



RESEARCH ARTICLE

Validity and reliability of the Turkish version of the Recovery Assessment Scale

Cansu Guler¹ , Ayca Gurkan¹ 

¹Ege University, Nursing Faculty, Department of Mental Health and Psychiatric Nursing, Izmir - Turkey

ABSTRACT

Objective: Globally, the field of mental health services has begun to evolve towards an improvement-focused approach. A valid and reliable measurement tool is needed to evaluate the subjective recovery process and to improve recovery-focused care. The purpose of this study was to assess the validity and reliability of the Turkish version of the Recovery Assessment Scale.

Method: The present work was planned as a methodological study. The survey included 180 individuals with chronic mental illness registered in two Community Mental Health Centers. Content validity, construct validity, and criteria validity were used to assess validity, while internal consistency and stability across time were examined to test reliability.

Results: The content validity index value of the scale was found to be over 0.80. Consequently, confirmatory factor analysis established that the Turkish form of the scale included 5 factors and 24 items, similar to the original version. Examination of criterion-related validity found an excellent positive significant correlation between the Recovery Assessment Scale and the Psychological Well-Being Scale ($r=0.864$, $p<0.01$). Cronbach's alpha value of the scale was 0.90 and the test-retest reliability value was 0.96.

Conclusion: As a result of the validity and reliability analyses, it was determined that the Turkish version of the Recovery Assessment Scale was a valid and reliable scale for evaluating the recovery of individuals diagnosed with mental illness. It may be advisable to test the scale in larger sample groups.

Keywords: Mental illness, recovery, reliability, validity

INTRODUCTION

From the perspective of individuals experiencing mental illness, recovery is defined as a deep and fundamental process that involves changes in their attitudes, values, emotions, goals, skills and roles, allowing them to develop new meaning and goals in life in order to lead a hopeful life within the limitations caused by the illness (1). Recovery is not a new concept in the field of mental health and psychiatry. In clinical trials, the concept of recovery is expressed as the

disappearance or reduction of the illness symptoms (1-3), a turn to the state before the onset of the illness, the absence of clinical hospitalization, and the termination of drug treatment (4). Research shows that the definition of traditional recovery by mental health service providers does not exactly match the definition of personal recovery given by individuals with mental illness (5-7). In the new meaning, recovery focuses not only on the outcome but also on the process and assumes that there will be improvements in the individual's ability to live a better life despite the

How to cite this article: Guler C, Gurkan A. Validity and reliability of the Turkish version of the Recovery Assessment Scale. Dusunen Adam The Journal of Psychiatry and Neurological Sciences 2019;32:309-319.

Correspondence: Cansu Guler, Ege University, Nursing Faculty, Department of Mental Health and Psychiatric Nursing, Izmir - Turkey

Phone: +90 506 823 83 16 **E-mail:** janskyju@gmail.com

Received: April 25, 2019; **Revised:** May 23, 2019; **Accepted:** October 02, 2019

symptoms (1,8). Davidson et al. (9) indicated that individuals in the recovery process should not be expected to return to their pre-morbid conditions, because in that case the individual's gains in the recovery process risk being ignored. In other words, recovery should be understood as the process of controlling an individual's own life, managing the symptoms of illness, and dealing with negative life experiences (5,10).

The concept of current recovery differs from the traditional definition of recovery in many aspects. The recovery process is a journey specific to the individual that always includes backward and forward steps and continues throughout life. In this process, individuals may not be able to cope with the symptoms of illness, but this is considered to be a part of the recovery (1,5,10,11). The contemporary approach focuses on well-being and positive aspects such as empowerment, hope, psychological resilience, life satisfaction, gaining meaning and purpose in life and revealing its potential, developing social skills, and struggling, rather than focusing on deficits such as symptoms and impaired functioning (8,12-14). Differences in the conceptualization of recovery also reveal differences of opinion on how to assess the recovery process (15). The traditional approach to the elimination of symptoms, the return to the state before the onset of the illness, the absence of clinical hospitalization and the termination of medication (4) and the contemporary approach emphasising the well-being and functionality of the individual reflects two different views in the assessment of recovery (16).

In the international literature, the concept of recovery has become the main subject of mental health policies, which has led to the need for measurement tools to evaluate the impact of interventions on recovery (17). This requirement has become even more important because individuals who are diagnosed with mental illness have criticized measurement tools based on the traditional approach on the grounds that they focus on incapability (7,18). This does not mean that evaluations based on the traditional method should be completely abandoned, but on the contrary, it underlines the need to take part in the assessment of the recovery objectives defined by individuals experiencing the illness personally (7). Evaluating recovery only from a traditional perspective, focusing on the disappearance of the symptoms of the illness, means directing patients towards goals that they may not be able to reach during their lifetimes, thus leading to disappointment and despair. Davidson et al. (5) indicated that people's lives

will be interrupted while they wait for the disappearance of symptoms, whereas improving the individual's life in the community and increasing functionality are more important issues. By contrast, the contemporary approach, which is based on people's own recovery goals, ensures that the individuals take an active role in their own recovery process (7,8). For this reason, in order to evaluate the recovery process of individuals diagnosed with mental illness, specific measurement tools are needed that adopt the current recovery approach.

