



ORIGINAL ARTICLE

Turkish adaptation of the reproductive autonomy scale: Validity and reliability study

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Abstract

Objective: This study aimed to determine the validity and reliability of the reproductive autonomy scale by adapting it to Turkish society.

Materials and Methodology: Designed with a methodological method, the study was conducted with an online form created by using Google Forms with 308 married women of reproductive age between the ages of 15 and 49 who use WhatsApp or Instagram. The cultural adaptation process of the scale was carried out in three stages: language validity, content validity, and pilot application. Exploratory and confirmatory factor analysis was used to test the scale's construct validity. The scale's reliability was evaluated using Cronbach's α internal consistency coefficient and test–retest analyses.

Findings.: As a result of the exploratory factor analysis conducted in the study, it was determined that reproductive autonomy scale (RAS) consists of 14 items and 3 subscales. Good fit index values were obtained in confirmatory factor analysis. Cronbach's α internal consistency coefficients for the RAS total and subscale were found to be 0.66, 0.64, 0.89, and 0.92, respectively. Additionally, test–retest analysis of the scale was determined to have a high correlation.

Conclusion: The reproductive autonomy scale is a valid and reliable measurement tool for measuring the reproductive autonomy of Turkish society.

KEYWORDS

family planning, gynecology, sexuality/sexual dysfunction

INTRODUCTION

Reproductive autonomy means that the individual has a say in contraceptive use, pregnancy, and having children, free from all kinds of pressure and violence.^{1,2} Although reproductive autonomy is a human right, individuals may face restrictions and pressure regarding exercising their reproductive rights.^{1,3,4} Although violation of reproductive autonomy can occur in both genders, it is pointed out in the literature that traditionally, reproductive pressure is applied to women by men.^{4,5} It is stated that the prevalence of reproductive pressure in women varies between 9% and 74%. Obstacles against women's reproductive autonomy include hiding contraceptive methods, restricting women's access to family planning services, making holes in condoms, forcing women to get pregnant, and using violence.^{6–8} These

emerging situations cause severe consequences in women, such as unwanted pregnancy, abortion, sexually transmitted infection, adverse pregnancy outcomes, and psychological trauma, which endanger the health of the woman and the baby.^{4,6,9,10}

Consequently, reproductive autonomy is an issue that needs to be emphasized because it affects the health of both the woman and the baby. Therefore, there is a need for measurement tools to evaluate reproductive autonomy in women. Uphaday et al. developed the “Reproductive Autonomy Scale (RAS)” to measure reproductive autonomy in women. The scale includes decision-making, communication, and freedom from coercion regarding reproductive autonomy. In this context, this study was conducted to determine the validity and reliability of the RAS developed by Uphaday et al. by adapting them to Turkish society.²

METHODS

Type of the study

The methodological study was carried out to determine the validity and reliability of the RAS for Turkish society.

Universe and sample

The study universe consisted of all married women of reproductive age between 15 and 49 who used WhatsApp or Instagram between April 20, 2023, and June 30, 2023. To apply factor analysis, less than 100; mid 200, better than 300; 500 is very good; 1000 people and more are perfect.¹¹ The sample size was determined in line with this scope and aimed to include 300 people in the study. The snowball sampling method was used to reach the targeted sample size, and women contacted online were asked to send the research link to other women they knew who met the research criteria. Thus, the study was completed with 308 married women between the ages of 15 and 49 who are of reproductive age and use WhatsApp or Instagram. Criteria for inclusion in the study are; being 18 years of age or older, using WhatsApp or Instagram, being married and sexually active (having experienced at least one vaginal penetration in the last month), not having undergone surgical or natural menopause, and not having had a tubal ligation procedure.

Data collection method and tools

The research was conducted on an online platform. Data collection forms were created via Google Forms, the research link was shared via Instagram and WhatsApp, and married women between the ages of 15 and 49 were invited to the research.

The “Personal Introduction Form” and the Turkish form of the “Reproductive Autonomy Scale” created by the researchers were used in collecting data.

The Personal Introduction Form: created by the researchers as a total of 12 questions, the form includes questions determining women’s sociodemographic and family planning characteristics.

