

# Development of the perception of professional identity in nursing scale: A quantitative study

Şefika Dilek Sarıkaya<sup>a,1</sup>, Ayşegül Yıldız İçigen<sup>b,\*,2</sup>

<sup>a</sup> Nevşehir Hacı Bektaş Veli University Semra ve Vefa Küçük Faculty of Health Sciences, Nursing Department, Nevşehir, Turkey

<sup>b</sup> Cappadocia University School of Health Sciences, Nursing Department, Nevşehir, Turkey

## ARTICLE INFO

### Keywords:

Professional identity  
Perception  
Reliability  
Validity  
Instrument development  
Nursing

## ABSTRACT

**Aim:** This study aimed to develop a measure, called the Professional Identity Perception in Nursing Scale and evaluate its psychometric properties.

**Background:** Professional identity in nursing, defined as the alignment of one's thoughts, actions and emotions with the values and norms of the profession, plays a critical role in empowering nurses, improving patient outcomes and advancing the nursing field.

**Design:** This study used a quantitative cross-sectional design.

**Methods:** The population of the study consisted of nurses working at a hospital in the Central Anatolia Region of Turkey. The item pool for the scale was developed through a literature review and qualitative data analysis, resulting in 26 items, which were then presented to 10 experts for evaluation. After content validity was established, a draft scale comprising 24 items was used as the data collection tool. Data were collected through an online survey created via Google Forms, with the participation of 262 nurses between December 2023 and June 2024.

**Results:** The 24-item scale with three sub-dimensions showed good fit indices: CMIN/DF= 3.559, GFI= 0.778, CFI= 0.905, RMSEA= 0.099, TLI= 0.893, IFI= 0.906 and SRMR= 0.071. All item path coefficients were significant ( $p < 0.001$ ). Cronbach's alpha values were 0.965 (beliefs, values, norms), 0.904 (identity-based motivation) and 0.889 (symbolic interactionism).

**Conclusion:** The Professional Identity Perception in Nursing Scale is a valid, reliable and 24-item tool with three sub-dimensions to assess nurses' professional identity.

## 1. Introduction

Professional identity has been defined as the perception of oneself about the job he/she does (Johnson et al., 2012). Professional identity in nursing has been characterized as a situation where "one thinks, acts and feels like a nurse impacted by the characteristics, norms and values of the nursing discipline about his/her own feelings and others" (Brewington and Godfrey, 2020). An important part of developing a sense of professional identity is accepting the job one does as a profession. Nurses with a strong sense of professional identity feel empowered in their workplaces and have the potential to work more effectively and competently (Hoeve et al., 2014; Philippa et al., 2021). Competent nurses can increase job satisfaction and reduce turnover and hospital

mortality rates by exhibiting improved communication skills and confidence (Laschinger et al., 2014). Therefore, nurses who perceive themselves as strong are more effective in improving patient outcomes by providing higher-quality care (Andrews, 2011; van der Cingel and Brouwer, 2021; Miao et al., 2024). Strengthening nurses' professional identity is very important for developing nursing as a profession. Therefore, it is necessary to determine professional identity, and a measurement tool is needed to do this. This study aimed to develop a scale to measure nurses' professional identity perceptions and to establish its validity and reliability.

\* Corresponding author.

E-mail addresses: [sdguven@nevsehir.edu.tr](mailto:sdguven@nevsehir.edu.tr) (Ş. Sarıkaya), [aysegul.yildiz@kapadokya.edu.tr](mailto:aysegul.yildiz@kapadokya.edu.tr) (A. Yıldız İçigen).

<sup>1</sup> ORCID-ID: 0000-0002-2761-4665

<sup>2</sup> ORCID-ID: 0000-0002-5526-5917

## 2. Methods

### 2.1. Type of the research

This study used a quantitative cross-sectional design.

### 2.2. Purpose of the research

The study was conducted to develop a scale to measure nurses' professional identity perceptions.

### 2.3. Research questions

1. Is the Professional Identity Perception in Nursing Scale a valid tool for measuring nurses' professional identity perceptions?
2. Is the Professional Identity Perception in Nursing Scale a reliable tool for measuring nurses' professional identity perceptions?

### 2.4. Population and sampling

The population of the study consisted of nurses working in a hospital in the Central Anatolia Region of Türkiye (N: 480). In scale development studies, it is often recommended to reach participants 10 times the number of the items on the scale (Younas, and Porr, 2024). Accordingly, it was aimed to reach at least 240 individuals, which is 10 times the number of items on the scale (24 items). No sample selection procedure was applied in the study. 262 nurses were included in the study using the convenience sampling method.