Over the last 20 years, in many countries perspectives that emphasize empowerment and capacity have challenged existing mental health programs and shifted their direction towards recovery-based procedures (19). The use of appropriate assessment tools to measure the impact of transformation interventions on mental health is necessary for a shift from clinical and illness-based measures to recovery and empowerment-oriented psychological assessments (20). In line with this requirement, various recovery-oriented assessment scales have been developed in the literature, and their psychometric properties have been analyzed empirically (7,14,20-22). The lack of a valid and reliable measurement tool to evaluate recovery may have delayed the formation of a basis of evidence that could arise through the evaluation of interventions and practices for recovery in the contemporary meaning of the term. In order to compare the results obtained with this instrument with those found in the international literature and to develop recovery-oriented care, a recovery assessment scale is needed (14). When reviewing the Turkish literature, we did not encounter any scale that evaluated recovery in its contemporary meaning.

The Recovery Assessment Scale (RAS) developed by Corrigan et al. (23) is considered to be a useful instrument for evaluating personal recovery in individuals with a mental illness. With the help of concepts that emphasize empowerment and capacity, the scale provides evidence about the individual's level of recovery. Self-confidence, hope, help-seeking behavior, orientation towards goals and success, perception of social support, and coping with symptoms are among these concepts (23-25). The RAS has been implemented in many countries, thus providing a solid basis for empirical evidence (14,19,26-28). It reflects the perspective of individuals experiencing mental illness and includes many factors that may be associated with recovery (14,22). In addition, the scale is easy to use and generates reliable quantitative data that provides evidence for the development of recovery-oriented mental health services (17,19,22).

The aim of the current study was to develop an equivalent Turkish version of the 24-item RAS through group translation and to evaluate the validity and reliability of this version in people with chronic mental illness in the community and among outpatients in Turkey.

METHOD

This research on the validity and reliability of the Turkish version of the RAS was a methodological study carried out between February and May 2017 in two Community Mental Health Centers (CMHC) in Turkey. Permission was obtained from the owners of the scale for it to be used in this project. Before beginning the study, written permission was obtained from the Ethics Committee of Ege University Nursing Faculty (decision date and number 2016-264) and from the two institutions where the research was carried out. Informed written consent was received from the individuals included in the study.

Participants

The study population consisted of individuals who had been diagnosed with mental illness and registered at two CMHCs (n=770). Of the 260 outpatients who regularly attended the CMHCs and met the inclusion criteria during the research period, 180 individuals gave their written informed consent and were included in the study (69.2%). Inclusion criteria were having had a diagnosis of mental illness for at least one year, being willing to participate in the research, not having a physical disease that would prevent them from responding, not being in an acute phase of the disease, not having been admitted to any psychiatric clinic for at least one year, being able to manage one's medication use, being more than 18 years of age, and not being mentally retarded or diagnosed with dementia. As in the original study of the scale, individuals were not subjected to any cognitive assessment, but individuals who could not read and understand the scale items were not included in the study.

All individuals participating in the study were regular outpatient CMHC users. This institution caters for patients who have completed their treatment, do not need clinical care, and can perform their medical and psychosocial care on their own or with the help of caregivers. All patients were using psychotropic drugs to manage their mental symptoms and their medication regimens were regularly monitored by the CMHC team. Continuous monitoring of medication regimens was

accepted as an indicator of the absence of cognitive and motor dysfunction.

Measures

Demographic Data Collection Form: The demographic data form was prepared by the researchers to collect sociodemographic data such as name, age, gender, marital status, educational status, occupation, income level, and medical history, including diagnosis of mental illness, duration of treatment, history of relapse, number of hospitalizations, and the presence of a physical disease.

Recovery Assessment Scale (RAS): The scale developed by Giffort et al. (29) with 41 items was revised by Corrigan et al. (23,24) to feature 24 items in five subscales. The instrument is a five-point Likert type scale with scores between 1 ("Strongly disagree") and 5 ("Strongly agree"). The names of the subscales and the numbers of items on each subscale are Personal Confidence and Hope [9], Willingness to Ask for Help [3], Goal and Success Orientation [5], Reliance on Others [4] and Not Dominated by Symptoms [3]. With a higher total score obtained from the scale, the perceived level of recovery also increases. The scale has been adapted to many languages in the international literature and has been used in many descriptive and experimental studies (14,19,21,26-31).

Psychological Well-Being Scale (PWS): This scale was developed by Diener et al. (32) and the Turkish validity and reliability study was performed by Telef (33). The scale measures the point of view of positive functions such as proficiency in positive relationships, getting respect, optimism, interest in daily activities, and having a meaningful and purposeful life. The instrument consists of eight-item scored on a 7-point Likert-type scale from 1 ("strongly disagree") to 7 ("strongly agree"). A high score obtained from the scale indicates that the individual has high psychological resources and strength. Cronbach's alpha coefficient of the scale was 0.80 (32).

Procedures

The current study applied a group translation process for the adaptation of the English version of the 24-item RAS to Turkish as will be briefly described here. In the linguistic validation and content validity process, it was taken into account that translation into a different language may compromise the construct intended for measurement purposes because of grammatical differences and accidental changes in the meanings of item statements. The scale was first translated from English to Turkish by five specialists; then, in the second

stage, the scale was translated back to English by two translators whose mother tongue was English. The statements of the scale translated back into English were compared with the statements of the original scale, and after the necessary revisions were made by consulting the owner of the scale, the Turkish version of the scale was established. Then, in line with the literature, multiple specialist opinions were obtained to assess the content validity of the scale (34,35). The scale was reviewed by eight specialists in Mental Health and Psychiatry. Following their advice, the Content Validity Index (CVI) of all items in the scale was evaluated using the Davis technique, which requires the value of the CVI to be 0.80 or above (36). In the current study, the CVI value of all items was above 0.80. Finally, to assess the content validity of the scale, the last version of the instrument was administered to 15 individuals who were not included in the research but who accorded with the characteristics of the sample. These individuals were asked to evaluate the items regarding comprehensibility, fitness for purpose, and readability. As a result of the content validity study, the Turkish form of the RAS (RAS-T) was completed by making minor changes.

