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Validation of the Spanish Version of the Nursing Self-Concept Instrument: Psychometric Properties and Study of Its Relations With Clinical Practice and Professional Quality of Life in Nursing Students

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ABSTRACT

The aim of the study was to validate the Spanish version of the Nursing Self-Concept Instrument (NSCI) for nursing students, while also describing its relations with clinical practice and professional quality of life (PQL). A cross-sectional survey was conducted. Analyses included the study of item-objective congruence, descriptive statistics, competitive confirmatory factor analyses, reliability estimates, and a structural model. Criterion-related validity evidence was studied by hypothesizing, estimating, and testing a mediation model. Item-objective congruence values indicated adequate content validity. Regarding dimensions, the lowest mean was found for leadership, whereas the highest was for care. The two tested models showed adequate fit. Reliability was adequate. The mediation model in which clinical experience explained the levels of nursing self-concept and PQL showed excellent overall fit. Dimensions of nursing self-concept and PQL showed adequate factor loadings. Results showed a statistically significant relation between clinical practice, nursing self-concept, and PQL. The NSCI for nursing students has adequate psychometric properties. A positive impact on PQL and the relationship between appropriate experiences and higher levels of nursing self-concept has been demonstrated.

1 | Introduction

Self-concept can be conceived as the whole set of attitudes, opinions, and cognitions that a person has of himself (Lone and Lone 2016). Due to its importance as a core concept in psychology, it has been thoroughly studied throughout the past century and still holds importance to this day (Arthur and Randle 2007). Many scholars and researchers agree that this general self-concept can be multidimensional and dynamic and thus, domain-and role-specific (Marsh and Craven 2006).

When it comes to nursing self-concept, multiple definitions have been proposed. Firstly, Porter and Porter (1991) put forward the Porter Nursing Image Scale (PNIS), which had three main factors (those being interpersonal power, interpersonal relations and intrapersonal ability). This instrument, in contrast to others that will be described later, is comprised of 32 bipolar adjectives presented in pairs with the idea that the subject will select the one that he/she feels describes him/her the most out of each pair. Useful as it may be, it fails to capture some key dimensions of the nurse's job and, therefore,

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Summary

- Nursing self-concept has been related to various desirable outcomes in the profession, such as higher recruitment and retention rates or greater job satisfaction.
- A good nursing self-concept is necessary for the development of leadership within the nursing team, the improvement of nursing students' career maturity, and the creation of a strong therapeutic relationship with patients.
- The NSCI has adequate psychometric properties when used to assess nursing students' self-concept. The study has demonstrated the positive impact of nursing self-concept on professional quality of life and the relationship between appropriate experiences and higher levels of nursing self-concept.

of their self-concept. For example, as described by Porter and Porter (1991), items of interpersonal power are related to the nurse as a leader; interpersonal relations, in turn, focuses on relations with patients, families, and peers; and intrapersonal ability is referred to personal traits, such as the nurse's ability to be organized, rational, competent, neat, logical, and controlled (Porter and Porter 1991). However, there are no clear references to how nurses think of themselves when it comes to their ability to keep abreast of new developments and knowledge during their professional lives. This factor has been cited as relevant in the development of nursing self-concept by other authors, such as Angel et al. (2012) or Cowin (2001), as it is related to self-confidence in one's own work (Chang and Yeh 2016), which in turn affects the general nursing self-concept. Furthermore, when asking professional nurses about nursing self-concept, Cowin (2001) suggested that the need to acquire and utilize nursing knowledge was commonly raised.

Secondly, Arthur (Arthur 1992, 1995) proposed the Professional Self-concept of Nurses Instrument (PSCNI) in which he suggested that the nursing self-concept was composed of seven dimensions. Later research (e.g., Arthur and Thorne 1998) would reduce them to five (i.e., flexibility, skill, leadership, communication and satisfaction) and shortened the overall length of the scale from 56 items (Arthur 1992) to 27 (Arthur and Thorne 1998). Again, as with the PNIS, the PSCNI in its latest form (Arthur and Thorne 1998) lacks dimensions that some authors (Angel et al. 2012; Cowin 2001) consider vital to the self-concept of nurses such as the care dimension, which is how nurses think of themselves as care providers and the joy they obtain from the tasks related to it (Angel et al. 2012). For example, Cowin (2001) presents that when talking to professional nurses about their self-concept, themes such as caring for people are commonly raised. This consensus can be seen in other articles such as Jacono (1993) or Kurtz and Wang (1991).

Considering these limitations, Cowin (2001) came up with the Nursing Self-Concept Questionnaire (NSCQ), which had a six-factor proposal for the concept (i.e., care, leadership, communication, knowledge, nurse general self-concept and staff relations) and a total of 36 items. Some problems have cropped up with this

instrument; for example, as pointed out by Angel et al. (2012), the factor "communication" may bias the self-concept score towards domestic professionals in comparison to those whose first language is not English. In addition, its length can be an obstacle to its implementation.

