

Araştırma Makalesi – Research Paper

VALIDITY AND RELIABILITY OF THE TURKISH VERSION OF “DEBRIEFING EXPERIENCE SCALE” IN SIMULATION-BASED LEARNING

SİMÜLASYONA DAYALI ÖĞRENMEDE “ÇÖZÜMLEME DENEYİM ÖLÇEĞİ”NİN TÜRKÇE VERSİYONUNUN GEÇERLİK GÜVENİRLİĞİ

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Özet

Simülasyona dayalı öğretimin en önemli aşaması “Çözümleme”dir. Çözümleme oturumunda ana hedef katılımcının kendi performanslarını gözden geçirmeleri ve simülasyon sırasında elde ettikleri kazanımlarının farkına varmalarıdır. Bu çalışma “Çözümleme Deneyim Ölçeği”nin Türkçe Geçerlik Güvenirliği” ni yapmak amacıyla metodolojik olarak yapıldı. Çalışmanın evrenini 2017-2018 yılında İstanbul’da bulunan bir üniversitenin hemşirelik bölümünde öğrenim gören öğrenciler (N=303) oluşturdu. Çözümleme Deneyim Ölçeğinin içerik geçerliliği, yapı geçerliliği, iç tutarlılık güvenilirliği test edildi. Ölçeğin total Cronbach alfa düzeyi “Çözümleme Deneyimi” için 0.948 olup, “Maddelerin Önemi” için ise 0.951’dir. Test-tekrar test sınıf içi korelasyon katsayısı (ICC) 0,999 idi (p<0,001). Çözümleme Deneyim Ölçeği’nin Türkçe versiyonu Türk toplumundaki öğrencilerde kullanılabilecek geçerli ve güvenilir bir ölçektir.

Anahtar Kelimeler: Simülasyon, Hemşirelik eğitimi, Çözümleme, Çözümleme deneyim ölçeği, Hasta simülasyonu

Abstract

The most important phase of simulation-based learning is “debriefing”. The main purpose of a debriefing session is to have participants review their own performances and identify the attainments they achieved during the simulation. This study performed the validity and reliability test of the Turkish version of the “Debriefing Experience Scale”. The universe of the study consisted of students (N=303) from the Nursing Department of a university during the 2017–2018 academic year. Content validity, construct validity, and internal consistency reliability of the Debriefing Experience Scale were tested. The Cronbach’s alpha level of the scale was found to be 0.948 for “Experience with Debriefing” and 0.951 for “Importance of item”. The test-retest intraclass coefficient (ICC) was 0.999 (p<0.001). The Turkish version of the Debriefing Experience Scale is a valid and reliable scale and can be applied to students in Turkish Society.

Keywords: Simulation, Nursing education, Debriefing, Debriefing experience scale, Patient simulation.

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1. INTRODUCTION

Simulation, as a teaching strategy, offers students the opportunity to apply clinical skills and serves as a tool for educators to perform the assessment process, including its conclusion, of student performances (Cantrell, 2008, pp. 19-23). Simulation-based experience (SBE) is a safe and effective way to prepare students for real implementations. With simulation, students have the opportunity to enhance their clinical skills, such as decision-making, assessment, teamwork, communication, and problem solving (Alderman, 2012, pp 394-400; Harder, 2009, pp. 169-172; Oudshoorn and Sinclair, 2015, pp. 396-401).

“Debriefing”, which is the final stage of the simulation implementation, is the most important phase of SBE (Decker, et al., 2008, pp. 74-80; Sanner-Stiehr, 2017, pp. 133-137). The International Nursing Association for Clinical Simulation and Learning (INACSL) defines the debriefing phase as “A reflective process immediately following the SBE that is led by a trained facilitator using an evidence-based debriefing model” (INACSL, 2016, pp. 39-47). According to Dreifuerst (2012), the debriefing sessions are essentially activities where reflective thinking is encouraged (Dreifuerst, 2012, pp. 326-333). The learning process starts with a theoretical course, proceeds to the simulation implementation, and concludes with a debriefing session marked by in-depth learning through reflections et al., 2006, pp. 49-55). The debriefing session that follows the participants’ completion of group activities provides them the opportunity to identify the skills they apply accurately and the skills they need to develop, and to understand the critical implementations (Chronister and Brown, 2012, pp. 281-288). All these characteristics show that the debriefing session is a learning strategy.

