daskal, 2017; Blanchard, 2005)	The supervisor will map out students' developmental vision, pushing them to work hard to achieve goals.
	Care for autonomy (Neck & Houghton, 2006; Kern et al., 2017)	The supervisor cares about student autonomy, encouraging them to take ownership of their study and life challenges.
Organizational structure	Reward system (Bryant & Kazan, 2012; Daskal, 2017)	The university gives material or moral rewards to students who

Variables & examples of literature sources			Explanations
			have achieved certain achievements.
	Unstructured environment (Houghton & Yoho, 2005; Stewart et al., 2019)		The university is managed flexibly, with students having autonomy over their tasks rather than fully obey established rules.
Self-leadership skills (Manz, 1986)	Behavior-focused Strategies	Self-observation	The recognition of our perceptions, thoughts, and intentions.
		Self-goal setting	Setting behavioral goals that can be made up of several small but specific plans.
		Self-reward	Rewarding oneself when progress and achievements are made.
		Self-punishment	Punishing oneself when mistakes are made to regulate one's words and deeds.
		Self-cueing	Use the external environment to help remind people of their focus.
	Natural reward strategy		The method that adds pleasant characteristics to a given task or activity so that people act on intrinsic motivation.
	Constructive thought pattern strategies	Evaluating beliefs and assumptions	Establish self-evaluation and analysis systems to identify negative beliefs and assumptions and reshape positive thought pattern.
		Self-talk	Be our own coaches, responding to the reasons for the negative attitudes, using self-direction and motivational self-talk to cope with challenges, and giving feedback when difficulties arise.
		Visualizing successful performance	Use imagination to portray the successful appearance of the target before completing a task.
Activities for creativity	Teamwork (Cheung et al., 2006; Morrison & Johnston, 2003)		Students sometimes take teamwork to solve problems.

Variables & examples of literature sources	Explanations
Problem-solving (Guilford, 1973; Seechaliao, 2017)	For a problem that has no standard answer, students will try to come up with multiple ideas for a solution.
Self-reflection (Yeh et al., 2012; Marquis et al., 2017)	Students will periodically reflect on whether or not they have recently introduced creativity into their life.
Divergent thinking (Guilford, 1973; Cheung et al., 2006)	Students will come up with as many answers as possible to those challenging questions, the more the better.
Practical task (Marquis et al., 2017; Seechaliao, 2017)	Students will try to be creative in accomplishing a specific task.
Brainstorming (Yeh et al., 2012; Morrison & Johnston, 2003)	When faced with a problem, students brainstorm with classmates to find the best solution.
Idea sharing (Wood & Bilsborow, 2014; Morrison & Johnston, 2003)	Students will share new ideas and good thoughts with others.

The second question of this study was to investigate the current status of the above variables in the target universities and to analyse their statistical relationship with creativity. For ease of presentation, the following tables use abbreviations to denote the variables, i.e. SLS=self-leadership skills, SL=supervisor leadership, OS=organizational structure, and AC=activities for creativity.

Stage 1 Descriptive statistics

Table 2 Descriptive statistics of SLS, SL, OS, AC, and creativity

Variables	Dimensions		Means		Std. Deviations	
SLS	Behavior-focused strategies	Self-observation	4.03	3.94	0.68	0.63
		Self-goal setting	4.14		0.62	
		Self-reward	3.96		0.73	
		Self-punishment	3.85		0.77	

Variables	Dimensions		Means		Std. Deviations	
		Self-cueing	3.75		0.85	
	Natural reward strategies		3.80		0.60	
	Constructive thoughts strategies	Evaluating beliefs and assumptions	3.89	3.93	0.98	0.63
		Self-talk	3.93		0.69	
		Visualizing successful performance	4.16		0.80	
	Total		*3.89*		*0.57*	
SL	Lead by example		4.19		0.94	
	Encourage all voices		4.38		0.85	
	Empowerment		4.19		0.75	
	Care for individual development		4.31		0.84	
	Set and deliver goals		4.12		0.82	
	Care for autonomy		4.32		0.64	
	Total		*4.17*		*0.65*	
OS	Reward system		4.08		1.13	
	Unstructured environment		4.04		0.87	
	Total		4.06		0.92	
AC	Team work		4.00		0.89	
	Self-reflection		4.16		0.68	
	Divergent thinking		3.97		0.82	
	Practical task		3.88		0.82	
	Brainstorming		4.15		0.73	
	Idea sharing		3.95		0.92	
	Problem solving		3.96		0.66	
	Total		*4.01*		*0.65*	
Creativity	Fluency		3.88		0.75	
	Flexibility		4.04		0.71	
	Originality		3.63		0.68	
	Total		*3.85*		*0.68*	