Finally, after a thorough review of the previous literature, Angel and co-authors defined nursing self-concept as "the subjective experience of nurses, incorporating how they think and feel (beliefs reflected in questions encompassing both cognition and affect) about themselves in their nursing roles (e.g., nursing knowledge/attributes, the work team environment and care processes/activities)" (Angel et al. 2012, p. 881). With this in mind and accounting for the shortcomings of the instruments previously proposed (those being the PNSCI by Arthur and Thorne (1998) and the NSCQ by Cowin (2001)), Angel et al. (2012) decided to put forward a new instrument, the Nursing Self-Concept Instrument (NSCI). This instrument is made up of 14 items, which are divided into four dimensions: (1) *care*, which explores how nurses think and feel about themselves as caregivers of patients and includes both caring about and caring for the patients and, moreover, the level of the joy the nurse obtains from caring; (2) *knowledge*, which refers to how nurses think and feel about their perceived knowledge of their own profession, and also includes mastering the contents, applying them and the ability to solve problems that may crop up during the daily practice; (3) *staff relations*, that can be conceived as how nurses think and feel about being part of the greater picture of healthcare professionals as a whole and, especially, their fit and level of joy when working within their specific team; and (4) *leadership*, defined as how nurses think and feel about themselves when adopting a leadership role within a group of professionals, the ability to assume responsibility, and their perception of the respect of their colleagues (Angel et al. 2012).

In this sense, the NSCI encompasses many of the previous instruments' factors and reformulates them in a shorter format. In addition to these advantages, the NSCI has been recently validated by Laboreria-Romances et al. (2023) in a large sample of professional nurses. These authors, however, did not find evidence of the original structure and provided limited evidence of the relationships the scale has with other variables, specifically, only with gender differences. However, the relevance of nursing self-concept goes far beyond this, and the scientific literature has contemplated different constructs as consequences of an adequate nursing self-concept. For example, nursing self-concept has been related to various desirable outcomes in the profession such as higher recruitment and retention rates (Kelly and Courts 2007) or greater job satisfaction (Cleary et al. 2013; Cowin et al. 2008), with some authors such as Sasat et al. (2002) even suggesting that a good nursing self-concept is necessary for the development of leadership within the nursing team, improvement of nursing students' career maturity and the creation of a strong therapeutic relationship with patients (Lyu et al. 2022). Moreover, Arthur and Randle (2007) have shown that those nurses who lack a good amount of professional self-concept (i.e., nursing self-concept) often provide care more negatively (Chang and Yeh 2016). Indeed, nursing self-concept has been related to professional quality of life (Farhadi et al. 2021) and burnout

(Liao et al. 2020). These are outcomes of the utmost importance as recent studies such as the World Health Organization summit in Bucharest suggest that nine out of ten nurses have considered leaving the profession at some point in time (World Health Organization [WHO] 2022).

For these reasons, many authors have put their efforts into researching the development of the nursing self-concept throughout the nurses' professional cycle (Arthur and Thorne 1998; Cowin and Hengstberger-Sims 2006; Kelly and Courts 2007). More specifically, a great deal of them have focused on the changes in self-concept that occur during the nurses' academic education and the subsequent professional adaptation once they finish their studies (Cowin and Hengstberger-Sims 2006; Kelly and Courts 2007). In these studies, it has been shown that professional self-concept may be altered during the transition from academia to the workforce (Chang and Yeh 2016). In addition, Kelly and Courts (2007) and Cowin and Hengstberger-Sims (2006) have shown that promoting the development of a positive professional self-concept may lead to a greater desire to remain in nursing and a greater retention rate. Previous studies have found that negative experiences in clinical practice can influence how nursing students establish their professional role (Barry et al. 2019; Salifu et al. 2018). More recently, Kim (2020) found evidence of a close negative relation between reality shock or transition shock (as a negative measure of practice experience, including conflict between theory and practice, overwhelming practicum workload, loss of social support, shrinking interpersonal relationships, ambiguity in professional nursing values, and incongruity between clinical practicum and personal life) and nursing self-concept in 184 nursing students who experienced clinical practice for the first time. That is, worse clinical practice experience was related to a lower professional self-concept.

However, studies in Spanish samples are scarce, even though self-concept may be, as the literature suggests, a predictor of students' retention (Badiyepymaiejahromi et al. 2023) and nurses' intent to serve (Hong and Lee 2021). This is of special importance in the Spanish context, as there has been an increase in the number of newly graduated Spanish nurses who seek work outside Spain (Galbany-Estragués and Nelson 2016) and a decrease in the quantity of professionals from Latin America that want to come to the country (Pastor-Bravo and Nelson 2019). These trends are further substantiated by the results of a national survey conducted in 2024 by the Spanish government, which emphasized the persistent structural and occupational challenges confronting the nursing profession. Notably, approximately 40% of respondents reported considering leaving the profession within the next ten years (Ministerio de Sanidad 2024).

2 | Methods

2.1 | Aims

Given the importance of the nursing self-concept in nursing students (Kelly and Courts 2007; Ware 2008), the aim of this present study is to validate the Spanish version of the NSCI for nursing students, while describing its relations with clinical practice and professional quality of life of future nurses.

2.2 | Design

The study is part of a larger research project that has a longitudinal design: “*Longitudinal research of Nursing Students' Inner resources for Compassionate Care: Consequences for burnout, compassion fatigue and satisfaction, well-being and quality care (NurSInCC)*”. The aim of this project is to provide scientific knowledge on which internal resources facilitate adequate levels of compassion and self-compassion in nursing students and, therefore, greater compassionate care. In this research project, nursing students are assessed at the end of every academic course, throughout every year of the Nursing Degree (first, second, third, and fourth year). For the present study, cross-sectional data of second-year nurses of the class of 2021–2022 were used.

