Original Article

A Self-Efficacy Scale for Nursing Educators' Role: A Turkish Validity and Reliability Study

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Abstract

Purpose: The aim of this study is to perform the validity and reliability study of the Turkish version of a Self-Efficacy Scale for the Role of Nursing Educators (SSNER-SL) in Sri Lanka.
Methods: Methodological and cross-sectional research design was used in the research method. The research was carried out with 400 nurse academicians in Turkey. Data were collected using SSNER.
Results: Explanatory factor analysis and confirmatory factor analysis results confirmed the five-factor structure of the scale. Cronbach's α, item-total correlation, test-retest analysis and equivalent form analysis showed high reliability. Turkish version of a Self-Efficacy Scale for the Role of Nursing Educators consists of 30 items on a five-point Likert-type scale. Five factors explained 53,040 of the total variance explained. It was determined that the scale had content validity of total variance. The Cronbach's α value of the scale was .878 and test-retest correlations were found as .976.
Conclusion: The Turkish version of SSNER is a valid and reliable tool for assessing nurse academicians' self-efficacy. Educators play a vital role in the success of higher education. Higher education institutions are open to continuous change and development due to their structure. In this context, there is a need for rigorous studies using valid and reliable tools to measure the self-efficacy of nurse academicians.

Keywords: academician, nurse, psychometric, reliability, self-efficacy, validity

IntroductIon

Educators' self-efficacy not only significantly affects their students' academic success, but also affects the knowledge, skills, attitudes and values of nursing students (Shyamamala, et al., 2021). In Turkey, a total of 283 nursing undergraduate education is given, 241 of which are faculties and 42 are colleges. Kocaman and Arslan Yurumezoglu (2015) reported that there was a very rapid increase in nursing departments between 1996 and 2015 and that qualified nursing education could not be given due to the inadequacy of the academic member in Turkey. Education in every profession is important, but education in the field of health is much more important because it directly affects human health. Nursing education is one of the most important of these training. In order to increase the quality of the nursing profession and increase the competencies of nurses, academic nurses who train them should have more competencies (Satoh et al, 2020). The effectiveness of health professionals depends on the competence of those who train them (Albarqouni et al., 2018; Mikkonen et al., 2019).

Teaching has two sides: Educators and learners. Some conditions are necessary for the completion of the training process and the successful flow of knowledge. Self-efficacy is also an important component of success. The idea that a person has self-efficacy is the most important indicator of success, self-development, openness to change, and continuous self-development (Bandura, 2006). Self-efficacy belief increases performance

and motivation in working life (Abun et al., 2021; Na-Nan and Sanamthong, 2020). According to Bandura (2002), self-efficacy is related to cognitive, affective, motivational, and decision-making processes. Educator competence is formed in the dimensions of having knowledge on the subjects taught, having clinical skills, having an entrepreneurial structure, research, having ethical principles, and leadership characteristics (Mikkonen et al., 2019).

The competencies required to perform a job include behavioral and individual characteristics as well as knowledge and skills (Satoh et al., 2020). Furthermore, World Health Organization (WHO) (2016) categorized the Nurse Educator Core Competencies as "cognitive (knowledge), affective (attitudes and behaviours) and psychomotor (skills) domains of learning" and listed the nurse educater' requirements as "nursing education, nursing competence, clinical nursing experiences, educational training". Satoh et al (2020) describe the nursing educator's self-efficacy as "the instructor's belief in the ability of nursing students to implement and organize the behaviors that characterize competent nurses" and added that the roles of nursing educators and the academic quality of educators differ between countries. The roles to be fulfilled by nursing educators differ from country to country, and the academic quality of educators differs between countries (Shyamamala,et al., 2021). Fukada (2018) reported in study that each country has different needs regarding the roles of nursing educators depending on different education systems.

The aim of the study is to adapt the Self-Efficacy Scale for the Role of the Nursing Educator into Turkish (SSNER-TR) and to test its validity and reliability. For this purpose, it is also aimed to use the study to test the Self-efficacy of nurse educators in Turkey and to help educators improve themselves.

