



Research article

Turkish adaptation of the resilience scale for nurses: A validity and reliability study[☆]

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ABSTRACT

Background: The psychological resilience of nursing students is often measured with scales developed for the general public. However, the Resilience Scale for Nurses is an updated scale developed using concept analysis based on the findings of in-depth interviews with nurses.

Objectives: This study aimed to adapt the Resilience Scale for Nurses into Turkish and test its validity and reliability in a study group of nursing students.

Design: A descriptive, cross-sectional, methodological design.

Setting: A faculty of nurses in a state university in Western Turkey.

Participants: A total of 422 nursing students participated in the first stage, and 100 nursing students participated in the second stage of the study.

Methods: Confirmatory factor analysis was used to test construct validity, and Pearson correlations between the Resilience Scale for Nurses and several self-report measures were used to test convergent validity. Internal reliability was assessed with an alpha coefficient. Test-retest reliability was tested with the Pearson correlation between these two measures.

Results: Confirmatory factor analysis indicated that a construct with four factors (dispositional, relational, situational, and philosophical patterns) showed an acceptable model fit. Students' scores on the Resilience Scale for Nurses showed significant positive correlations with other psychological resilience scale scores and a negative correlation with perceived stress scores. The alpha coefficient of the scale was 0.93. A significant positive correlation was found between the test and retest scores of the scale ($r = 0.72, p < 0.001$).

Conclusion: It was concluded that the Turkish version of the Resilience Scale for Nurses showed good construct validity, convergent validity, internal reliability and test-retest reliability. It is recommended that the psychological resilience of nursing students and nurses be measured with a scale developed specifically for nursing instead of scales that are developed for the general public.

1. Introduction

Nursing education can be perceived by nursing students as a stressful experience. During clinical education, nursing students start to be exposed to the reality of the nursing profession (Li and Hasson, 2020). Nursing students experience various clinical stressors, such as managing emergencies in clinical areas, death of a patient, fear of making mistakes and lack of clinical skills (Senocak and Demirkıran, 2020). The stress experienced by nursing students has a negative impact on their physical

and mental health and on their academic achievements and clinical performance (Tharani et al., 2017; Gurková and Zelenfková, 2018). Therefore, it is possible to say that during nursing education, there are certain situations that can cause negative effects on students.

In fact, stress experienced in clinical environments is not a problem that only nursing students have. Starting work can also create similar stress and anxiety in new graduate nurses (Phillips et al., 2017). In addition, more experienced clinical nurses also experience intense work stress. Emotional difficulty witnessing the suffering of people,

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interpersonal conflicts with other team members, and emotional labour due to managing negative feelings can have a negative impact on the well-being and work performance of nurses and lead to burnout (Delgado et al., 2017). Nurses constitute important healthcare professionals. However, the number of nurses is decreasing due to stress and burnout (Yu et al., 2019). Some nurses experience burnout caused by various challenges, while others keep themselves afloat by dealing with challenges successfully. This is explained with the concept of “psychological resilience” as a protective factor in the literature.

Psychological resilience is defined as one's adaptation process against important stress sources and adversities, power of recovery from stressful life events, or ability to successfully cope with unexpected negative events (Walsh et al., 2020). There are several protective factors related to psychological resilience. These protective factors are having a good level of cognitive skills, positive self-perception, emotional and behavioural regulation skills, and positive interpersonal relationships (Walsh et al., 2020). Psychological resilience is a skill that is needed by nurses to cope with many challenges in clinical departments, manage their emotional needs, show their professional competencies, improve their well-being, develop effective coping skills and help patients maintain their optimum conditions (Park et al., 2019; Li and Hasson, 2020). High psychological resilience levels in nurses are associated with improved general well-being, improved work relationships, psychological health, and increased job satisfaction (Delgado et al., 2017; Li and Hasson, 2020). However, psychological resilience in nurses has a negative correlation with emotional labour, turnover intention and burnout (Ju and Oh, 2016). As both nursing education and the nursing profession are very stressful experiences, it is important to measure the psychological resilience levels of nursing students and nurses with a suitable measurement tool and to develop intervention programmes for those in need.

