

ORIGINAL ARTICLE

Psychometric properties of the self-efficacy for clinical evaluation scale in Turkish nursing students

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Aims and objectives. To examine psychometric properties of the Self-Efficacy for Clinical Evaluation Scale (SECS) in a nursing student sample.

Background. Self-efficacy is a good choice to be used in order to make a prediction of nursing students' performance in clinical practice. The SECS, consisting of perceived self-efficacy and importance subscales, seems to be suitable to evaluate self-efficacy regarding care skills for patients with chronic diseases. However, there is not a valid tool to evaluate the perception of self-efficacy for Turkish nursing students.

Design. Cross-sectional methodological design.

Methods. The sample included 400 Turkish nursing students who attended practicum at a hospital. Content of the SECS was evaluated by content validity index (CVI). Reliability was evaluated with internal consistency, item-total correlation and test-retest reliability. Confirmatory factor analysis (CFA) and convergent and divergent validity were used to test the validity.

Results. The CVI results were satisfactory. We found satisfactory evidence for internal consistency and item-total correlations. Intraclass correlation coefficients showed stability of subscales. The CFA replicated two-factor structure for the SECS. This was reflected in all fit indices. All factor loadings were positive and were above the perfect level. The convergent validity was supported by the correlation between SECS and General Self-Efficacy Scale. The divergent validity findings demonstrated that SECS differentiated between students with various levels of general point average, which is an indicator of academic success.

Conclusion. In conclusion, SECS is a reliable and valid tool used in clinical nursing education settings.

Relevance to clinical practice. Measuring students' self-efficacy in a clinical environment can provide an insight for students into what they have learned. Nurse educators can also use the SECS to spot nursing students with weaknesses in care activities and create educational strategies to help them to enhance their academic performance. Using the SECS can yield an insight both for students and for nursing educators.

Key words: academic performance, clinical practice, nursing education, reliability, self-efficacy, self-efficacy for clinical evaluation scale, validity

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Introduction

Baccalaureate nursing education has been offered in Turkey for 57 years. In fact, it was 1955 when the first four-year

programme offering undergraduate degree in nursing began. Programmes offering master's and doctorate degrees began in 1968 and 1972, respectively (Bahcecik & Ecevit 2009). At present, 109 schools of nursing provide undergraduate

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nursing education (Higher Education Council 2010). In Turkey, programmes offering undergraduate education in all fields of study including nursing last four years (eight semesters) and are preceded by twelve years of primary, secondary and high school education (Bahcecik & Ecevit 2009).

Nursing is mainly based on practice. Thus, almost half of the nursing education is based on practical training including laboratory and clinical studies. Clinical environment provides students with opportunities to gain experience in nursing in a real atmosphere and help them to put what they have learned into practice (Elliott 2002). Nursing students' clinical achievement is affected by some factors including anxiety, stress, loss of control (Ofori & Charlton 2002, Cook 2005), motivation (Linnenbrink & Pintrich 2002) and self-efficacy (Andrew 1998, Andrew & Vialle 1998, Shellman 2007, Henderson *et al.* 2012).

Self-efficacy, which affects students' performance in clinics, has been one of the variables extensively studied by educational scientists over the past 20 years. Bandura described self-efficacy as individuals' perceptions on their ability or capacity to fulfil a task. Perceptions on academic capabilities, that is, self-efficacy, are useful predictors of students' academic success and their future career plans (Bandura 1997).

In nursing education, various activities, such as lectures, case studies, homework, group work, oral presentations, written tests and short quizzes as well as clinical practice and laboratory studies, are used to calculate overall course grades. As opposed to what is expected, self-efficacy beliefs help determine academic performance more than objective assessments because they are mediators of the effects of students' prior achievement, knowledge and skills on subsequent achievement. Having strong self-efficacy will enable individuals to perceive difficult skills as challenges to cope with instead of barriers, and it is more likely for them to fulfil a task assigned until they excel in it (Bandura 1997). Previous studies have shown a significant positive correlation between perceived self-efficacy and academic success (Chacko & Huba 1991, Multon *et al.* 1991, Pagares 1996, Andrew 1998, Robbins *et al.* 2004).

It has been recognised in the last decades in Turkey that most of the patients have been admitted to hospitals because of chronic diseases, which have become the main burden on Turkey's health economy (The Ministry of Health of Turkey 2010).