Reproductive autonomy scale

This scale was developed by Upadhyay et al. to evaluate women’s reproductive autonomy. This scale assesses a woman’s power to control contraceptive use, pregnancy, and childbearing.² It consists of 14 items and 3 subscales. In the scale, the subdimensions of freedom from coercion (5–9) and the communication subdimension (10–14) comprised of five items, and the decision-making subscale consists of four items (1–4) is formed. The subscale of

freedom from coercion is coded as a reverse item. The scale measured mean score and higher score indicating higher levels of reproductive autonomy—decision-making subscale three Likert type and coercion and communication subscales four Likert type. The total Cronbach’s alpha value of the scale is 0.78, freedom from coercion is 0.82, communication is 0.74, and the Cronbach’s alpha value of the decision-making subdimension is 0.74.

Cultural adaptation studies of the scale

The cultural adaptation process of the scale includes language validity, content validity, and pilot application stages. During the language validity phase, the “Reproductive Autonomy Scale” was translated from English to Turkish by the researchers and two sworn translators. Then, a typical text was prepared by selecting the most appropriate expressions from the translations. The prepared standard text was sent to a linguist and compared with the original scale. In the comparison made by the linguist, it was determined that the meanings of the scale items were preserved, and the language validity was completed. After language suitability was determined, the content validity stage was started. At this stage, the obtained Turkish scale and the original scale items were sent to 10 academic experts in the field, along with the content validity form. Experts were asked to score the scale items between 1 and 4 (“1: not suitable,” “2: it needs to be made suitable,” “3: suitable,” “4: very suitable”). The content validity index (CVI) was calculated based on the evaluations from experts. The Davis technique obtained the CVI value. According to the Davis technique, the CVI score of each item should be between 0.8 and 1.0.^{12,13} It was determined that the CVI value of each item in the scale was 0.8 and above. In the final stage of cultural adaptation, the scale was piloted. In the pilot application, the scale was sent via WhatsApp to 20 women who met the inclusion criteria of the sample group, and these people were asked to read the items and interpret the expressions that were not understood. Twenty women who evaluated the scale items stated that no items in the scale were not understood. For this reason, no changes were made to the scale items, and the scale was given its final form. In addition, the results of the women who participated in the pilot application were not included in the sample.

Evaluation and statistical analysis

Research data were evaluated with SPSS (Statistical Package for Social Sciences) for Windows 25.0 and Amos 22.0 programs. The number, percentage, mean, standard deviation, the Kaiser–Mayer–Olkin Index (KMO), and Bartlett’s sphericity test were used when

evaluating the data. The literature recommends that the KMO value be 0.5 and above, and values between 0.8 and 0.9 are stated to be appropriate. Additionally, due to Bartlett's sphericity test, significance is expected to be <0.05 .¹⁴ Cronbach's alpha coefficient and item-total score correlation were used to test the reliability of the scales, and exploratory factor analysis (EFA) and confirmatory factor analysis were performed to test construct validity. Pearson correlation coefficient was used to compare RAS total scores obtained by the test-retest method.

Ethical considerations

In order to conduct the research, permission was first obtained from the original scale author via e-mail. Ethics committee approval for the study was received from İnönü University (2023/4547). Before starting the survey, information about the purpose and content of the study and a consent tab stating that participation was voluntary were included. The consent of those who accepted after reading the informed consent was obtained before the survey by clicking the "I have read and agree to participate in the study" tab.

RESULTS

It was determined that the average age of the women was 31.73 ± 6.59 , the average duration of marriage was 7.98 ± 7.17 , the number of children was 1.84 ± 1.09 , and the duration of using family planning methods was 40.47 ± 40.92 months. It was found that 70.1% of the women had a university education or higher, 63.0% were working, 61.7% had an income equal to their expenses, and 23.4% lived in the Eastern Anatolia Region. When looking at the characteristics of women regarding family planning, it was determined that 66.6% used a family planning method, 51.7% of those who used the method used condoms, and 90.2% were satisfied with the method (Table 1).