Nursing students in their second year of training at the University of Valencia and the University of the Balearic Islands (Spain) were encouraged to participate. They were accessed via the universities' list of registered students. For inclusion, the participants had to be nursing students in their second year of the Degree in Nursing. The students fulfilled the questionnaire online in approximately 20 min. Data were gathered in 2023.

2.2.1 | Translation and Adaptation Procedure

For the translation of the scale, we used the backward and forward translation process. First, the scale was translated into Spanish by a professional native; it was then translated back into English by another native professional. The final version was revised by four experts in Psychometrics and cross-cultural instrument development and validation, Educational Psychology and Developmental Psychology, and Nursing. All of them judged the instrument to adequately measure nurse self-concept, and no revisions from the original backward-forward translation were made.

2.3 | Participantst

The sample was composed of 172 nursing students. 50.6% ($n = 87$) were University of Valencia students, and 49.4% ($n = 85$) were students of the University of the Balearic Islands. 82.0% ($n = 141$) were women. The mean age was 23.46 (SD = 6.80) years old. The majority of the students were not working at the time of the survey (62.8%, $n = 108$). 15.7% ($n = 27$) were working as healthcare professionals. For more details, see Table 1.

2.4 | Variables and Measures

For the present study, we used participants' information on:

- Sociodemographic characteristics including: (a) gender, with three response categories: woman, man, other; (b) age; (c) University, with two categories: University of Valencia, University of the Balearic Islands (d) job, with three categories: no job, part-time job, full-time job; and (e) healthcare professional, with two answers: yes or no.
- Clinical practice experience, which was measured through a series of questions regarding the satisfaction

TABLE 1 | Sample description.

Variable/groups	M	SD
Age	23.46	6.80
	<i>n</i>	%
Sex		
Women	141	82.0
Men	28	16.3
Missing	3	1.7
University		
University of Valencia	87	50.6
University of the Balearic Islands	85	49.4
Missing	0	0.0
Job		
Not job	108	62.8
Part-time job	46	26.7
Full-time job	15	8.7
Missing	3	1.7
Healthcare professional		
No	142	82.6
Yes	27	15.7
Missing	3	1.7

Abbreviations: M, mean; SD, standard deviation.

of the nursing student with; (a) the intern nurse that tutored them while in the institution; (b) the team of multi-disciplinary professionals with whom the student has worked; (c) the quality of the healthcare provided by the unit they worked in; (d) the quality of care provided by the nurses in their unit and; and (e) the quality of the relationships between professionals and the patients and families. Indicators were measured using Likert-type scales with 4 options, going from (1) not at all satisfied to (4) completely satisfied. Internal consistency estimate for the five indicators was 0.85.

- The Nursing Self-Concept Instrument (NSCI), made by Angel et al. (2012). This instrument is composed of 14 items scored from 1 (“definitely false”) to 8 (“definitely true”) Likert scale. The 14 items assess the four aforementioned dimensions: care (items 1–3), leadership (items 4–7), staff relations (items 8–10), and knowledge (items 11–14). Internal consistency estimates for this sample are presented in the Results section.
- The Spanish version of the Short Professional Quality of Life Scale (Short-ProQOL) (Galiana et al. 2020). The ProQOL comprises three subscales: compassion satisfaction, compassion fatigue, and burnout (Stamm 2010). Each dimension is represented in the scale by three items that are scored using a 5-point Likert scale (ranging from 1 ‘never’ to 5 ‘very often’) (Galiana et al. 2020). The scores for each dimension

are calculated as the sum of the three items and therefore range from 3 to 15. Internal consistency estimates for this sample were 0.88 for compassion satisfaction, 0.79 for burn-out, and 0.78 for compassion fatigue.

2.5 | Ethical Considerations

The study was approved by the Ethics Research Committee of the University of Valencia (code 2581819) and the University of the Balearic Islands (code 263CER22). Students participated voluntarily and anonymously. The study complied with the ethical principles for research in health sciences established in the Declaration of Helsinki (World Medical Association 2013). The participants signed an informed consent document to authorize the collection and processing of their personal information, and they were able to withdraw their consent at any time and without any consequences.

2.6 | Data Analysis

Firstly, the NSCI items’ content was assessed using Rovinelli and Hambleton’s (1977) indices of item-objective congruence (IOC). For this purpose, four Professors of Nursing, experts in nursing practice education and training, were consulted. They judged the congruence of each item in each of the four objectives of the scale (meaning the dimensions of care knowledge, care, staff relations, and leadership), with responses being 1 (for clearly measuring), –1 (clearly not measuring), or 0 (the degree to which it measures the content area is unclear) for each objective. The range of the index score for an item is –1 to 1, where 1 indicates that all experts agree that the item is clearly measuring that objective (in this case, each original dimension) and is not measuring any other objective. A value of –1 for the intended objective would indicate that the experts believe the item is measuring other objectives or dimensions, instead of the one it was originally hypothesized to measure. For this study, the authors defined an a priori a value of 0.50 as an indicator of adequate congruence following the guidelines provided by Brown (2005), since it would mean that four of the experts agreed that the item measured the intended objective (1) and they indicated it did not measure (0 or –1) the rest of dimensions.

Secondly, descriptive statistics for the items and the total scores of the Spanish version of the Nursing Self-Concept Instrument were calculated. These included means, standard deviations, minimum and maximum scores, skewness, and kurtosis. All the values for univariate skewness and kurtosis for all the variables analyzed were satisfactorily within conventional criteria for normality (–3 to 3 for skewness and –10 to 10 for kurtosis), according to the guidelines suggested by Kline (2015).