### 2.5. Data collection and the tools

Data were collected between December 2023 and June 2024 via an online questionnaire created on Google Forms. Before data collection, a preliminary test was applied to a small group (n = 50) that met the research criteria to determine the intelligibility of the scale items. No changes were made to the wording of the scale items after the test. Data were collected using a personal information form and the Professional Identity Perception in Nursing Scale. The scale development process was carried out in three steps: content analysis and item development, content validity index and pilot application.

#### 2.5.1. Step 1: content analysis and item development

The items of a scale should be created in an observable and measurable manner based on the theoretical definition of the measured value. According to some studies, an item pool can be created by examining the existing scales on the subject during the development of scale items. However, there were no scale development studies in the literature on professional identity perception in nursing. During the development of the scale items in the study, research into professional identity in nursing (Brewington and Godfrey, 2020; Johnson et al., 2012; Hovee et al., 2014; Laschinger et al., 2014; Philippa et al., 2021) and sociology and psychology theories closely related to the concept of professional identity, such as symbolic interactionism (Buechler, 2008; Stryker and Burke, 2000), the role theory (Stryker and Burke, 2000; Stryker, 2000; Buechler, 2008; Stets, 2007) and the identity-based motivation model (Oyserman and Destin, 2010; Kiper et al., 2024) were used. A five-point Likert-type scoring system was determined as a response format of the scale items identifying the situation to be measured. The response options for each item were "strongly disagree = 1," "disagree = 2," "neither agree nor disagree = 3," "agree = 4," and "strongly agree = 5."

#### 2.5.2. Step 2: content validity index

The resulting draft scale was sent to 10 academicians to get expert opinions to determine the content validity (four from the field of nursing fundamentals, two from internal medicine nursing, two from surgical

diseases nursing, one from pediatric nursing and one from psychological guidance and counseling). The experts were asked to evaluate each item. The content validity index of the items (CVI) was calculated based on expert opinions by using the Davis Method for content/scope validity (Davis, 1992). Each item was rated using very appropriate/very relevant (4 points), appropriate/relevant (3 points), somewhat appropriate/somewhat relevant (2 points) and not appropriate/not relevant (1 point). Item-level content validity ratios (CVR), content validity indexes (CVI) for each sub-dimension and scale-level content validity index (S-CVI) were calculated. CVI was calculated by dividing the number of experts who scored an item as three or four by half of the total number of experts and subtracting one from the result. According to the content validity criteria, the minimum/critical value of CVR has been stated as 0.62 in studies conducted with 10 experts (Veneziano, 1997). In this study, the CVR value was determined as 0.90. The CVI of each sub-dimension was calculated by dividing the sum of the CVR of the items on that sub-dimension by the number of items. The S-CVI was calculated by averaging all of the CVR values (Lawshe, 1975).

#### 2.5.3. Step 3: pilot application

A small-scale application involving 50 nurses was conducted to examine the readability and intelligibility of the draft scale items. No changes were made to the scale items as a result of this test.

### 2.6. Ethics of the research

At the outset, the approval of the ethics committee of a university (decision number: 11317 and date: 23.12.2020) was obtained. During the data collection phase, first, participants were informed about the purpose of the study and then the study was completed with 262 nurses who agreed to participate.

### 2.7. Limitations of the study

Although it was determined that the Professional Identity Perception in Nursing Scale was reliable and valid, it was thought that repeated testing would be necessary. Since no other similar scales could be found, the criterion validity and equivalent form reliability could not be examined, which constituted a limitation of the study.

### 2.8. Data analysis

Data were analyzed on the IBM SPSS V23 and IBM SPSS AMOS V24 software packages. The normality of the data was examined according to the assumption of multivariate normality. Explanatory factor analysis and confirmatory factor analysis were used for construct validity. In explanatory factor analysis, principal component analysis method was employed for factor extraction and varimax method was used for rotation. Bootstrap Maximum Likelihood Method was used in confirmatory factor analysis. Significance level was taken as  $p < 0.050$ .

## 3. Results

### 3.1. Content and construct validity

The draft scale was sent to 10 faculty members to get expert opinions (four from nursing fundamentals, four from internal medicine nursing, two from surgical diseases nursing, one from pediatric nursing and one from psychological guidance and counseling). The item-level CVR values were found to be 0.90 for the scale, evaluated by 10 experts. The items that did not meet the minimum value of 0.80 for content validity were removed from the scale (items 4 and 11). The sub-dimension-level CVIs calculated with the remaining items were found to be between 0.80 and 1.00. The scale-level CVI value was found to be 0.93. The items on the scale are considered to have content validity if the CVI value is greater than the CVR criterion (Lawshe, 1975). As a result of the content

validity analysis of the scale, since the CVI values of each sub-dimension (first sub-dimension (beliefs, values and norms) CVI = 0.96; second sub-dimension (identity-based motivation) CVI = 0.90; third sub-dimension (symbolic interactionism) CVI = 0.88) and the scale-level CVI (0.93) value were > CVR value (0.90), it was decided that the scale had good content validity.