As a result of the analysis of the data, the KMO value was found to be 0.827, and the chi-square value using the Bartlett Sphericity test was $\chi^2 = 2561.068$, $p < 0.05$ (Table 2). The scale has 14 items and a 3-factor structure, and this 3-factor structure explains 66.43% of the total variance. Considering the sub-dimension and absolute reliability of the scale, it was determined as 0.64, 0.89, 0.92, and 0.66 for the overall scale, respectively. The subscale of the scale, decision-making, freedom from coercion, and communication, were determined as 2.23 ± 0.34 , 3.60 ± 0.53 , and 2.90 ± 0.91 , respectively, and the total score of the scale was determined as 2.91 ± 0.40 (Table 2).

Model for factor analysis of the reproductive autonomy scale (Figure 1).

TABLE 1 Descriptive statistics and distribution of participants in the study according to their sociodemographic and family planning characteristics ($N = 308$).

Variables	\bar{X}	SD (Standard Deviation)	
Age	31.73	6.59	
Marriage duration/year	7.98	7.17	
Number of children ($n = 225$)	1.84	1.09	
Family planning duration/month ($n = 205$)	40.47	40.92	
Variables	n	%	
Educational level	Literate	5	1.6
	Primary education	28	9.1
	High school	59	19.2
	University and higher	216	70.1
Employment status	Employed	194	63.0
	Unemployed	114	37.0
Income status	Income is less than expenses	82	26.6
	Income equals expenses	190	61.7
	More income than expenses	36	11.7
Region of residence	Mediterranean	36	11.7
	Aegean	29	9.4
	Marmara	51	16.6
	Black Sea	22	7.1
	Central Anatolia	34	11.0
	Eastern Anatolia	72	23.4
Family planning usage status	Southeastern Anatolia	64	20.8
	Uses	205	66.6
	Not using	65	21.1
	Used it in the past but doesn't use it now	38	12.3
Family planning method used	IUD (Intrauterine Device)	38	18.5
	Condom	106	51.7
	Birth control pill	16	7.8
	Withdrawal	36	17.6
	Calendar	9	4.4
Satisfaction status with the method used	Yes	185	90.2
	No	20	9.8

As a result of confirmatory factor analysis, It was determined that $\chi^2 = 181.683$, $df = 74$, root mean square error of approximation (RMSEA) = 0.06, goodness of fit index (GFI) = 0.92, cognitive flexibility inventory (CFI) = 0.95, and incremental fit index (IFI) = 0.83 (Table 3).

As a result of the Pearson correlation analysis performed to determine the test–retest reliability of the scale, there is a significant positive relationship ($r = 0.876$, $p < 0.05$) (Table 4).

TABLE 2 Distribution of reproductive autonomy, item total correlations and factor analysis.

Scales	F1	F2	F3	Mean (SD)	Total correlation
Decision-making; mean 2.23 ± 0.34					
Item 1	0.803			2.28 (0.50)	0.041
Item 2	0.786			2.28 (0.53)	0.060
Item 3	0.625			2.18 (0.50)	0.069
Item 4	0.508			2.18 (0.45)	0.065
Freedom from coercion; mean 3.60 ± 0.53					
Item 5		0.893		1.41 (0.63)	0.541
Item 6		0.886		1.44 (0.64)	0.507
Item 7		0.759		1.31 (0.55)	0.522
Item 8		0.823		1.42 (0.69)	0.389
Item 9		0.775		1.36 (0.64)	0.425
Communication; mean 2.90 ± 0.91					
Item 10			0.738	2.75 (1.14)	0.574
Item 11			0.886	2.90 (1.06)	0.674
Item 12			0.922	2.96 (1.02)	0.703
Item 13			0.929	3.06 (1.02)	0.725
Item 14			0.826	2.81 (1.03)	0.635
Validity	0.64	0.89	0.92		0.66
Variance	%13.9	%25.13	%27.3		%66.43
KMO = 0.827; $\chi^2(136) = 2561.068$; Bartlett's test of sphericity ($p = 0.000$)					

Abbreviation: KMO, Kaiser–Mayer–Olkin.