In the third place, for the study of the internal structure, two competitive confirmatory factor analyses were hypothesized, estimated and tested. They included the four-correlated factor structure proposed by Angel et al. (2012) and a model in which a second-order factor was added, as evidence reported by Angel et al. (2012) showed a positive, high correlation pattern among first-order factors. This second model hypothesized the original four first-order factors (knowledge, care, staff

relations and leadership) and a second-order factor, which in turn explained the four first-order factors.

To assess the model's overall fit, several criteria were used: the chi-square statistic, the Comparative Fit Index (CFI), the Standardized Root Mean Square Residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA). CFI values above 0.90 (better over 0.95) and SRMR and RMSEA values below 0.08 (better under 0.06) were indicative of good fit (Perry et al. 2015). For model comparison, as the competitive CFA models were not nested, subjective criteria were used. That is, if a parsimonious model evidences adequate levels of practical fit, it is preferred over the more complex model. CFI differences (Δ CFI) lower than 0.01 (Cheung and Rensvold 2002) or 0.05 (Little 1997) were used as cut-off criteria. The model was estimated using the weighted least squares mean and variance adjusted (WLSMV) estimation method, according to the ordinal nature of the data (Flora and Curran 2004; Muthén and Muthén 2017).

Once evidence of internal structure was gathered, estimates of reliability were calculated. For this purpose, both Cronbach's alpha and McDonald's omega were calculated for the first and second-order factors.

Finally, criterion-related validity evidence was studied by hypothesizing, estimating and testing a mediation model, in which clinical experience was related to the levels of nursing self-concept, and this, in turn, was related to nursing students' levels of professional quality of life. As previously reviewed, practice experience has been related to professional self-concept (Barry et al. 2019; Kim 2020; Salifu et al. 2018), and the professional self-concept has been pointed out as a predictor of professional quality of life (Farhadi et al. 2021; Liao et al. 2020). Additionally, the relations between the variables were controlled by the potential effects of age and gender. The model was estimated using maximum likelihood with robust corrections for the standard errors and fit indices.

For the statistical analyses, SPSS version 28 (IBM Corp 2021) and Mplus version 8.10 (Muthén and Muthén 2017) were used.

3 | Results

3.1 | Translation and Validity Content of the Spanish Version of the Nursing Self-Concept Instrument

The Nursing Self-Concept Instrument was translated into Spanish. The backward and forward translation process was used: first, the scale was translated into Spanish by a professional native; it was then translated back into English by another native professional. No differences were found. The final version was revised by two experts in Psychometrics and Nursing, who agreed on the adequacy of the translation.

Once the scale was translated, evidence of content validity was assessed using the item content on the Spanish version of the Nursing Self-Concept Instrument. Four Professors in Nursing, experts in nurse education and training, examined the validity using Rovinelli and Hambleton's (1977) indices of

item-objective congruence (IOC). IOC values ranged from 0.60 (item 3, "I get a lot of enjoyment out of caring for my patients") to 0.88 (items 6, "I find new nursing knowledge stimulating", and 9, "I am able to form good working relationships with my colleagues"), except for item 2 ("I am proud of the way I care for my patients"), with IOC = 0.46. Although this last result did not pass the cutoff point, the item was retained, taking into account the experts in Psychometrics and Nursing's insights and previous evidence of content validity (Angel et al. 2012). The rest of IOCs indicated adequate content validity for the items of the Spanish version of the NSCI. More details, together with the resulting Spanish version of the scale, can be consulted in Table 2.

3.2 | Descriptive Statistics

Descriptive statistics for the dimensions and the items of the NSCI were calculated. Regarding the dimensions of nursing self-concept, the lowest mean was found for leadership ($M = 6.33$, $SD = 1.33$), whereas the highest was for care ($M = 7.48$, $SD = 0.76$). Items' means ranged from 5.77 (item 14, "I like/will like leading a nursing team") to 7.71 (item 7, "I like having the knowledge to solve nursing problems"). More details can be consulted in Table 2.

3.3 | Study of the Internal Structure

The two tested models, the four-correlated factor solution ($\chi^2(71) = 259.87$ ($p < 0.01$), CFI = 0.94, TLI = 0.93, RMSEA = 0.13 (90% CI = 0.11, 0.14), and SRMR = 0.07) and the second-order factor solution ($\chi^2(73) = 251.09$ ($p < 0.01$), CFI = 0.95, TLI = 0.93, RMSEA = 0.12 (90% CI = 0.10, 0.13), and SRMR = 0.07), showed adequate fit, except for the RMSEA value. However, this index has shown poor performance in structural models with a small sample size (Kenny et al. 2015). The models' fit, then, was considered adequate. When compared, the second-order factor solution showed a better value for the CFI (Δ CFI = 0.01) with no worsening of the other indices. Considering that this was a more parsimonious model ($\Delta df = 2$), it was retained as a better representation for the NSCI internal structure.

As regards the analytical fit, it was excellent. For the dimension of Care, factor loadings ranged from 0.83 (item 3) to 0.92 (item 2); for Knowledge ranged from 0.77 (item 4) to 0.87 (item 7); for Staff relationships from 0.82 (item 8) to 0.91 (items 9 and 10); and for Leadership from 0.76 (item 14) to 0.92 (item 12). For the second-order factor, loadings ranged from 0.61 (leadership) to 0.92 (knowledge and staff relationships). More details can be consulted in Figure 1.