As shown in Table 2, the mean of students' self-leadership skills was 3.89, with behaviour-focused strategies scoring the highest at 3.94, constructive thoughts strategies scoring 3.93, and natural reward strategies scored 3.80, which was the lowest scoring dimension of self-leadership skills. The mean for supervisor leadership was 4.17, with encourage all voices achieving 4.38 as the highest score and set and deliver goals being rated

4.12 as the lowest score. The overall mean for organizational structure was 4.06, with reward system and unstructured environment scoring 4.08 and 4.04 respectively. The mean of activities for creativity was 4.01, with the highest and lowest scoring dimensions being self-reflection (4.16) and practical task (3.88).

Stage 2 Statistical relationships

Table 3 Pearson product-moment correlation coefficient between SL, OS and SLS

		SLS
SL	Pearson Correlation	0.738**
	Sig. (2-tailed)	0.000
OS	Pearson Correlation	0.569**
	Sig. (2-tailed)	0.002

**. Correlation is significant at the 0.01 level (2-tailed).

Pearson product-moment correlation coefficient showed that the *p*-values between supervisor leadership, organizational structure and self-leadership skills were 0.000 and 0.002 respectively, both less than 0.01, which suggested that correlations between these factors were all significant at the 0.01 level (2-tailed). Furthermore, according to the *r*-values, supervisor leadership (0.738) was more closely related to self-leadership skills than organizational structure (0.569).

Table 4 Pearson product-moment correlation coefficient between SLS, SL, OS, AC and creativity

		Creativity
SLS	Pearson Correlation	0.840**
	Sig. (2-tailed)	0.000
SL	Pearson Correlation	0.598**
	Sig. (2-tailed)	0.001
OS	Pearson Correlation	0.677**
	Sig. (2-tailed)	0.000
AC	Pearson Correlation	0.834**
	Sig. (2-tailed)	0.000

** Correlation is significant at the 0.01 level (2-tailed).

As shown in Table 4, the *p*-values between supervisor leadership, organizational structure, and activities for creativity and creativity were 0.001, 0.000, and 0.000, respectively, all less than 0.01, which indicated that correlations between these factors were all significant at the 0.01 level (2-tailed). In addition, their *r*-values with creativity were 0.598, 0.677, and

0.834, respectively, indicating that students' activities for creativity were most closely related to their creativity among these variables tested.

In summary, it can be concluded from Tables 3 and 4 that the statistical association between supervisor leadership and organizational structure and students' self-leadership skills was statistically significant, while these three factors together with activities for creativity, had a positive impact on students' creativity.

Table 5 ANOVA[a] of regression analysis

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	9.473	4	2.368	22.851	0.000[b]
Residual	2.176	21	0.104		
Total	11.650	25			

Table 6 Coefficients[a] of regression analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.074	0.481		0.153	0.880
SL	-0.287	0.164	-0.272	-1.754	0.094
OS	0.206	0.102	0.278	2.022	0.056
SLS	0.720	0.220	0.599	3.271	0.004
AC	0.356	0.202	0.341	1.767	0.092

After further regression analysis, the *p*-values between self-leadership skills, supervisor leadership, organizational structure, and activities for creativity and creativity were 0.04, 0.094, 0.056 and 0.092, respectively, which were all greater than 0.05 except for self-leadership skills, which meant that self-leadership skills was a predictor of creativity and they allow for a simple linear regression model with creativity as the dependent variable and self-leadership skills as the independent variable.

The third question of this study was to develop a model of college students' self-leadership to enhance their creativity. Based on the results of the data analysis in the previous step, among all the variables extracted through literature synthesis, students' self-leadership skills proved to be a direct predictor of their creativity, while supervisor leadership, organizational structure could influence self-leadership skills, and at the same time, they also had an impact on creativity along with activities for creativity. In other words, students' self-leadership skills should occupy the central position in the model, while the other three factors do not directly determine creativity, but do exert some positive influence, and therefore they should play a supporting role in the model. Based on this fact, the researcher, together with the higher education experts, developed the model, as shown in the figure below.

