

The Sense of Belonging in Nursing School Scale: Turkish Validity and Reliability Study: Methodological Study

Hemşirelik Bölümüne Aidiyet Duygusu Ölçeği: Türkçe Geçerlik ve Güvenirlik Çalışması: Metodolojik Çalışma

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ABSTRACT Objective: The study was planned to perform the Validity and Reliability of the “Sense of Belonging in Nursing School (SBNS) Scale” in Turkish. There is a need for a tool to measure nursing students’ sense of belonging toward the nursing school. The “SBNS Scale” was created for this purpose, but a Turkish validity and reliability study is lacking. **Material and Methods:** Study in methodological design. It was carried out in the nursing department of a university in Türkiye. Participants, 210 nursing students continuing their education were selected using the stratified random sampling method. “Content Validity Index” was used for content validity of the scale, “Confirmatory Factor Analysis” for construct validity, and “Cronbach Alpha Reliability Coefficient” and “Test-Retest” methods for reliability. **Results:** The Content Validity Index score of the scale was found to be 0.985 (excellent). According to confirmatory factor analysis, index values showed a good model fit for construct validity. For reliability, Cronbach’s alpha coefficient was found to be 0.920 (high), while test-retest measurements did not show any variation ($p>0.05$). **Conclusion:** The study demonstrated that the “SBNS Scale” adapted from English to Turkish is a valid and reliable instrument. Thanks to this scale, the belonging of nursing students can be evaluated, and studies to strengthen the belonging of the students can be planned according to the results.

Keywords: Validity; reliability; belonging; nursing; student

ÖZET Amaç: Çalışma “Sense of Belonging in Nursing School (SBNS) Scale”nın Türkçe geçerlik ve güvenilirliğini gerçekleştirmek amacıyla planlandı. Hemşirelik öğrencilerinin hemşirelik okuluna karşı hissettiği aidiyet duygusunu değerlendiren bir ölçüm aracına ihtiyaç vardır. Bu ihtiyacı gidermek için “SBNS Scale” isimli ölçek geliştirilmiştir. Ancak bu ölçeğin Türkçe geçerlik ve güvenilirlik çalışmasının olmadığı görülmüştür. **Gereç ve Yöntemler:** Metodolojik desende çalışma. Tabakalı rastgele örnekleme yöntemi kullanılarak, öğrenimine devam eden 210 hemşirelik öğrencisi seçildi. Çalışma kapsamında ölçeğin kapsam geçerliği için “Kapsam Geçerlik İndeksi”, yapı geçerliği için “Doğrulamalı Faktör Analizi” ve güvenilirliği için “Cronbach alfa güvenilirlik katsayısı” ve “Test Tekrar Test” yöntemi kullanıldı. **Bulgular:** Ölçeğin Kapsam Geçerlik İndeksi puanı 0,985 (mükemmel) bulunmuştur. Yapı geçerliği kapsamında; doğrulamalı faktör analizine göre indeks değerleri model uyumu iyiliğini sağlamaktadır. Güvenirlik kapsamında; Cronbach alfa katsayısı 0,920 olarak (yüksek), test-tekrar ölçümlerinin ise değişkenlik göstermediği ($p>0,05$) bulunmuştur. **Sonuç:** Çalışma İngilizceden Türkçeye uyarlanan “SBNS Scale”nin geçerli ve güvenilir bir araç olduğunu ortaya koymuştur. Bu ölçek sayesinde hemşirelik öğrencilerinin aidiyeti değerlendirilebilecek, sonuçlara göre öğrenciler için aidiyeti güçlendirme çalışmaları da planlanabilecektir.