The normality of the data was examined according to the assumption of multivariate normality. Explanatory factor analysis and confirmatory factor analysis were used for construct validity. In explanatory factor analysis, the principal components analysis method was used for factor extraction and the varimax method was used for the rotation process. The Bootstrap Maximum Likelihood Method was employed in confirmatory factor analysis. The significance level was set at  $p < 0.050$ .

According to the assumption of multivariate normality, the data did not show a normal distribution. The bootstrap maximum likelihood method was used as the analysis method. As a result of the first-level confirmatory factor analysis consisting of a total of 24 items and 3 sub-dimensions, after five different modification processes were performed, the model fit values were obtained as CMIN/DF= 3.559, GFI= 0.778, CFI= 0.905, RMSEA= 0.099, TLI= 0.893, IFI= 0.906 and SRMR= 0.071. The path coefficients of all items were found to be significant ( $p < 0.001$ ) (Table 2).

### 3.2. Factor analysis

First, Kaiser-Mayer Olkin (KMO) analysis was applied to reveal the adequacy of the sample size and Bartlett's test was employed to

determine the suitability of the data for factor analysis. Then, the factor structure of the scale was interpreted with explanatory factor analysis (EFA) and confirmatory factor analysis (CFA), which was used to verify the measurement tool.

In the explanatory factor analysis, the principal components analysis method was used for factor extraction and the varimax method was employed for rotation (Fig. 1, Fig. 2). When an item is under two different factors or the difference between the values of an item under different factors is less than 0.1, it should be removed from the scale. Due to these assumptions, items 4 and 11 were removed from the scale. The results obtained accordingly are presented in Table 1. After these items had been removed, the KMO value was found as 0.938 and the chi-square value of the Bartlett's test was 6650.924 ( $p < 0.001$ ). These values revealed the suitability of the data set for factor analysis. It was determined that all of the extraction values of the scale consisting of 24 items were > 0.3 and all of the diagonal values in the anti-image correlation matrix were > 0.5. As a result of the analysis, a three-factor structure was revealed. The ratio of the explained variance by the factors was as follows: factor 1 = 37.55 %; factor 2 = 20.57 %; and factor 3 = 14.55 %. In total, these three dimensions explained 72.67 % of the total variance.

### 3.3. Reliability and item analysis

Reliability analysis was conducted to determine the internal consistency of the scale. This analysis reveals the consistency of the items with the scale as a whole and with each other. In addition, it is used to

