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Original Research

Development of the Sahara Attitude Scale Towards Violence Against Women and Examination of Its Psychometric Characteristics

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Abstract

Background: Violence against women remains a critical global public health and human rights issue. Although several tools have been developed to assess attitudes toward violence against women, existing scales are often limited in scope, population coverage, or psychometric strength. **Methods**: This study addresses this gap by developing and validating the Sahara Attitude Scale Towards Violence Against Women for individuals aged 18 and above. The development process of the scale consisted of the following stages: content validity, construct validity, convergent and discriminant validity, reliability studies, validation of the obtained structure, and test-retest reliability. Data were collected through Google Forms from 360 individuals with different sociocultural backgrounds for exploratory factor analysis (EFA) and 336 individuals for confirmatory factor analysis (CFA). **Results**: As a result of exploratory and confirmatory factor analyses, a two-factor, 12-item structure was obtained. The scale explains 76.3% of the variance, with Cronbach's α of 0.94, Gutman's 0.95, and McDonald's Omega ω of 0.96. The fit indices for the construct [χ^2/df = 2.726, Root Mean Square Error of Approximation (RMSEA) = 0.072, comparative fit indices (CFI) = 0.97, goodness-of-fit index (GFI) = 0.93, adjusted goodness of fit index (AGFI) = 0.90, and normed fit index (NFI) = 0.96] were found to be at an adequate level. The legitimization factor reflects individuals' tendency to view actions such as violence, harassment, or mistreatment toward women as legitimate, understandable, or justified for various reasons. This factor consists of 1–6 items, explaining 63.2% of the variance, with Cronbach's α of 0.94, Gutman's 0.94, and McDonald's Omega ω of 0.92. The control factor represents a perspective that considers it legitimate to restrict women's freedom, establish control over them, and constantly monitor their actions. This factor consists of items 7–12 and explains 13.1% of the variance, with Cronbach's α of 0.92, Gutman's 0.91, and McDonald's Omega ω of 0.94. **Conclusions**: The Sahara Attitude Scale Towards Violence Against Women is a 5-point Likert scale (0 = Strongly Disagree, 4 = Strongly Agree). There are no reverse-scored items in the scale. The total scale score is obtained by summing the scores of all items, and the raw score ranges from 0 to 48 points. The raw score must be standardized to a range of 0–100 points in accordance with the guidelines. Higher scale scores indicate stronger attitudes supporting violence against women.

Keywords: attitude; social psychology; reliability; validity; violence; women

Desarrollo de la Escala de Actitudes del Sáhara Frente a la Violencia Contra la Mujer y Análisis de sus Características Psicométricas

Resumen

Antecedentes: La violencia contra la mujer sigue siendo un problema crítico a nivel mundial en materia de salud pública y derechos humanos. Aunque se han desarrollado varias herramientas para evaluar las actitudes frente a la violencia contra la mujer, las escalas existentes suelen tener limitaciones en cuanto a su alcance, cobertura poblacional o solidez psicométrica. **Métodos**: Este estudio aborda esta carencia mediante el desarrollo y la validación de la Escala de Actitudes del Sáhara hacia la Violencia contra las Mujeres para personas mayores de 18 años. El proceso de desarrollo de la escala consistió en las siguientes etapas: validez de contenido, validez de constructo, validez convergente y discriminante, estudios de fiabilidad, validación de la estructura obtenida y fiabilidad test-retest. Los datos se recopilaron a través de Google Forms de 360 personas con diferentes contextos socioculturales para el análisis factorial exploratorio (AFE) y de 336 personas para el análisis factorial confirmatorio (AFC). **Resultados**: A raíz de los análisis factoriales exploratorios y confirmatorios, se obtuvo una estructura de dos factores y 12 ítems. La escala explica el 76,3 % de la varianza, con un α de Cronbach de 0,94, un coeficiente de Gutman de 0,95 y un ω de McDonald de 0,96. Los índices de ajuste del constructo [χ^2/df =