Anahtar Kelimeler: Geçerlik; güvenilirlik; aidiyet; hemşirelik; öğrenci

According to the Turkish Language Association, belonging refers to “relatedness and connection”.¹ Another definition describes it as a person’s relationship to any emotion, thought or place.² Hagerty et al., on the other hand, considered belonging as “the ex-

perience of being included in a system or environment so that people feel like an integral part of the environment”.³ In summary, belonging is related to having a place in something and seeing and feeling oneself involved.⁴

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People begin to feel a sense of belonging first to family, then to work, groups of friends, and profession.⁵ One's profession has an important place not only for individuality but also for presence in society.⁶ Individuals with high belongingness are more committed to their profession, and their performance increases significantly with professional satisfaction.^{7,8} Those who feel distant, separate, and distant from their profession may experience emotional problems such as anxiety, depression, and burnout, not care enough about their work, and make mistakes.^{2,8,9} A high sense of belonging for the members of a profession is essential, especially for the human-oriented nursing profession, which defends people's uniqueness and cares about their well-being.⁷ When nurses do not have a complete sense of belonging to the work, they experience unhappiness in both their social and professional lives, leading to inadequate patient care, depressive symptoms, and negative self-reflection.^{9,10} The more such situations are experienced, the more negatively the patient-nurse relationship and, thus, the care process is affected.¹⁰

The sense of belonging to nursing should begin during nursing education, where nursing students should develop and reinforce this sense, and each member of the profession should graduate with a sense of professional belonging.¹¹⁻¹⁴ Students' knowledge or prejudices about nursing are usually gained through what they hear in their social lives or personal communications with nurses during clinical experiences. These may or may not be in line with reality.¹⁵ However, nursing students' experiences in clinical practice are essential in gaining a sense of belonging to the department they are studying and ensuring their desire to belong to the profession.¹⁵

Previous studies have reported that nursing students want to feel a sense of belonging to their department, clinical environment, and colleagues.^{8,16-20} This desire will strengthen their adaptation to the nursing field and increase the quality of care and holistic patient care. Nursing students want to belong to the department and class they are studying. They want to be valued, accepted and respected by their friends and teaching staff but may sometimes have problems gaining a sense of belonging due to environmental, individual characteristics, race, gender,

age and ethnicity differences, and physical disability.^{8,21} Nurse students also want to be accepted by nurses, trainers, and other healthcare professionals in the clinical setting. They aim to be a team member and work together with a common goal and sense of responsibility.^{18,22} Students who have developed a sense of belonging to the clinical environment have more confidence.²³ They communicate more with patients and other health professionals and accept that they are members of the team, and as a result, they develop a higher motivation to learn and adopt nursing as their profession with higher satisfaction.²⁴

Previous studies used the qualitative design and questionnaires or open-ended questions prepared by researchers.^{8,19,20} This reveals the need for a measurement tool to evaluate the nursing students' sense of belonging towards the nursing school. For this, Patel et al. created the "Sense of Belonging in Nursing School (SBNS) Scale".²⁵ To our knowledge, there has been no Turkish validity and reliability study of this scale in our country. Therefore, the present study aimed to examine the Turkish validity and reliability of the "SBNS Scale".

Objective and Hypothesis

This study aims to determine the validity and reliability of the "SBNS Scale", Turkish version. The research hypothesised that "the Turkish version of the SBNS is a valid and reliable instrument".

MATERIAL AND METHODS

RESEARCH TYPE

This is a methodologically designed research and examined the language validity and construct validity of the scale and test reliability. All stages of the study were carried out in Consensus Based Standards for the Selection of Health Measurement Instruments.

POPULATION AND SAMPLE

The population was 665 students (first grade n=177, second grade n=134, third grade n=166, fourth grade n=188) studying in the nursing department of a health sciences faculty in the spring term of 2022-2023 (n=665). The sample size was determined following the principle: "When determining the sample size in

methodological studies, it is recommended to enrol individuals 5-10 times the total number of items in the scale", and accordingly, the sample size was calculated as 190 for the 19-item scale.²⁶ However, to prevent missing data, 10% more participants were included in the sample and as a result, it was aimed to reach 210 students to study the validity and reliability study of the scale (n=210).