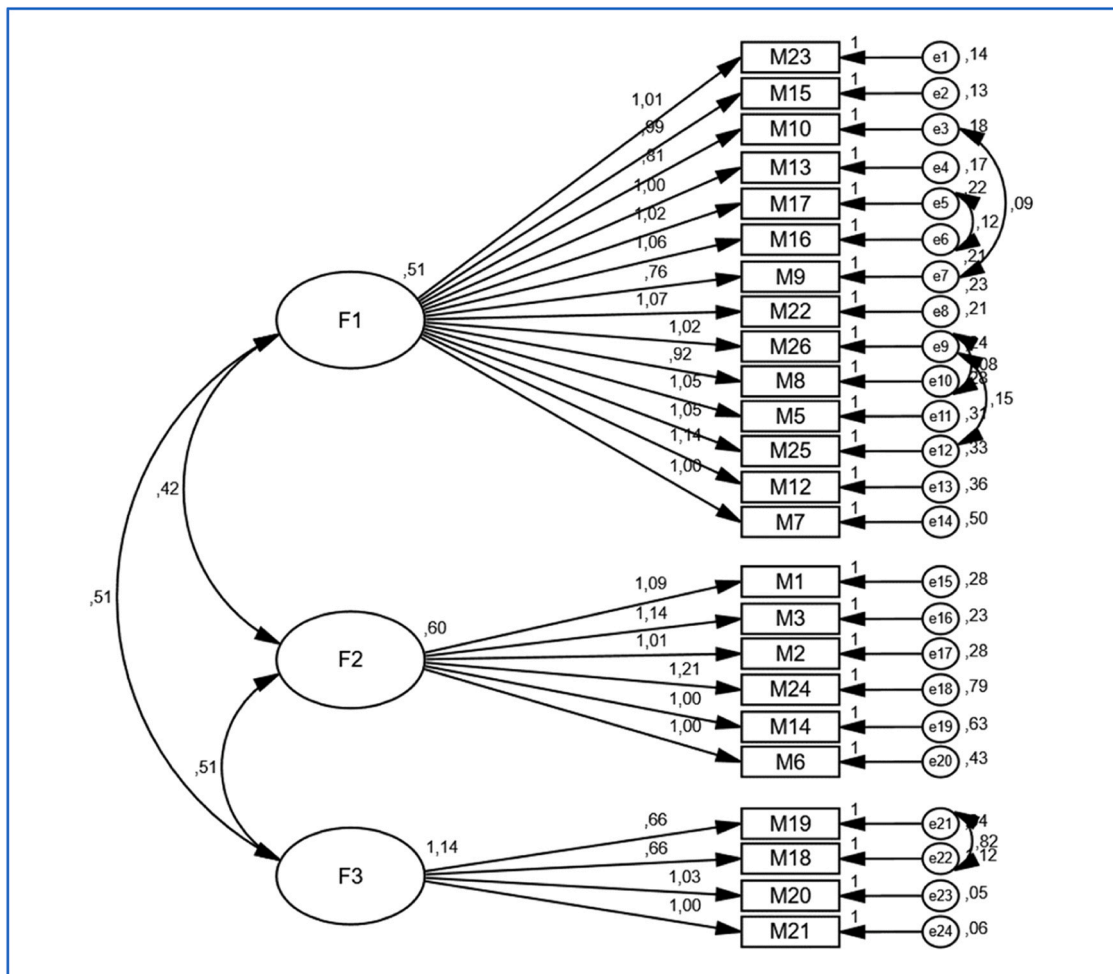


Fig. 1. Non-standardized path coefficients.

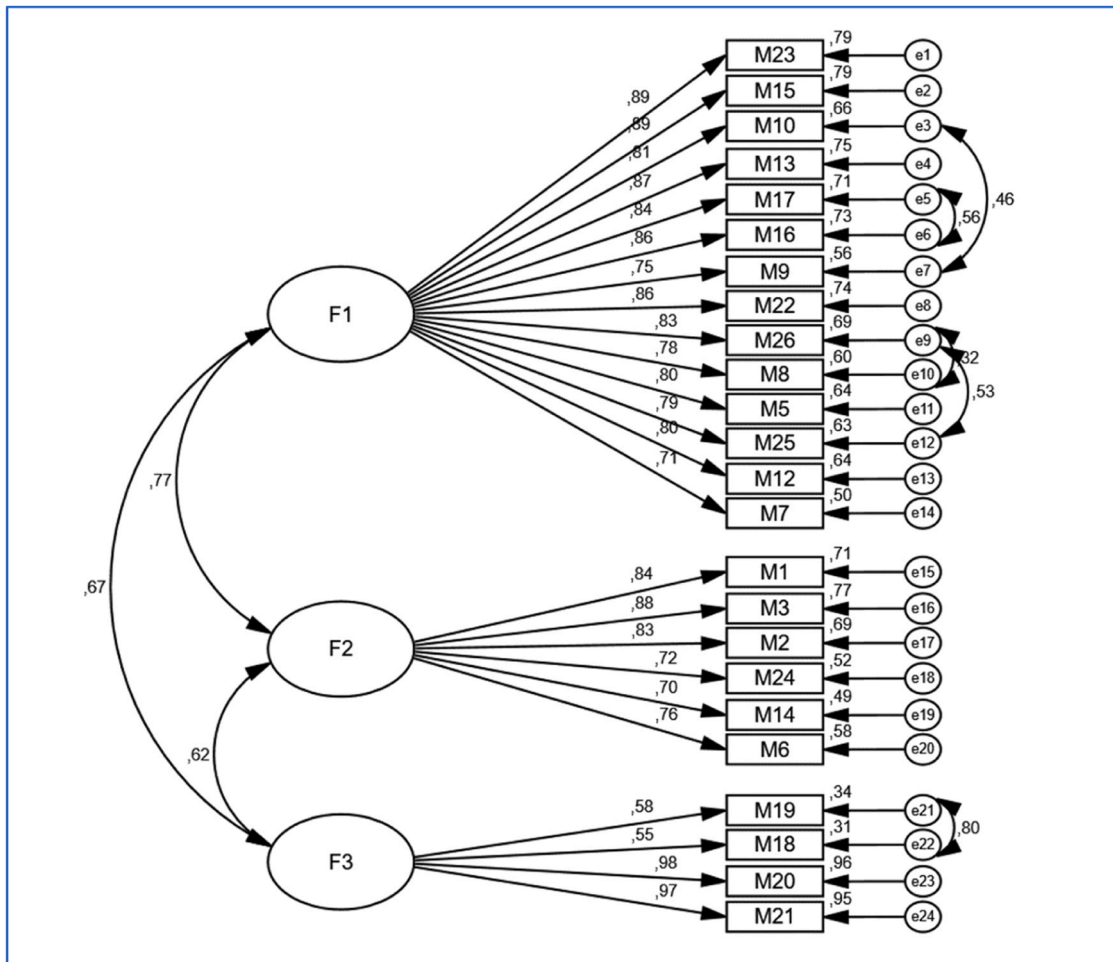


Fig. 2. Standardized path coefficients.

