

ORIGINAL ARTICLE

THE INFLUENCE OF PERSONAL CHARACTERISTICS AND LEARNING MOTIVATION ON THE PROFESSIONAL IDENTITY OF NURSING STUDENTS

Sonoko Takase¹⁾, Ryoko Tsuchiya²⁾, and Yoshiko Nishizawa³⁾

Abstract We examined the effects of personal characteristics and learning motivation on nursing students' professional identity. In total, 1,892 students were targeted from the first to the fourth year of nursing at six nursing universities in Japan; we employed a self-administered questionnaire. The questionnaire measured professional identity and personal characteristics such as occupational motivation, having a professional role model, and self-esteem. To evaluate learning motivation, we used items assessing *intrinsic*, *identified*, *introjected*, and *external regulation* based on the *self-determination theory*. The data from 625 participants were analyzed using structural equation modeling. Occupational motivation from "nursing interest," having a professional role model, self-esteem, *identified regulation*, and *intrinsic regulation* had direct positive effects on the professional identity of students of all school years. "Nursing interest," having a professional role model, and self-esteem had indirect effects on professional identity through *intrinsic regulation* and *identified regulation*. However, occupational motivation from "a stable job," *external regulation*, and *introjected regulation* had no significant effect on professional identity. The personal characteristics that affected participants' professional identity differed according to school years. The results indicate that autonomous learning motivation, such as *identified regulation* and *intrinsic regulation*, are critical in the establishment of nursing students' professional identity.

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Key words: professional identity; learning motivations; nursing students; self-determination theory.

Introduction

According to Erikson¹⁾, "In general it is primarily the inability to settle on an occupational identity which disturbs young people." The Investigative Commission on Nursing Human Resource Development at University by The Ministry of Education, Culture, Sports, Science and Technology²⁾ has indicated the "maturity of a professional identity sufficient for qualifying for national exams" as an important task in basic nursing education at nursing universities. Some studies³⁻⁵⁾ on professional identity have shown that the professional identity score of first-year

students were the highest among all school years, thereafter declining in the second-year students and subsequently increasing in the final-year students. It was suggested that the high professional identity score among first-year students indicates that they have strong admiration for nurses, while the low scores among second-year students can perhaps be attributed to their understanding of the reality of nursing by receiving specialized education. Other studies have shown personal characteristics to be related to a professional identity. These include reasons for aspiring towards being a nurse⁶⁻⁸⁾, having a professional role model^{6,9)}, and self-

¹⁾ Hirosaki University Graduate School of Health Sciences, Doctor's programs, Japan

²⁾ Hirosaki University Hospital, Aomori, Japan

³⁾ Hirosaki University Graduate School of Health Sciences, Japan

Correspondence: S. Takase

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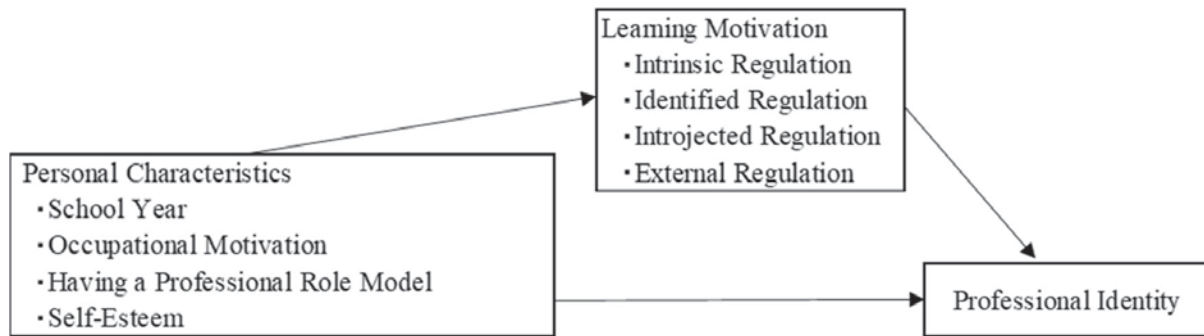