The lack of consensus on the definition of psychological resilience makes it harder to measure. In the literature, the Resilience Scale-RS (Wagnild and Young, 1993), Connor-Davidson Resilience Scale-CD-RISC (Connor and Davidson, 2003), Resilience Scale for Adults-RSA (Friborg et al., 2003), and Brief Resilience Scale-BRS (Smith et al., 2008) are widely used in measuring psychological resilience levels in adults. RS, CD-RISC and RSA intend to measure the composition of factors related to resilience. However, conflicting conceptualizations were found in different populations and cultures for CD-RISC (Jørgensen and Seedat, 2008) and RS (Aroian et al., 1997); therefore, it is still unclear which psychological resilience factors are measured by these scales. Although BRS is shorter than the other resilience scales, only one personal characteristic related to resilience is used in this scale (personal recovery experience from stressful events), and other protective factors measured by other scales are not included. A potentially important problem for the RSA is that in some of the items of the social resources factor, there is no distinction between the roles of family and peers in item stems. In addition to the above, all these scales were developed to measure psychological resilience in the general public.

When the literature is reviewed, the psychological resilience levels of nurses and nursing students are generally measured with scales developed for the general public, such as the CD-RISC (Kong et al., 2016) and RSA (Güngörmüş et al., 2015). However, although limited in numbers, psychological resilience scales have been developed for nurses and nursing students in the literature. These scales are the “resilience scale for nurses” studied with a group of Japanese nurses (Ihara et al., 2010), “resilience scale” studied with a group of Korean nursing students (Yang et al., 2015) and the “Resilience Scale for Nurses (RSN)” studied with a group of Korean nurses (Park et al., 2019). As there was no psychological resilience scale specific for nurses and nursing students in Turkey, our objective was to adapt the RSN (Park et al., 2019), which is a current, valid and reliable measurement tool in Turkey, and test the validity and reliability of the Turkish version.

The RSN was originally developed by Park and Park (2016) to measure the psychological resilience levels of nurses using concept

analysis based on a literature review and the findings of in-depth interviews. Polk (1997) suggested a resilience model for nurses based on Rogers' theory and described four resilience patterns (dispositional, relational, situational, and philosophical patterns). Park et al. (2019) restudied the validity and reliability of the RSN and presented a structure with four factors that included 19 items by basing their theoretical framework on Polk's study. Different from other scales that assess personal psychological resilience, the RSN includes items about clinical situations. Measuring the psychological resilience of nursing students and nurses with a scale developed specifically for nurses can provide valuable insights to academics. As nursing education is a very stressful experience, academics should measure the psychological resilience levels of nursing students with a suitable tool. Therefore, this study aimed to perform a Turkish adaptation of the RSN revised by Park et al. (2019) and test the validity and reliability of the Turkish version of the RSN in a study group of nursing students.

2. Methods

2.1. Study design

This study had a descriptive, cross-sectional and methodological design.

2.2. Setting and participants

This study was conducted in the Department Of Nursing of a state university in a city in Western Turkey. Nursing programmes typically last four years (eight semesters) in Turkey, and nursing students have clinical education starting from the second semester of their first year in the study setting. Since the RSN includes items related to clinical situations and first-year students have insufficient exposure to the clinical environment, first-year students were excluded from the study. Second, third- and fourth-year nursing students were invited to participate in the study.

Data were collected at two different times. A construct validity study was the first stage of data collection. Convergent validity and internal reliability were also assessed at this stage. A total of 459 nursing students decided to participate in the study. However, only 422 students filled out the data collection form in full. Of these students, 193 were in their third year (45.7%), 145 were in their fourth year (34.4%), and 84 were in their second year (19.9%). Of the students, 65.6% were female ($n = 277$), 34.4% were male ($n = 145$), and the mean age was 21.48 ± 1.32 years (ranging from 19 to 27 years). The first-stage data of the study were collected in May 2019.