Statistical Analysis

For the psychometric assessment of the RAS-T, the scale was first tested for validity. For this purpose, construct validity and criterion-related validity tests were performed. Confirmatory factor analysis (CFA) was used for scale adaptation studies (37,38). Before CFA was carried out, Kaiser-Meyer-Olkin (KMO) sampling proficiency test and Barlett's test of sphericity were used to determine the size, adequacy, and strength of the sample. According to the literature, the result of KMO should be above 0.60-1.00 for the sample to be considered sufficient for CFA (39,40), the result of Barlett's sphericity test value should be $p \leq 0.05$ for the correlation matrix to be suitable for factor analysis (39,40), and the power analysis value to determine the sampling power should be over 80% (39,41).

The CFA was performed using a maximum likelihood estimation method to find the best model fit for the measure. The model adequacy was analyzed by the Comparative Fit Index (CFI > 0.90), Goodness of Fit Index (GFI > 0.90), Adjusted Goodness of Fit Index (AGFI > 0.90), Normed Fit Index (NFI > 0.90), Standardized Root Mean Square Residual (SRMR < 0.1), Root Mean Square Error of Approximation (RMSEA < 0.1), and the chi-square statistic ($\chi^2/df < 5$), which are acceptable indices of fit when used to determine the adequacy of the model of measure

(Table 1) (37,42,43). For criterion-related validity, the relationship between total scores of RAS-T and PWS was examined. For statistical analysis, Pearson product-

Table 1: Participants' sociodemographic and clinical characteristics

Variables	n=180	%
Gender		
Female	72	40.0
Male	108	60.0
Marital status		
Married	50	27.8
Single	106	58.9
Divorced	24	13.3
Education		
Primary school	37	20.6
Secondary/High school	80	44.4
University	63	35.0
Occupational status		
Retired	47	26.1
Officer	27	15.0
Worker	6	3.3
Self-employed	15	8.3
Unemployed	85	47.3
Income		
Low income	45	25.0
Modarete income	120	66.7
High income	15	8.3
Diagnosis		
Schizophrenia	103	57.2
Schizoaffective disorder	14	7.8
Bipolar disorder	28	15.6
Major depression	18	10.0
Anxiety disorder	15	8.4
Other (Eating disorder)	2	1.2
Duration of the treatment		
1-5 years	39	21.7
6-15 years	82	45.5
16-25 years	41	22.8
26 years and over	18	10.0
Relapse	162	90.0
Number of relapses		
1-5 times	116	64.5
6-10 times	22	12.3
More than 10 times	24	13.3
Hospitalization	139	77.2
Physical disease	69	38.3

moment correlation coefficient (r), regression coefficient (β_1) and explanatory coefficient (R^2) were examined. According to the literature, if r is between 0.80 and 1.00 and the R^2 value approaches 1, the relationship between the two variables is strong.

In the second stage of the psychometric assessment of RAS-T, internal consistency and stability across time were examined to test the reliability of the scale. Scale and subscale internal consistencies were assessed using the item-total correlations and Cronbach's alpha reliability coefficient, as this was a Likert-type scale. A high Cronbach's alpha reliability coefficient indicates that the items on the scale are consistent with each other and that the scale is composed of items that measure the same property (39,44,45). Cronbach's alpha coefficient is one of the reliability methods available, but it is not a definitive criterion. Therefore, another internal consistency method, item analysis, was also used in the study. In the literature, if the sample is less than 400, the item-total correlation coefficient value should be 0.30 or above (45,46).

The test-retest method was used to evaluate the stability of the instrument across time: The scale was re-administered to 35 participants two weeks after the first application and the relationship between the measurements was assessed by the Pearson product-moment correlation coefficient (r) method. According to the literature, the correlation coefficient value should not be less than 0.70 and should not take on a negative value (39,45).

For the analysis of demographic data, numerical and percentage distributions and averages were calculated. All analyses were performed using the LISREL v.8.8 and SPSS v.17 statistical packages.

RESULTS

Demographic and Clinical Characteristics

Participants' mean age was 39.7 ± 11.33 years; 60.0% of the individuals ($n=108$) were men, 58.9% ($n=106$) were

single, 44.4% ($n=80$) were secondary or high school graduates, 47.3% ($n=85$) did not work, and 66.7% ($n=120$) had balanced income and expenditures. It was determined that 57.2% ($n=103$) of the individuals had been diagnosed with schizophrenia; 45.5% had been treated for 6-15 years with a mean duration of treatment of 13.02 ± 8.98 years. In 90% ($n=162$) of the subjects who participated in the study, mental illness had relapsed, in 64.5% ($n=116$) 1-5 times; 77.2% ($n=139$) of the individuals had previously been hospitalized at least once due to mental illness, and 38.3% ($n=69$) had a physical disease (Table 1).

Findings Related to Validity Testing

In order to examine the construct validity of the scale, the size, adequacy and power of the sample were determined before the CFA. Kaiser-Meyer-Olkin (KMO) sampling proficiency measurement and the Barlett test of sphericity results were found to be significant (KMO=0.70 $\chi^2=1578$, Df=210, $p<0.001$). Power analysis was performed for the sample, which was found to have a power of 95%. The fit indices and model of the Turkish form of the scale were found as a result of the CFA (Table 2, Figure 1).