3.4 | Reliability Evidence

To study the reliability of the Spanish version of the NSCI, Cronbach's alpha and McDonald's Omega were used. Reliability estimates showed that all the dimensions, including the first- and second-order factors, had adequate reliability. The estimates can be consulted in Table 3.

TABLE 2 | Items' content, descriptive statistics and IOC values for the Spanish version of the NSCI.

Dimensions and items content	M	SD	Min	Max	IOC
Care/Cuidado	7.48	0.76	3.67	8.00	—
1. I care about my patients' needs./1. <i>Cuido de mis pacientes.</i>	7.46	1.04	2.00	8.00	0.75
2. I am proud of the way I care for my patients./2. <i>Estoy orgulloso/orgullosa de la forma en que cuido a mis pacientes.</i>	7.37	0.87	3.00	8.00	0.46
3. I get a lot of enjoyment out of caring for my patients./3. <i>Disfruto cuidando a mis pacientes.</i>	7.60	0.76	4.00	8.00	0.60
Knowledge/Conocimientos	7.29	0.70	3.50	8.00	—
4. I am able to master new nursing knowledge./4. <i>Soy capaz de dominar nuevos conocimientos de enfermería.</i>	7.09	1.00	3.00	8.00	0.84
5. I am good at applying my nursing knowledge to patient care./5. <i>Soy bueno/buena aplicando mis conocimientos de enfermería al cuidado del paciente.</i>	6.88	1.00	3.00	8.00	0.76
6. I find new nursing knowledge stimulating./6. <i>Me estimulan los nuevos conocimientos de enfermería.</i>	7.47	0.84	4.00	8.00	0.88
7. I like having the knowledge to solve nursing problems./7. <i>Me gusta tener conocimientos para resolver problemas de enfermería.</i>	7.71	0.73	4.00	8.00	0.80
Staff relationships/Relaciones con los compañeros	7.40	0.74	4.00	8.00	—
8. I like working with my colleagues./8. <i>Me gusta trabajar con mis compañeros.</i>	7.41	0.84	4.00	8.00	0.80
9. I am able to form good working relationships with my colleagues./9. <i>Soy capaz de establecer buenas relaciones con mis compañeros.</i>	7.41	0.82	4.00	8.00	0.88
10. I am good at helping my colleagues./10. <i>Se me da bien ayudar a mis compañeros.</i>	7.40	0.85	4.00	8.00	0.84
Leadership/Liderazgo	6.33	1.33	2.00	8.00	—
11. I am/will be a good leader of nurses./11. <i>Soy/Seré un buen/una buena líder de enfermeras.</i>	6.45	1.36	1.00	8.00	0.80
12. I enjoy/will enjoy having nursing leadership responsibility./12. <i>Disfruto/Disfrutaré teniendo responsabilidades de liderazgo en enfermería.</i>	6.36	1.51	2.00	8.00	0.76
13. I am/will be a respected nurse team leader./13. <i>Soy/Seré un/una responsable de equipo de enfermería respetado/respetada.</i>	6.74	1.28	3.00	8.00	0.67
14. I like/will like leading a nursing team./14. <i>Me gustará dirigir un equipo de enfermería.</i>	5.77	2.00	1.00	8.00	0.80
General nursing self-concept/Autoconcepto enfermero general	7.08	0.71	3.36	8.00	

Note: italics for the Spanish version.

Abbreviation: IOC, item-objective congruence.

3.5 | Mediation Model

The mediation model in which clinical experience was related to the levels of nursing self-concept, and this, in turn, was related to nursing students' levels of professional quality of life, while controlling for age and gender, showed excellent overall fit: $\chi^2(29) = 45.75$ ($p = 0.03$), CFI = 0.96, TLI = 0.93, RMSEA = 0.06 (90% CI = 0.02, 0.09), and SRMR = 0.06. Regarding the measurement part of the model, all the dimensions of nursing self-concept and the ones from professional quality of life showed adequate factor loadings ($p < 0.01$). As regards the relations among clinical practice, nursing self-concept, and professional quality of life, the first showed a statistically significant and

positive relation with nursing self-concept, thus meaning nursing students with better experiences in their clinical practice showed higher levels of nursing self-concept. Additionally, nursing self-concept was positively related to professional quality of life, meaning students with greater self-concept were also those with higher levels of compassion satisfaction and lower burnout and compassion fatigue. Finally, control variables played very different roles. Whereas no effects of age were found, better clinical experiences were reported by men (coded as group 1) and higher levels of professional quality of life were found in women (group 0). No relation between gender and nursing self-concept was found. Detailed results can be consulted in Figure 2.