All nursing students in Turkey encounter patients who have chronic diseases during their practicum. Nursing educators therefore should search alternative methods to improve nursing students' self-efficacy perceptions regarding

care for patients with chronic diseases in a clinical environment. Hence, a valid and reliable measurement to evaluate self-efficacy perception is needed. The Self-Efficacy for Clinical Evaluation Scale (SECS) was developed to measure students' self-efficacy perceptions and importance perceptions regarding care skills for patients with chronic diseases in a clinical environment (Clark *et al.* 2004). However, the applicability of the SECS in Turkish nursing students has not been investigated. In this study, having translated the original SECS into Turkish, we investigated its reliability and validity in Turkish nursing students.

Methods

Aim

The aim of the study was to evaluate psychometric properties of the SECS in a nursing student sample in Turkey.

Design

Cross-sectional methodology was used in this research.

Participants

This study was conducted on nursing students from three universities. The only inclusion criterion was having at least one-year training in nursing. We excluded first-year students from the study because they did not take any theoretical and practical courses regarding nursing care of patients with chronic diseases, except some introductory courses such as anatomy, psychology, sociology and humanities. The study population consisted of 400 nursing students, who accepted to participate in the study. All nursing students had clinical experiences at hospitals. Duration of practicum varied from two weeks to one month. Students completed the measures on a single assessment visit in the classroom during the second semester in 2010. Mean average time to answer the questionnaire was about 20 minutes. Twenty questionnaires were excluded from the analysis as they had missing data, which were over 60%. Thus, the studied population finally comprised 380 nursing students. During the statistical analysis, we also excluded 22 participants from the gathered data set because they had potential univariate and multivariate outliers. Finally, 358 questionnaires were analysed.

Prior to the study, we obtained permission for conducting the study from Clark *et al.* (2004). We also obtained permissions from administrations of the universities and approval from an institutional review board. Written

informed consent was obtained from the students following an explanation on research purpose and procedures. We guaranteed confidentiality.

The mean age of the students was 21.9 years, ranging from 18–25 years. The majority of them were women (91.1%), and only a small proportion of them were men (8.9%). Of all the students participating in the study, 27% were second-year students, 35.5% were third-year students, and 37.4% were fourth-year students.

Instruments

Clark *et al.* (2004) developed the SECS, which consists of 30 statements and two subscales including perceived self-efficacy and perceived importance. The first subscale measures students' self-efficacy perceptions regarding care skills for patients with chronic diseases in a clinical environment, and the second one assesses importance placed on these skills by the students. In other words, perceived self-efficacy reflects confidence of a student in providing care for patients with chronic diseases, and the perceived importance provides evidence for the students' beliefs about the importance of care practices.

The scale is a five-point Likert scale. Thus, one can obtain scores of one to five for the two subscales and the SECS. A low score shows that a student is not confident in providing care for patients with chronic diseases and does not place sufficient importance on a given practice. The SECS showed satisfactory reliability and validity results. Clark *et al.* found that Cronbach's alpha value to be 0.98 for self-efficacy subscale and 0.95 for perceived importance subscale; item–total correlation coefficients varied from 0.33–0.87. The results of goodness-of-fit indices including comparative fit index (CFI = 0.98) and root mean square error of approximation (RMSEA = 0.067) supported construct validity of the SECS.

The General Self-Efficacy Scale (GSES), the most widely used general self-efficacy measure, was developed by Sherer *et al.* (1982) to measure a general set of expectations that an individual carries into new situations. A high score shows good self-efficacy. Psychometric properties of the Turkish version of the scale were evaluated by Gozum and Aksayan (1999), and its Cronbach's alpha coefficient was found to be 0.81 and its test–retest reliability was 0.92. The Cronbach's alpha coefficient of the GSES in our study was 0.81.

Procedures

Before reliability and validity of the scale were tested, the language equivalence and cultural adaptation of the scale

were performed. In this process, first, three linguistic experts translated the scale into Turkish. Second, Turkish statements were evaluated by six nursing teaching staff members who were experts in their fields from different universities. This evaluation was made to determine whether the statements were suitable for the Turkish population and the context of the education provided in nursing schools. The Turkish scale took its final form after comments and evaluations were received. Third, a pilot study was made on 30 students to determine whether the items were comprehensible. Fourth, another group of three linguistics experts retranslated the Turkish version of the scale into English. The back-translated scale was reviewed by Clark *et al.* Finally, Turkish SECS was developed. The translators were familiar with English and Turkish culture. They were also fluent in both languages. The expert panel had similar backgrounds to those of the translators as well.