Methods

The article, Shyamamala, for the Turkish Validity and Reliability of the scale to ensure language equivalence of SSNER-SL; translated into Turkish by a researcher and two people, two of whom have lived and worked in the United States for more than five years, and are fluent in English. The three translations at hand were evaluated by the researchers, and the most appropriate expressions were determined and a single translation was obtained. Then, it was reviewed by a lecturer who teaches Turkish Language and Literature in terms of clarity of expressions and spelling. The scale was created as a presentation form for expert opinion and presented to nine academicians who are experts in this field. Experts were asked to score each item between 1-4 points in the expert opinion presentation form prepared in order to determine the compatibility between the English items of the scale and their Turkish equivalents and the

Procedure, Participants and setting: This research was conducted in a methodological design in order to ensure that the Turkish version of SSNER-SL is used as a reliable and valid measurement tool in nursing research in Turkey. The research was carried out between 01 December 2021 and 01 March 2022 with nurse academicians at the state university in Turkey. For a reliable factor analysis when adapting a scale to another culture, it is recommended that the sample size be at least 5 to 10 times the number of items in the scale (DeVellis, 2016; Tavsancil, 2014). For this reason, 400 nurse academicians who accepted to participate in the study and answered the questionnaire completely were included in the study.

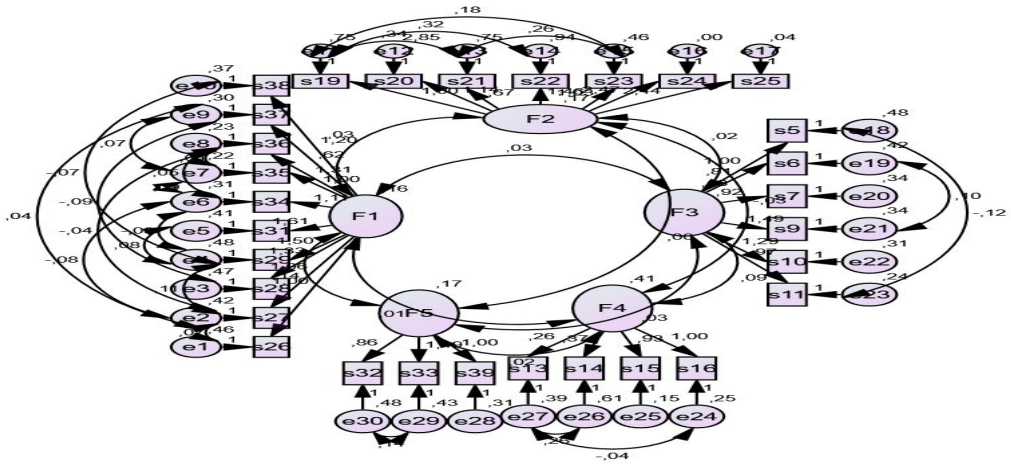
Data Collection: Data were collected with SSNER-SL, which consists of 39 questions. For the Turkish validity and reliability study, permission and the original forms of the scale were obtained from the communication writer of point; ineligible, 2 points; somewhat appropriate (revision of item/statement required), 3 points; very suitable (appropriate but minor modification required), 4 points; described as "extremely appropriate". A pilot study was conducted to decide on the clarity, comprehensibility and clarity of the scale items and to test the reliability by calculating the internal consistency of the scale. The pilot study was conducted with 100 nurse academicians in line with the International Testing Commission guidelines (Hernandez et al., 2020). During the pilot study, the scale items were understood by the nurse academicians, and the nurse academicians did not report any problems regarding the intelligibility of the items. None of the nurse academics participating in the pilot study participated in the validation study.

Data analysis: SSPS 26.0 and AMOS software program were used in the analysis of the data. In the definition of the data, number, percentage, mean and standard deviation values were calculated. Language and content validity were studied during the adaptation process. During the

validity period, the suitability of the data for Explanatory Factor Analysis (EFA) was evaluated with Kaiser-Meyer-Olkin (KMO) and Bartlett's sphericity tests, and the reliability of the scale was evaluated with Cronbach's α. Confirmatory factor analysis (CFA) was applied to evaluate whether the factor model was adapted to the data as a result of EFA. For this purpose, the covariance matrix was prepared by transferring the data to the AMOS software program. Model fit was evaluated using various fit criteria such as χ2/degree of freedom, approximate root mean square error, standardized root mean square residual, goodness of fit index, and normless fit index. The path diagram of the validated model is created. Test-retest analysis was performed to evaluate the reliability of the scale and to determine its stability over time. Spearman-Rho correlation test was used to determine the relationship between the scales.

Ethical considerations: Before starting the study, permission was obtained from Shymamala for the use of SSNER-SL, and Ethics Committee approval (decision no:30.11/24.09) was obtained for the implementation of the study. It was stated to the nurse academicians included in the study that the decision about whether or not to participate in the research was entirely their own, that the data obtained from this study would only be used within the scope of the research, confidentiality would be strictly ensured, and their consent was obtained. All procedures performed in studies involving human participants were performed in accordance with the ethical standards of the National Research Committee and the 1964 Declaration of Helsinki.