2,726, error cuadrático medio de aproximación (RMSEA) = 0,072, índices de ajuste comparativo (CFI) = 0,97, índice de bondad de ajuste (GFI) = 0,93, índice de bondad de ajuste ajustado (AGFI) = 0,90 e índice de ajuste normalizado (NFI) = 0,96] se consideraron adecuados. El factor de legitimación refleja la tendencia de las personas a considerar acciones como la violencia, el acoso o el maltrato hacia las mujeres como legítimas, comprensibles o justificadas por diversas razones. Este factor consta de 1 a 6 ítems, explica el 63,2 % de la varianza, con un α de Cronbach de 0,94, un 0,94 y el omega de McDonald ω de 0,92. El factor de control representa una perspectiva que considera legítimo restringir la libertad de las mujeres, ejercer control sobre ellas y supervisar constantemente sus acciones. Este factor consta de los ítems 7–12 y explica el 13,1 % de la varianza, con un α de Cronbach de 0,92, el 0,91 de Gutman y el omega ω de McDonald de 0,94. **Conclusiones**: La Escala «Sahara Attitude» sobre la violencia contra las mujeres es una escala de Likert de 5 puntos (0 = Totalmente en desacuerdo, 4 = Totalmente de acuerdo). No hay ítems con puntuación inversa en la escala. La puntuación total de la escala se obtiene sumando las puntuaciones de todos los ítems, y la puntuación bruta oscila entre 0 y 48 puntos. La puntuación bruta debe estandarizarse a un rango de 0 a 100 puntos de acuerdo con las directrices. Las puntuaciones más altas en la escala indican actitudes más marcadas a favor de la violencia contra las mujeres.

Palabras Clave: actitud; psicología social; fiabilidad; validez; violencia; mujeres

1. Introduction

In recent years, violence has become an increasingly widespread phenomenon on a global scale, as well as in our own country. The most common form of violence is that which is perpetrated against women. Prior to an examination of the notion of gender-based violence against women, it is first necessary to provide a concise discussion of the phenomenon of violence within the concept. The World Health Organization (WHO) defines violence as "any situation in which there is actual or threatened use of physical force or power against oneself, another person, or against the community, that either results in or is likely to result in physical injury, death, psychological harm, or deprivation" (WHO, 1996; Krug et al., 2002). It is evident from the data presented by a plethora of regional and international organisations, chiefly the WHO, that women constitute the most vulnerable demographic with regard to exposure to violence in its myriad forms. The notion of violence against women was initially delineated in 1993 in the United Nations (UN) General Assembly's "Declaration on the Elimination of Violence Against Women". According to the aforementioned definition, violence against women is defined as "any act of violence based on gender that results in or is likely to result in physical, sexual, or psychological harm or suffering to women, including threats of such acts, coercion, or arbitrary deprivation of liberty, whether occurring in public or private life" (UN, 1993). In the course of the World Conference on Human Rights in Vienna that same year, the global community formally recognised violence against women as a significant human rights violation on the international stage (Devries et al., 2013). Violence against women, a pervasive human rights violation on a global scale, manifests in various forms, including physical, psychological, economic, and sexual violence. According to WHO, such behaviors include "physical aggression such as slapping, hitting, kicking, and beating" and "sexual aggression such as forced sexual intercourse and other forms of sexual coercion". However, the WHO definition encompasses a broader spectrum of behaviors, extending beyond physical and sexual violence to encompass intimidation, monitoring of movement, and psychological abuse, including reproductive coercion (WHO, 2021). Other forms of violence against women, such as sexual harassment, non-spousal sexual violence, female genital mutilation, and honor killings, are also becoming increasingly prominent (Corey et al., 2023; Farouki et al., 2022). Flirting violence on university campuses, along with abuse facilitated by technology, has been frequently encountered in recent years in many forms of intimate partner violence, such as non-partner sexual violence and sexual harassment (Sardinha et al., 2022). At the same time, developments in communication technology, such as spyware, location trackers, and devices that can record attacks and upload them to social media, have given rise to new forms of violence against women (Henry and Powell, 2018). According to estimates published by the WHO, approximately 30% of women worldwide have experienced physical and/or sexual violence at some point in their lives (WHO, 2024). This phenomenon has far-reaching consequences, impacting women's individual, social, and economic participation in societal life. Moreover, it has been associated with significant health implications and even fatalities (García-Moreno et al., 2015; Cepeda et al., 2022).

Violence against women is regarded as one of the most critical social issues, as it constitutes a violation of fundamental rights, both domestically and on a global scale. Violence against women is a multifaceted phenomenon, rooted in historical and societal factors including gender inequality, patriarchal norms, and individual beliefs. Power relations between men and women, shaped by patriarchal structures and societal expectations of traditional gender roles, have contributed to the perpetuation of violence against women.