Content of the SECS was evaluated by calculating content validity index (CVI) including item-level CVI (I-CVI) and overall scale-level CVI (S-CVI) based on expert opinions. To calculate I-CVI, first we asked panel members to rate each item in the subscales in terms of its relevance to the underlying construct. The panel members rated each item using a Likert-type scale with four possible responses including 1 = not relevant, 2 = somewhat relevant, 3 = quite relevant and 4 = highly relevant. Depending on the relevant literature (Polit & Beck 2006), ratings of 1 and 2 showed 'invalid content', while ratings of 3 and 4 showed 'valid content'. Then, for each item, I-CVI was calculated as the number of experts giving a rating of 3 or 4 divided by the total number of experts. To calculate S-CVI, first, average proportions of items rated relevant across the experts were calculated (Polit & Beck 2006). We considered I-CVI >0.78 and S-CVI >0.90 as acceptable criteria, as recommended by Lynn (1986).

We tested reliability by using internal consistency, item–total correlation and test–retest stability. To assess internal consistency, Cronbach's alpha was computed. Depending on the relevant literature, a minimum Cronbach's alpha of ≥ 0.70 was considered satisfactory (Bland & Altman 1997). The Pearson's correlation coefficient was used to assess corrected item–total consistency. The acceptable value for the results of this analysis was determined as >0.40 (Nunnally & Bernstein 1994). We computed intra-class correlation coefficients (ICCs) to assess test–retest stability. The scale was administered twice at a 15-day interval to 45 students.

Contemporary thinking is that a threshold of 0.70 for the ICC is acceptable. However, an important limitation of ICC is that it is strongly influenced by the variance of the

trait in the sample in which it is assessed. In a heterogeneous sample with a high variance, the ICC of the scale tends to be high; however, in a homogenous sample with a low variance, the ICC of the scale may be low (Müller & Büttner 1994). In this study, based on the sample's homogeneity, we assumed that an ICC value over 0.70 would be excellent, a value of between 0.40–0.70 would be fair to good, and a value below 0.40 would be poor (Müller & Büttner 1994).

Construct validity was examined by confirmatory factor analysis (CFA) and convergent and divergent validity. In the CFA, the parcelling method was used because the number of items in the SECS was relatively high (Bandalos 2002, Hau & Marsh 2004, Meade & Kroustalis 2006). Each subscale of the SECS was separated into four parcels: the first parcel of self-efficacy subscale (PSe1), the second parcel of self-efficacy subscale (PSe2), the third parcel of self-efficacy subscale (PSe3) and the fourth parcel of self-efficacy subscale (PSe4), as well as the first parcel of importance subscale (PIIm1), the second parcel of importance subscale (PIIm2), the third parcel of importance subscale (PIIm3) and the fourth parcel of importance subscale (PIIm4).

In parcelling, the items were bundled without considering their content. The first parcel consisted of seven items, the second and third parcels consisted of eight items, and the fourth parcel consisted of seven items. After parcelling, the structure of each parcel was examined by means of multicollinearity, univariate and multivariate outliers and normality.

To examine multicollinearity, the bivariate correlation coefficient between variables was calculated. It was assumed that there would be a correlation between parcels lower than 0.90. The bivariate correlation coefficients between parcels ranging from 0.17–0.87 showed that these items actually measured different aspects (Kline 2005).

We considered the students who had standardised scores (z) higher than 3 as potential univariate outliers (Tabachnick & Fidell 2007). Thirteen cases were excluded from the data set because they exceeded the recommended value of 3. The criterion for multivariate outliers of all parcels was Mahalanobis distance at $p < 0.001$, which was considered as chi-squared with degrees of freedom equal to the number of variables (Kline 2005, Tabachnick & Fidell 2007). In this study, the values >24.32 were accepted as multivariate outliers. Thus, nine cases, which exceeded 24.32, were excluded from the data set.