Factor loadings related to the items in the Turkish version of the scale are shown in Table 3. The t values of factor loadings of all items in the Turkish version of the scale were statistically significant at the level of $p<0.001$ (Table 3).

For the criterion-related validity study, the relationship between the total scores obtained from the RAS-T and the PWS was investigated. The correlation coefficient was found to be 0.864 ($p<0.001$), indicating a highly significant positive correlation between RAS-T and PWS. In the next step, the regression coefficient (β_1) and explanatory coefficient (R^2) were investigated. The regression coefficient (β_1) was 0.71 and the explanatory coefficient (R^2) was 0.50 ($t=6.53$ $p<0.001$).

Table 2: Confirmatory factor analysis standard fit indices comparison with research findings

Index	Perfect fit criteria	Acceptable compliance criteria	Research findings	Conclusion
χ^2/df	0-3	3-5	1.98	Perfect fit
RMSEA	$0.00 \leq RMSEA \leq 0.05$	$0.05 \leq RMSEA \leq 0.10$	0.07	Good fit
SRMR	$0.00 \leq SRMR \leq 0.05$	$0.05 \leq SRMR \leq 0.08$	0.06	Good fit
GFI	$0.95 \leq GFI \leq 1.00$	$0.90 \leq GFI \leq 0.95$	0.98	Perfect fit
CFI	$0.95 \leq CFI \leq 1.00$	$0.90 \leq CFI \leq 0.95$	1.00	Perfect fit
NFI	$0.95 \leq NFI \leq 1.00$	$0.90 \leq NFI \leq 0.95$	1.00	Perfect fit
AGFI	$0.90 \leq AGFI \leq 1.00$	$0.85 \leq AGFI \leq 0.90$	0.97	Perfect fit

χ^2/df : Chi-square Statistic RMSEA: Root Mean Square Error of Approximation, SRMR: Standardized Root Mean Square Residual, NFI: Normed Fit Index, AGFI: Adjusted Goodness Of Fit Index, GFI: Goodness-of- Fit Index, CFI: Comparative Fit Index

Table 3: Confirmatory factor analysis results of Recovery Assessment Scale

Items	Goal and success orientation	Personal confidence and hope	Not dominated by symptoms	Willingness to ask for help	Reliance on others	Error variance (δ)	t
	Factor loadings (λ_x)						
Item 1	0.44	-	-	-	-	0.23	5.10
Item 2	0.39	-	-	-	-	0.61	4.70
Item 3	0.34	-	-	-	-	0.64	4.32
Item 4	0.40	-	-	-	-	0.22	4.88
Item 5	0.39	-	-	-	-	0.55	4.79
Item 6	-	-	-	-	0.62	0.55	13.00
Item 7	-	0.82	-	-	-	0.52	25.26
Item 8	-	0.76	-	-	-	0.51	23.60
Item 9	-	0.68	-	-	-	0.56	21.59
Item 10	-	0.47	-	-	-	0.75	15.33
Item 11	-	0.69	-	-	-	0.52	21.61
Item 12	-	0.50	-	-	-	0.65	16.13
Item 13	-	0.68	-	-	-	0.45	21.57
Item 14	-	0.65	-	-	-	0.66	20.85
Item 15	-	-	0.94	-	-	0.38	24.06
Item 16	-	-	0.98	-	-	0.17	24.34
Item 17	-	-	0.93	-	-	0.24	23.85
Item 18	-	-	-	0.66	-	0.25	14.09
Item 19	-	-	-	0.74	-	0.25	15.06
Item 20	-	-	-	0.62	-	0.40	13.66
Item 21	-	0.68	-	-	-	0.56	21.68
Item 22	-	-	-	-	0.68	0.50	13.69
Item 23	-	-	-	-	0.60	0.54	12.83
Item 24	-	-	-	-	0.37	0.74	8.66

t values > 1.96, p < 0.05

Findings on Reliability Testing

Cronbach's alpha coefficient was 0.90 for the entire scale. For the subscales, the respective values were 0.84 for Goal and Success Orientation, 0.84 for Personal Confidence and Hope, 0.74 for Reliance on Others, 0.89 for Not Dominated by Symptoms, and 0.87 for Willingness to Ask for Help (Table 4).

The item-total correlation coefficient of the RAS-T, which consisted of 24 items, ranged between $r=0.633$ and $r=0.088$. The item-total score correlation value of 6 items (items 1, 2, 3, 4, 5, and 10) was found to be below 0.30. The item reliability coefficient of 3 of 6 six items (items 2, 3 and 10) was found to be non-significant ($p>0.05$) (Table 5).

The item-subscale total correlation coefficients of all RAS-T items except for one (item 10) were found to be above 0.30 (Table 6).

Table 4: Cronbach's alpha coefficients of the Recovery Assessment Scale and its subscales

Scale and subscales	Cronbach's alpha coefficients
Goal and success orientation	0.84
Personal confidence and hope	0.84
Not dominated by symptoms	0.89
Willingness to ask for help	0.87
Reliance on others	0.74
Recovery Assessment Scale	0.90

To determine test-retest reliability, the scale was re-administered to 35 subjects two weeks after the first run, and results for the two iterations were compared. There was a significant positive correlation between the test-retest scores of the scale and the subscales ($p<0.01$) (Table 7).