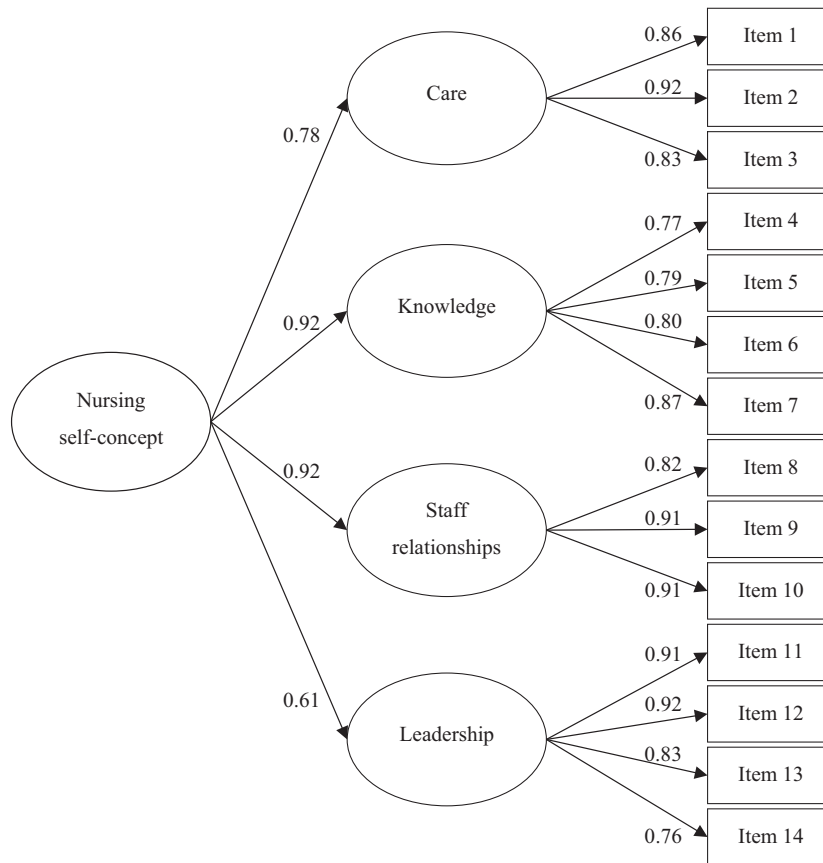


FIGURE 1 | Analytical fit of the second order confirmatory factor analysis for the Spanish version of the NSCI. All factor loadings were statistically significant ($p < 0.01$). For the sake of clarity, standard errors are not shown.

TABLE 3 | Cronbach's alpha and McDonald's omega for the Spanish version of the NSCI.

NSCI dimensions	Cronbach's alpha	Omega
Care	0.81	0.90
Knowledge	0.77	0.92
Staff relationships	0.86	0.88
Leadership	0.88	0.92
General nursing self-concept	0.88	0.89

4 | Discussion

The aim of this study was to validate the Spanish version of the NSCI for nursing students while also describing the relations with their clinical practice and professional quality of life of future nurses. For this objective, a sample of 172 nursing students from both the University of Valencia and the University of the Balearic Islands was surveyed during the second year of their bachelor's degree.

With regard to the content validity results, the Spanish NSCI showed preliminary evidence of content validity via the IOC (Rovinelli and Hambleton 1977), except for Item 2: *"I am proud of the way I care for my patients"*, which did not surpass the

established threshold of $IOC > 0.5$. As suggested by (Chang and Yeh 2016) its poor functioning may be related to the fact that in more collectivist cultures such as the Chinese or the Spanish in comparison to that of Australia, the word "proud" does not represent the nurses' perception of their role as some of them expressed that "proud" seemed too arrogant for those surveyed. Be that as it may, taking into consideration the results presented by Angel et al. (2012) and the fact that the IOC was very close to the cut-off point, the item was retained.

When it comes to the internal structure, competitive CFAs were used to determine the goodness of fit of two different factorial solutions. These analyses showed that the model with a general overarching second-order factor for nursing self-concept, which comprised the four first-order factors (i.e., "care", "knowledge", "staff relationships" and "leadership") had a better fit than the four-factor solution originally proposed by Angel et al. (2012). Moreover, this model with the second-order factor showed greater parsimony via an increase in the number of degrees of freedom. As the fit was deemed acceptable but for the RMSEA, which has been shown to function poorly in small sample sizes like this one (Kenny et al. 2015) this model was used in the posterior mediation model. Furthermore, every first-order factor had acceptable factor loadings, with the dimensions of "knowledge" and "staff-relationships" showing saturations greater than 0.90, thus making them the best representation of the second-order general factor of nursing self-concept.