Figure 1 The conceptual framework of this paper

esteem^{10,11}). However, few studies have examined factors with the most influence on nursing students' professional identity. Moreover, few studies have examined factors influencing professional identity according to school year. Some studies^{7, 12,13} have mentioned that it is necessary to increase learning motivation as an educational method to facilitate the development of a professional identity. With regard to learning motivation, many studies in educational psychology have been conducted from the perspective of the *organismic integration theory* (Ryan & Deci)¹⁴, which is a subordinate theory of the *self-determination theory*. *Extrinsic motivation* and *intrinsic motivation* were previously thought to be antithetical. However, the *organismic integration theory* has shown that the two form a continuum. Few studies have examined the relationship between professional identity and learning motivation using the *organismic integration theory* among nursing students. The aims of this study were as follows: 1) To clarify the effects on nursing students' professional identity, of their personal characteristics such as occupational motivation, having a professional role model, and self-esteem; 2) To clarify the influence of learning motivation on professional identity of nursing students; and 3) To identify the effects of learning motivation and personal characteristics on professional identity according to school years. We also sought to identify the appropri-

ate method of education for developing nursing students' professional identity.

Method

1. The Conceptual Framework of This Study

The conceptual framework of this paper is shown in Figure 1. This study examines the effects of personal characteristics such as school year, occupational motivation, having a professional role model, and self-esteem on professional identity. Further, it aimed to examine whether school year, occupational motivation, having a professional role model, and self-esteem have an effect on professional identity by mediating learning motivation.

2. The Operational Definition of the Term

1) Professional identity

Professional identity in the current study is used to mean nursing students' attainment of a sense of identity in relation to their occupation, or to perceive one's occupation as rewarding. Thus, the definition of professional identity is based on Fujii et al.'s¹⁵ concept of vocational identity.

3. Participants

The study participants were 1,892 first- to fourth-year nursing students from six universities in the northern Tohoku region of Japan.

4. Study Period

This study was conducted from June to September 2017.

5. Study Procedures

A survey was conducted using self-administered questionnaires. We requested the universities under study to distribute the survey forms. Participants were required to send the completed surveys by post to the researchers.

6. Research Instruments

1) Participant characteristics

The first section of the questionnaire comprised questions regarding participants' age, sex, school year, occupational motivation, having a professional role model, and learning situations.

With regard to occupational motivation, we measured participants' reasons for aspiring to become nurses using 10 items taken from previous studies⁶⁻⁸⁾. All these items could be answered on a scale of 1 (strongly disagree) to 5 (strongly agree). These included questions such as, "I am interested in nursing" and "I want to qualify for national exams." With regard to having a professional role model, participants were required to indicate items most applicable to them, among options such as, "Clinical Instructors" and "Nursing Teacher." We included items about their learning situation, such as "I had been exposed to basic nursing skills practice" and "I had been exposed to fundamental clinical nursing practice."

2) Professional identity of nursing students

We used the vocational identity of medical sciences students scale developed by Fujii *et al.*¹⁵⁾ to measure the professional identity of nursing students. The scale measures the vocational identity of medical sciences students, based on Erikson's theory. The scale consisted of 20 items measured on a 7-point Likert scale from

1 (strongly disagree) to 7 (strongly agree). The total score ranged from 20–140 points. The higher the score, the higher the level of nursing students' professional identity.

3) Learning motivation

We used the learning motivation scale created by Ando¹⁶⁾ to measure students' learning motivation. The scale is based on the *self-determination theory*. It consisted of 14 items, with 4 subscales of consciousness, namely, *external regulation*, *introjected regulation*, *identified regulation*, and *intrinsic regulation*. The items were measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

4) Self-esteem

We used the Japanese edition (Yamamoto *et al.*¹⁷⁾) of Rosenberg's Self-Esteem Scale. The scale consists of 10 items, each measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The total score ranged from 10 to 50 points. A higher score indicates higher self-esteem.