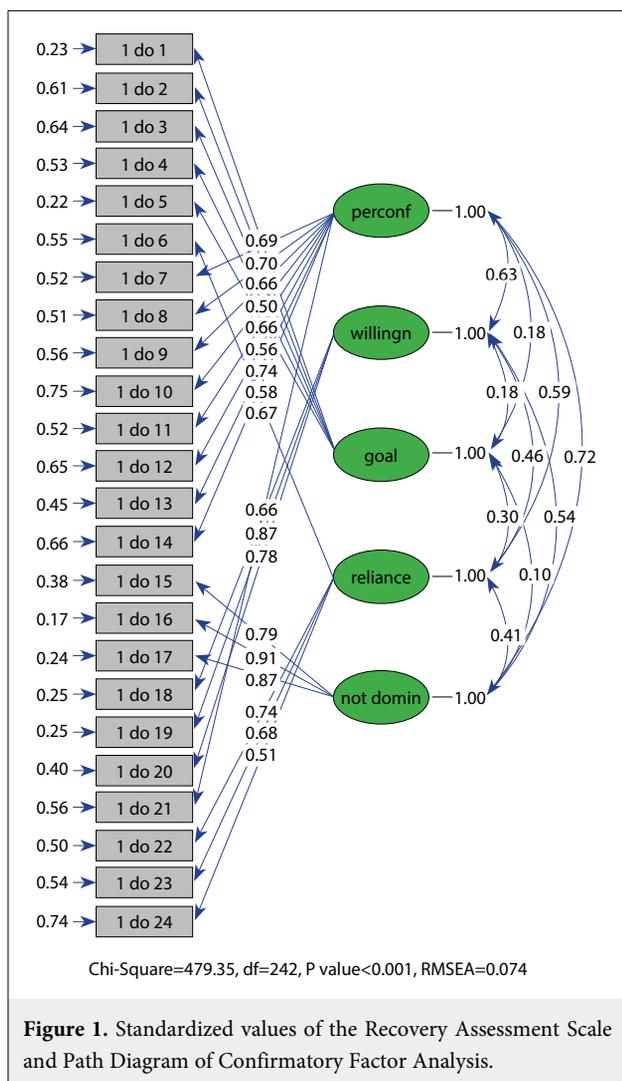


Table 5: Recovery Assessment Scale Item-Total Correlations

Items	Item-total correlation coefficients (r)	p
Item 1	0.198	0.008
Item 2	0.088	0.242
Item 3	0.141	0.059
Item 4	0.161	0.031
Item 5	0.188	0.011
Item 6	0.459	<0.001
Item 7	0.608	<0.001
Item 8	0.620	<0.001
Item 9	0.557	<0.001
Item 10	0.125	0.094
Item 11	0.615	<0.001
Item 12	0.530	<0.001
Item 13	0.633	<0.001
Item 14	0.535	<0.001
Item 15	0.586	<0.001
Item 16	0.626	<0.001
Item 17	0.596	<0.001
Item 18	0.567	<0.001
Item 19	0.570	<0.001
Item 20	0.511	<0.001
Item 21	0.590	<0.001
Item 22	0.466	<0.001
Item 23	0.489	<0.001
Item 24	0.367	<0.001

DISCUSSION

The Turkish version of RAS showed overall good factor structure, criterion-related validity, reasonable internal consistency reliability, and high overall test-retest reliability among people with chronic mental illness in community mental health settings.

To evaluate construct validity of RAS-T, factor analysis was used. Before CFA, the KMO value was found to be within the accepted limits for the adequacy of the sample (39,40). In addition, the preferred result was reached for the Barlett’s sphericity test value for the correlation matrix indicating suitability for factor analysis ($p < 0.001$). As a result of the power analysis, it was concluded that the sample had a power of 95% and was suitable for CFA ($p < 0.001$) (39,41).

In the construct validity test, fit indices are used in the implementation of CFA. In this test, the model to be tested for CFA analysis was established to consist of five

factors, similar to the original scale. After the five-factor structural model was tested, the CFA indicated that this extracted factor structure fitted the data reasonably well. Fit index values (χ^2/df , CFI, GFI, AGFI, NFI, RMSEA and SRMR) of the model reached the recommended standard (37,42,43,47). According to these results, the model tested was compatible with the original model. The CFAs also showed that factor structures reported earlier in other languages also fitted the data almost to the same degree or better (GFI=0.82, AGFI=0.77, CFI=0.80, RMSEA=0.08 for those in the US study; GFI=0.81, AGFI=0.77, CFI 0.80, RMSEA=0.08 for those in the Australian study, $\chi^2/df=1.759$, CFI=0.913, GFI=0.874, RMSEA=0.06 for those in the Portuguese study) (19,24,28).

In our study, the t values of factor loadings of all items were higher than the accepted value of 1.96, and these values were statistically significant at a level of

Table 6: Item-Subscale Total Score Correlations

Items	Goal and success orientation	Personal confidence and hope	Not dominated by symptoms	Willingness to ask for help	Reliance on others
	Item-subscale total correlation coefficients (r)				
Item 1	0.777	-	-	-	-
Item 2	0.615	-	-	-	-
Item 3	0.522	-	-	-	-
Item 4	0.570	-	-	-	-
Item 5	0.806	-	-	-	-
Item 6	-	-	-	-	0.580
Item 7	-	0.605	-	-	-
Item 8	-	0.679	-	-	-
Item 9	-	0.591	-	-	-
Item 10	-	0.078*	-	-	-
Item 11	-	0.671	-	-	-
Item 12	-	0.564	-	-	-
Item 13	-	0.690	-	-	-
Item 14	-	0.523	-	-	-
Item 15	-	-	0.764	-	-
Item 16	-	-	0.805	-	-
Item 17	-	-	0.790	-	-
Item 18	-	-	-	0.716	-
Item 19	-	-	-	0.773	-
Item 20	-	-	-	0.795	-
Item 21	-	0.512	-	-	-
Item 22	-	-	-	-	0.527
Item 23	-	-	-	-	0.589
Item 24	-	-	-	-	0.441