determine the comprehensibility of the scale items. In scientific research, the reliability of a scale is determined with Cronbach's alpha coefficient, which is interpreted as follows: " $0.80 \leq \alpha < 1.00$ , high reliability"; " $0.60 \leq \alpha < 0.80$ , quite reliable"; " $0.40 \leq \alpha < 0.60$ , low reliability"; and " $0.00 \leq \alpha < 0.40$ , unreliable" (Van Griethuijsen et al., 2015).

Reliability analysis was applied to the scale and the alpha coefficient was found to be 0.888 for the total scale, 0.965 for the first factor (beliefs, values and norms), 0.904 for the second factor (identity-based motivation dimension) and 0.889 for the third factor (symbolic interaction dimension). Whether the scale was additive was examined, and it was found that the scale was not additive according to Tukey's test of additivity ( $p < 0.001$ ) (Table 1).

#### 4. Discussion

The essence of nursing professional identity is the perception of what it means to be a nurse. This perception is the most important condition that distinguishes nursing from other health professions and determines the value given to nursing (King et al., 2024; Fitzgerald and Clukey, 2021). A superficial commitment to the profession can lead to low-quality nursing care. Therefore, it is also important for the development of the nursing profession. Lack of a desired level of development in nurses' professional identities can negatively affect commitment to the profession and result in a decrease in the quality of nursing care (Al-Noumani et al., 2024; Douglass et al., 2024; Neishabouri et al., 2017; Zeng et al., 2022). For these reasons, determining the levels of nurses' perception of nursing professional identity is important in terms of

increasing commitment to the profession, providing a positive impact on the development of the profession and taking action to increase the quality of nursing care. This study provides preliminary evidence that nurses' perception of professional identity can be measured using a valid and reliable measure.

Symbolic interactionism analyzes how individuals assign meanings to events, symbols and behaviors, emphasizing that interaction becomes significant when it occurs between people. Individuals' responses are shaped by the meanings they attribute to behaviors, involving interpretation as well as the use of symbols (Bosun-Arije and Ekpenyong, 2023). A core feature of symbolic interactionism is its support for individuals in expressing themselves in their social environment (Aylmer et al., 2024; Stryker, 2000). This approach also underpins identity development, which emerges from social, cultural, contextual and personal symbolic structures. Recognition as a community member reflects the development of identity through shared meanings (Buechler, 2008). In nursing, professional identity is influenced by environmental interactions. Nurses develop three concepts of the self: as a process (changing perceptions), as a practitioner (workplace actions) and as an object (feelings toward roles and professional growth).

Role theory, meanwhile, examines how individuals enact roles through social norms and values, positioning identity as a displayed role, exemplified by professional identity and performance (Bruce and Yearley, 2006). Role identity forms a hierarchy influenced by external support, personal commitment and the internal and external rewards associated with the role (Stets, 2007). Stryker and Burke (2000) frame role theory as a model explaining how social expectations construct behavior. Multiple layers of social expectations—from client

**Table 1**  
Explanatory Factor Analysis Results of the Three-Factor Model of the Professional Identity Perception in Nursing Scale.

	Factor 1*	Factor 2**	Factor 3***	Extraction
M23	0.865			0.829
M15	0.857			0.817
M10	0.808			0.711
M13	0.801			0.711
M17	0.799			0.753
M16	0.797			0.767
M9	0.758			0.737
M22	0.739			0.750
M26	0.738			0.737
M8	0.721			0.737
M5	0.705			0.737
M25	0.648			0.695
M12	0.617			0.711
M7	0.556			0.737
M1		0.742		0.711
M3		0.738		0.737
M2		0.735		0.782
M24		0.730		0.742
M14		0.650		0.609
M6		0.641		0.737
M19			0.792	0.782
M18			0.765	0.757
M20			0.765	0.827
M21			0.759	0.810
Eigenvalue	9.012	4.936	3.493	
VRE	37.551	20.568	14.555	
CVE	37.551	58.120	72.675	
Crobach's Alpha	0.965	0.904	0.889	

VAO: Variance Explained Ratio; CVE: Cumulative Variance Explained; K-M-O= 0.938; Bartlett Test = 6650.924; p < 0.001; \*= Beliefs, values, and norms; \*\*= Identity-based motivation dimension, \*\*\*= Symbolic interaction dimension

interactions to organizational relationships—shape professional roles (Bruce and Yearley, 2006). Shared beliefs, values and norms serve as reference points that connect individuals with their social groups (Stryker, 2000). Within dynamic identity relations, individuals define who they are and who they are not, a process also reflected in how nurses distinguish themselves in their professional role (Buechler, 2008; Stets, 2007).