7. Statistical Analysis

Participant characteristics were analyzed using the median. Confirmatory factor analysis was used to examine the structural validity of occupational motivation. Participants' professional identity, learning motivation, and self-esteem according to school year were analyzed using Kruskal-Wallis test and Steel-Dwass test. The analysis was conducted using the hypothesized model, wherein personal characteristics were hypothesized to have an indirect effect on professional identity through learning motivation. We used the bootstrap method (1,000 resamples) to calculate 95% bootstrapping confidence intervals to test the significance of indirect effects of personal characteristics on professional identity through learning motivation. We used multiple-group structural equation modeling to test the pathways among school years. SPSS Statistics 22.0 J for Windows, SPSS Amos 21.0

for Windows, and R 2.8.1 were used as the analysis software. A p-value of < 0.05 indicated statistical significance.

8. Ethical Considerations

This study was approved by the Ethics Committee of Hirosaki University Graduate School of Health Science, Hirosaki, Japan (approval number: 2016-052). We obtained permission to conduct the study from the heads of department of the target universities. The information sheet informed the nursing students that their participation was voluntary, that their identities would remain anonymous when participating, and that the results would be statistically analyzed.

Results

1. Participant Characteristics

A total of 662 questionnaires were collected (response rate: 35.0%). Incomplete questionnaires were excluded from analysis; therefore, data from 625 questionnaires were used in the final analysis. In total, 567 (90.7%) participants were female; 58 (9.3%) were male. Participants' median (quartile 1, quartile 3) age was 20.0 (19.0-21.0) years. The participants were 171 (27.4%) first-year students, 140 (22.4%) second-year students, 129 (20.6%) third-year students, and 185 (29.6%) fourth-year students. Moreover, 66.7% of first-year students and all second-year students had been exposed to basic nursing skills practice. In addition, 82.1% of the second-year students had undergone early clinical exposure. More than half of the third-year students had undergone for professional nursing courses at university, and more than 90% had been exposed to fundamental clinical nursing practice. Fourth-year students had undergone for professional nursing courses, except for clinical training in integrated nursing practice. As school years progressed, the number of students who had a professional role model increased.

The frequency of having a professional role model per study year was as follows: 95 (55.6%) of first-year students, 86 (61.4%) second-year students, 90 (69.8%) third-year students, and 141 (76.2%) fourth-year students. The most common professional role models for third- and fourth-year students were clinical instructors. The most common professional role model for first- and second-year students was "a nurse in charge of my/my family member's hospitalization, etc."

2. Occupational Motivation

Confirmatory factor analysis was used to examine the structural validity of occupational motivation, which had two interpretable factors, namely, nursing interest and a stable job. The model is shown in Figure 2. The model had goodness of fit, given the following indices: $\chi^2 = 142.5$, GFI = .956, AGFI = .929, CFI = .940, and RMSEA = .072. The study results showed that "nursing interest" and "a stable job" were factors of occupational motivation.

3. Professional Identity, Learning Motivation, and Self-Esteem

The median (quartile 1, quartile 3) of the total professional identity and self-esteem scores, and the subscale scores of learning motivation by school year are shown in Table 1. First-year students had the highest professional identity score, while fourth-year students had the lowest score. The first-year students' score was significantly higher than were those obtained by second- and fourth-year students, respectively. The self-esteem score did not significantly differ by school year. With regard to the subscales of learning motivation, the highest score was obtained for the *identified regulation* subscale, while the lowest score was obtained for the *external regulation* subscale. Second-year students had significantly higher scores on the *identified regulation* subscale than did fourth-year students. Furthermore, the score for the *introjected reg-*