Facilitators have different debriefing types to choose from in the debriefing session (e.g. discussion alone, discussion of video recording, and written debriefing). Regardless of which debriefing type is used, facilitators should configure the debriefing stage. Commonly used debriefing structures include debriefing for meaningful learning, debriefing for good judgement, outcome, present state, test model debriefing, Crew Resource Management, and PEARLS (Promoting Excellence and Reflective Learning in Simulation) (Eppich and Cheng, 2015, pp. 106-115; Ulrich and Mancini, 2014).

The main purpose of the debriefing session is to give participants the opportunity to revise their own performances and to recognize the attainments they achieved during the SBE. To this end, educators need to evaluate the efficiency of the methods they used during the debriefing session. Furthermore, it is important that a structured approach be used in the process to reach learning objectives (Sanner-Stiehr, 2017, pp. 133-137). Reed (2012) indicated that there is only a limited number of studies evaluating students’ attainments in the debriefing phase. To address this lack of studies, the “Debriefing Experience Scale” was developed to assess students’ learning experiences in the debriefing session (Reed, 2012, pp. 211-217).



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The debriefing session is considered to be the heart of SBE. Learning is known to particularly occur in the debriefing session. In Turkey, the use of SBE has started to gradually increase in line with INACSL standards. However, there still exists no Turkish scale to reveal participants’ experiences regarding this learning environment.

This methodological study was conducted to confirm the validity and reliability of the Turkish version of the Debriefing Experience Scale.

2. METHODS

2.1. Sample

The universe of the study included the students (N=303) from the Nursing Department of a university during the 2017–2018 academic year.

2.2. Instrument

The Debriefing Experience Scale was developed by Reed in 2012 to collect data. The original scale consisted of 20 items. Respondents evaluate these 20 items in two different parts. In the first part, respondents express their opinions about the debriefing experience. These opinions on debriefing are then scored using a five-point Likert-type scale, where the response options to the items are 1=Strongly disagree, 2=Disagree, 3=Undecided, 4=Agree, 5=Strongly Agree, and NA—Not Applicable.

The second part addresses the importance the respondents attach to the learning experiences. The degree of importance of their learning experiences is scored using a five-point Likert-type scale, where the response options to the items are 1=Not Important, 2=Somewhat Important, 3=Neutral, 4=Important, and 5=Very Important.

Sub-dimension scores are obtained by summing the individual items. The original form of the scale consists of four dimensions: Analyzing Thoughts and Feelings, Learning and Making Connections, Facilitator Skill in Conducting the Debriefing, and Appropriate Facilitator Guidance (Reed, 2012, pp. 211-217). A high score on the overall scale and its sub-dimensions indicates an increase in attainments in the debriefing experience.

2.3. Ethical Considerations

Written permission to conduct the study was granted from the Scientific Ethical Committee Acibadem University (2018-2/53). In order to translate the scale into Turkish, written permission was granted by Reed, the author of the scale. Prior to the implementation, the students were informed about the aim and procedure of the study and their verbal agreement to participate was received.



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2.4. Validity Phase

Validity is defined as how accurate an instrument measures the characteristic intended to be measured (Büyüköztürk, 2007, pp. 100-350). Content and construct validity techniques were used in this validity study of the Debriefing Experience Scale.

2.4.1. The translation of scale items into Turkish/Language Validity: In order to confirm language validity, the Turkish adaptation of the scale was carried out by four language experts. Two linguist specialists, whose native language is Turkish, independently translated the scale into Turkish. The Turkish form obtained was then independently translated into English by two translators, and the consistency between these forms was analyzed. Later, a Turkish language expert revised and finalized the scale items by considering the Turkish meaning of the words.