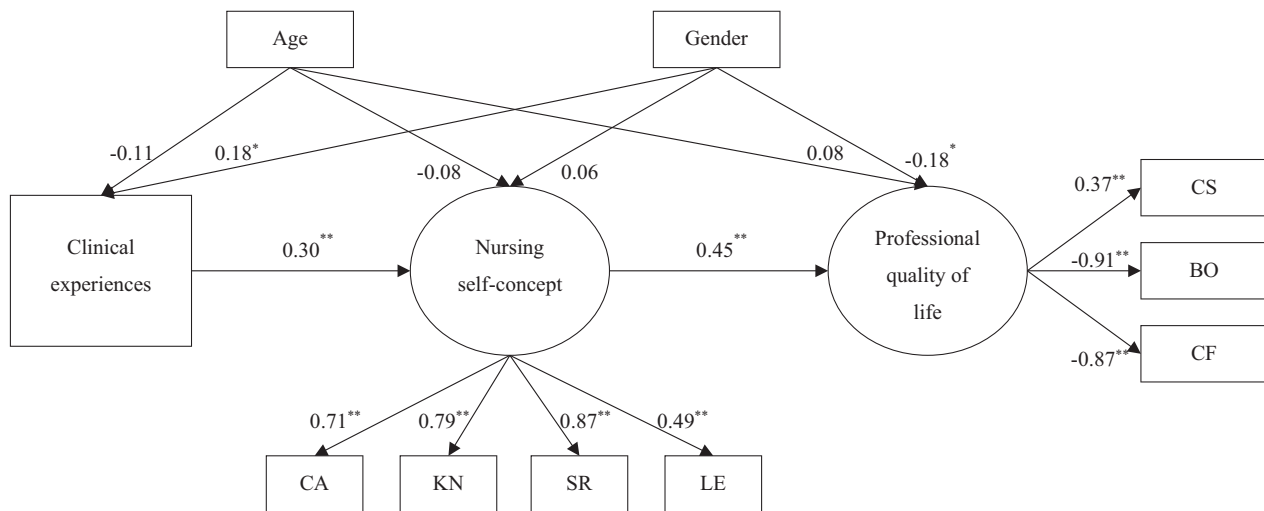


FIGURE 2 | Mediation model. * $p < 0.05$; ** $p < 0.01$. All factor loadings were statistically significant ($p < 0.01$). For the sake of clarity, they are not shown.

Reliability was assessed via Cronbach's alpha and McDonald's omega indexes. When comparing the results obtained in this study to those of the original scale (Angel et al. 2012), the subscales showed a similar level of reliability. For the dimension knowledge, Angel et al. (2012) reported an alpha of $\alpha = 0.81$ whereas the present version showed a smaller alpha but a greater omega. For the leadership subscale in the present study, the alpha reported in this study was mimetic to the one found by Angel et al. (2012), but McDonald's omega suggested greater reliability. Staff relations also showed the same alpha value both the present study and Angel et al. (2012), but a greater result when using the omega index. Evidence of reliability for care when using alpha in this study was slightly below the value offered by Angel et al. (2012), that is, $\alpha = 0.86$, but again omega was higher than the reliability estimate presented in the original work. Finally, when it comes to the reliability of the full scale, the estimates presented in this study were close to the ones offered by Angel et al. (2012) ($\alpha = 0.94$). When compared to previous Spanish research (Laborería-Romances et al. 2023), and considering that this comparison was limited by the proposed change in the internal structure, results show a similar level, if not better, of reliability in the present study. In sum, we could say reliability estimates of the Spanish version of the NSCI were excellent and very close to the ones previously found (Angel et al. 2012).

To examine the external validity, a total mediation model was used, which included different variables based on a review of previous literature about nursing self-concept. These were: professional quality of life, measured by the ProQoL, which has been previously related with nursing self-concept (Farhadi et al. 2021); clinical experiences, which was measured by a series of questions about clinical experiences, and that has been found to be related with the development of professional self-concept in nurses (Kim 2020; Oh and Song 2023); age, due to greater age being related to a larger professional self-concept (Kelly and Courts 2007); and gender, with previous literature suggesting that men may have greater self-concept (Jo et al. 2013). The results obtained broadly replicated these previous findings as clinical experiences were shown to have a positive relation with the general nursing self-concept

(where better clinical experiences predicted higher levels of self-concept), while the later had a positive relation with professional quality of life (i.e., greater nursing self-concept was related to better professional quality of life).

Based on the obtained results and, as shown by previous authors such as Kim (2020), the period during which a nurse comes into contact with real clinical practice is of the utmost importance to the later development of a positive nursing self-concept (Kim 2020). These first clinical experiences make new nurses acquire attitudes, beliefs, values, and ethical standards through the internalization of the nursing role (Oh and Song 2023). If this transition becomes too overwhelming, nurses might begin to perceive themselves as incapable of dealing with the clinical situation or providing care for their patients, resulting in a poorer self-concept. In fact, this is also present in the transition shock model proposed by Duchscher (2008), which argues that negative clinical experiences might lead to feelings of loss, doubts about oneself, confusion, and disorientation. These factors impede the formation of a positive nursing self-concept, which in turn is highly related to the professional quality of life of nurses.

When it comes to the relationship between nursing self-concept and the professional quality of life, previous evidence pointed out that a greater self-concept means that nurses perceive themselves as efficient in their work and see their behavior standards as fulfilled (Hong and Sohn 2019), with studies showing that nursing self-concept is related to the quality of care that nurses provide (Arthur and Randle 2007; Chang and Yeh 2016). These nurses with greater levels of nursing self-concept are more likely to experience positive emotions when working, as the work they perform leads to the fulfillment of their perceived nurse role. These positive emotions in turn also increase compassion satisfaction (one of the subdimensions of the professional quality of life), as a feedback process between the two of them is initiated (good work performance leads to positive emotions and these, to greater compassion satisfaction and the fulfillment of one's perceived nursing role, which increases work performance). Thus, a good level of self-concept is paramount to the performance

exhibited in the workplace and this, in turn, to the professional quality of life.

Regarding the relation between gender and nursing self-concept, it is important to note that although no relation between gender and general nursing self-concept was found, although men reported better clinical experiences and higher levels of professional quality of life were found in women. Both of these results are somewhat counterintuitive. For example, some studies about the clinical experiences of newly graduated nurses suggest that men tend to face greater difficulties when incorporating into the profession such as low acceptance from patients (Meadus 2000) or having to deal with the discordance between their perceived masculinity and their profession as nursing has traditionally been related to women (Chan et al. 2014). Either way, it could be possible that these problems are being reduced over time, as some authors suggest that there are no major differences in satisfaction between men and women nurses (Chan et al. 2014; Christensen et al. 2021). This has been attributed to the ability of new male nurses to reconstruct their masculinity, with some of them recognizing the existence of benefits and advantages of being male during this transition between studies and professional life (Liu and Li 2017). Nevertheless, it is important to note the small sample of men gathered for this study, as it is relevant for the generalization of results.