The students to be included in the sample were determined by the stratified random sampling method (stratification criterion: the grade in which they studied). Foreign students were excluded from the study due to language differences. Accordingly, the study was completed with 210 students: 56 (n=56) from the first, 42 (n=42) from the second, 52 (n=52) from the third and 60 (n=60) from the fourth grade.

The inclusion criteria were (i) the students should be registered in the faculty of health sciences, and (ii) willing to participate.

DATA COLLECTION TOOLS

Two forms were used in the data collection process.

Structured questionnaire: It includes four questions on students' demographics, such as their grade, age, gender, and marital status.

SBNS Scale: The scale was developed by Patel et al. to evaluate nursing students' sense of belonging in three different settings: in the clinic, at school, and among schoolmates.²⁵ The five-point Likert-type scale (from 1=Strongly disagree to 5=Strongly agree) has 19 items in four subscales: (1) Clinical experience with nurses; (2) Clinical experience with teaching staff; (3) Experience in courses; (4) Experience with students in the same department. The scale has a score range of 19 to 95 points. High scores show a heightened sense of belonging to the nursing school. Cronbach's alpha coefficient was reported as 0.914 for the original scale.

Conduct

The study is planned to be completed in two successive steps.

Step 1: Language and Content Validity

Based on the information presented in the literature, the scale's language equivalence was examined in

four stages: (i) translation, (ii) back-translation, (iii) expert opinion, and (iv) pilot study.²⁷⁻²⁹

Translation: Two independent language experts first translated the scale from English to Turkish. Consensus was sought with the common opinion of the researchers over the translations from these two language experts.

Back-translation: The scale was then sent again to two additional language experts, other than those who previously translated the scale, for translation from Turkish to English. The scale was evaluated for meaning integrity by comparing the original with the items in the back-translated scale.

Expert opinion: Ten lecturers who are experts in the field of nursing principles and psychiatric nursing were asked to offer their opinions for the content validity of the scale's Turkish version. The Content Validity Index (CVI) was used to evaluate their opinions.³⁰

Pilot study: To evaluate scale items' intelligibility and appropriateness, a pilot study was conducted with 42 nursing students, 2-3 times the total number of items in the scale.³¹ The students reported no difficulties with understanding or responding to the scale items and did not see any need for changes. Pilot study participants were determined to be 10 students from each grade level. Two groups were determined by the draw method between the groups. As a result of the draw, 1 student from the 3rd grade and 1 more student from the 4th grade were recruited, and a total of 42 students were included in the pilot study (20% of the total number of participants). An announcement about the pilot study was made during the class break. Students who agreed to participate were included to the pilot study. Due to the absence of any recommendations, pilot study data were included in the research.

Step 2: Application of the Scale to Nursing Students

The study data were collected by the researcher (SPC) in the classroom environment by face-to-face interview technique between January 2023 and June 2023. The researcher she explained the purpose of the work and invited them to work. The form was distributed to those who accepted. The researcher waited

in the classroom until the form was filled out. It took an average of 10 minutes for the participants to complete the forms. To examine the scale reliability and invariance over time, the measurement tools were reapplied to 42 students (20% of the total number of participants) in the sample with an interval of two weeks.³²

DATA ANALYSIS

SPSS 26.0 (IBM Corp., Armonk, NY, USA) and LISREL 8.70 (Scientific Software International, Inc., Lincolnwood, IL, USA) software were used for statistical analyses. Descriptive statistical calculations (mean, standard deviation, frequency) were used while evaluating students' demographic data. The language and content validity were calculated with the CVI, and the construct validity was calculated with confirmatory factor analysis (CFA). Reliability was evaluated with Cronbach's alpha reliability coefficient and the test-retest method. Test-retest measurements were made with intraclass correlation analysis. Statistical significance was set at $p < 0.05$.

ETHICAL CONSIDERATIONS

Ethical approval (date: January 17, 2023; no: 2023/40) from Eskişehir Osmangazi University Non-Interventional Research Ethics Committee, institutional permission from Eskişehir Osmangazi University, and verbal and written consent from the participants were obtained to conduct the study. Permission to use the scale was obtained from the scale owners. The study adhered to the principles stated in the Declaration of Helsinki.