The Sustainable Development Goal emphasizes the elimination of all forms of violence against women in the public and private sectors by 2030 (WHO, 2024).

Analysing the social factors that fuel violence against women and conducting research in this area is of great importance in determining goals and action plans for policymakers and decision-makers in the fight to stop violence against women. In this context, it is observed that numerous national and international studies have been conducted on the issue of violence against women (Yanıkkerem and Esmeray, 2023; Tektaş et al., 2020; Bouhours and Broadhurst, 2015; Castro et al., 2017; Kabasakal and Girli, 2012). Conversely, attitudes towards violence against women are influenced by a multitude of factors embedded within the social structure. In this context, the principal objective of the present study is to ascertain the attitudes of individuals towards violence against women and to evaluate these attitudes in terms of various psychosocial factors. Consequently, it is hypothesised that the development of enhanced measurement tools within the current research paradigm will facilitate expeditious advancements in the study of violence against women. Furthermore, it is anticipated that this study will facilitate the development of appropriate policies and strategies for interventions targeting attitudinal and behavioural change to prevent violence against women.

1.1 Objective and Importance of the Study

The objective of this study is to ascertain the attitudes of individuals aged 18 and over towards violence against women and to evaluate these attitudes in terms of various psychosocial factors. The phenomenon of violence against women is multifaceted, with numerous factors contributing to its perpetuation, including but not limited to gender inequality, patriarchal norms, and individual beliefs. Recent international studies highlight the importance of developing culturally adapted measurement tools to assess violent and aggressive behaviors in different societies (Sanjari et al., 2025). A review of the extant literature reveals that there are various measurement tools aimed at measuring attitudes towards violence against women. One such measurement tool is the Attitude Scale Toward Violence, which was developed by Gömbül in 2000 (Gömbül, 2000). The development of this scale was initiated to ascertain the attitudes of health personnel towards violence against women by their spouses within the family. Consequently, its capacity for measurement is constrained to health personnel and is not adequate for general population screening. Another measurement tool related to this topic is the ISKEBE Attitude Scale Toward Violence Against Women, which was developed by Kanbay et al. (2017). This measurement tool is a two-factor, 30-item scale developed for the population aged 18 and over, with an explanatory variance of 47.9%. Despite the scale's adequate number of items and variability, its comparatively low variability indicates the necessity for a measurement instrument with a reduced number of items and elevated variability for the general population. The objective of this study is to address a significant gap in the existing literature by developing the Sahara Attitude Scale Toward Violence Against Women. The data obtained will be significant in terms of raising social awareness, developing strategies to combat violence, and guiding policymakers.

1.2 Type of Research

Since this research aims to develop a measurement tool, it requires the use of analytical techniques and specific methodology. Therefore, the study was designed as a methodological research (DeVellis, 2014).

2. Materials and Methods

The development process of the scale was conducted in two phases. The initial phase of the tool development process was conceptualisation, while the subsequent phase involved psychometric evaluation procedures (see Fig. 1).

2.1 Creating the Item Pool

In this study, the item pool for the scale developed to measure attitudes toward violence against women among individuals aged 18 and older was created based on literature reviews. National and international studies on violence against women and previously developed measurement tools were reviewed. Individual, cultural, and social factors influencing attitudes toward violence against women were identified in the literature. At the end of this phase, an item pool consisting of 30 statements was created.

2.2 Content Validity

For content validity, opinions were obtained from 10 experts in the fields of sociology, psychology, measurement, and evaluation. Content validity was achieved using the Lawshe technique (Lawshe, 1975).

2.3 Pilot Study

The purpose of the pilot study is to test the suitability of the developed scale for the target population. In this process, a sample representing the target population and showing demographic, social, and economic diversity should be selected (Erkuş, 2007; Trochim and Donnelly, 2006). According to Boateng and colleagues (2018), 30–50 participants are sufficient for a pilot application. Therefore, a pilot application was conducted with a sample of 32 participants. During this process, item clarity, relevance, and comprehensibility were evaluated, and minor wording adjustments were made based on participant feedback to ensure the appropriateness of the scale for the general population.

2.4 Population and Sample

Since this study is a scale development study, factor analysis techniques must be used. In the study, exploratory factor analysis (EFA) was first performed to reveal the structure, and then confirmatory factor analysis (CFA) was performed to validate the structure that emerged.