The test-retest reliability study was the second stage of data collection. After the construct validity stage was completed, test-retest reliability was studied with 100 volunteer third-year nursing students who did not participate in the previous stage. The RSN was distributed to the students over a two-week interval. Students were asked to write both a nickname and their date of birth on the questionnaire forms to pair the test and retest responses anonymously. Data from the second stage were collected in October 2019.

2.3. Scale translation process

The forward-backward translation method was used to achieve language equivalency in the RSN translation. The first three academics from the “Psychiatric and Mental Health Nursing” and “Psychological Counselling and Guidance” departments who are fluent in both languages and two academics from the foreign languages department translated the scale from English to Turkish. Then, together with a different nursing academic, these translated Turkish versions were reviewed, the sentences that gave the meaning of the items in the original scale in the best way were selected, and a single Turkish form was developed. This Turkish form was back translated from Turkish to English by two

different academics from the foreign languages department. These English versions were compared with the original text of the scale by a committee of experts of five academics to understand whether there was any inconsistency, and the committee concluded that they were similar. Additionally, a lecturer working in the Department of Turkish Language and Literature who is also a member of the committee of experts checked the scale's Turkish translation for grammar. After an evaluation with the Turkish language expert, the committee agreed on minor revisions for "Item 5" and "Item 9". The authors contacted and informed Park et al. (2019), who studied the validity and reliability of the 19-item version of the RSN. Based on the evaluation with the Turkish language expert, item five of the scale "I fully accept the advice of others" was changed to "I am fully open to the advice of others". The sentence "I fully accept the advice of others" can have negative connotations in Turkish culture. Turkish translation of this item can have the following meaning: "The person accepts and implements every advice of others". Therefore, in this item, the person can be perceived as someone passive or not assertive in Turkish culture. However, in the original scale, what it is meant is a positive statement such as "I am fully open to the advice of others". From this perspective, it can be assumed that the person accepts the advice of others but still makes his or her own decisions. The person respects the advice of others but has control over his or her decisions. In addition to the above Turkish translation of item nine, "I know when I am not involved in the work or I am involved", was not considered a good translation and did not result in a meaningful sentence. Consequently, the authors who studied the validity and reliability of the RSN version of 19 items (Park et al., 2019) were contacted and asked to explain the item with a few sentences. One of the authors explained it as follows: "I know my job descriptions and can differentiate which work is within my profession or not." Based on this, item nine was revised to "I know my powers and authorities for my work." After it was decided that the Turkish and English versions of the scale were equivalent, 20 nursing students who would not participate in the main study were asked to review the scale items, and after reading all the items, the students reported that all items were understandable.

2.4. Ethical considerations

This study was carried out in accordance with the principles of the Declaration of Helsinki. This study was approved by the Non-interventional Clinical Research Ethics Committee of the Nursing Faculty in Aydın Adnan Menderes University (Protocol Number: 2019/086). Institutional approval to collect data for the study was obtained from the directorate of the nursing faculty. Information about the objective and scope of the study was provided to the nursing students who participated in the study, and informed consent was obtained.

2.5. Instruments

Data were collected with a self-administered questionnaire that included the Personal Information Form (PIF), Resilience Scale for Nurses, Brief Resilience Scale, Psychological Hardiness Scale, Resilience Scale for Adults, and Perceived Stress Scale. PIF consists of questions about education year, gender, age, perceived academic success, whether students willingly chose the nursing department and perceived economic status.