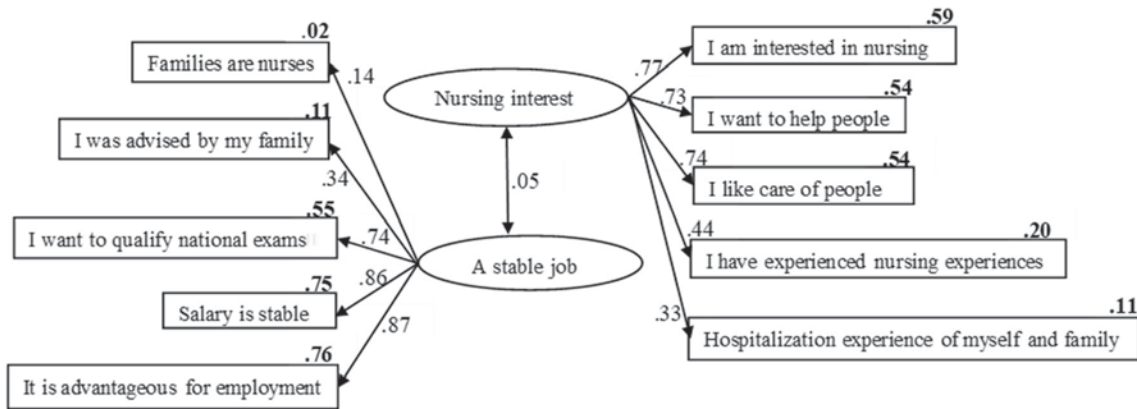


Figure 2 The Model about Occupational Motivation

Table 1 Characteristics of the participants

	All school years n=625	First-year n=171	Second-year n=140	Third-year n=129	Fourth-year n=185	p
Professional identity Cronbach α(0.94)	97.0(85.0-109.0)	101.0(89.0-117.0)	97.0(86.0-105.0)	97.0(84.0-110.5)	95.0(81.0-104.0)	2nd<1st* 4th<1st***
Self-Esteem Cronbach α(0.85)	30.0(26.0-35.0)	30.0(26.0-34.0)	29.0(25.0-35.0)	31.0(27.0-35.0)	30.0(25.0-35.0)	
Learning motivation						
Intrinsic regulation Cronbach α(0.77)	3.3(2.7-4.0)	3.3(2.7-4.0)	3.3(2.7-4.0)	3.3(2.7-4.0)	3.3(3.0-4.0)	
Identified regulation Cronbach α(0.85)	4.6(4.0-5.0)	4.8(4.0-5.0)	4.8(4.2-5.0)	4.6(4.0-5.0)	4.6(4.0-5.0)	4th<2nd*
Introjected regulation Cronbach α(0.61)	3.7(3.3-4.3)	4.0(3.3-4.7)	4.0(3.3-4.3)	4.0(3.3-4.3)	3.7(3.3-4.0)	4th<1st* 4th<2nd**
External regulation Cronbach α(0.83)	2.0(1.0-3.0)	2.0(1.0-2.7)	1.7(1.0-3.0)	2.0(1.0-3.0)	2.0(1.0-3.0)	

Kruskal-Wallis Test and Steel-Dwass Test

*p=0.05, **p=0.01, ***p=0.001

ulation subscale score was significantly higher among first- and second-year students than among fourth-year students.

4. The Effects of Learning Motivation and Personal Characteristics on Nursing Students' Professional Identity

The hypothesized model, comprising “nursing interest,” “a stable job,” having a professional role model, and self-esteem had an indirect effect on professional identity through learning motivation. To test the hypothesized model, we verified the fit and validity of the measurement model using structural equation modeling. The models are shown in Figure 3. The fit indices

of measurement model were as follows: $\chi^2 = 88.73$, GFI = .982, AGFI = .961, CFI = .992, and RMSEA = .031. The study models was shown to have good fit. *Intrinsic regulation* and *identified regulation* had weak direct positive effects on professional identity, whereas *introjected regulation* and *external regulation* had non-significant effects. “Nursing interest,” having a professional role model, and self-esteem had weak direct positive effects on professional identity; however, “a stable job” did not have a significant effect on professional identity, although it did have a weak direct positive effect on *introjected regulation* and *external regulation*. Using the bootstrap method (1,000