Figure 2. Structural Equation Model of SSNER-TV (n = 400)



Findings *Validity*

Before determining the factor structure of the Turkish Version of the Self-Efficacy Scale for the Role of the Nursing Educator (SSNER-TV), the KMO test was used to determine the suitability of the sample size for factor analysis, and the Bartlett's sphericity test was used for statistical significance. Due to the normality distribution of the data, the maximum likelihood calculation method was used. KMO coefficient was 0.781 and Bartlett's test of sphericity was determined as 6275.152, and the result was statistically significant (P<0.001). According to these findings, it was determined that the sample size was suitable for factor analysis. According to the EFA results, the factor loads of the items in the scale ranged from 0.45 to 0.77 (Table 1). In addition, it was determined that the scale had 53,040 of the total variance. It was determined that all of the items in the original scale had the appropriate factor loading and were included in the factors they belonged to. It consists of four themes, "clinical mentoring" (18 items), "research" (10), "teaching" (6) and "consulting" (5), four sub-dimensions and a total of 39 items.The fit index values calculated for the produced model are presented in Table 2. The goodness-of-fit criterion x2/SD=2.841 RMSEA=

0.065, CFI=0.907, GFI= 0.910 suggested as a goodness-of-fit criterion obtained as a result of the first level CFA is shown to be compatible with the data and acceptable. According to EFA results, fit indices were found to be at acceptable levels in general, and all fit values for the five-factor model were found to be within acceptable limits (Table 2).

Table 1. Explanatory factor analysis results for SSNER -TV (n = 400)

Scale items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
36	0.77				
35	0.73				
29	0.69				
31	0.68				
27	0.67				
34	0.63				
28	0.62				
26	0.60				
38	0.48				
37	0.48				
19		0.76			
22		0.76			
24		0.76			
25		0.74			
21		0.68			
23		0.67			
20		0.53			
9			0.77		
8			0.71		
10			0.65		
6			0.64		
7			0.63		
5			0.59		
11			0.45		
14				0.72	
15				0.67	
13				0.65	
16				0.63	
33					0.62
32					0.57
39					0.55

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

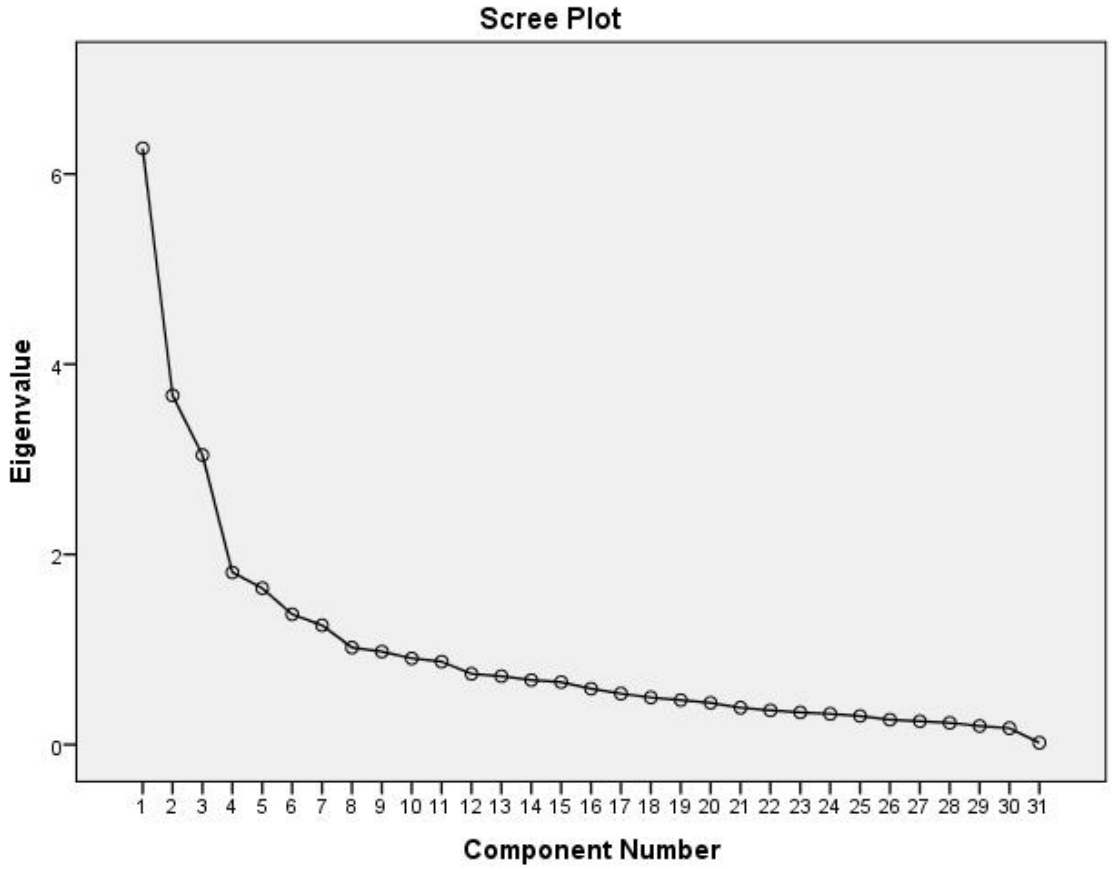
a. Rotation converged in 9 iterations.