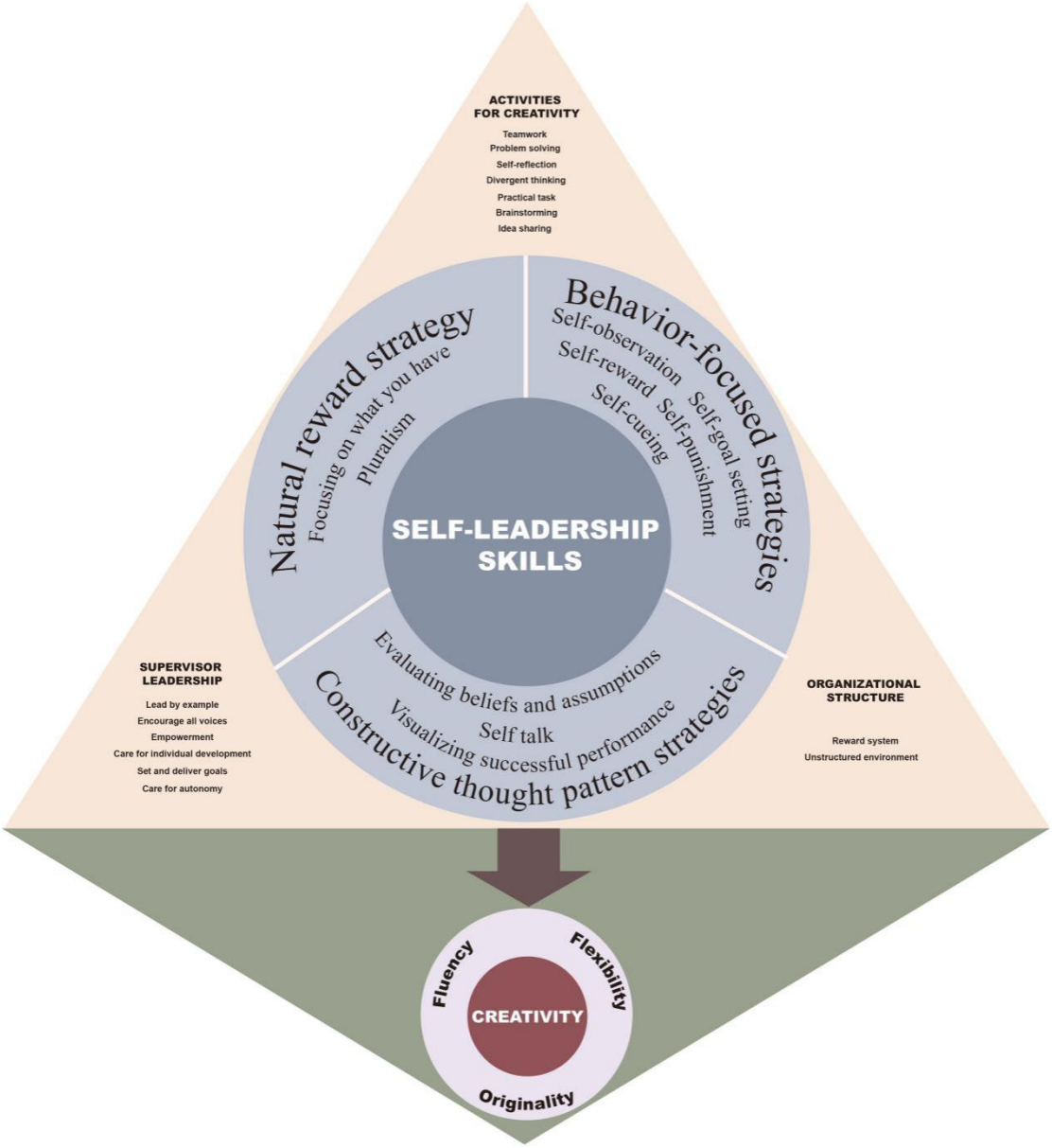

Figure 1 The self-leadership model for student creativity

The model incorporates all the elements derived from the synthesis of the literature and, in consultation with experts, adds *focusing on what you have* and *pluralism* to the Natural Reward Strategy to explain the meaning of this strategy. The layout of the segments corresponds to the results of the data analysis, with the four influencing factors form a triangle with self-leadership skills at its core, serving creativity characterized by fluency, flexibility, and originality.