Regarding results of professional quality of life, women showed greater levels, which somehow contradicts previous literature as men have traditionally displayed higher levels (Lluch et al. 2022; Hall et al. 2016; Rotenstein et al. 2018; Mooney et al. 2017). Nonetheless, it is important to have in mind that some studies have also found that male professionals tend to experience more burnout symptoms (Cao et al. 2021; Prost and Middleton 2020) and some even suggest that there are no significant differences between men and women when it comes to professional quality of life of nurses and nursing students (Hamaideh et al. 2023). But again, the interpretation of the results may be done cautiously, not only due to the small group of men, but also for the particularities of the sample under study. Students in the second year of the Degree of Nursing are just getting started in their professional career, and their experience with clinical practice is still limited. Women nurses could see reduced their levels of professional quality of life in later stages of their careers.

Finally, age did not have any statistically significant relations with the main variables (i.e., clinical experiences, nursing self-concept and professional quality of life), but that could be due to the low variability of the sample as the participants were all students from the same academic course in both universities.

4.1 | Limitations

Several limitations may exist in the present study. The first of them is the small sample size, which makes the generalization of results harder and also could account for a lack of potency in the analyses performed. Secondly, the cross-sectional studies such as this one may preclude the interpretation of the temporary relationships between the variables used in this study. To solve this, the ideal solution would be a longitudinal study, which would detect the development of each variable through

time, thus legitimizing its importance and order in the mediation model. In third place, the fact that the targeted population is nursing students makes it difficult to assess their professional quality of life. In fact, students who participated had very little clinical experience, limited to the internships that are carried out for a few months during the second year of the Degree. Therefore, future studies in populations with different ranges of experience would be welcomed. Finally, it is important to note that the relation that age could have had with the studied variables could have been neglected by the fact that the sample had a very low variability. In this case, the sample was comprised of subjects all in the same academic year, thus leaving very little room for age differences between them that could enlarge the variability and make it easier to study the relation between age and the nursing self-concept, clinical experiences, or professional quality of life.

5 | Conclusions

This study extends the validity of the NSCI as an instrument for assessing nursing self-concept. Moreover, it shows the feasibility of using the NSCI in nursing students, which is one of the most studied groups in the field of nursing due to the high turnover rates in the profession (Burke et al. 2012; World Health Organization [WHO] 2022) and the necessity for more nurses in the Spanish healthcare more than ever before (Ministerio de Sanidad 2024). A need that is ever more accentuated by the increase in the number of newly graduated Spanish nurses who seek work outside Spain (Galbany-Estragués and Nelson 2016) and the decrease in the quantity of professionals from Latin America who want to come to the country (Pastor-Bravo and Nelson 2019).

As suggested by Angel et al. (2012), these types of investigations provide preliminary evidence which future professionals can use as a base for their research, with the ultimate goal of understanding the impact of specific self-concept domains on desirable outcomes (e.g., retention) in the profession. In this same direction, a total mediation model was used to examine these relationships, highlighting how clinical experiences are associated with the development of the general nursing self-concept, and how this self-concept is, in turn, related to later professional quality of life.

Future research could focus on further examining the validity of the NSCI as an instrument in different populations and cultures. Another possibility would be to use the NSCI in a longitudinal setting. This would provide greater insight into the topic of nursing self-concept, its development, and its relationships with other significant variables.

6 | Relevance for Clinical Practice

Newly developed interventions (Zhou 2020) set to increase the nursing self-concept could greatly benefit from evidence-based instruments, as professional self-concept significantly impacts student development (Xu et al. 2023), job retention (Cowin et al. 2008) and the professional quality of life (Farhadi et al. 2021), factors specifically relevant in the context of nursing.

In this sense, based on the results obtained, these new programmes could focus on improving the conditions of the clinical experiences that students have to complete during their education, as having supportive and well-trained mentors that provide quality care is of the utmost importance to the development of a positive nursing self-concept (and this, to greater performance and a positive professional quality of life). For these reasons, faculties and policy-makers should consider the importance that the mandatory clinical experiences during bachelor's degrees can have, as the nursing profession is ever more important in the global healthcare context, where there is an accentuated necessity of new and efficient nurses as well as an improvement of nurse retention as much as possible.

Author Contributions

Conceptualization: Laura Galiana and Noemí Sansó. Methodology: Laura Galiana and Noemí Sansó. Software: Laura Galiana and Noemí Sansó. Validation: Laura Galiana. Formal analysis: Laura Galiana and Javier Sánchez-Ruiz. Investigation: Noemí Sansó and Gabriel Vidal-Blanco. Resources: Laura Galiana and Noemí Sansó. Data curation: Laura Galiana and Javier Sánchez-Ruiz. Writing – original draft: Laura Galiana, Noemí Sansó, and Javier Sánchez-Ruiz. Writing – review and editing: All authors. Supervision: Laura Galiana, Noemí Sansó, and Gabriel Vidal-Blanco. Project administration: Laura Galiana and Noemí Sansó. Funding acquisition: Laura Galiana and Noemí Sansó. All authors have read and agreed to the published version of the manuscript.

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Ethics Statement

The study was approved by the Ethics Research Committee at the University of the Balearic Islands (263CER22) and by the Ethics Research at the University of Valencia (2581819).

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.