2.4.2. Content Validity: Content validity ratios were developed by Lawshe (1975). In the Lawshe technique, opinions of at least five and at most 40 experts are needed (Yurdugül, 2005, pp. 771-774). In this study, opinions of 13 experts who are specialized in the field of nursing and have taken active roles in simulation practices, were consulted about the content validity. Experts were asked to evaluate each item according to their suitability and clarity by marking them as "Appropriate/It can stay", "It can be changed/recommendation for change", or "It is not appropriate/ should be excluded". After collecting the expert opinions, a Content Validity Index (CVI) was determined for each item using the Lawshe Technique.

2.4.3. Pre-Implementation of the scale/pilot study: The scale was administered to 20 students in order to evaluate its understandability. Based on the feedback received from the students, it was determined that there were difficulties in understanding items 2, 4, 15, and 17. At this stage, the opinion of the researcher who developed the scale was consulted, and a qualitative interview was performed with the students. A focus- group interview, which lasted approximately 40 minutes, was conducted with 10 students from the pilot study group. The final version of the scale was obtained according to the views of the students and the researcher.

2.4.4. Construct Validity: Explanatory and confirmatory factor analyses were used to analyze the construct validity.

2.5. Reliability Phase

The reliability of the Debriefing Experience Scale was analyzed with internal consistency tests. Tests of internal consistency determine the reliability that all aspects of a scale accurately measure what they intend to measure (Esin, 2014). For the reliability of this scale, test-retest, Kuder-Richardson-20 (KR-20), Cronbach’s alpha reliability, and item-total correlation were applied (Büyüköztürk, 2007, pp. 100-350). Test-retest techniques involve the reexamination of the scale used within either a short or long period of time, depending on the situation. At the reliability phase of this study, the scale was again applied to 36% of the participants (n=69) 4–6 weeks after the data collection procedure (Şencan, 2005).



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2.6. Statistical Analyses

NCSS (Number Cruncher Statistical System) 2007 (Kaysville, Utah, USA) software was used for the statistical analyses. Descriptive statistical methods (mean, standard deviation, frequency, percentage, and minimum and maximum values) were used for the analysis of the data. The Shapiro-Wilk test and graphical analysis were used to test whether the quantitative data had a normal distribution. The Kaiser-Meyer-Olkin (KMO) sample adequacy measurement and Bartlett sphericity test were used to measure the applicability of the explanatory factor analysis. Cronbach’s alpha coefficient was used to determine the scale’s internal consistency, and in order to detect to what extent and in which direction the questions affected the alpha coefficient, "Alpha if item deleted" values were calculated. To test the factor structure obtained by the explanatory factor analysis, confirmatory factor analysis was conducted. The correlation/fit level between test-retest scores was determined with the intraclass correlation coefficient to test the reproducibility of the scale. Statistical significance was accepted at $p < 0.05$.

3. RESULTS

Examination of the students’ demographic characteristics showed that 85.8% were females ($n=163$) and 14.2% were males ($n=27$). The age of the students ranged between 18 and 34, with the mean age being 21.15 ± 1.93 . The majority of the students were seniors (45.3%).

The mean number of students in the debriefing sessions was 8.97 ± 2.35 . In 22.6% of the debriefing sessions ($n=43$), the discussion was carried out without videos, while in 77.4% ($n=147$) of them, the discussion included videos.

The students mostly practiced different scenarios within the scope of the Cancer Nursing (22.6%), Women’s Health and Diseases Nursing (22.1%), and Mental Health and Diseases Nursing (21.1%) courses. These different scenarios practiced by the students included the extravasation method (22.6%), post-partum monitoring (22.1%), and psychiatric interviews (21.1%) (Table 1).



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Table 1. Demographic Information

Characteristics		n(%)
Gender	Female	163 (85.8)
	Male	27 (14.2)
Age	Min-Max	18-34
	Mean±sd	21.15±1.93
Scenario Topic	Extravasation Method	43 (22.6)
	Post-partum Monitoring	42 (22.1)
	Psychiatric Interview	40 (21.1)
	Safe Medicine Application	22 (11.6)
	Triage Application in Emergency	19 (10)
	Diabetic Foot Examination	16 (8.4)
	Culture-Sensitive Care	8 (4.2)
Grade	1	22 (11.6)
	2	42 (22.1)
	3	40 (21.1)
	4	86 (45.3)
Course Name	Cancer Nursing	43 (22.6)
	Women’s Health and Diseases Nursing	42 (22.1)
	Mental Health	40 (21.1)
	Emergency Care	27 (14.2)
	Fundamental Principles and Applications in Nursing	22 (11.6)
	Diabetic Nursing	16 (8.4)
Number of people participating in debriefing	Min-Max	6-12
	Mean±sd	8.97±2.35
Method; n(%)	Discussion without video	43 (22.6)
	Discussion with video	147 (77.4)