The identity-based motivation model posits that actions align with individuals' identities, which are multifaceted and composed of numerous components (Burmeister et al., 2024; Oyserman and Destin, 2010). According to this model, people interpret the world and take actions consistent with their salient identities (Oyserman and Dawson, 2024). Identity salience can be contextually triggered and may either facilitate or hinder goal-directed behavior, depending on the structure of identity in the situation and the available behavioral options (Oyserman and Destin, 2010; Kiper et al., 2024). In nursing, whether identity-based meaning-making and readiness for action positively or negatively influence nursing behaviors depends on how challenges to identities and goals are interpreted.

The scale developed in this study allows subjective measurement of the perception of professional identity in nursing with the dimensions of “beliefs, values and norms,” “identity-based motivation,” and “symbolic interactionism.”

The Professional Identity Perception in Nursing Scale consisted of three decisive areas (beliefs, values and norms; identity-based motivation; and symbolic interactionism). This scale showed a three-factor construct (Table 1). These factors were compatible with symbolic interactionism, the role theory and the identity-based motivation model from sociology and psychology theories, which are closely related to the concept of professional identity. The first factor, namely beliefs, values and norms, expresses who the nurse is or is not when she positions herself in a group in her professional relationships. The second factor, identity-based motivation, involves the meaning individuals attribute to nurses, nurses' developing and changing perceptions of themselves and

**Table 2**  
CFA Results for the Three-Factor Model of the Professional Identity Perception in Nursing Scale.

			β <sup>1</sup> (%95 CI)	β <sup>2</sup> (%95 CI)	Std. Error	P
M23	< —	F1	0.886 (0.832–0.924)	1.013 (0.872–1.165)	0.073	< 0.001
M15	< —	F1	0.889 (0.839–0.926)	0.986 (0.866–1.119)	0.064	< 0.001
M10	< —	F1	0.809 (0.682–0.89)	0.811 (0.601–1.022)	0.108	< 0.001
M13	< —	F1	0.867 (0.788–0.915)	0.997 (0.881–1.121)	0.061	< 0.001
M17	< —	F1	0.84 (0.729–0.915)	1.018 (0.776–1.278)	0.127	< 0.001
M16	< —	F1	0.856 (0.794–0.907)	1.064 (0.92–1.26)	0.087	< 0.001
M9	< —	F1	0.746 (0.603–0.843)	0.757 (0.556–0.939)	0.098	< 0.001
M22	< —	F1	0.858 (0.799–0.9)	1.066 (0.937–1.242)	0.076	< 0.001
M26	< —	F1	0.828 (0.754–0.886)	1.018 (0.858–1.227)	0.093	< 0.001
M8	< —	F1	0.777 (0.68–0.849)	0.921 (0.765–1.108)	0.087	< 0.001
M5	< —	F1	0.799 (0.724–0.857)	1.046 (0.936–1.196)	0.066	< 0.001
M25	< —	F1	0.795 (0.71–0.856)	1.049 (0.893–1.262)	0.092	< 0.001
M12	< —	F1	0.803 (0.73–0.857)	1.144 (1.015–1.339)	0.081	< 0.001
M7	< —	F1	0.71 (0.607–0.791)	1 (1–1)		
M1	< —	F2	0.845 (0.785–0.894)	1.091 (0.949–1.261)	0.078	< 0.001
M3	< —	F2	0.879 (0.833–0.92)	1.144 (1.013–1.319)	0.078	< 0.001
M2	< —	F2	0.828 (0.758–0.885)	1.012 (0.853–1.189)	0.085	< 0.001
M24	< —	F2	0.723 (0.64–0.793)	1.209 (1.033–1.43)	0.101	< 0.001
M14	< —	F2	0.697 (0.61–0.77)	1 (0.832–1.201)	0.093	< 0.001
M6	< —	F2	0.762 (0.68–0.828)	1 (1–1)		
M19	< —	F3	0.583 (0.477–0.675)	0.655 (0.55–0.75)	0.051	< 0.001
M18	< —	F3	0.552 (0.45–0.645)	0.656 (0.543–0.767)	0.058	< 0.001
M20	< —	F3	0.979 (0.945–1.002)	1.028 (0.986–1.076)	0.023	< 0.001
M21	< —	F3	0.974 (0.953–0.991)	1 (1–1)		

β<sup>1</sup>: Standardized Beta Coefficient; β<sup>2</sup>: Non-Standardized Beta Coefficient.

others, the action they take in their work environments and their feelings about their own roles and professional development. The third factor, symbolic interactionism, shows the acceptability of the nursing identity by others.