2.5.1. The resilience scale for nurses

The RSN was originally developed by Park and Park (2016) to measure the psychological resilience levels of nurses. They developed a self-report measurement tool for nurses using concept analysis based on the review of previous psychological resilience scales, a literature search and in-depth interviews with nurses. Later, Kim and Park (2016) assessed the factor structure of the scale and offered a version that consisted of 27 items grouped under five factors. Park et al. (2019) used explanatory factor analysis (EFA) and confirmatory factor analysis

(CFA) to retest whether RSN was fit to measure the psychological resilience levels of nurses and obtained a four-factor model that consisted of 19 items. They determined these four factors based on Polk's (1997) model. *The philosophical pattern* (six items) assesses personal beliefs and positive expectations from the future. *The relational pattern* (four items) measures the value of friendly and reliable relationships. *The dispositional pattern* (six items) measures self-confidence, self-efficacy, and self-reliance, which allows nurses to solve problems on their own. *The situational pattern* (three items) measures the ability to interpret stressful situations, flexibility to cope with stressful situations, and patience. On a 5-point Likert-type scale (1: Almost never; 5: Almost always), higher scores refer to a higher psychological resilience level. The scale's alpha coefficient was 0.95 when the scale was developed first (Park and Park, 2016), 0.95 when tested by Kim and Park (2016) and 0.94 when used by Park et al. (2019). The scale's alpha coefficient was 0.93 in this study.

2.5.2. The brief resilience scale

The BRS was developed by Smith et al. (2008) to measure the psychological resilience of people. The BRS is a self-report, 5-point Likert-type scale with six items. Higher scores indicate high psychological resilience. The scale has a single factor model. Turkish adaptation of the BRS was studied by Dogan (2015) in a sample that consisted of university students. The alpha coefficient was found to be 0.83 by Dogan (2015). The alpha coefficient value of the scale was 0.67 in this study.

2.5.3. The psychological hardiness scale

The scale developed by Isik (2016) to measure the psychological hardiness level of people consists of 21 items and three factors. These factors were named commitment, control and challenge. The PHS is a 5-point Likert scale that ranges between "Strongly disagree" and "strongly agree". The higher the PHS scores were, the higher the level of psychological hardiness. Isik (2016) calculated the alpha coefficient as 0.76. The alpha coefficient value of the scale was 0.89 in this study.

2.5.4. The resilience scale for adults

The RSA was developed by Friberg et al. (2003). The Turkish adaptation of the scale was studied by Basim and Çetin (2011), and the Turkish version of the scale consists of 33 items. It is a 5-point Likert scale and has a six-factor model that includes perception of self, perception of future, social competence, structured style, family cohesion, and social resources. In the schematic evaluation, higher or lower scoring of psychological resilience measurements was up to preference. In this study, the method of scoring was preferred, as higher scores on the scale referred to higher psychological resilience levels. The alpha coefficient was found to be 0.86 for both student and employee samples (Basim and Çetin, 2011). The scale's alpha coefficient was 0.89 in this study.

2.5.5. The perceived stress scale

The PSS was developed by Cohen et al. (1983). Eskin et al. (2013) adapted the scale into Turkish. The PSS consists of 14 items and measures how certain situations in life are perceived as stressful. The PSS has a two-factor model. Participants assessed each item on a 5-point Likert-type scale (0: Never, 4: Very frequently). The PSS scores ranged from 0 to 56. Higher scores refer to higher perceived stress. Eskin et al. (2013) found that the scale's alpha coefficient was 0.86 in their study. The scale's alpha coefficient was 0.64 in this study.

2.6. Data collection

Data were collected during courses, and data collection took approximately 15-20 min. Questionnaire forms were distributed by the researchers to the students and completed by the students under supervision.

2.7. Data analysis

SPSS 18.0 and LISREL 8.80 programmes were used to analyse the study data. Participants' characteristics were analysed with descriptive statistics, including percentage, arithmetic means, and standard deviation. CFA was performed to assess the construct validity of the RSN in the first stage of the study. The assumptions of normality were met

(Field, 2009), and Pearson correlation coefficients were assessed between the RSN and BRS, PHS, RSA, and PSS to test convergent validity. The internal consistency reliability was defined with the alpha coefficient. Test-retest reliability was assessed in the second stage with the Pearson correlation coefficient between two measurements after checking that the assumption of normality was met.

