

# The Effect of Calligraphy on Career Decision-making Self-efficacy and Self-leadership of Nursing Students

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**Abstracts:** This is a single-arm pre-post study conducted to determine the effect of a calligraphy program on nursing students' career decision-making self-efficacy and self-leadership. The data collected from 231 second-year nursing students were analyzed using SPSS WIN 25.0 to determine descriptive statistics, paired t-test to analyze the effect of calligraphy, and Pearson correlation coefficient to determine the relationship between career decision self-efficacy and self-leadership. After the program, both career decision self-efficacy ( $t=7.23$ ,  $p<.001$ ) and self-leadership ( $t=6.81$ ,  $p<.001$ ) improved, and there were statistically significant differences in each of the sub-items. There was a difference in pre- and post-program self-efficacy based on satisfaction with their major, but the difference between groups was not significant on post-hoc tests. The analysis of career decision self-efficacy and self-leadership before the program showed a strong correlation ( $r=.811$ ,  $p<.001$ ) and a strong correlation after the program ( $r=.849$ ,  $p<.001$ ). The results of this study are significant in that they validate the effectiveness of a calligraphy program in promoting self-leadership and career decision-making self-efficacy among nursing students who do not have clear career goals. At a time when the importance of cultural arts education is gradually increasing in social and educational fields around the world, calligraphy has the advantage of laying the foundation for the promotion of basic arts for the revitalization of cultural arts, so educational support is needed not only in terms of improving the quality of life and pursuing self-actualization of individuals with emotional expression and creative problem-solving skills, but also at the social level.

**Keywords:** Calligraphy, Career Decision, Self-Efficacy, Self-Leadership, Nursing Students.

## 1. INTRODUCTION

The word calligraphy, which is used in various ways today, means a beautiful typeface, and its etymology comes from the Greek words kallos, meaning beautiful, and graphy, meaning handwritten, meaning pictograms. In an emotional society, calligraphy is utilized in various visual media and serves as a tool for emotional communication with the public. In the midst of digital images created by computer graphics, calligraphy is gaining attention for its oriental beauty with human sensitivity and as a free and individual way of expression. Calligraphy is suitable for revealing one's personality and emotions as it allows free expression without any restrictions on tools or materials [1].

Today's students are more accustomed to typing than they are to handwriting. Calligraphy reminds them of the joy of writing by hand and evokes an emotion that is missing from computerized print. Calligraphy instills a positive perception of our language and letters, and it can also increase awareness of form.

Compared to other majors, nursing students tend to enter college with a strong belief in the profession of nursing and a predetermined career choice and lack in-depth consideration of their career due to adjustment to the department and busy curriculum. However, while students may decide to become a nurse upon entering the university, they need to explore and decide on their own career paths as there are many options other than working in a hospital. Career decision-making self-efficacy is a belief in one's abilities related to one's career. Career decision self-efficacy is the confidence that one can successfully perform tasks related to one's career and refers to the confidence in one's own behavior, such as goal selection, job information, problem solving, and future planning. On the other hand, self-leadership is a concept that realizes the process of making the right career decisions and achieving goals. Self-leadership is an internal motivation to set goals, have autonomy, self-control, responsibility, and self-management, which is thought to have a positive impact on career decision self-efficacy.

Field [2] suggests that any learning or participatory activity can increase self-efficacy or happiness. In this context, previous studies on various learning and activities related to self-efficacy and self-leadership include young adults' participation in positive psychology programs [3], adult women's yoga class activities [4], and the

effects of adult physical activity on self-efficacy and happiness [5], but there are few studies on the effects of calligraphy activities on participants' career decision-making self-efficacy and self-friendship. Therefore, this study aims to investigate the effects of nursing students' calligraphy experience on their career decision-making self-efficacy and self-leadership.