#### 4.1. Implications for education

This scale can be used to evaluate the professional identity perceptions of nurses working in the clinic and the field and in-service training given after graduation regarding the development of the components that constitute the professional identity. It can also be used by educators in institutions providing nursing education to evaluate the professional identity perceptions of students enrolled in undergraduate and graduate education programs.

#### 4.2. Implications for practice

In practice, this scale will support managers in planning in-service

training programs for nurses by determining their professional identity perception, thus improving professional identity in nursing.

#### 4.3. Limitations strengths and recommendations

The sample of this study consisted solely of nurses working in a hospital located in the Central Anatolia region. This limits the generalizability of the findings to nurse populations in different geographical regions or cultural contexts. Future studies should collect data from heterogeneous samples across various regions and hospitals to enhance external validity.

The Professional Identity Perception in Nursing Scale, which was developed to determine the professional identity perception of nurses, was based on symbolic interactionism (Buechler, 2008; Stryker, 2000), the role theory (Buechler, 2008; Stets, 2007; Stryker and Burke, 2000; Stryker, 2000) and the identity-based motivation model (Kiper et al., 2024; Oyserman and Destin, 2010), which are theories of sociology and psychology fields, closely related to the concept of professional identity. All of these features increased the power of the scale.

#### 5. Conclusions

The Professional Identity Perception in Nursing Scale consists of 24 items and three sub-dimensions and is a valid and reliable measurement tool, developed to evaluate nurses' perception of professional identity. In this regard, it will contribute to the assessment of nurses' professional identity perceptions. On the other hand, since there is no scale on the subject in the literature, it is thought that the scale developed in this study will be a reference for studies to be conducted in this field.

#### Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

#### Declaration of Competing Interest

There is no conflict of interest between the authors.

#### Acknowledgments

We would like to thank all volunteer participants who contributed to the conduct of the research.