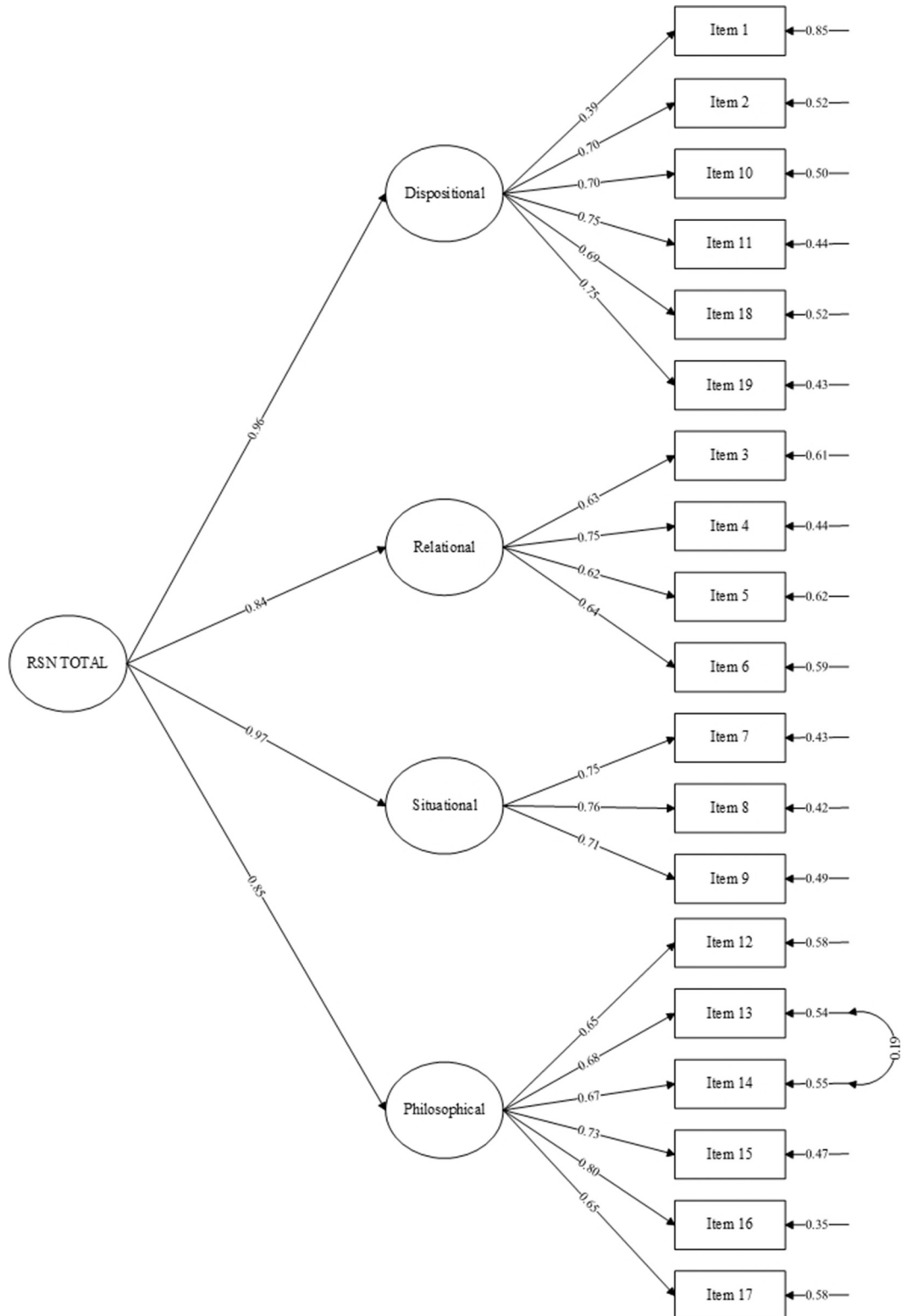


Fig. 1. CFA measurement model.