RESULTS

70% (n=147) of the students were female, and almost all were single (n=208). Their mean age was 21.30 ± 1.83 (minimum: 18, maximum: 32).

VALIDITY

The scope and construct validity were considered.

Content Validity

The scale's language and content validity were evaluated with the Davis technique.³⁰ The scale was presented to 10 faculty members with expertise in

nursing principles and psychiatric nursing. According to this technique, the experts marked each item from 1 (inappropriate) to 4 (very appropriate) to verify the intelligibility, linguistic accuracy, clarity, and expressiveness of the wording. At least 80% of expert opinions are expected to be "adequate" or "very appropriate". After completing the item rating, the CVI was calculated by dividing the total number of experts by the number of experts who gave 3 and 4 points. CVI values varied between 0.80-1.00 for each item. The overall scale CVI (0.985) was considered "excellent". Thus, the content validity was completed.

Construct Validity

CFA was performed to determine the construct validity. The goodness of fit index (GFI) was used to test the significance of the model. The calculated test statistic of the four-factor model was found to be 1.459 [$\chi^2/\text{degree of freedom (df)}=1.459$]. From the fit indices, the GFI value was determined as 0.906, the comparative fit index (CFI) value as 0.976, and the root mean square approximation error (RMSEA) value as 0.047, indicating a good model fit (Table 1). The diagram resulting from the path analysis is given in Figure 1. Accordingly, the correlation coefficients to the factors were calculated by adding error terms to the scale items. The two-way relationship levels of each factor with each other were determined.

RELIABILITY

The reliability was analysed with Cronbach's alpha reliability coefficient, item-total score analysis and test-retest method.

Cronbach's Alpha Reliability Coefficient

The internal consistency coefficient "Cronbach's alpha" was used to estimate the reliability of the 25 items in the scale. The scale's overall reliability was assessed as "high" with a Cronbach's alpha score of 0.920. The sub-dimension reliability values of the scale are given in Table 2.

TEST-RETEST

To investigate the test-retest reliability of the scale, the questionnaire was tested with 42 students at two-week intervals. From the analysis of these measurements, the paired t-test, intraclass correlation coefficient

TABLE 1: Confirmatory factor analysis model fit indices.

Fit Criteria	Good	Acceptable	Model outcome	Fit
SRMR	$0 \leq SRMR \leq 0.05$	$0.05 \leq SRMR \leq 0.10$	0.057	Acceptable
χ^2/df	$0 \leq \chi^2/df \leq 2$	$2 \leq \chi^2/df \leq 3$	1.459	Good
GFI	$0.95 \leq GFI \leq 1$	$0.90 \leq GFI \leq 0.95$	0.906	Acceptable
AGFI	$0.90 \leq AGFI \leq 1$	$0.85 \leq AGFI \leq 0.90$	0.875	Acceptable
RFI	$0.90 \leq RFI \leq 1$	$0.85 \leq RFI \leq 0.90$	0.913	Good
IFI	$0.97 \leq IFI \leq 1$	$0.95 \leq IFI \leq 0.97$	0.976	Good
TLI	$0.97 \leq NNF \leq 1$	$0.95 \leq NNF \leq 0.97$	0.971	Good
CFI	$0.97 \leq CFI \leq 1$	$0.95 \leq CFI \leq 0.97$	0.976	Good
RMSEA	$0 < RMSEA < 0.05$	$0.05 \leq RMSEA \leq 0.10$	0.047	Good

SRMR: Standardized root mean square error; df: Degree of freedom; GFI: Goodness of Fit Index; AGFI: Adjustment Goodness of Fit Index; RFI: Relative Fit Index; IFI: Incremental Fit Index; TLI: Tucker-Lewis Index; CFI: Comparative fit index; RMSEA: Root mean square approximation error.