## 2. METHOD

### 2.1 Subject of the Study & Research Design

The subjects of this study were students enrolled in the second year of the College of Nursing at K University who agreed to cooperate with the study, fully understood the purpose and method of this study, and gave written consent to participate in the survey. Participants in the program were recruited through the school's website, and those who agreed to participate in the study after the purpose of the study was explained were selected as subjects. The number of participants was calculated using the G\*Power 3.1.9.2 program according to Cohen's formula. Based on the effect size of 0.4, the sample size was calculated for correlation analysis with a significance level of 5% and a power of 95%, and the minimum sample size was found to be 71. A total of 275 people participated in the program, and data from 231 people were analyzed, excluding 42 people who did not respond to the survey. The pre- and post-surveys were administered one week before the program started and one week after it ended, and the questionnaires took 10-15 minutes to complete. The design of the study is shown in Table 1.

**Table 1. Research Design**

Group	Pre-test	Intervention	post-test
Experimental group	$Y^{e_1}$	$X''$	$Y^{e_2}$

$Y^{e_1}$ : **General Characteristics, Career Decision Self-Efficacy, Self - Leadership**

$X''$ : **Calligraphy Program**

$Y^{e_2}$ : **Career Decision Self-Efficacy, Self - Leadership**

From April to June 2022, the calligraphy program was held once a week for 50 minutes per session, for a total of four sessions. The program was conducted by two professional instructors, one with the qualifications of an art psychotherapist and a colorist, and the other with the qualifications of a calligrapher, a calligraphy educator, a Chinese character educator, and a professional art instructor, who have been teaching calligraphy courses for many years. The detailed program is shown in Table 2.

**Table 2. Contents of the Calligraphy program**

Sessions	Contents
1	Understanding the basics of calligraphy About where calligraphy is being utilized Fundamentals of calligraphy
2	Simple calligraphy demonstrations and hands-on experience
3	Basic calligraphy short story writing trainings
4	Create a calligraphy piece

### 2.2 Tool of the Study

The general characteristics questionnaire of this study consisted of six items: age, gender, motivation for choosing nursing, satisfaction with the nursing major, self-expression, and interpersonal relationship.

The career decision-making self-efficacy measure was an adaptation and validation of the Career Decision-making Self-efficacy Scale Short Form (CDMSES-SF), a shortened version of the Career Decision-making Self-

efficacy Scale (CDMSES) developed in 1983 [6]. The scale consists of four factors: goal selection, career information, problem solving, and future planning, with 11 questions for each subfactor: goal selection, 6 questions for career information, 3 questions for problem solving, and 5 questions for future planning. The total number of questions is 25, with a 5-point scale ranging from 'very much so' to 'not at all so', and the score ranges from a low of 25 to a high of 125, with a higher total score indicating higher career decision-making self-efficacy. In this study, Cronbach's  $\alpha$  was .93.

The self-leadership measure was a tool developed in 1992 [8], which was modified and supplemented by Kim [9]. The questions are divided into 6 factors, 3 self-expectation, 3 rehearsal, 3 goal setting, 3 self-reward, 3 self-criticism, and 3 constructive thinking, for a total of 18 questions. Scores range from a low of 18 to a high of 90 on a 5-point Likert scale ranging from 1 for "never" to 5 for "always," with higher scores indicating higher levels of self-leadership. In this study, Cronbach's  $\alpha$  was .89.

### 2.3 Data collection

For ethical considerations, the research was approved by the Institutional Review Board of K University (1041455-202202-HR-002-01). This study was approved by the Institutional Review Board of K University, and efforts were made to ensure the anonymity of the research subjects and the reliability of the data. The data collected will be used for research purposes only, and the right to discontinue participation at any time, even while filling out the questionnaire, was fully explained at the beginning of the study.

### 2.4 Data Analysis

The data collected in this study were analyzed using the Statistical Package for the Social Science (SPSS) WIN 25.0 program. Frequencies, percentages, means, and standard deviations were calculated to examine the general characteristics of the participants. To examine the effects of calligraphy on nursing students' career decision self-efficacy and self-leadership, paired t-test was used to test the hypotheses. Pearson correlation coefficient was used to analyze the relationship between nursing students' career decision self-efficacy and self-leadership after applying calligraphy.