Table 2 Bootstrapping confidence intervals to test the significance of indirect effects through intrinsic regulation and identified regulation on professional identity

Factors	Indirect effect	p	95% CI	
			LL	UL
Nursing interest	.13	.002	.09	.16
Having a professional role model	.05	.002	.03	.07
Self-Esteem	.05	.002	.03	.07

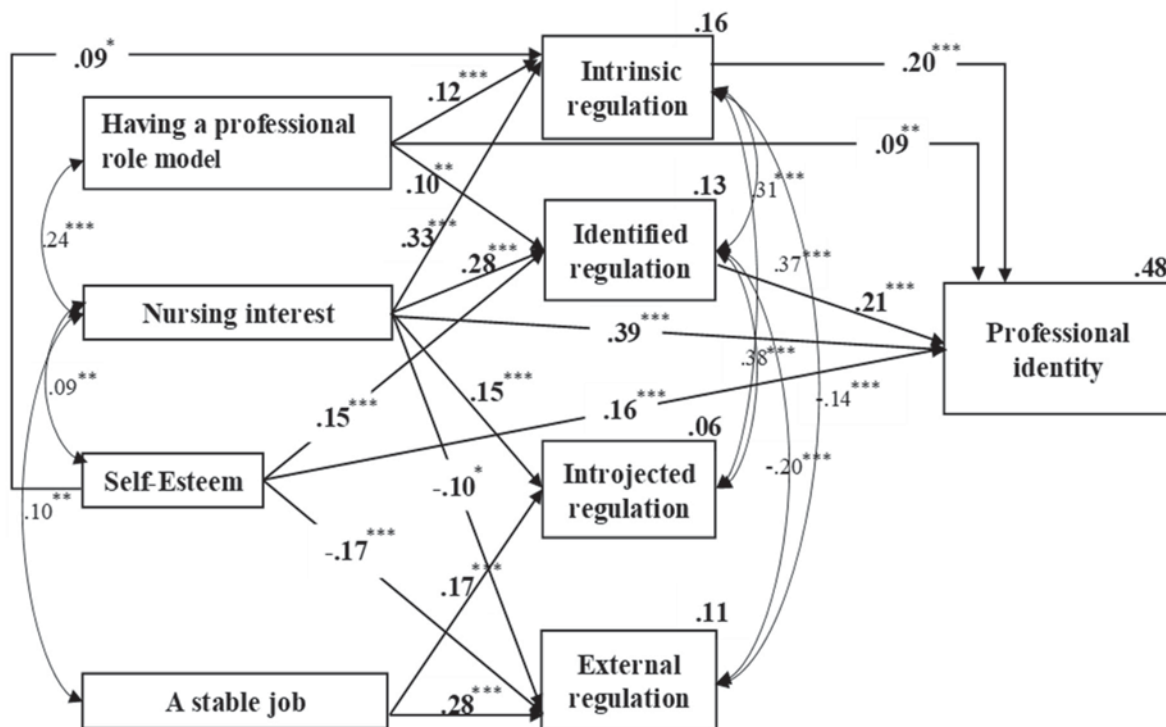


Figure 3 The Effects of Learning Motivation and Personal Characteristics on Nursing Students' Professional Identity
 *p<.05, **p<.01, ***p<.001
 The hypothesized model, comprising “nursing interest,” “a stable job,” having a professional role model, and self-esteem had an indirect effect on professional identity through learning motivation.

resamples) to calculate 95% bootstrapping confidence intervals, we tested the significance of the indirect effects of “nursing interest,” having a professional role model, and self-esteem on professional identity via *intrinsic regulation* and *identified regulation*. These results are presented in Table 2. The results confirmed that “nursing interest,” having a professional role model, and self-esteem all had significant indirect effects on professional identity via *intrinsic regulation* and *identified regulation* (95% confidence intervals did

not include zero).