#### References

- Al-Noumani, H., Al Zaabi, O., Arulappan, J., George, H.R., 2024. Professional identity and preparedness for hospital practice among undergraduate nursing students: A cross-sectional study. *Nurse Educ. Today* 133, 106044. <https://doi.org/10.1016/j.nedt.2023.106044>.
- Andrews, D.R., Burr, J., Bushy, A., 2011. Nurses' self-concept and perceived quality of care: a narrative analysis. *J. Nurs. Care Qual.* 26 (1), 69–77. <https://doi.org/10.1097/ncq.0b013e3181e6f3b9>.
- Aylmer, R., Aylmer, M., Dias, M., 2024. Psychological contract, symbolic interactionism, social exchange and expectation violation theories: a literature review. *Eur. J. Theor. Appl. Sci.* 2 (2), 605–623. [https://doi.org/10.59324/ejtas.2024.2\(2\).53](https://doi.org/10.59324/ejtas.2024.2(2).53).
- Bosun-Arije, S.F., Ekpenyong, M.S., 2023. Using the theory of symbolic interactionism to inform assessment processes in nurse education. *Nurs. Educ. Pr.*, 103781 <https://doi.org/10.1016/j.nepr.2023.103781>.
- Brewington, J., Godfrey, N., 2020. The professional identity in nursing initiative. *Nurs. Educ. Perspect.* 41 (3), 201. <https://doi.org/10.1097/01.NEP.0000000000000667>.
- Bruce, S., Yearley, S., 2006. *The Sage Dictionary of Sociology*. Sage, London.
- Buechler, S.M., 2008. Social strain, structural breakdown, political opportunity and collective action. *Sociol. Compass* 2 (3), 1031–1044. <https://doi.org/10.1111/j.1751-9020.2008.00109.x>.
- Burmeister, A., Song, Y., Wang, M., Hirschi, A., 2024. Understanding knowledge sharing from an identity-based motivational perspective. *J. Manag.*, 01492063241248106 <https://doi.org/10.1177/01492063241248106>.
- Davis, L.L., 1992. Instrument review: getting the most from a panel of experts. *Appl. Nurs. Res.* 5 (4), 194–197. [https://doi.org/10.1016/S0897-1897\(05\)80008-4](https://doi.org/10.1016/S0897-1897(05)80008-4).
- van der Cingel, M., Brouwer, J., 2021. What makes a nurse today? A debate on the nursing professional identity and its need for change. *Nurs. Philos.* 22 (2), e12343. <https://doi.org/10.1111/nup.12343>.
- Douglass, B., Stager, S.L., Shaw, K., Hite, A., Solecki, S., Stanik-Hutt, J., Tufts, G., 2024. Professional identity in nursing: why it is important in graduate education. *J. Prof. Nurs.* 52, 50–55. <https://doi.org/10.1177/09697330241238343>.
- Fitzgerald, A., Clukey, L., 2021. Professional identity in graduating nursing students. *J. Nurs. Educ.* 60 (2), 74–80. <https://doi.org/10.3928/01484834-20210120-04>.
- Hoeve, Y.T., Jansen, G., Roodbol, P., 2014. The nursing profession: Public image, self-concept and professional identity. A discussion paper. *J. Adv. Nurs.* 70 (2), 295–309. <https://doi.org/10.1111/jan.12177>.
- Johnson, M., Cowin, L.S., Wilson, L., Young, H., 2012. Professional identity and nursing: contemporary theoretical developments and future research challenges. *Int Nurs. Rev.* 59 (4), 562–569. <https://doi.org/10.1111/j.1466-7657.2012.01013>.
- King, R., Laker, S., Taylor, B., Ryan, T., Wood, E., Tod, A., Robertson, S., 2024. Development of the nursing associate professional identity: a longitudinal qualitative study. *Nurs. Open* 11 (3), e2131. <https://doi.org/10.1002/nop.2131>.
- Kiper, G., Oyserman, D., Yan, V.X., 2024. I'll take the high road: Paths to goal pursuit and identity-based interpretations of difficulty. *Self Identit.* 23 (1-2), 1–22. <https://doi.org/10.1080/15298868.2024.2314920>.
- Laschinger, H.K.S., Read, E., Wilk, P., Finegan, J., 2014. The influence of nursing unit empowerment and social capital on unit effectiveness and nurse perceptions of patient care quality. *JONA J. Nurs. Adm.* 44 (6), 347–352. <https://doi.org/10.1097/NA.000000000000080>.
- Lawshe, C.H., 1975. A quantitative approach to content validity. *Pers. Psychol.* 28 (4), 563–575. <https://doi.org/10.1111/j.1744-6570.1975.tb01393.x>.
- Miao, C., Liu, C., Zhou, Y., Zou, X., Song, L., Chung, J.W., Li, D., 2024. Nurses' perspectives on professional self-concept and its influencing factors: A qualitative study. *BMC Nurs.* 23 (1), 237. <https://doi.org/10.1186/s12912-024-01834-y>.
- Neishabouri, M., Ahmadi, F., Kazemnejad, A., 2017. Iranian nursing students' perspectives on transition to professional identity: a qualitative study. *Int Nurs. Rev.* 64 (3), 428–436. <https://doi.org/10.1111/inr.12334>.
- Oyserman, D., Dawson, A., 2024. Successful learning environments support and harness students' identity-based motivation: a primer. *Virtual Learning Environments*. Routledge, pp. 67–82.
- Oyserman, D., Destin, M., 2010. Identity-based motivation: Implications for intervention. *J. Couns. Psychol.* 38 (7), 1001–1043. <https://doi.org/10.1177/0011000010374775>.
- Philippa, R., Ann, H., Jacqueline, M., Nicola, A., 2021. Professional identity in nursing: a mixed method research study. *Nurse Educ. Pr.* 52, 103039. <https://doi.org/10.1016/j.nepr.2021.103039>.
- Stets, J., 2007. Identity theory and emotions. In: Stets, J., Turner, J.H. (Eds.), *Hand Book of the Sociology of Emotions*. Springer, New York, NY, pp. 203–223.
- Stryker, S., 2000. Identity competition: key to differential social movement involvement. In: Stryker, S., Owens, T., White, R. (Eds.), *Identity, Self and Social Movements*. University of Minnesota Press, Minneapolis, MN, pp. 21–40.
- Stryker, S., Burke, P.J., 2000. The past, present and future of an identity theory. *Soc. Psychol. Q.* 63 (4), 284–297. <https://doi.org/10.2307/2695840>.
- Van Griethuijsen, R.A., van Eijck, M.W., Haste, H., Den Brok, P.J., Skinner, N.C., Mansour, N., BouJaoude, S., 2015. Global patterns in students' views of science and interest in science. *Res Sci. Educ.* 45, 581–603.
- Veneziano, L., 1997. A method for quantifying content validity of health-related questionnaires. *Am. J. Health Behav.* 21 (1), 67–70.
- Younas, A., Porr, C., 2024. A step-by-step approach to developing scales for survey research. *Nurse Res* 32 (3). <https://doi.org/10.7748/nr.2018.e1585>.
- Zeng, L., Chen, Q., Fan, S., Yi, Q., An, W., Liu, H., Huang, H., 2022. Factors influencing the professional identity of nursing interns: a cross-sectional study. *BMC Nurs.* 21 (1), 200. <https://doi.org/10.1186/s12912-022-00983-2>.