The fourth question of this study was to test how effective this model is in practical application. After analyzing the changes in creativity before and after the intervention in students' self-leadership skills, the following conclusions were drawn.

Table 7 Paired samples statistics of self-leadership skills and creativity

Variable		Mean	Std. Deviation
SLS	Pre-test	3.91	0.57
	Post-test	4.23	0.61
Creativity	Pre-test	3.94	0.59
	Post-test	4.15	0.56

As shown in Table 7, before the self-leadership training, the mean for students' self-leadership skills and creativity were 3.91 and 3.94, while after the training they reached 4.23 and 4.15, meaning that they had improved in both areas.

Table 8 Paired samples test of creativity

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	S.D.	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair	Pre - Post	-0.208	0.152	0.034	-0.279	-0.137	-6.105	29	0.000

Further calculations using the paired-samples *t* test on students' pre and post creativity data revealed a *p*-value of 0.000, which indicated a significant difference, proving that developing students' self-leadership skills was effective in enhancing their creativity. That is to say, when the core component of the model works, a more pronounced effect of the remaining elements running together will be evident, which validates the effectiveness of the model.

Discussions

This study endeavored to develop a model of self-leadership among university students to enhance their creativity, using Yunnan Province, China as an example. The researcher designed four interlocking questions, the first of which was the foundation in which three factors related to self-leadership were derived that were believed to help students become a self-leader and then, their creativity could be enhanced by autonomously engaging in a number of daily activities that contribute to creativity. While it was initially conceived that supervisor leadership, organizational structure, and individual self-leadership skills should be seen as a whole and as conditions for students to develop self-leadership, in actual investigations it was found that supervisor leadership and organizational structure could influence individual self-leadership skills and that they were also statistically associated with creativity. However, only self-leadership skills had the most direct predictive function, which is in line with many

empirical studies (Kern et al., 2017; Neck & Houghton, 2006; DiLiello & Houghton, 2006). The stronger one's self-leadership skills are, the greater the likelihood that individuals will think proactively to explore their creative potential, thus promoting creativity (DiLiello & Houghton, 2006). Although there may be mediating variables such as autonomy and self-determination (Neck & Houghton, 2006), individual self-leadership skills are a prerequisite that helps students to take the initiative to adopt appropriate ways to enhance creativity when being guided on the importance of creativity. Therefore although it has been argued in the literature that organizational factors such as supervisor leadership have a strong influence on the creative climate among members (Kern et al., 2017), the degree of individual mastery of self-leadership skills determines the degree of proactive behaviour.

In addition to the three factors directly related to self-leadership, activities for creativity are also in the model as a secondary variable favoring creativity. Although these activities have been suggested to be beneficial in developing students' creativity in the synthesis of the literature (Guilford, 1973; Cheung et al., 2006; Morrison & Johnston, 2003), they did not directly determine creativity in the actual investigation, which is in fact in line with the assumptions of this study. As many studies agree, students' intrinsic motivation is a central source of power for developing creativity (Seechaliao, 2017; Cheung et al., 2006; Amabile, 1983), and although students may be guided by teachers in these activities for creativity, but in the absence of internal motivation, these behaviors can easily become purposeless and mechanical. It is therefore particularly important that students have self-leadership, and that a self-leader has the ability to employ self-leadership skills to use these everyday behaviors promoted in the model for the purpose of developing creativity.

Conclusions

The purpose of this study was to develop a model of self-leadership for universities in Yunnan Province, China, with the aim of enhancing student creativity. After a comprehensive research approach combining literature synthesis, descriptive statistics, regression analysis, focus group discussions, and a paired-samples *t* test, the model was eventually developed with students' self-leadership skills at its core and activities for creativity, supervisor leadership, and organizational structure as supporting factors for the development of students' creativity. And the effectiveness of the model was validated through a four-week intervention.

The limitation of this study is that it is based on a sample of three universities in Yunnan Province, and whether the final findings are applicable to all universities in this province still requires more samples to be tested. However, limitations aside, the researcher suggests that university leaders in Yunnan Province could consider using this model as a means of enhancing student creativity, such as teaching students self-leadership skills through short or long-term training, and guiding teachers to assess their behaviors in line with the recommendations in the model's supervisor leadership segment, etc. In addition, researchers in this field could further explore whether there are mediating factors between self-leadership and creativity, making this a more diverse pathway to realisation.

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