DISCUSSION

Reproductive autonomy is a public health problem that needs to be emphasized. Our study determined that the scores women received from the reproductive autonomy scale and its subscales ranged between 2.23 ± 0.34 and 3.60 ± 0.53 . The lowest mean score was taken from the decision sub-dimension, while the highest was from the pressure sub-dimension. In studies conducted in the United Kingdom and Brazil, the scores obtained from the scale and its subscale were 2.49 ± 0.35 and 3.88 ± 0.3 , respectively. It varies between 2.45 ± 0.45 and 3.08 ± 0.59 . The average scores obtained differ from our study. It is thought that this difference is due to the sample being different. However, in both studies, the lowest mean score was taken from the decision sub-dimension, while the lowest was from the decision sub-dimension. In this respect, it also contains findings parallel to our study.^{15,16}

This study evaluated the Turkish validity and reliability of a measurement tool needed to evaluate reproductive autonomy in women. In this context, first of all, the stages of translation, expert opinion, and pilot application, which are the steps for the cultural adaptation of the scale, were carried out. Linguists and researchers translated and then sent to 10 academics who are experts in the field, and CVI was calculated according to the Davis technique. According to the Davis technique, the CVI score of each item should be between 0.8 and 1.0.^{12,13} In line with expert opinions, it was determined that the CVI score of each item on the scale varied between 0.8 and 1.0. As a result of the pilot application, it was determined that there were no items in the scale that were not understood, and thus, the language validity of the Turkish form of the scale was completed.

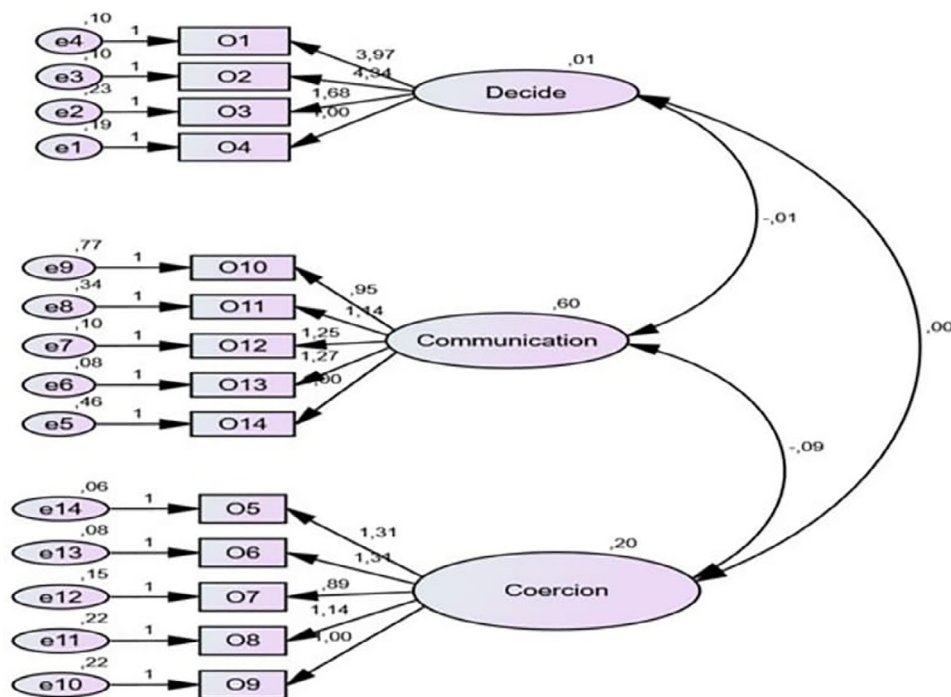


FIGURE 1 Model for factor analysis of the reproductive autonomy scale.

TABLE 3 CFA goodness of fit (GFI) indices of RAS.

	Structural equation modeling variables	Suggested variables
χ^2/df	2.455	≤ 5
RMSEA	0.06	≤ 0.08
GFI	0.92	≥ 0.90
CFI	0.95	≥ 0.90
IFI	0.83	≥ 0.80
$\chi^2: 181.683, df: 74, p: <0.05$		

Abbreviations: CFA, confirmatory factor analysis; CFI, cognitive flexibility inventory; GFI, goodness of fit index; IFI, incremental fit index; RAS, reproductive autonomy scale; RMSEA, root mean square error of approximation.

TABLE 4 Correlation analysis of test–retest scores of RAS.