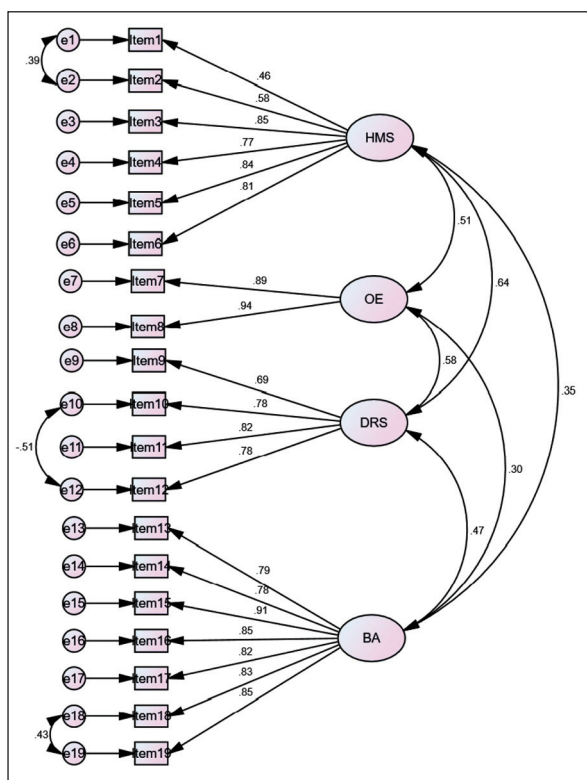


FIGURE 1: Confirmatory factor analysis.
HMS: Nurses; OE: Lecturers; DRS: Lessons; BA: Student in same department.

(ICC): test-retest was determined as 0.993 [95% confidence interval (CI): 0.881-0.955]. The results of the test indicated no significant difference between the pre-test and the post-test ($p > 0.05$ for each item) with a high level of fit ($p < 0.001$ for each item) (Table 3).

DISCUSSION

Belonging is a concept that matures in various developmental processes. According to Maslow, it is a necessity and comes immediately after the physiological and safety needs of the person.⁵ According to the literature, individuals with a high sense of belonging are also more committed to their profession, and performance increases significantly with professional satisfaction.^{7,8} It is of great importance for the future of the profession that nursing students graduate by gaining professional belonging.¹⁵ The qualitative study of Albloushi et al. with nursing students emphasised that nursing students want to be accepted by the clinic’s nurses, patients, and other health professionals and to belong to clinical environments.⁸ The study of Ebert et al. with nursing and midwifery

TABLE 2: Cronbach alpha reliability coefficients.

	Item no	Items	Minimum-maximum (Median)	$\bar{X} \pm SD$	Internal consistency
Nurses	6	1-6	7-30 (24)	24.35 ± 4.26	0.872
Lecturers	2	7-8	2-10 (8)	8.41 ± 1.73	0.911
Lessons	4	9-12	7-20 (15)	14.63 ± 3.29	0.833
Students in the same dept.	7	13-19	7-35 (27)	26.17 ± 6.16	0.939
Total	19	1-19	34-95 (74)	73.57 ± 11.87	0.920

SD: Standard deviation.

TABLE 3: Test-retest analysis of the scale (n=42).

	Test	Retest	ICC (95% CI)	p value
Nurses	24.52±3.92	24.57±3.86	0.998 (0.997, 0.999)	<0.001*
Lecturers	8.57±1.50	8.57±1.50	1.000	-
Lessons	14.90±3.09	15.10±2.92	0.976 (0.955, 0.987)	<0.001*
Students in the same dept.	26.55±5.67	27.07±5.75	0.985 (0.955, 0.994)	<0.001*
Total	74.55±10.59	75.31±10.25	0.993 (0.966, 0.998)	<0.001*

ICC: Intraclass correlation coefficient; CI: Confidence interval. *p<0.01

students demonstrated a need to develop quality clinical learning experiences that foster a sense of belonging.¹⁹ Similarly, in the study of Manokore et al., nursing students reported that as their belonging to their trainers and clinical settings improved, they experienced more constructive learning, and their level of professional competence increased.²⁰ Qualitative designs, questionnaires or open-ended questions were used in the relevant studies.^{8,19,20} Patel et al. developed a measurement tool to evaluate nursing students' sense of belonging towards the nursing school.²⁵ This scale, "SBNS Scale", is a valid and reliable tool, allowing student nurses to gauge their sense of belonging to the department.²⁵ In this study, the scale was analysed for validity and reliability and was adapted to the Turkish language.