3. Results

The results of adapting the RSN to Turkish and testing its validity and reliability are listed below.

3.1. Construct validity

CFA was applied to assess structural relationships among four factors of the RSN. The maximum likelihood method was used in the CFA, and several model fit measurements were assessed: standard χ^2 (chi-square minimum/degree of freedom [χ^2 /d.f.]), root mean square error of approximation (RMSEA), and comparative fit index (CFI). The extent to which correlating item error covariances lowers the chi-square value obtained in the CFA was also examined. Since item 13 (I feel generally happy) and item 14 (I am satisfied with my life) are in the same factor and are manifest variables that have close meanings, error covariances of these two items were correlated, and the CFA was repeated. The results of the CFA are listed below (Fig. 1).

CFA showed acceptable construct validity. Chi-square/df (458.4/147) was 3.12 and showed acceptable fit. The CFI value was 0.98 and showed good model fit. RMSEA was 0.071 with a 90% confidence interval of 0.064–0.078.

3.2. Convergent validity

Pearson correlation coefficients between RSN and BRS, PHS, RSA, and PSS were assessed to test convergent validity. The RSN scores of the nursing students showed a large positive correlation with the PHS and RSA scores, a medium to large positive correlation with the BRS scores and a small to medium negative correlation with the PSS scores, and all of these correlations were statistically significant (Table 1).

3.3. Internal reliability

The alpha coefficient was 0.93 for the 19 items and 0.82 for the dispositional pattern, 0.75 for the relational pattern, 0.79 for the situational pattern and 0.86 for the philosophical pattern (Table 2).

3.4. Test-retest reliability

One hundred nursing students in the third year who did not participate in the previous stage participated in the test-retest application as the second stage of the study. The RSN was distributed to the students over a 2-week interval. The Pearson correlation coefficient between the test-retest scores of the RSN was 0.72 ($p < 0.001$).

4. Discussion

This study has a descriptive, cross-sectional and methodological design to assess the validity and reliability of the Turkish version of the RSN in a study group of nursing students. The study found that the RSN meets the construct validity, convergent validity, internal consistency reliability and test-retest reliability criteria. Since existing studies measured the psychological resilience levels of nurses and nursing

Table 1
RSN Convergent Validity and Mean Scores of RSN, BRS, PHS, RSA and PSS.

Scales	RSN	Bootstrap ^a	Min	Max	Mean	SD
RSN	$r = 1$	–	35	95	69.4	11.1
BRS	$r = 0.44^*$	(0.36) - (0.51)	6	30	19.2	3.4
PHS	$r = 0.69^*$	(0.63) - (0.75)	4	80	54.9	10.5
RSA	$r = 0.53^*$	(0.45) - (0.60)	56	165	117.1	19.2
PSS	$r = -0.27^*$	(-0.36) - (-0.18)	9	45	27.2	5.1

^a Bootstrap 95% Confidence Interval Lower and Upper Values, SD = Standard Deviation.

* $p < 0.01$.

Table 2

Internal reliability of the Turkish version of RSN.

Factors	Item	Corrected item-total correlation	Alpha coefficient if item deleted	Alpha coefficient
Dispositional pattern	1	0.376	0.929	0.82
	2	0.660	0.922	
	10	0.634	0.923	
	11	0.681	0.922	
	18	0.625	0.923	
	19	0.691	0.922	
Relational pattern	3	0.510	0.925	0.75
	4	0.629	0.923	
	5	0.494	0.926	
	6	0.575	0.924	
Situational pattern	7	0.693	0.922	0.79
	8	0.686	0.922	
	9	0.638	0.923	
Philosophical pattern	12	0.555	0.925	0.86
	13	0.635	0.923	
	14	0.628	0.923	
	15	0.645	0.922	
	16	0.713	0.921	
Total	17	0.551	0.925	0.93

students using scales developed for the general public, this study is meaningful because it measures the psychological resilience levels of nursing students using a scale that was developed from the findings of in-depth interviews with nurses.