Skewness and kurtosis were used to assess the normality of the variables. We accepted that a skewness value at 3 would be satisfactory as recommended by Kline. In this

study, all skewness values were between 0.09–1.02, which shows a normal distribution. Despite the fact that there is no consensus, absolute values ranging from about 8.0 to over 20.0 have been considered as 'extreme kurtosis'. However, according to Kline (2005), absolute kurtosis index values higher than 10.0 indicate a problem. In this study, none of the items had a kurtosis value higher than 10.0, which lends support for univariate normality in the items.

Confirmatory factor analysis relies on goodness-of-fit indices predictive of the degree of fit between the model and the data (Byrne 2004). Although there is no consensus regarding which goodness-of-fit indices should be taken account of when assessing suitability of the data set to the CFA model, it is expected that at least three parameters should be at acceptable levels. In the current study, we anticipated that at least three of four goodness-of-fit indices would satisfy the acceptable criteria (Jaccard & Wan 1996).

In this study, fit indices included goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), CFI and RMSEA. It is acknowledged that CFI is the basic criterion to assess the fit of each model. In addition, GFI, AGFI and RMSEA are also used as indicators to evaluate the fit between different models and observed data (Streiner & Norman 2003). RMSEA is accepted as one of the most sensitive (Hu & Bentler 1999) and reliable indices (Toyoda 1998). Toyoda indicated that the effect of degree of freedom on RMSEA is minimum. Notwithstanding other fit indices, structural equation modelling is considered appropriate if RMSEA value is not higher than 0.10. In this study, we thought that desirable indices of fit were proved by GFI >0.90 , AGFI >0.80 , CFI >0.90 and RMSEA <0.10 , as recommended in the literature (Jöreskog & Sörbom 2004). In this study, chi-squared test was not considered as a fit index because the sample size was over than 200 (Streiner & Norman 2003).

It is stated that factor loadings (standardised regression weights) should exceed 0.30 and be positive; however, in CFA, factor loadings over 0.71 are accepted as perfect, 0.63 as very good, 0.55 as good, 0.45 as sufficient and 0.32 as poor (Tabachnick & Fidell 2007). Thus, we assumed that the factor loadings of each parcel would be over 0.45. We examined the pattern of cross-scale correlations for each subscale to investigate the structure of the SECS in a more detailed way.

To evaluate convergent validity, we analysed the correlation between mean scores for the SECS and mean scores for the GSES. The SECS helps to evaluate nursing students' perceptions of self-efficacy regarding clinical skills (Clark *et al.* 2004), while the GSES reflects general beliefs regarding one's capability to perform a task (Sherer *et al.* 1982).

Thus, we expected to find a significant, positive low-to-moderate association between the SECS and the GSES scores.

Divergent validity was tested to evaluate discriminative power of the SECS. Depending on the relevant literature, we assumed that the mean SECS scores would be different among students who have different levels of academic success. We used grade point average (GPA) as a criterion for academic success. Students must (1) attain a GPA of 2.0 at the end of each academic semester to be considered successful and to progress to the next semester, (2) maintain a cumulative grade point average (CGPA) of 2.0 at the end of each academic year to be able to follow the courses in the second, third and fourth years of the programme and (3) obtain a minimum CGPA throughout the entire undergraduate programme to be able to graduate from the programme.

Grade point average is calculated as in the following: the scores obtained are added and the credit points obtained in each class are multiplied by the number of credit hours of each class. The sum is divided by the total credit hours attempted. CGPA on completion of each academic year and baccalaureate nursing degree programme is calculated. In this study, we used the last semester GPA, which was graded as fail (GPA = 1–1.99), pass (GPA = 2–2.99), credit (GPA = 3–3.99) and distinction/high distinction (GPA = 4).

Statistical analysis

Demographic data were analysed using frequencies, means and ranges as appropriate. Internal reliability of the SECS was assessed by computing Cronbach's alpha coefficient. The Pearson's correlation coefficient was used to assess corrected item–total consistency and to test the relationships between the SECS mean scores and GSES mean scores. To test stability of the SECS, ICC was computed. A one-way ANOVA test was applied to examine the differences between categories of GPA (fail, pass, credit and distinction/high distinction) in relation to nursing students' perceived self-efficacy and perceived importance. Confirmatory factor analysis (CFA) was used to test factorial structure of the SECS. SPSS, version 15.0 (SPSS Inc., Chicago, IL, USA) was used to perform descriptive statistics, Cronbach's alpha coefficient, Pearson's correlation coefficient, ICC and one-way ANOVA test. The LISREL, version 8.5 (Scientific Software International Inc., Skokie, IL, USA) was used to calculate CFA.