VALIDITY

In line with the recommendations of the International Test Commission, language validity was ensured in the first step of the intercultural scale adaptation process.²⁹ For the validity of the Turkish version, the CVI was calculated and was expected to be at least 0.80.^{30,33} The CVI calculated with the opinions of ten experts was found to be "excellent" (0.985). The data obtained showed that the scale was suitable in language and content for adaptation. Only minor revisions based on expert recommendations were made without removing any items, and it was deemed appropriate regarding content validity.

The fit of the factors in the scale's Turkish version was evaluated by CFA. For CFA, the most common goodness-of-fit indices in the literature were assessed first.²⁶ For the scale to have an acceptable goodness of fit, the c^2/df value is expected to be less than 5, which was found to be 1.459 in this study.³⁴

The values of other goodness-of-fit indices (GFI=0.906, CFI=0.76, RMSEA=0.047) were also found to be consistent with the literature.²⁶ These results show that the model provides goodness of fit. Factor loads were calculated according to the CFA analysis. In the literature, the factor loading of each item is expected to be 0.30 and above.³⁵ When standardised coefficients are examined, factor loads are found to be high. These results confirm the scale's original structure.³⁵

RELIABILITY

Reliability analysis shows the instrument's stability, consistency, or reliability.³³ This study evaluated reliability by two methods: Cronbach's alpha reliability coefficient and the test-retest.

The former is classified as " $0.00 \leq \alpha < 0.40$ =unreliable; $0.40 \leq \alpha < 0.60$ =low reliability; $0.60 \leq \alpha < 0.80$ =moderate reliability; $0.80 \leq \alpha < 1.00$ =high reliability", with values ≤ 0.70 considered sufficient.²⁶ The original scale's reliability coefficient was 0.914, and it was 0.920 in this study.²⁵ Thus, the Turkish version shows "high reliability".

The last method used to test reliability was the test-retest. Data from repeated measurements were analysed by paired t-test. ICC results ranged from 0 to 1. Values approaching 1 indicate high agreement.³³ The ICC values of the items were determined to be "excellent" with a 95% CI. This result shows that the test-retest measurements are consistent, and therefore, the scale is reliable.

LIMITATIONS OF THE STUDY

This study has some limitations. The first of these is that the researcher and the participants know each other. Despite all the explanations, participants may

have had privacy concerns. This dynamic should be taken into consideration in studies using the scale. The second limitation of the research is that the data belongs to a single institution. It may be recommended for future studies to test the scale with student nurses with a larger sample and nurses working in different clinical settings and also with varying groups of patients.

CONCLUSION

The study demonstrated that the “SBNS Scale” adapted from English to Turkish is a valid and reliable instrument. We think the SBNS scale is a reliable tool for evaluating the sense of belonging nursing students will develop throughout their learning journey, beginning in their first year.

Source of Finance

During this study, no financial or spiritual support was received

neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Sevil Pamuk Cebeci, Esra Uslu; **Design:** Sevil Pamuk Cebeci, Esra Uslu; **Control/Supervision:** Sevil Pamuk Cebeci; **Data Collection and/or Processing:** Sevil Pamuk Cebeci; **Analysis and/or Interpretation:** Sevil Pamuk Cebeci, Esra Uslu; **Literature Review:** Sevil Pamuk Cebeci, Esra Uslu; **Writing the Article:** Sevil Pamuk Cebeci, Esra Uslu; **Critical Review:** Sevil Pamuk Cebeci, Esra Uslu; **References and Fundings:** Sevil Pamuk Cebeci; **Materials:** Sevil Pamuk Cebeci.

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