The correlation level between the items and the overall scale score was found to range between 0.543 and 0.794. While item 2 had the lowest correlation level with the overall scale score, item 12 had the highest correlation level (Table 2).



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Table 2. Mean and Standard Deviation Values of the Items and the Examination of the Correlation Level Between Items and the Overall Scale Score

	Mean	sd	r
Item 1	4.59	0.74	0.690
Item 2	4.38	0.79	0.543
Item 3	4.48	0.76	0.570
Item 4	4.34	0.81	0.636
Item 5	4.59	0.59	0.770
Item 6	4.56	0.66	0.736
Item 7	4.63	0.59	0.787
Item 8	4.59	0.62	0.745
Item 9	4.60	0.62	0.782
Item 10	4.56	0.65	0.718
Item 11	4.57	0.62	0.735
Item 12	4.54	0.66	0.794
Item 13	4.47	0.77	0.674
Item 14	4.42	0.78	0.671
Item 15	4.56	0.65	0.766
Item 16	4.39	0.85	0.688
Item 17	4.58	0.63	0.741
Item 18	4.49	0.73	0.688
Item 19	4.51	0.70	0.736
Item 20	4.54	0.67	0.784

Pearson correlation analysis ** $p < 0.01$

3.1. Validity

3.1.1. Content Validity: Item CVI was between 0.69 and 1.00. The CVI of the scale was found to be 0.82.

3.1.2. Construct Validity: The fact that the Kaiser-Meyer Olkin (KMO) measurement was at a sufficient level indicated that the dataset obtained was suitable for factor analysis. Table 3 shows the KMO and Bartlett sphericity test results of the Debriefing Experience Scale. The KMO sample adequacy measurement was found to be 0.924. Bartlett sphericity test measurement was found to be $\chi^2=2793.186$; $P=<0.001$. The four-factor structure explained 70.759% of the variance. The factor loadings of the items in the four-factor structure are presented in Table 4.

Table 3. Results of KMO and Bartlett sphericity test

Kaiser-Meyer-Olkin Sample Adequacy Measurement		0.924
Bartlett Sphericity Test	Chi-square	2793.186
	Degree of freedom	190
	Significance	<0.001



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Table 4. Factor Analysis Loads

	Factors			
	1	2	3	4
Item 1				0.658
Item 2				0.837
Item 3				0.777
Item 4				0.249
Item 5	0.655			
Item 6	0.757			
Item 7	0.663			
Item 8	0.726			
Item 9	0.757			
Item 10	0.760			
Item 11	0.799			
Item 12	0.652			
Item 13		0.796		
Item 14		0.802		
Item 15		0.519		
Item 16		0.800		
Item 17		0.327		
Item 18			0.806	
Item 19			0.779	
Item 20			0.600	

3.2. Reliability

3.2.1. Internal Consistency Analysis: The scale consists of 20 items. The total Cronbach’s alpha level of the overall scale was found to be 0.948 for Experience with Debriefing and 0.951 for Importance of Item (Table 5).



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Table 5. The Effects of the Items Forming the Scale on the Internal Consistency Level

Item	Cronbach’s alpha level of the scale when the item is removed	Cronbach’s alpha level- with Experience debriefing	Cronbach’s alpha level- Importance of item
Analyzing Thoughts and Feelings			
Item 1	0.946	0.759	0.772
Item 2	0.949		
Item 3	0.948		
Item 4	0.947		
Learning and Making Connections			
Item 5	0.945	0.931	0.921
Item 6	0.945		
Item 7	0.945		
Item 8	0.945		
Item 9	0.945		
Item 10	0.945		
Item 11	0.945		
Item 12	0.944		
Facilitator Skill in Conducting the Debriefing			
Item 13	0.946	0.865	0.870
Item 14	0.946		
Item 15	0.945		
Item 16	0.946		
Item 17	0.945		
Appropriate Facilitator Guidance			
Item 18	0.945	0.908	0.907
Item 19	0.945		
Item 20	0.944		
Total		0.948	0.951

The Analyzing Thoughts and Feelings sub-dimension of the scale consists of four items. Its Cronbach’s alpha level was found to be 0.759 for Experience with Debriefing and 0.772 for Importance of Item.