## 3. Result

### 3.1 General Characteristics of Study Respondents

The general characteristics of the students are shown in Table 3.

**Table 3. General Characteristics of Study Respondents (N=231)**

Variable	Classification	N(%) or M $\pm$ SD
gender	Male	33(14.3)
	Female	198(85.7)
Age	$\leq 22$	8(3.5)
	$> 22$	223(96.5)
Admission motivation		20.1 $\pm$ 1.52
	Encouragement by parents	21(9.1)
	Encouragement by teachers	9(3.9)
	Considering the employment rate	109(47.2)
	for community service	23(12.1)
	according to grade point average	8(3.5)

		according to my will (aptitude)	47(20.3)
		Others	9(3.9)
Satisfaction with major		Good	165(71.4)
		Middle	55(23.8)
		Bad	11(4.8)
			7.28±1.89
Relationships		Good	113(48.9)
		Average	100(43.3)
		Difficult	18(7.8)
Self-expression		Good	93(40.3)
		Average	108(46.8)
		Difficult	30(13.0)

### 3.2 Career Decision Self-Efficacy and Self-Leadership Before and After Calligraphy Program

Career decision self-efficacy ( $t=7.23, p<.001$ ) and self-efficacy ( $t=6.81, p<.001$ ) both improved after the program, with statistically significant differences in each of the subcategories (Table 4).

**Table 4. Career Decision Self-Efficacy and Self-Leadership before and after Calligraphy Program**

Variable		Pre-test	Post-test	t	p
		M±SD	M±SD		
Career decision self-efficacy	Total	3.82±0.635	4.07±0.675	7.23	<.001
	Goal selection	3.91±0.655	4.10±0.681	5.53	<.001
	Career information	3.85±0.703	4.09±0.721	5.78	<.001
	Problem solving	3.76±0.740	4.00±0.773	5.17	<.001
Self-leadership	Future planning	3.64±0.723	4.01±0.749	8.62	<.001
	Total	3.82±0.578	4.06±0.659	6.81	<.001
	Self-expectation	3.87±0.738	4.10±0.736	5.50	<.001
	Rehearsal	3.97±0.712	4.16±0.727	4.44	<.001
	Goal setting	3.83±0.707	4.13±0.762	6.70	<.001
	Self-reward	4.00±0.676	4.15±0.737	3.51	.001
	Self-criticism	3.56±0.768	3.77±0.890	3.73	<.001
	Constructive thinking	3.70±0.724	4.04±0.799	7.30	<.001

### 3.3 Differences of Career Decision Self-Efficacy and Self-Leadership between Post-Pre according to General Characteristics

There was a difference in pre- and post-program self-leadership based on satisfaction with their major, but post hoc tests showed that the difference between groups was not significant (Table 5).

**Table 5. Differences of Career Decision Self-Efficacy and Self - Leadership between Post-Pre according to General Characteristics (N=231)**

Variable	Classification	N(%) or M±SD	Career decision self-efficacy(post-pre)		Self-leadership (post-pre)	
			M±SD	t/F(p)	M±SD	t/F(p)
gender	male	33(14.3)	0.38±0.59	1.65(.100)	0.37±0.65	1.25(.219)
	female	198(85.7)	0.22±0.50		0.22±0.51	
Age	≤22	8(3.5)	0.23±0.50	-1.46(.188)	0.23±0.52	-0.71(.480)
	> 22	223(96.5)	0.63±0.77		0.37±0.76	