* p>0.05

Table 7: Correlation analysis results of test-retest scores of Recovery Assessment Scale and subscales (n=35)

Correlations between first and second administration of subscale and total score of scale	Test-retest	p
Correlation coefficients (r)		
Goal and success orientation	0.86	<0.001
Personal confidence and hope	0.91	<0.001
Not dominated by symptoms	0.90	<0.001
Willingness to ask for help	0.75	<0.001
Reliance on others	0.88	<0.001
Recovery Assessment Scale	0.96	<0.001

p<0.05 (39). It was seen that there were acceptable factor loading values for each item on the scale based on these data. According to this result, CFA confirmed that the extracted factor structure fitted the data as well

as the original of the scale with five subscales and 24 items (24). CFA showed that the factor structure found in this sample was similar to those reported in previous studies in the US and Australia (24,28).

In the original RAS, scales evaluating psychological well-being such as an empowerment scale or a scale assessing the meaning of life, a hope index, and a subjective quality of life scale were used in order to test criterion-related validity (23,24). Since an increase in the number of items in the scale would affect the reliability of the results, we preferred to use the short Psychological Well-Being Scale (PWS) which covers all of these factors (33). The relationship between the total score of the RAS-T and the total score of the PWS in the first step was thus analyzed by calculating the Pearson product-moment correlation coefficient (r) (39). This value was found to be 0.864 (p<0.001), with

a significant positive, meaningful and perfect relationship between the total scores of RAS-T and PWS. The well-being score strongly and positively correlated with the total RAS-T score. As described above, well-being has been regarded as a component of recovery (14). This result remained valid according to the regression analysis which tested the criterion-related validity. The regression coefficient and the explanatory coefficient (R^2) were calculated in the second step for the criterion-related validity. According to these findings, it was concluded that the scores of the RAS-T were a statistically significant predictor of PWS scores ($\beta_1=0.71$, $t=6.53$, $p<0.001$) (39,48). It was observed that according to the explanatory coefficient ($R^2=0.50$), the scores obtained from RAS-T explained 50% of the variance in the PWS scores. The findings of the study support the predictive validity of the RAS-T through methods of criterion-related validity.

Cronbach's alpha coefficients of the total scale and its five subscales exceeded 0.74, indicating good internal consistency and reliability of the RAS-T. This finding is comparable to previous observations that Cronbach's alpha coefficients were greater than 0.70 in the US, Australia, and Japan (19,24,26,28).

Item-total correlation values ranged between 0.088 and 0.633, and the item-total correlation of the six items (1,2,3,4,5 and 10) was below the expected value (39). However, p values calculated for the item-total correlation of all items except items 2, 3, and 10 were found to be statistically significant ($p<0.05$). Sencan (45) stated that if the scale is a battery consisting of subscales, item-total correlation values may be lower than the preferred value for many items in the scale, and therefore the item analysis should be performed in the context of the subscale total scores. Based on this knowledge, the item-subscale total correlation was investigated. Only one item (item 10) was found to be below the acceptable lower limit ($r=0.078$, $p>0.05$); however, all other item values were found to be within the preferred range ($p<0.05$) (44). While these findings can be interpreted with a low sample size, they may also be related to the situation measured by the scale item. Karakoc et al. (49) stated that reliability may be low in scales used to evaluate abstract features. However, correlation value of item 10 should be interpreted with caution because of this expression.

In studies adapting a previously developed scale to another culture, on occasion item removal is applied in case of low factor loadings or low internal consistency

levels (23,24,27). Cum and Koc (38) stated that the item extraction method changed the factor structure of the scale: Removing an item from the original form transformed the scale into a different one. In the present study, where linguistic validation and content validity studies were carried out meticulously by asking the opinion of the owner of the original scale, it was decided to maintain the conceptual structure by keeping the critical item on the scale, given that item 10 measures a critical behavior and the item factor load was within the accepted range. Future analysis of the RAS-T could also focus on a possible reduction of the 24-item version to a 23-item scale.

For test-retest reliability, the relationship between the results of the first and second measurements was analyzed by calculating the Pearson moments product correlation coefficient (r). According to the literature, the correlation coefficient value should not be less than 0.70 and it should not take on a negative value (39,45). In the study, the scale was re-administered to 35 individuals 15 days after the first run and the measurement results were compared. Test-retest correlation coefficients for the total scale and all subscales (r) were between 0.75 and 0.96. These values were in the range accepted by the literature ($p<0.01$) (Table 5). It was proved with the correlation values obtained that the scale did not vary with time. Internal consistency and stability across time, which were examined for reliability testing, showed that RAS-T was a reliable measurement tool.

The research has some limitations. Because of the lack of a valid and reliable scale that can be used to evaluate the recovery process of individuals diagnosed with mental illness in Turkey at the date of this study, PWS, which is considered to be closely related with RAS-T, was used. In the current study, the lack of an equivalent recovery scale was a limitation, as was the fact that the targeted number of samples (10 times the number of items) could not be reached as not all of the registered patients continued to attend the CMHCs.

In sum, the RAS-T consists of five subscales and 24 items. As a result of psychometric studies, the Turkish version of RAS is proven to be a valid and reliable measurement tool. A few suggestions can be made for future studies. Firstly, it is recommended that the item-total correlation of item 10 should be revised by applying the scale in a wider sample. Secondly, it was not clear how the factor structure of the RAS-T items was different for community and inpatient ward settings, which should be examined in further research to determine how treatment settings affect the results.