Polk (1997) suggested a nursing resilience model based on Rogers' theory and indicated that the energy field, openness, pattern, and pan-dimensionality concepts constitute the basis of the nursing resilience model. Resilience characteristics were classified as patterns using the conceptual synthesis process, and four resilience patterns were identified in Polk's study. Park et al. (2019) presented their theoretical framework based on Polk's work. Our confirmatory factor analysis results were consistent with the model suggested by Polk (1997) and the study of Park et al. (2019). Our results showed satisfactory construct validity for the RSN. χ^2 statistics (p -value) are one of the most commonly used fit indices in study findings. The p value should be >0.05 for the χ^2 test. Since the χ^2 difference test depends on the sample size, if the sample size is large, it can reject the models that actually fit the data, and researchers can find significant p values in practice. Therefore, in addition to interpreting the χ^2 difference test by the ratio of the χ^2 value and degrees of freedom, it is recommended to use other model fit indices. For χ^2 /d.f., a ratio lower than 3 is accepted as a good model fit; a ratio lower than 5 indicates an acceptable fit. The χ^2 /d.f. ratio was found to be close to 3 in this study and showed acceptable fit. While a CFI value that is higher than or equal to 0.90 indicates an acceptable model fit, values that are close to or higher than 0.95 indicate a good model fit. CFI showed a good model fit in this study. RMSEA represents the model misfit level and is reported on a scale between 0 and 1; values that are smaller than or equal to 0.05 are an indicator of a good fit of the data; values between 0.05 and 0.08 indicate an acceptable fit (Kline, 2015). RMSEA showed an acceptable fit in this study.

Convergent validity was tested with Pearson correlation coefficients between RSN and several self-reported scales. The RSN scores of the students showed positive correlations with the other resilience scales and the hardiness scale, as expected. Additionally, the psychological resilience levels of students had a negative correlation with their perceived stress. This finding is consistent with previous findings in the literature (Li and Hasson, 2020). Furthermore, the large positive correlation between the test and retest scores of the students in the second stage of the study demonstrates that the scale is time-invariant. The findings show that convergent validity and test-retest reliability were satisfactory. Additionally, the internal consistency was also acceptable.

4.1. Limitations of the study

This was a cross-sectional study; the data collected are valid only for the time period the study was conducted. Additionally, the main data of the study were obtained through self-report questionnaires and may introduce response bias. This study was conducted at only one university, and the results may not be generalizable. Since there was no version other than the Korean version of the RSN, only comparisons between Turkish and Korean versions of the scale could be made in terms of construct validity. Therefore, comparisons among different cultures could not be included in the discussion section.

When the concepts measured by a scale as well as scale items are understood and conceptualized in the same way by people who have different language backgrounds, it means that the scale is measurement invariant. Another limitation of this study is that since the study was conducted in a group of only Turkish nursing students, measurement invariance analysis was not tested.

5. Conclusions

This study concluded that the Turkish version of the RSN is a valid and reliable measurement tool. These results are important because this is the first study that measures psychological resilience levels of nursing students in Turkey with a scale developed for nurses. Additionally, it is among the few studies in the international literature. Correct measurement of the psychological resilience levels of nursing students is expected to provide baseline data to better understand the psychological resilience concept. Therefore, further studies to plan intervention and education programmes that aim to improve the psychological resilience levels of nursing students are recommended. Validity and reliability studies of the RSN for other languages and assessment of the scale for measurement invariance analysis will allow us to better understand the psychometric properties of the scale.

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Credit authorship contribution statement

Study design, Conceptualization and Methodology: SÜŞ, FD, and TT; Data collection: SÜŞ, FD, and TT; Data analysis: SÜŞ and TT; Manuscript writing: SÜŞ, FD, and TT; Reviewing and Editing: FD and TT. All of the authors are in agreement with the content of the manuscript and meet the authorship criteria.

Declaration of competing interest

The authors declare no competing interests.

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