Results

As seen in the Table 1, the values for I-CVI and S-CVI were 0.95 and 0.94, respectively.

Reliability results are shown in Table 2. As seen in Table 2, the SECS yielded a good internal reliability, item–total correlation and test–retest stability. The Cronbach's alpha values were 0.94 and 0.97 for the perceived self-efficacy and perceived importance subscales, respectively. The corrected item–total correlations ranged from 0.42–0.67 for the perceived self-efficacy subscale and from 0.56–0.76 for the perceived importance subscale. The ICC was found to be 0.64 for the perceived self-efficacy subscale and 0.81 for the perceived importance subscale.

The structure of the SECS was assessed with CFA. First, we formed a single-factor model and then created a two-factor model. Fit indices for tested models are presented in Table 3. All goodness-of-fit criteria in the single-factor model were lower than the recommended level, while the two-factor model met all fit criteria.

The factor loadings were all positive and ranged from 0.73–0.89 for perceived self-efficacy and from 0.83–0.95 for perceived self-confidence (Fig. 1). Two factors in the SECS were correlated with each other in a positive direction and moderately ($r = 0.37$).

The results for convergent and divergent validity are shown in Tables 4 and 5, respectively. We found a low-to-moderate positive significant association between perceived SECS and GSES scores ($r = 0.29$), as expected (Table 4). The students who were awarded a fail or pass grade for their last semester's nursing courses had lower mean scores for the SECS than the students who obtained a credit or distinction/high distinctions. The mean differences between the groups in terms of perceived self-efficacy and perceived importance were all statistically significant (Table 5).

Discussion

The content validity of the SECS was established based on expert opinions. The mean I-CVI and S-CVI values exceeded the recommended criteria by Lynn (1986). We can conclude that the SECS sufficiently reflects the perceived self-efficacy and perceived importance regarding care skills for patients with chronic diseases in a clinical environment.

The Cronbach's alpha values for the two subscales of the SECS were ideal, indicating that the individual items in both subscales represent their dimensions. Each item had a corrected item–total correlation coefficient, which exceeded the acceptable value, suggesting that the items measured phenomena pertinent to the perceived self-efficacy and perceived importance constructs in the SECS.

Table 1 Content validity of the Self-Efficacy for Clinical Evaluation Scale ($n = 8$)

Item number	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	Number in agreement (number giving rating of 3 or 4)	Item CVI
Se1	+	+	+	+	+	+	+	+	8	1.00
Se1	+	+	+	+	+	+	+	+	8	1.00
Se2	+	+	+	+	+	+	+	+	8	1.00
Se3	+	+	+	+	-	+	+	+	7	0.875
Se4	+	-	+	+	+	+	+	+	7	0.875
Se5	+	+	+	+	+	+	+	+	8	1.00
Se6	+	+	-	+	+	+	+	+	7	0.875
Se7	+	+	+	+	-	+	+	+	7	0.875
Se8	+	+	+	+	+	+	+	+	8	1.00
Se9	+	+	+	+	+	+	+	-	7	0.875
Se10	+	+	+	+	+	+	+	+	8	1.00
Se11	+	+	+	+	+	+	+	+	8	1.00
Se12	+	+	+	+	+	+	+	+	8	1.00
Se13	+	+	+	+	+	+	+	+	8	1.00
Se14	-	+	+	+	+	+	+	+	7	0.875
Se15	+	+	+	+	+	+	+	+	8	1.00
Se16	+	+	+	+	+	+	+	+	8	1.00
Se17	+	+	+	+	+	+	+	+	8	1.00
Se18	+	+	+	+	+	+	+	+	8	1.00
Se19	+	+	+	+	+	+	+	+	8	1.00
Se20	+	+	+	+	+	+	+	+	8	1.00
Se21	+	+	+	+	+	+	+	+	8	1.00
Se22	+	+	+	+	-	+	+	+	7	0.875
Se23	-	+	+	+	+	+	+	+	7	0.875
Se24	+	-	+	+	+	+	+	+	7	0.875
Se25	+	+	+	+	+	+	+	-	7	0.875
Se26	+	+	-	+	+	+	+	+	7	0.875
Se27	+	+	+	+	+	+	+	+	8	1.00
Se28	+	+	+	+	+	+	+	+	8	1.00
Se29	+	+	+	+	+	+	+	-	7	0.875
Se30	+	+	+	+	+	+	+	+	8	1.00
Proportion relevant	0.93	0.93	0.93	0.97	0.90	1.00	1.00	0.90	Mean I-CVI = 0.95 S-CVI/Ave = 0.94	