5. The Effects of Learning Motivation and Personal Characteristics on Professional Identity According to School Years

We used multiple-group structural equation modeling to test the pathways across the school years. The model fit was good, with ratings of $\chi^2 = 56.94$, GFI = .981, AGFI = .941, CFI = 1.00, and RMSEA = .000. “Nursing interest” among participants of all school years had direct effects

on professional identity and *intrinsic regulation*. Among third-year students, having a professional role model ($\beta = .21, p < .001$) had slightly direct positive effects on *intrinsic regulation*. On the other hand, among fourth-year students, having a professional role model ($\beta = .15, p < .05$) had slightly direct positive effects on *identified regulation*. Self-esteem among fourth-year students ($\beta = .24, p < .001$) had slightly direct positive effects on *intrinsic regulation*; the effects were not statistically significant among first-, second-, and third-year students. Self-esteem among third-year ($\beta = .22, p < .01$) and fourth-year students ($\beta = .25, p < .001$) had slightly direct positive effects on *identified regulation*; the effects were not significant among first- and second-year students. Self-esteem among third-years ($\beta = -.22, p < .01$) and fourth-year students ($\beta = -.22, p < .01$) had slightly direct negative effects on *external regulation*. “A stable job” among second-year ($\beta = .21, p < .01$) and fourth-year students ($\beta = .23, p < .001$) had slightly direct positive effects on *introjected regulation*.

We used the bootstrap method (1,000 resamples) to calculate 95% bootstrapping confidence intervals to test the significance of indirect effects of “nursing interest”, having a professional role model, and self-esteem on professional identity through *intrinsic regulation* and *identified regulation*; the results are presented in Table 3. The indirect effects on professional identity among participants of all school years were weaker than were the direct effects. On the other hand, among third-year students, the indirect effect of having a professional role model was stronger than was the direct effect. A significant indirect effect of “nursing interest” on professional identity was confirmed among first- and second-year students. Among third-year students, there were significant indirect effects of “nursing interest” and having a professional role model on professional identity via *intrinsic regulation* and *identified regulation*. Finally,

among fourth-year students, the indirect effects of “nursing interest,” having a professional role model, and self-esteem on professional identity via *intrinsic regulation* and *identified regulation* were significant (95% confidence intervals did not include zero).

Discussion

1. The Effects of Learning Motivation and Personal Characteristics on Professional Identity among Nursing Students of all School Years

This study indicated that “nursing interest,” having a professional role model, and self-esteem have a direct positive effect on professional identity among participants of all school years. Moreover, the bootstrapping method showed that “nursing interest,” having a professional role model, and self-esteem have an indirect effect on professional identity through *intrinsic regulation* and *identified regulation*. The first point to be discussed is that *intrinsic regulation* and *identified regulation* were learning motivation factors related to professional identity, while *external regulation* and *introjected regulation* had no significant effect on professional identity. According to Ryan and Deci¹⁸⁾, *external regulation* and *introjected regulation* have been combined to form a controlled motivation composite, while *identified regulation* and *intrinsic regulation* have been combined to form an autonomous motivation composite. The study by Soenens et al.¹⁹⁾ has shown identity to be positively associated with autonomous motives and not with controlled motives. Our study found that professional identity correlated with autonomous motivation, but not with controlled motivation. The second point to be considered is that “nursing interest,” having a professional role model, and self-esteem had indirect effects on professional identity through autonomous learning motivation in the form of *intrinsic regulation* and *identified regulation*. With regard to identity and occupational in-