Contribution Categories		Author Initials
Category 1	Concept/Design	C.G., A.G.
	Data acquisition	C.G., A.G.
	Data analysis/Interpretation	C.G., A.G.
Category 2	Drafting manuscript	C.G., A.G.
	Critical revision of manuscript	C.G., A.G.
Category 3	Final approval and accountability	C.G., A.G.
Other	Technical or material support	C.G., A.G.
	Supervision	A.G.

Acknowledgements: Thanks to Prof. Dr.Tuncay Ogretmen who conducted the statistical analysis of the research.

Ethics Committee Approval: This study was approved by the Ethics Committee of Ege University Nursing Faculty (decision date and number 2016-264) and from the two institutions where the research was carried out.

Informed Consent: Written informed consent was obtained from the patients.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

Financial Disclosure: None declared.

REFERENCES

- Anthony WA. Recovery from mental illness: the guiding vision of the mental health service system in the 1990s. *Psychiatr Rehabil J* 1993; 16:11-23. [CrossRef]
- Jacobson N, Greenley D. What is recovery? A conceptual model and explication. *Psychiatr Serv* 2001; 52:482-485. [CrossRef]
- Whitwell D. The myth of recovery from mental illness. *Psychiatric Bulletin* 1999; 23:621-622. [CrossRef]
- Harding CM, Zahniser JH. Empirical correction of seven myths about schizophrenia with implications for treatment. *Acta Psychiatr Scand* 1994; 90 (Suppl.384):140-146. [CrossRef]
- Davidson L, O'Connell MJ, Tondora J, Lawless M, Evans AC. Recovery in serious mental illness: a new wine or just a new bottle? *Prof Psychol Res Pr* 2005; 36:480-487. [CrossRef]
- Soygur H, Yuksel MM, Eraslan P, Attepe Ozden S. Lessons learned from experiencing Mavi At Café (Blue Horse Café) during six years: a qualitative analysis of factors contributing to recovery from the perspective of schizophrenia patients. *Turk Psikiyatr Derg* 2017; 28:75-80. (Turkish) [CrossRef]
- Andresen R, Caputi P, Oades LG. Do clinical outcome measures assess consumer-defined recovery? *Psychiatry Res* 2010; 177:309-317. [CrossRef]
- Davidson L. Recovery, self management and the expert patient: changing the culture of mental health from a UK perspective. *J Ment Health* 2005; 14:25-35. [CrossRef]
- Davidson L, Strauss JS. Sense of self in recovery from severe mental illness. *Br J Med Psychol* 1992; 65:131-145. [CrossRef]
- Watkins PN. *Recovery: A Guide for Mental Health Practitioners*. Edinburgh: Churchill Livingstone/Elsevier, 2007, 29-30.
- Deegan PE. Recovery: The lived experience of rehabilitation. *Psychiatr Rehabil J* 1988; 11:11-19. [CrossRef]
- Onken SJ, Craig CM, Ridgway P, Ralph RO, Cook JA. An analysis of the definitions and elements of recovery: a review of the literature. *Psychiatr Rehabil J* 2007; 31:9-22. [CrossRef]
- Ralph RO. Recovery. *Am J Psychiatr Rehabil* 2000; 4:480-517.
- Scheyett A, Deluca J, Morgan C. Recovery in severe mental illnesses: a literature review of recovery measures. *Soc Work Res* 2013; 37:286-303. [CrossRef]
- Lieberman RP. *Recovery from Disability: Manual of Psychiatric Rehabilitation*. Yildiz M (Translation Editor). *Turkiye Sosyal Psikiyatri Dernegi*, 2011, 16-19. (Turkish)
- Cohen AN, Hamilton AB, Saks ER, Glover DL, Glynn SM, Brekke JS, Marder SR. How occupationally high-achieving individuals with a diagnosis of schizophrenia manage their symptoms. *Psychiatr Serv* 2017; 68:324-329. [CrossRef]
- Shanks V, Williams J, Leamy M, Bird VJ, Le Boutillier C, Slade M. Measures of personal recovery: a systematic review. *Psychiatr Serv* 2013; 64:974-980. [CrossRef]
- Andresen R, Oades L, Caputi P. The experience of recovery from schizophrenia: towards an empirically validated stage model. *Aust N Z J Psychiatry* 2003; 37:586-594. [CrossRef]
- Jorge-Monteiro MF, Ornelas JH. Recovery assessment scale: testing validity with Portuguese community-based mental health organization users. *Psychol Assess* 2016; 28:e1-11. [CrossRef]
- Nelson G, Kloos B, Ornelas J. *Community Psychology and Community Mental Health: Towards Transformative Change*. New York: Oxford University Press, 2014. [CrossRef]
- Sklar M, Groessl EJ, O'Connell M, Davidson L, Aarons GA. Instruments for measuring mental health recovery: a systematic review. *Clin Psychol Rev* 2013; 33:1082-1095. [CrossRef]
- Burgess P, Pirkis J, Coombs T, Rosen A. Review of recovery measures. Australian Mental Health Outcomes and Classification Network 2010. {https://www.mentalhealth.va.gov/communityproviders/docs/review_recovery_measures.pdf. Accessed [04.01.2018]}.
- Corrigan PW, Gifford D, Rashid F, Leary M, Okeke I. Recovery as a psychological construct. *Community Ment Health J* 1999; 35:231-239. [CrossRef]
- Corrigan PW, Salzer M, Ralph RO, Sangster Y, Keck L. Examining the factor structure of the recovery assessment scale. *Schizophr Bull* 2004; 30:1035-1041. [CrossRef]
- Corrigan PW. A toolkit for evaluating programs meant to erase the stigma of mental illness. 2012. {<https://www.montefiore.org/documents/Evaluating-Programs-Meant-to-Erase-the-Stigma-of-Mental-Illness.pdf>. Accessed [22.06.2016]}.
- Chiba R, Miyamoto Y, Kawakami N. Reliability and validity of the Japanese version of the Recovery Assessment Scale (RAS) for people with chronic mental illness: scale development. *Int J Nurs Stud* 2010; 47:314-322. [CrossRef]
- Cavelti M, Wirtz M, Corrigan P, Vauth R. Recovery Assessment Scale: examining the factor structure of the German version (RAS-G) in people with schizophrenia spectrum disorders. *Eur Psychiatry* 2017; 41:60-67. [CrossRef]