The Learning and Making Connections sub-dimension of the scale consists of eight items. Its Cronbach’s alpha level was found to be 0.931 for Experience with Debriefing and 0.921 for Importance of Item.

The Facilitator Skill in Conducting the Debriefing sub-dimension of the scale consists of five items. Its Cronbach’s alpha level was found to be 0.865 for Experience with Debriefing and 0.870 for Importance of Item.

The Appropriate Facilitator Guidance sub-dimension of the scale consists of three items. Its Cronbach’s alpha level was found to be 0.908 for Experience with Debriefing and 0.907 for Importance of Item.

The RMSEA value was 0.076; the NFI value was 0.890; the CFI value was 0.939; the IFI value was 0.939; the RFI value was 0.863; the SRMR value was 0.042; and the χ^2 / df value was 2.100. The results of the confirmatory factor analysis are presented in Figure 1.

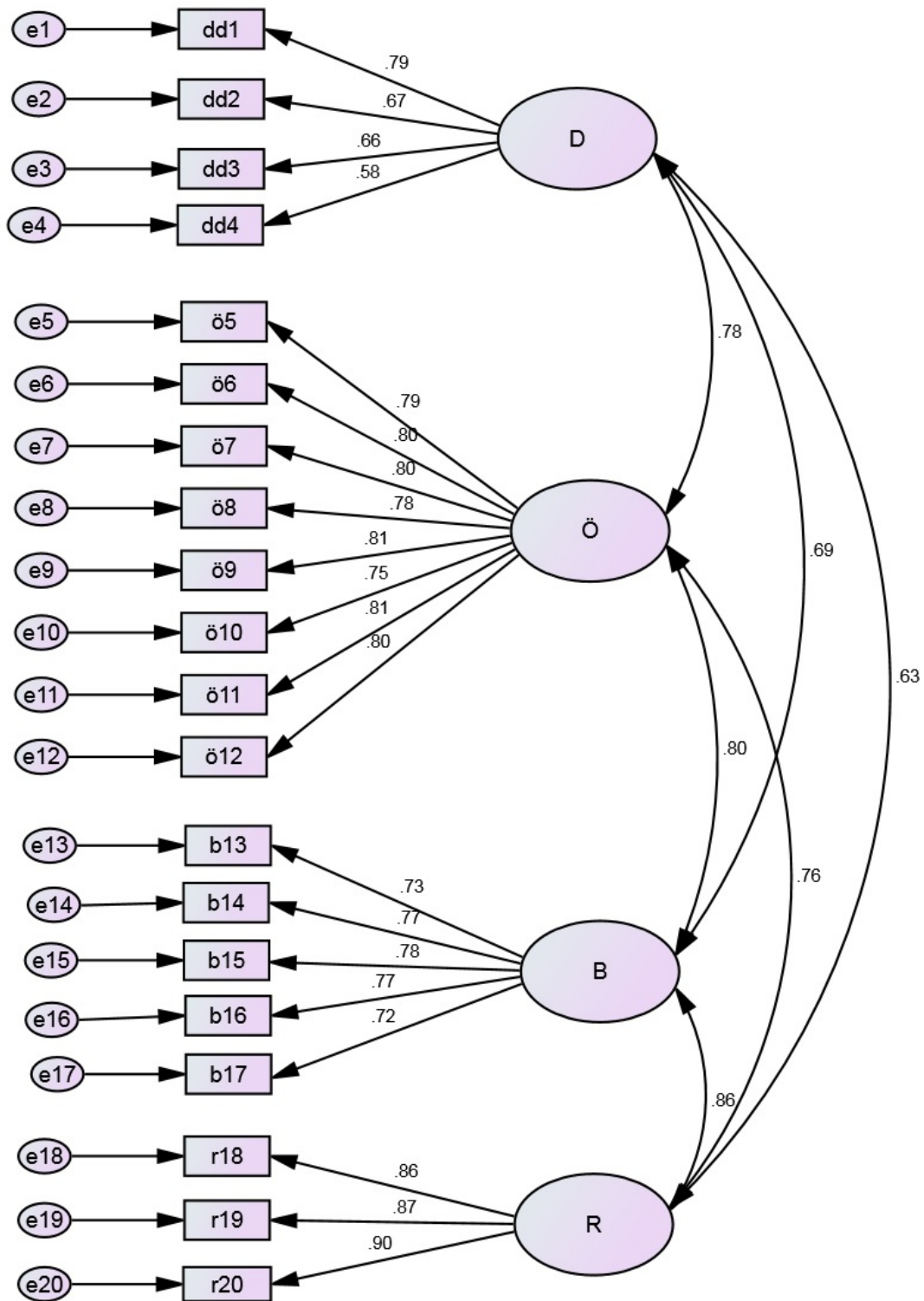


Figure 1. Path Diagram of the Verified Model
D: Feeling Thought; **Ö:** Learning; **B:** Skill; **R:** Guidance



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ICC levels were analyzed in order to test the reproducibility of the scale. These levels were found to be 0.999 for the sub-dimension of Analyzing Thoughts and Feelings, 0.998 for the sub-dimension of Learning and Making Connections, 0.994 for the sub-dimension of Facilitator Skill in Conducting the Debriefing, 0.999 for the sub-dimension of Appropriate Facilitator Guidance, and 0.999 for the overall scale ($P < 0.001$) (Table 6).

Table 6. Test-retest analysis

	ICC	p
Analyzing Thoughts and Feelings	0.999	<0.001**
Learning and Making Connections	0.998	<0.001**
Facilitator Skill in Conducting the Debriefing	0.994	<0.001**
Appropriate Facilitator Guidance	0.999	<0.001**
Total	0.999	<0.001**

ICC: Intraclass correlation coefficient

4. DISCUSSION

This study performed the Turkish adaptation of the Debriefing Experience Scale and an analysis of its validity and reliability with the aim of making this measurement instrument available for use on Turkish society.