Table 3 Bootstrapping confidence intervals to test the significance of indirect effects through *intrinsic regulation* and *identified regulation* on professional identity of each school years

School year	Factors	Direct effect	p	95% CI		Indirect effect	p	95% CI	
				LL	UL			LL	UL
First-year	Nursing interest	.34	.001	.28	.41	.03	.002	.11	.23
	Having a professional role model	.10	.099	-.01	.20	.02	.233	-.02	.08
	Self-esteem	.15	.001	.10	.21	.02	.067	-.00	.09
Second-year	Nursing interest	.38	.001	.31	.46	.09	.002	.04	.15
	Having a professional role model	.15	.027	.03	.27	.02	.281	-.02	.07
	Self-esteem	.19	.001	.11	.27	-.00	.842	-.06	.04
Third-year	Nursing interest	.37	.002	.29	.44	.15	.002	.09	.22
	Having a professional role model	.03	.526	-.08	.15	.10	.005	.04	.17
	Self-esteem	.18	.002	.11	.25	.05	.145	-.02	.12
Fourth-year	Nursing interest	.38	.001	.31	.45	.10	.002	.04	.15
	Having a professional role model	.17	.002	.06	.26	.05	.014	.01	.09
	Self-esteem	.18	.001	.11	.26	.09	.002	.04	.14

terest, Ida's²⁰⁾ study revealed that identity and occupational interest relate to autonomous learning motivation. Our study showed that "nursing interest" had an effect on professional identity and autonomous learning motivation. With regard to self-esteem, Goda et al.'s¹⁰⁾ study has suggested that a stronger professional identity is associated with higher self-esteem. Further, Sato's²¹⁾ study has shown an association between self-esteem and autonomous learning motivation. Our study showed that self-esteem had an effect on professional identity and autonomous learning motivation. According to Dotan et al.²²⁾, having a professional role model can help form a professional image and strengthen motivation for learning. Thus, our study showed that having a professional role model affected not only nursing students' professional identity, but also their autonomous learning motivation. Our study results also indicated that "nursing interests," self-esteem, having a professional role model, and autonomous learning motivation play a crucial role in education in developing nursing students' professional identity. However, "a stable job," *external regulation*, and *introjected regulation* had no significant effect on professional identity,

whereas "a stable job" had a slight effect on *external regulation*. Therefore, it is suggested that students with occupational motivation through "a stable job" find it difficult to form a professional identity, and so it requires education support for students with occupational motivation through "a stable job."

2. The Personal Characteristics of, and Learning Motivation Factors Related to Professional Identity among Nursing Students in Different School Years

First, we discuss the professional identity score and subscale scores of learning motivation of participants in each school year. The results showed the professional identity score to be highest among first-year students, declining from the second-year students. This finding is consistent with those of other studies on nursing students³⁻⁵⁾ and occupational therapy students^{23, 24)}. Regarding the subscales of learning motivation, the highest score was obtained for the *identified regulation* subscale among all school years. This finding is consistent with both the findings of Ando¹⁶⁾ and Sato.²¹⁾ In addition, there were significant differences in scores

between the second-year students and fourth-year students in *identified regulation*. There were significant differences in scores between the first- and second-year students and fourth-year students in *introjected regulation*. Thus, it is inferred that the difference between school-year levels of both identified and introjected regulations was influenced by the difference in learning situation, such as the first- and second-year students mainly learn through university lectures, while fourth-year students mainly learn through clinical nursing practice. Additionally, the reason for the lower scores in *identified regulation* and *introjected regulation* among fourth-year students may be that they had experienced clinical nursing practice (such as night-shift clinical training), which motivates them to imagine their future work as a nurse; in other words, fourth-year students were learning how to work at a hospital rather than learning nursing studies at a university.