	Before	After
Before	1.000	0.876
<i>p</i>	-	0.000*
After	0.876	1.000
<i>p</i>	0.000*	-

Abbreviation: RAS, reproductive autonomy scale.

**p* < 0.05.

Explanatory and confirmatory factor analyses were applied to statistically determine the structural validity of the scale. Before applying factor analyses, KMO and Bartlett sphericity tests were performed to determine the suitability of the data set and sample for analysis. The literature recommends that the KMO value be 0.5 and above, and values between 0.8 and 0.9 are stated to be appropriate. Additionally, due to Bartlett's sphericity test, significance is expected to be <0.05.¹⁴ As a result of the analyses, the KMO value was found to be 0.82, and the Bartlett sphericity test statistic resulted in a χ^2 value of 2561.068 (*p* < 0.05). It was determined that both the data set and the sample were suitable for factor analysis.

Explanatory factor analysis was first applied to the data set suitable for factor analysis. As a result of explanatory factor analysis, it is known that the cut-off point for the factor loadings of the items should be more than 0.30 or 0.40, but it is more accepted that it is higher than 0.40.¹⁷ As a result of the analysis, it was determined that the factor loadings of the items in the scale varied between 0.50 and 0.92 and had values above acceptable limits. Additionally, it was determined that the scale showed a three-factor structure. In the original scale, factor loadings are above 0.40, and it is seen that it has a three-factor structure. In this respect, the validity and reliability of the scale show similar features to the original scale.² In the confirmatory factor analysis, it was determined that the RMSEA value was 0.06, the GFI value was 0.92, the CFI value was 0.95, and the IFI value was 0.83. The corrected chi-square value was 2.455. The

compliance criteria obtained in the study are acceptable values.^{18–20}

In addition to validity, one of the features that the scale must have is reliability. Reliability shows the stability of a measurement tool in repeated measurements. Cronbach's alpha coefficient value is a widely used method to determine the reliability of measurement tools. It is stated that the acceptable limits of Cronbach's alpha value for a measurement tool should be between 0.60 and 0.70.²¹ In our study, Cronbach's alpha coefficients of the scale and its sub-dimensions were found to vary between 0.64 and 0.92, and the values are within the acceptable range. The scale was found to have Cronbach's alpha coefficients between 0.61–0.82 and 0.68–0.81 in adaptation studies for women in the United Kingdom and Brazil.^{17,18} Besides, Cronbach's alpha coefficient values in the original scale are between 0.65 and 0.82, and our results parallel other and the original scale study.^{2,15,16}

In assessing internal consistency for reliability, the item-total correlation coefficient is evaluated. Item-total correlation levels higher than 0.25 are considered sufficient, and the items measure the same structure.^{22,23} In the study, item-total correlations of the scale's non-exposure to coercion and communication sub-dimension items ranged between 0.38 and 0.72 and are within the acceptable value range. However, the item-total correlation coefficients of the decision-making subscale are below 0.25. In this case, before removing the item from the scale, it should be checked whether there is a significant change in reliability when the item is removed. If there is no significant change, it is appropriate not to remove the items.²² Since there was no significant change in the reliability level when the items were removed from the scale in the study, the subscale items were preserved.

Finally, the test–retest method was used to determine the reliability of the measurement tool. The test–retest analysis is a suitable method to assess the intraclass correlation coefficient of the scales. Determined correlation coefficient values between 0.40 and 0.75 are good, and values above 0.75 are excellent.²⁴ The correlation value determined in our study is 0.87, and it can be said that it has an excellent intra-class correlation value.

The study results showed that the RAS Turkish form has sufficient validity and reliability. It is thought that the scale will meet an essential need in future studies and that, thanks to this measurement tool, reproductive autonomy in women will be evaluated and will be a guide in taking protective measures for the health of both the woman and the baby. Testing the validity and reliability of the scale in different samples is recommended.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interests for this article.

DATA AVAILABILITY STATEMENT

Data is available on request due to privacy/ethical restrictions. The data used in this study can be shared on

demand if any concern rises due to the reliability of the data but according to the ethical and legal regulations in Turkey the authors can not share the data via a data repository.