Our results were comparable with the findings from the original validation study by Clark *et al.* (2004). They reported that Cronbach's alpha coefficient was 0.98 for self-efficacy and 0.95 for perceived importance and that corrected item-total correlation coefficients ranged from 0.48–0.87 and from 0.33–0.81 for self-efficacy and perceived importance, respectively.

Finally, ICC findings supported the stability of the tool. The current test-retest findings cannot be compared with the results of the study by Clark *et al.* (2004) because they did not examine test-retest stability.

The CFA demonstrated a well fit between the data we obtained and the hypothesised two-factor model. As compared with the single-factor model, the two-factor model of the SECS had a good fit. This was shown in all fit indices

including GFI, AGFI, CFI and RMSEA. The results of this study were consistent with those from the original validation study, where the SECS demonstrated a CFI of 0.98 and a RMSEA of 0.067 (Clark *et al.* 2004). The results of the current study demonstrated that the factor structure was similar in both the Turkish and original versions of the SECS.

All factor loadings were positive and were above the perfect level of 0.71, which showed excellent factor loadings. It is because all parcels were strongly associated with their factors.

As we expected, dimensions of perceived self-efficacy and perceived importance in the SECS were moderately correlated with each other in a positive direction, which suggested that the two constructs have both similarities and differences.

Table 2 Results of reliability ($n = 358$)

Self-efficacy		Importance	
Item number	Item-total correlation	Item number	Item-total correlation
Se1	0.54	Im1	0.65
Se2	0.45	Im2	0.62
Se3	0.51	Im3	0.70
Se4	0.53	Im4	0.71
Se5	0.62	Im5	0.67
Se6	0.60	Im6	0.73
Se7	0.52	Im7	0.63
Se8	0.60	Im8	0.67
Se9	0.47	Im9	0.56
Se10	0.67	Im10	0.74
Se11	0.64	Im11	0.66
Se12	0.60	Im12	0.76
Se13	0.58	Im13	0.75
Se14	0.60	Im14	0.73
Se15	0.66	Im15	0.72
Se16	0.55	Im16	0.71
Se17	0.55	Im17	0.72
Se18	0.62	Im18	0.74
Se19	0.58	Im19	0.70
Se20	0.60	Im20	0.72
Se21	0.58	Im21	0.69
Se22	0.61	Im22	0.71
Se23	0.66	Im23	0.75
Se24	0.64	Im24	0.72
Se25	0.58	Im25	0.61
Se26	0.60	Im26	0.67
Se27	0.66	Im27	0.72
Se28	0.63	Im28	0.75
Se29	0.53	Im29	0.68
Se30	0.42	Im30	0.58
Cronbach's alpha	0.94		0.97
Test-retest	0.64		0.81

Table 3 Summary of fit indices from confirmatory factor analysis ($n = 358$)

	One-factor model	Two-factor model
χ^2	163.17	74.62
df	19	17
p	<0.001	<0.001
Comparative fit index		
CFI	0.94	0.97
GFI	0.90	0.95
AGFI	0.80	0.89
RMSEA	0.15	0.09

CFI, comparative fit index; GFI, goodness-of-fit index; AGFI, adjusted goodness-of-fit index; RMSEA, root mean square error of approximation.