In methodological studies, it is recommended that 5–10 participants be included for each item (Sönmez, 2005, pp. 150-173). Since the Debriefing Experience scale includes 20 items, the scale was applied to 190 students, which roughly corresponds to ten times the number of items. The number of participants involved in the validation study of the scale was 130 in the original version, 138 in the Norwegian version, and 103 in the Portuguese version (dos Santos Almeida et al., 2016, pp. 658-665; Reed, 2012, pp. 211-217; Tosterud, et al., 2015, pp. 27-34). The number of participants in the Turkish version developed was higher than the number seen in similar studies.

The CVI value, which was 0.82, was quite high. Taking the content validity indices put forward by Ayre and Scally (2014) as a basis, the minimum index value for 13 experts is 0.538 at the $\alpha=0.05$ significance level (Ayre and Scally, 2014, 79-86). Since the CVI of each item in this study was between 0.69 and 1.00, no item was excluded from the scale. With these results, it was confirmed that the language structure of the Turkish version of the Debriefing Experience Scale was clear and that its content was appropriate.

The results of the factor analysis used to test the construct validity of the scale were collected under four factors, similar to the original version. Regarding the factor loads, one item was found to be below 0.30 (i.e. item 4 in Factor 4). Since the factor analysis value of 0.249 was not too low, the item was left under this factor. The literature suggests a minimum range of between 0.30 and 0.40 for factor load values for items et al., 2012).



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The four factors obtained in this study explained 70.75% of the variance. Four factors explained 65.3% of the variance in the Norwegian version (Tosterud, et al., 2015, pp. 27-34) and 68% in the Portuguese version (dos Santos Almeida et al., 2016, pp. 658-665). An explained variance value between 40% and 60% is stated to be sufficient (Büyüköztürk, 2007, pp. 100-350). Considering these studies, the contribution of the four factors defined to the total variance is sufficient. Since the values found in this study confirm the reference ranges, they are compatible with the factors. Therefore, all the items in the original scale were preserved, and they were considered to be appropriate for the Turkish culture.