Table 2. SSNER-TV Compliance Values (n=400)

Fit indices	Excellent	Acceptable	Factor model	Factor modela
x2/SD	≤2	≤5	≤3	2.841
RMSEA	≤0.05	≤0.08	≤0.080	0.065
CFI	≥0.95	≥0.90	≤0.90	0.907
GFI	≥0.95	≥0.90	≤0.85	0.910

Abbreviations: χ2/df, χ2/degree of freedom; CFI, comparative fit index; GFI, goodness-of-fit index; RMSEA, root mean square error of approximation; a After modification Fication. Based on these results, the five-factor structure was confirmed and the path diagram of the model is shown in Figure 1.

Figure 1. Scree Plot Chart



Reliability

Cronbach's α coefficient was used to evaluate the internal consistency of SSNER-TV. In this study, Cronbach's α for the scale was .880, for the sub-dimensions .823, .819, .781, 660 and .660, respectively. The item-total correlation of the scale was examined and it was determined that the acceptable level ranged from 0.45 to 00.77 (Table 3). SSNER-TV was found to be quite reliable in terms of total and all sub-dimensions. Test-retest analysis was performed to determine the stability of the scale over time. For analysis, the scale was applied to the sample group (n=100) for the second time 2 weeks after the first application. The correlation value of the relationship between test and retest results was determined as r = 0.783 for the total scale score and was found to be statistically significant. (P <

.001). The lowest score that can be obtained from SSNER-TV is 30 and the highest score is 150.

Discussion

Universities play an important role in the generation and dissemination of knowledge and in the development of cognitive and communication skills such as critical thinking. Instructors play a vital role in the success of higher education. Higher education institutions are open to continuous change and development due to their structure (Malik, 2018). WHO emphasizes that in order to increase the quality of nursing education and ensure accountability, nursing educators should have basic competencies in adult learning principles and theories, educational programs and practices, nursing practices, research, communication and cooperation, ethical principles, monitoring and evaluation, management and leadership. (WHO, 2016). In this context, there is a need for rigorous studies using valid and reliable tools to measure the self-efficacy of nurse academicians. Developed by Shyamamala et al., (2021) and originally published in English, SSNER-SL is a valid, applicable and acceptable measurement tool for the assessment of nurse academics' self-efficacy levels (Shyamamala et al., 2021). In this study, the validity and reliability of SSNER-TV, developed by Shyamamala et al., was tested to measure self-efficacy in nursing academics. The test-retest reliability, which is the criterion of consistency, is the power of a measurement that is independent of time. It is a tool that delivers consistent results from application to application and changes over time. To find the test-retest reliability, the correlation between the scores obtained from the two applications is calculated. For the reliability of the scale, this correlation coefficient is required to be high and positive (Büyüköztürk, 2012; Çapık et al., 2018). When the test-retest results, which test the reliability of the scale, were examined, it was found that there was a high positive correlation between the total scores of the first and last tests (r=0.976). This result shows that the questions of this scale, which measures the self-efficacy level, are understood by the nurse academicians. The KMO value of the original scale was 0.91 and Bartlett's test was 5145,548 (p<.001). The KMO coefficient of SSNER-TV was 0.781 and Bartlett's test was 6275.152, and the result was statistically significant (P<0.001). The total Cronbach's a coefficient of the original SSNER ranged from 0.97, and the coefficients of the four factors ranged from 0.88 to 0.96. Sub-dimensions of the original SSNER; 0.96 for clinical guidance, 0.93 for research, 0.88 for counseling and 0.88 for teaching. It was also found that the original scale had 63.50 of the total variance. The factor loads of the items in SSNER-TV vary between 0.45 and 0.77. It was determined that the scale had scope validityof the total variance. Cronbach's α was determined as .878 for sub-dimensions, 0.823 for 1-clinical mentorship, 0.819 for 2-relationship, 0.781 for 3-teaching, 0.66 for 4-research and 0.66 for 5-supportive. This result confirms that SSNER-TV is a very reliable scale to evaluate the self-efficacy levels of nurse academicians. The original SSNER consists of 39 items with four factors. These sub-dimensions are; clinical mentoring" "research" teaching" and "consulting". SSNER-TV again consists of four factors and 30 items, namely "clinical mentorship", "relationship", "teaching", "research" and "supportive". When all the tests applied for the reliability of SSNER-TV are evaluated in this study, it can be said that SSNER-TV is reliable. A comparison could not be made due to the lack of validity and reliability studies of the original SSNER in other cultures.