28. McNaught M, Caputi P, Oades LG, Deane FP. Testing the validity of the recovery assessment scale using an Australian sample. *Aust N Z J Psychiatry* 2007; 41:450-457. [\[CrossRef\]](#)
29. Giffort D, Schmook A, Woody C, Vollendorf C, Gervain M. Construction of a scale to measure consumer recovery. Springfield, IL, Illinois Office of Mental Health, 1995
30. Biringer E, Tjoflat M. Validation of the 24-item recovery assessment scale-revised (RAS-R) in the Norwegian language and context: a multi-centre study. *Health Qual Life Outcomes* 2018; 16:23. [\[CrossRef\]](#)
31. Mak WW, Chan RC, Yau SS. Validation of the recovery assessment scale for Chinese in recovery of mental illness in Hong Kong. *Qual Life Res* 2016; 25:1303-1311. [\[CrossRef\]](#)
32. Diener E, Wirtz D, Biswas-Diener R, Tov W, Kim-Prieto C, Choi DW, Oishi S. New Measures of Well-Being: In Diener E (editor). *Assessing Well-Being. Social Indicators Research Series 39*. Dordrecht: Springer Science and Business Media, 2009, 247-266.
33. Telef BB. The adaptation of [the] psychological well-being [scale] into Turkish: a validity and reliability study. *Hacettepe Universitesi Egitim Fakultesi Dergisi* 2013; 28:374-384. (Turkish)
34. Buyukozturk S. *Handbook of Data Analysis for Social Sciences: Statistics, Study Design, SPSS Applications, and Interpretation*. Ankara: Pegem Akademi, 2014. (Turkish)
35. Aker S, Dundar C, Pekfien Y. Two vital concepts of measurement instruments: validity and reliability. *Ondokuz Mayis Universitesi Tip Dergisi* 2005; 22:50-60. (Turkish)
36. Yurdugul H. Use of content validity indices in the development of measurement instruments. XIV National Congress of Educational Sciences Proceeding Book 2005; 771-774. (Turkish)
37. Erkorkmaz U, Etikan I, Demir O, Ozdamar K, Sanisoglu SY. Confirmatory factor analysis and fit indices: review. *Turkiye Klinikleri* 2013; 33:210-223. (Turkish) [\[CrossRef\]](#)
38. Cum S, Koc N. The review of scale development and adaptation studies which have been published in psychology and education journals in Turkey. *Egitim Bilim ve Uygulama* 2013; 12:115-135. (Turkish)
39. Alpar R. *Applied Statistics and Validity-Reliability: With Examples from Sports, Health, and Educational Sciences*. Ankara: Detay Yayıncılık, 2016. (Turkish)
40. Hadi NU, Abdullah N, Sentosa I. An easy approach to exploratory factor analysis: marketing perspective. *Journal of Educational and Social Research* 2016; 6:215-223.
41. Capik C. Use of confirmatory factor analysis in validity and reliability studies. *Anadolu Hemsirelik ve Saglik Bilimleri Dergisi* 2014; 17:196-205. (Turkish)
42. Schumacker RE, Lomax RG. *A Beginner's Guide to Structural Equation Modeling*. Third Ed., New York: Routledge/Taylor and Francis Group, 2010.
43. Kline RB. *Principles and Practice of Structural Equation Modeling*. Third ed., London: The Guilford Press. 2011.
44. Gozum S, Aksayan S. A guide for transcultural adaptation of the scale II: psychometric characteristics and cross-cultural comparison. *Hemsirelikte Arastirma Gelistirme Dergisi* 2003; 1:3-14. (Turkish)
45. Sencan H. *Reliability and Validity in Social and Behavioral Measurement Instruments*. First ed., Ankara: SeckinYayıncılık, 2005. (Turkish)
46. Cam MO, Baysan Arabaci L. Qualitative and quantitative steps on attitude scale construction. *Hemsirelikte Arastirma Gelistirme Dergisi* 2010; 12(2):59-71. (Turkish)
47. Celik HE, Yilmaz V. *Structural Equation Modeling with LISREL 9.1, Basic Concepts – Applications – Programming*. Ankara: Ani Yayıncılık, 2013. (Turkish)
48. Kilic S. Interpretation of correlation analysis results. *Journal of Mood Disorders* 2012; 2:191-3. (Turkish) [\[CrossRef\]](#)
49. Karakoc FY, Donmez L. Basic principles of scale development. *Tip Egitimi Dunyasi Dergisi* 2014; 39-49. (Turkish) [\[CrossRef\]](#)