Explanatory and confirmatory factor analyses were used for the construct validity of the Debriefing Experience Scale. In explanatory factor analysis, the Kaiser-Meyer-Olkin value is calculated in order to determine whether the sample size is adequate. This value is expected to be above 0.60. A KMO value between 0.80 and 0.90 is considered to be very good (Tezbaşaran, 2008). The KMO value in this study was 0.924. The Bartlett test was also applied in order to determine whether the data had a multivariate normal distribution. The Bartlett value, χ^2 , which was 2793.186 ($p < 0.01$), was found to be significant. The ratio of the chi-square to the degree of freedom is considered to be good if it is equal to or less than three, and a ratio of up to five is considered to be an adequate fit (Çokluk et al., 2012). Almedia et al. (2015) reported a KMO value of 0.83 in the Portuguese version of the scale (dos Santos Almeida et al., 2016, pp. 658-665).

An RMSEA value equal to or less than 0.08, CFI, GFI, and NNFI values equal to or greater than 0.90, and an AGFI value equal to or greater than 0.80 indicate a good fit (Harrington, 2009). The values obtained in the confirmatory factor analysis, which was the second stage of the construct validity, indicated that the SRMR was at a good fit level and the RMSEA at an acceptable level. The four-factor model obtained from the results of the confirmatory factor analysis confirmed the scale's proficiency in measuring students' debriefing experiences. For the reliability study of the scale, the item-total score correlations of 20 items were investigated. In this study, the item-total score correlations ranged between $r=0.543$ and $r=0.94$ at the $p < 0.01$ significance level. A Pearson correlation coefficient of $r=0.00$ indicates no relationship, an r value between 0.01 and 0.29 indicates a low-level correlation, an r value between 0.30 and 0.70 indicates a moderate correlation, an r value between 0.71 and 0.99 indicates a high-level correlation, and an r value of 1.00 indicates a perfect correlation (Çokluk et al., 2012). The item-total score correlations in this study were found to be moderate to high.

Reed (2012) reported a Cronbach's alpha coefficient of 0.93 for the Experience with Debriefing and 0.91 for the Importance of Item (Reed, 2012, pp. 211-217); Tosterud et al. (2015) found these values to be 0.86 and 0.64, respectively, in the Norwegian version of the scale (Tosterud, et al., 2015, pp. 27-34); and Almedia et al. (2015) reported them to be 0.94 and 0.96, respectively, in the Portuguese version of the scale (dos Santos Almeida et al., 2016, pp. 658-665).



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In the present study, the Cronbach’s alpha coefficients for the sub-dimensions ranged between 0.759 and 0.931, while for the overall scale, it was 0.948. The ‘Importance of Item’ Cronbach alpha coefficients for the sub-dimensions ranged between 0.772 and 0.921, while for the overall scale it was found to be 0.951. A Cronbach’s alpha coefficient between 0.60 and 0.80 is considered to be “very reliable”, and a value between 0.80 and 1.00 is considered to be “highly reliable” (Karagöz, 2014). The values obtained indicated that the Turkish version of the Debriefing Experience Scale is highly reliable.

The ICC analysis was also used to evaluate the ability of the scale to show consistency over time as well as invariance over time. To this purpose, the scale was again applied 4-6 weeks later to 69 students who had already completed the scale. The analyses revealed a reliability level between 0.994 and 0.999. The test-retest reliability is an important metric for showing the extent to which the responses to items on a scale change over time (Burns and Groves, 2003). The results showed that there was perfect consistency between the measurements, that the Debriefing Experience Scale had perfect internal consistency, and that its test-retest reliability was high.

5. CONCLUSIONS

The results obtained in the study revealed that the Turkish version of the Debriefing Experience Scale is valid and reliable and that it can be used in Turkish societies. Further studies can use the Turkish version of the Debriefing Experience Scale with different simulation practices, scenarios, and larger sample sizes and contribute to the results pertaining to the validity and reliability of the scale.

6. REFERENCES

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