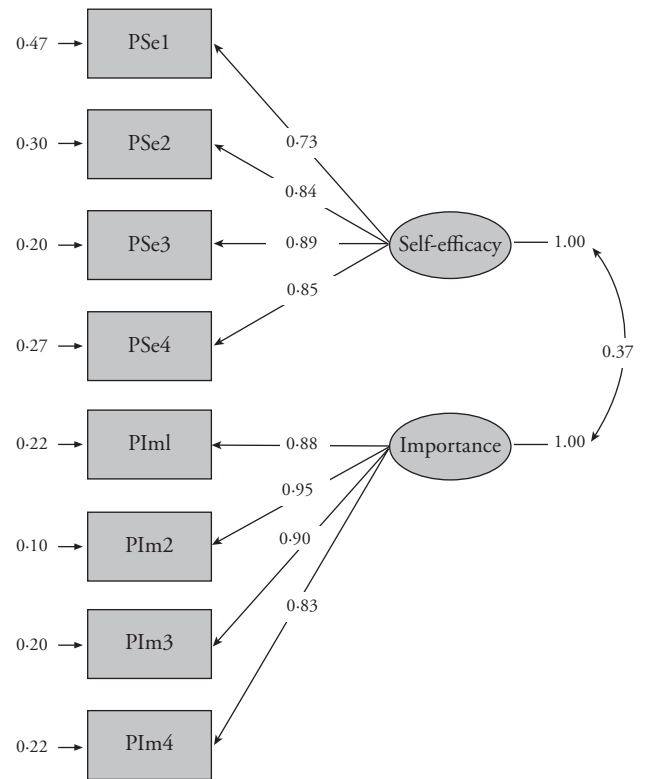


Figure 1 Factor structure of the two-factor Self-Efficacy for Clinical Evaluation Scale ($n = 358$).

Table 4 Results of convergent validity ($n = 358$)

	Perceived self-efficacy	Perceived importance
General	$r = 0.29^*$	$r = 0.29^*$
Self-Efficacy Scale	$p = 0.00$	$p = 0.00$

*Correlation is significant at the 0.01 level.

Table 5 Results of divergent validity ($n = 358$)

	Perceived self-efficacy	Perceived importance
Grade point average		
Fail ($n = 30$)	3.20 ± 0.46	4.15 ± 0.62
Pass ($n = 172$)	3.53 ± 0.68	4.24 ± 0.72
Credit ($n = 122$)	3.64 ± 0.65	4.27 ± 0.57
Distinction/high distinction ($n = 34$)	4.10 ± 0.66	4.46 ± 0.60
	$p = 0.006^*$	$p = 0.003^*$

*Significant at $p < 0.05$.

Depending on the CFA results, we can conclude that although self-efficacy perception is individual specific and can differ between societies, our results demonstrated that the SECS had a similar construct among American and

Turkish nursing students, who come from two different cultures. This result may be due to the universal nature of nursing care for patients with chronic diseases.

Convergent validity was achieved by confirming a moderate correlation between the SECS and the GSES. This indicates that the constructs in the SECS and the GSES are not exactly similar; however, different constructs underlying conceptualisation of dimensions of self-efficacy are universal.

The divergent validity findings demonstrated that the SECS differentiated between students with various levels of GPA, which is an indicator of academic success. This is not surprising because the relationship between self-efficacy and academic achievement has been described elsewhere before (Chacko & Huba 1991, Multon *et al.* 1991, Pagares 1996, Andrew 1998, Robbins *et al.* 2004).

In conclusion, the SECS is a reliable and valid tool that can be used in clinical nursing education settings. Strengths of this study include its large, representative sample of nursing students and strict procedures for the validation study including CFA and convergent and divergent validity. Additionally, this is the first study to show the test–retest stability of the SECS.

However, this study has some limitations. Our findings revealed an association between self-efficacy and academic success. However, academic achievement may also be related to student's cognitive ability, to decreased level of stress and to high motivation. In addition, in the current study, we only used the last semester GPA to evaluate academic success. Nevertheless, in nursing education, various activities, such as lectures, case studies, homework,

group work, oral presentations, written tests and short quizzes as well as clinical practice and laboratory studies, can be used to calculate overall course grades. Self-efficacy may function in different ways in different activities as mentioned above. Understanding how these factors affect self-efficacy will be helpful to nurse educators to improve students' interest and success in care interventions for patients with chronic diseases in a clinical environment.

Relevance to clinical practice

Measuring students' perceived self-efficacy and perceived importance regarding care for patients with chronic diseases in a clinical environment can yield an insight for the students into what they have learned. Nurse educators can also use the SECS to better understand students who have inadequate background on care activities. Thus, educational interventions can be planned to improve students' academic achievement in clinical nursing courses. The use of the SECS can provide an insight both for students and for nurse educators.

Contributions

Study design: NZ, RP; data collection and analysis: NZ, ACA, HY, RP and manuscript preparation: NZ, RP, ACA, HY.

Conflict of interests

The authors declare that they have no conflict of interests.

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