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REFERENCES

- Rowlands S, Walker S. Reproductive control by others: means, perpetrators and effects. *BMJ Sex Reprod Health*. 2019;45(1):61–7.
- Upadhyay UD, Dworkin SL, Weitz TA, Foster DG. Development and validation of a reproductive autonomy scale. *Stud Fam Plan*. 2014;45(1):19–41.
- Grace KT, Anderson JC. Reproductive coercion: a systematic review. *Trauma Violence Abuse*. 2018;19(4):371–90.
- Park J, Nordstrom SK, Weber KM, Irwin T. Reproductive coercion: unclinking an imbalance of social power. *Am J Obstet Gynecol*. 2016;214(1):74–8.
- Miller E, Decker MR, McCauley HL, Tancredi DJ, Levenson RR, Waldman J, et al. Pregnancy coercion, intimate partner violence and unintended pregnancy. *Contraception*. 2010;81(4):316–22.
- Fay K, Yee L. Reproductive coercion and women's health. *J Midwifery Womens Health*. 2018;63(5):518–25.
- Huslage M, Ely GE, Nugent WR, Auerbach S, Agbemenu K. Reproductive autonomy in appalachia: an investigation into perceived contraceptive pressure. *J Interpers Violence*. 2023;38(9–10):6985–7011.
- Price E, Sharman LS, Douglas HA, Sheeran N, Dingle GA. Experiences of reproductive coercion in queensland women. *J Interpers Violence*. 2019;37(5–6):NP2823–43.
- Alhusen JL, Bloom T, Anderson J, Hughes RB. Intimate partner violence, reproductive coercion, and unintended pregnancy in women with disabilities. *Disabil Health J*. 2020;13(2):100849.
- McCauley HL, Falb KL, Streich-Tilles T, Kpebo D, Gupta J. Mental health impacts of reproductive coercion among women in côte d'ivoire. *Int J Gynaecol Obstet*. 2014;127(1):55–9.
- Comrey AL, Lee HB. A first course in factor analysis. 2nd ed. New York: Psychology Press; 1992.
- Davis LL. Instrument review: getting the most from a panel of experts. *Appl Nurs Res*. 1992;5(4):194–7.
- Roebianto A, Savitri I, Sriyanto A, Syaiful I, Mubarakah L. Content validity: definition and procedure of content validation in psychological research. *TPM—Testing*. 2023;30:5–18.
- Shrestha N. Factor analysis as a tool for survey analysis. *Am J Appl Math Stat*. 2021;9(1):4–11.
- Riches E, Barrett G, Hall JA. Evaluation of the psychometric properties of the reproductive autonomy scale for use in the UK. *BMJ Sex Reprod Health*. 2023;49(3):151–7.
- Fernandes ETBS, Dias ACS, Ferreira SL, Marques GCM, Pereira COJ. Cultural and reliable adaptation of the reproductive autonomy scale for women in Brazil. *Acta Paul Enferm*. 2019;32(3):298–304.
- Watson R, Thompson DR. Use of factor analysis in journal of advanced nursing: literature review. *J Adv Nurs*. 2006;55(3):330–41.
- Hooper D, Coughlan J, Mullen M. Structural equation modeling: guidelines for determining model fit. *Electron J Bus Res Methods*. 2008;6(1):53–60.
- Schermelleh-Engel K, Moosbrugger H, Müller H. Evaluating the fit of structural equations models: tests of significance and descriptive goodness-of-fit measures. *Methods Psychol Res*. 2003;8(2):23–74.
- Akinyode BF. The use of structural equation modeling (SEM) in built environment disciplines. *Res Humanit Soc Sci*. 2016;6:109–20.
- Kilic S. Cronbachs alpha reliability coefficient. *JMOOD*. 2016;6(1):47–8.
- Karagöz Y. SPSS 23 ve AMOS 23 Uygulamalı İstatistiksel Analizler. 2nd ed. Ankara: Nobel Akademik Yayıncılık; 2016.
- Souza AC, Alexandre NMC, Guirardello EB. Psychometric properties in instruments evaluation of reliability and validity. *Epidemiol Serv Saude*. 2017;26(3):649–59.
- Matheson G. We need to talk about reliability: making better use of test-retest studies for study design and interpretation. *PeerJ*. 2019;7:e6918. <https://doi.org/10.7717/peerj.6918>

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