Limitations: The limitations of this study are that it was applied to nurse academicians working in state universities in Turkey and the scale was used for the first time in Turkish society.

Conclusion: According to the results obtained from this study; Explanatory factor analysis and confirmatory factor analysis results confirmed the five-factor structure of the scale. Cronbach's α, item-total correlation, test-retest analysis and equivalent

References

Abun, D., Nicolas, M. T., Apollo, E., Magallanes, T., & Encarnacion, M. J. 2021. Employees' self-efficacy and work performance of employees as mediated by work environment. International Journal of Research in Business and Social Science. 10(7), 01–15.

Albarqouni, L., Hoffmann, T., Straus, S., Olsen, N. R., Young, T., Ilic, D., ... & Glasziou, P. 2018. Core competencies in evidence-based practice for health professionals: consensus statement based on a systematic review and Delphi survey. JAMA network open, 1(2), e180281-e180281.

Bandura A. 2002. Social Cognitive Theory in Cultural Context. Applied Psychology. 51(2), 269-290.

Bandura, A. 2006. Adolescent Development from an Agentic Perspective. In F. Pajares, & T. Urdan

(Eds.), Self-Efficacy Beliefs of Adolescents, (pp.1-43). Greenwich, CT: Information Age.

Büyüköztürk, S. 2012. Manual of data analysis for social sciences. Ankara: Pegem Academy Publishing.

Çapık, C., Gözüm, S., & Aksayan, S. 2018. Intercultural scale adaptation stages, language and culture adaptation: An updated guide. Florence Nightingale Journal of Nursing, 26(3), 199-210.

DeVellis, R.F. 2017. Scale Development: Theory and Application, 4th ed.; Sage Publications: Thousand Oaks, CA, USA, pp. 1–297.

Fukada, M. 2018. Nursing competency: Definition, structure and development. Yonago Acta Med, 61, 1–7.

Hernández, A., Hidalgo, M. D., Hambleton, R. K., & Gómez-Benito, J. 2020. International Test Commission guidelines for test adaptation: A criterion checklist. Psicothema, 32(3), 390-398.

Kocaman, G. & Arslan Yürümezoğlu, H. 2015. Situation Analysis of Nursing Education in Turkey: Nursing Education with Numbers (1996-2015) Journal of Higher Education and Science, 5(3), 255-262.

Malik, R. S. 2018. Educational challenges in 21st century and sustainable development. Journal of Sustainable Development Education and Research, 2(1), 9-20.

Mikkonen, K., Koskinen, M., Koskinen, C., Koivula, M., Koskimaki, M., Lahteenmaki, M.-L., MäkiHakola, H., Wallin, O., Sjögren, T., Salminen, L., Sormunen, M., Saaranen, T., Kuivila, H.-M., & Kääriäinen, M. 2019. Qualitative study of social and healthcare educators' perceptions of their competence in education. Health and Social Care in the Community, 27(6), 1555-1563.

Na-Nan, K. & Sanamthong, E. 2020. Self-efficacy and employee job performance: Mediating effects of perceived workplace support, motivation to transfer and transfer of training. International Journal of Quality & Reliability Management, 37(1), 1-17.

Satoh, M., Fujimura, A., & Sata o, N. 2020. Competency of Academic Nurse Educators. SAGE Open Nursing. 6, 1-11.

Tavsancil, E. 2010. Measuring attitudes and data analysis with SPSS (4th ed.). Ankara: Nobel Prize Broadcast Distribution

Weerasekara, S. S., Oh, J., Cho, H., & Im, M. 2021. Development and Validation of a Self-Efficacy Scale for Nursing Educators' Role in Sri Lanka. International journal of environmental research and public health, 18(15), 7773.

World Health Organization (WHO) 2016. Nurse educator core competencies. https://www.who.int/hrh/nursing_midwifery/nurse_educator050416.pdf