Second, the effects of individual characteristics and learning motivation on professional identity differed by school years. The results confirmed the indirect effect of “nursing interest” on professional identity through *intrinsic regulation* and *identified regulation* among first- and second-year students. The personal characteristics of first-year students in the study showed that they had hardly learned about professional nursing. Moreover, the percentage of first-year students who had met their professional role models during their own or family members’ hospitalization was the highest, among all school years. According to Hatano¹³⁾, first-year students hold ideals that are different from reality. Therefore, the high professional identity among first-year students was due to their recent entry into university having been influenced by certain ideals and desires. Second-year students had begun to learn professional nursing practices and so their professional identity scores presumably declined as a result. Among third-

year students, “nursing interest” and having a professional role model had an indirect positive effect on professional identity through *intrinsic regulation* and *identified regulation*. The indirect effect of having a professional role model is higher than the direct effect. This result indicated that having a professional role model affected professional identity via autonomous learning motivation rather than directly influencing professional identity. Moreover, more than 90% of third-year students experienced fundamental nursing clinical practice. Therefore, compared to first- and second-year students, third-year students had clinical instructors in clinical practice as their professional role models. This finding indicated that being taught by a clinical nurse in clinical training could influence individuals’ development of a professional identity by fueling nursing students’ motivation for learning.

With regard to fourth-year students, some studies^{3,5)} have shown that nursing students’ professional identity scores declined with the progression of academic years, and rose again in the final years. However, in this study, fourth-year students had the lowest professional identity score. According to the study by Hatano¹³⁾, nursing students tend to be confronted with a severe reality through learning and clinical practice. Day²⁵⁾ demonstrated that students transitioned from holding a lay image to a professional image of nursing over the course of their four-year program. Accordingly, the reason that first-year students had the highest professional identity score in our study is perhaps because they had an idealized image of nursing. In contrast, fourth-year students’ professional identity score was the lowest because they had been exposed to the reality of nursing practice, given that they were participating in clinical practicums during the study period. These study results suggested that their professional identity developed along with their formation of real image of professional nursing. With regard to fourth-year

students, “nursing interest,” having a professional role model, and self-esteem were found to have indirect effects on professional identity via *intrinsic regulation* and *identified regulation*. The direct effect of having a professional role model was higher than the indirect effect via autonomous learning motivation to form a professional identity. This suggested that fourth-year students are undergoing more hands-on training and had were greatly influenced by occupational role models. Additionally, self-esteem among fourth-year students had a direct positive effect on autonomous learning motivation, and self-esteem among fourth- and third-year students had a direct negative effect on controlled learning motivation. According to the study by Sharif and Masoumi²⁶⁾, nursing students experience anxiety in clinical practice, and the development of confidence should be facilitated by the process of nursing education. It is important that education promotes students’ self-esteem until they commence with clinical practice. Personal characteristics affecting participants’ professional identity differed according to school years. Therefore, as a means of educational support for nursing students’ professional identity formation, nursing teachers and clinical instructors should recognize that factors affecting professional identity differ according to school year. It was suggested that students need a type of education that can help them identify their learning interests and recognize the significance of learning.

3. Limitations of This Study and Recommendations for Future Studies

The sample comprised students in the northern Tohoku region only, and response rate of this study was low (at 35.0%), thereby minimizing the generalizability of the results. In the future, it is necessary to clarify changes in nursing students’ professional identity and influential factors according to grade levels by conducting

longitudinal studies. Increasing the number of participants would increase reliability.

Conclusion

The professional identity scores were highest for first-year students, and declined from the second-year students, such that fourth-year students obtained the lowest score. The learning motivation factors related to professional identity were *intrinsic regulation* and *identified regulation*. This study found that personal factors that affected the professional identity of nursing students were “nursing interest,” having a professional role model, and self-esteem. Further, these personal characteristics had an indirect effect on professional identity, as mediated by autonomous learning motivation. The effects of individual characteristics and learning motivation on professional identity differed across school years.

All authors have no conflicts of interest directly relevant to the content of this article.

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