		20.1±1.52				
Admission motivation	Encouragement by parents	21(9.1)	0.18±0.39		0.16±0.36	
	Encouragement by teachers	9(3.9)	0.65±1.13		0.40±0.53	
	Considering the employment rate for community service	109(47.2)	0.27±0.54	1.29(.263)	0.23±0.58	
	according to grade point average	23(12.1)	0.21±0.38		0.26±0.49	0.88(.513)
	according to my will(apitude)	8(3.5)	0.20±0.29		0.45±0.76	
	Others	47(20.3)	0.17±0.40		0.16±0.47	
Satisfaction with major	Good	9(3.9)	0.19±0.36		0.46±0.48	
	Middle	165(71.4)	0.21±0.51	1.40(.248)	0.19±0.48	
	Bad	55(23.8)	0.34±0.53		0.41±0.64	4.06(.019)
	11(4.8)	0.18±0.51	0.09±0.51			
Relationships		7.28±1.89				
	Good	113(48.9)	0.21±0.41		0.24±0.47	
	Average	100(43.3)	0.29±0.63	0.93(.395)	0.23±0.59	0.02(.978)
Self-expression	Difficult	18(7.8)	0.16±0.36		0.24±0.53	
	Good	93(40.3)	0.20±0.45		0.21±0.51	
	Average	108(46.8)	0.24±0.50	1.30(.274)	0.25±0.54	0.19(.827)
	Difficult	30(13.0)	0.37±0.70		0.27±0.56	

### 3.4 Correlations among Career Decision Self-Efficacy and Self-Leadership before and after Calligraphy Program

The analysis of career decision self-efficacy and self-leadership before the program showed a strong correlation ( $r=.811, p<.001$ ) and a strong correlation after the program ( $r=.849, p<.001$ ) (Table 6).

**Table 6. Correlations among Career Decision Self-Efficacy and Self – Leadership before and after Calligraphy Program**

Variables	Career decision self-efficacy before program	Self-leadership before program	Career decision self-efficacy after program	Self-leadership after program
	r(p)	r(p)	r(p)	r(p)
Career decision self-efficacy before program	1			
Self-leadership before program	.811(<.001)	1		
Career decision self-efficacy after program	.698(<.001)	.693(<.001)	1	
Self-leadership after program	.566(<.001)	.640(<.001)	.849(<.001)	1

## DISCUSSION

It can be said that nursing students enter the professional world in a situation where the profession of nursing is predetermined upon entering the nursing department, and they lack in-depth consideration of their career preparation. A study reported that the more nursing students believe that their career path is predetermined, the higher their employment stress, so it is necessary to provide specific career education and counseling during university life and strengthen career preparation behaviors for nursing students' successful employment and

adaptation to various fields after graduation [10]. In this study, it was confirmed that career decision self-efficacy and self-leadership were improved after applying the calligraphy program. The results of this study are in line with previous studies [11,12] that showed positive effects of group art therapy on improving career decision self-efficacy and problem-solving skills in college students, and studies [13-16] that showed positive effects of group art therapy on self-resilience, career decision self-efficacy, and career maturity in college students. By relating the results of this study to previous studies, it can be analyzed that calligraphy, which is inherently human and aesthetically pleasing, can be a tool for expressing and communicating emotions and feelings that are relatively difficult to express in a human and emotional way, and can make positive changes in nursing students' self-efficacy such as problem solving and future planning, and self-leadership such as self-expectation, positive experiences, and constructive thinking. There was a strong correlation between career decision self-efficacy and self-leadership. The results of this study are consistent with those of a study that examined the effects of a group art program on nursing students' career decision self-efficacy and self-leadership [17,18] and a study that found that self-leadership positively influenced the career decision self-efficacy of college students majoring in taekwondo [19,20].

The findings of this study are significant in that they validate the effectiveness of a calligraphy program in promoting self-leadership and career decision self-efficacy among nursing students who do not have clear career goals. At a time when the importance of cultural and artistic education is gradually increasing in social and educational fields around the world, calligraphy has the advantage of laying the foundation for the promotion of basic arts for cultural and artistic revitalization, so it is necessary to provide educational support not only in terms of improving the quality of life and pursuing self-actualization of individuals with emotional expression and creative problem-solving skills, but also at the social level.

This study applied a calligraphy program to nursing students at a university and examined their career decision-making self-efficacy and self-leadership before and after the program, using a single-group pre-post design with no control group. Since it is a single-group pre-post design, there is a possibility of improvement in career decision self-efficacy and self-leadership due to the maturation of the subjects, and since there is no control group, it is unreasonable to conclude that the change in career decision self-efficacy and self-leadership is the effect of the program.

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