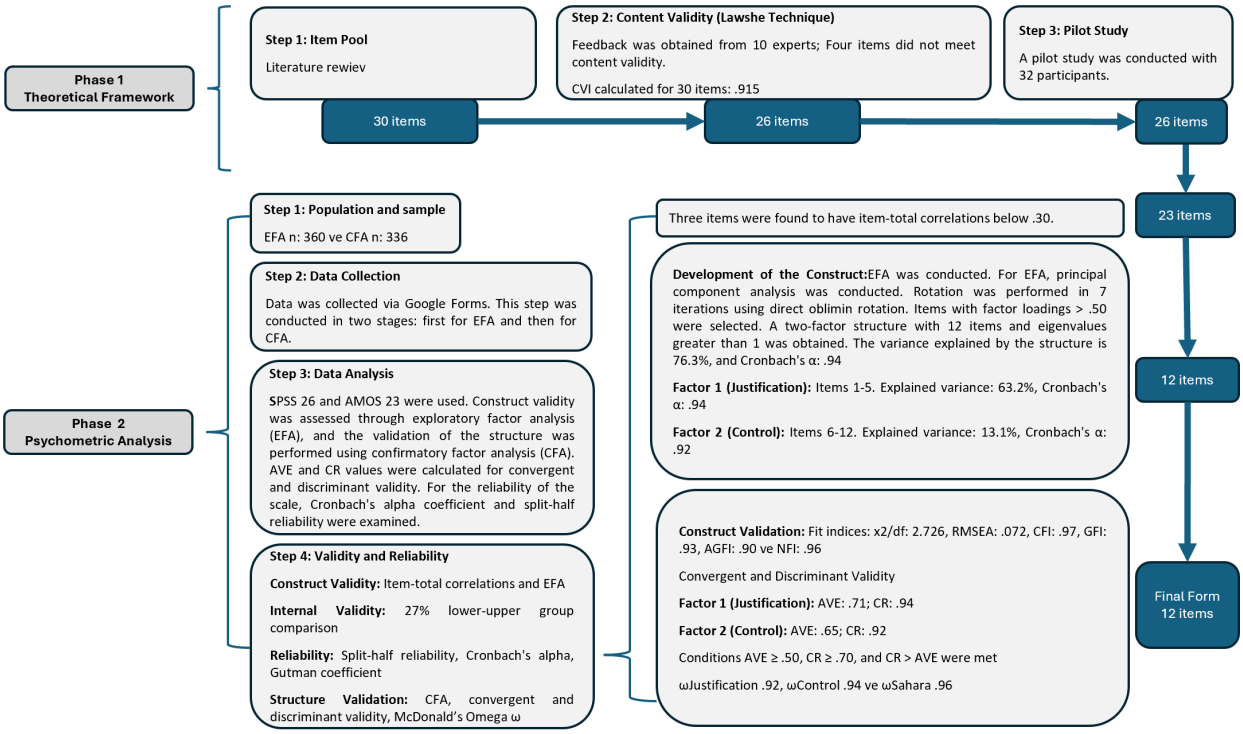

Fig. 1. Flow diagram of research methodology. CVI, content validity index; AVE, average variance extracted; CR, composite reliability.

Therefore, two separate samples with similar characteristics were needed in the study. It is stated that a sample size of at least 300 is appropriate to achieve sufficient sample size in scale development studies (Comrey and Lee, 1992). In this study, 696 individuals (360 for EFA and 336 for CFA) were reached as a result of the data collection phase.

51.4% of the EFA sample were male, 29.4% were married, 73.9% were higher education students or graduates, 80.3% had a nuclear family, and 61.9% lived in a city or large city. The mean age of the sample is 28.4 ± 10.5 (min: 18, max: 72). 53% of the CFA sample are male, 23.2% are married, 67.9% are higher education students or graduates, 75.6% have a nuclear family, and 50.9% live in a city or large city. The average age of the sample is 26 ± 9.9 (min: 18, max: 72).

2.5 Data Collection

During the data collection process, a link created via Google Forms was shared with participants through online platforms and social media accounts. Participants were selected using a purposive sampling method. This method is considered an effective approach in scale development studies to reach the target population and include individuals with diverse socio-demographic characteristics. Online data collection enabled access to a large participant group in a short period of time and allowed us to exceed the minimum sample size recommended for factor analyses.

The inclusion criteria for participation in the study were as follows:

(1) Being 18 years of age or older,

(2) Having the ability to read and understand Turkish,

(3) Voluntarily agreeing to complete the online form.

Participants who met these criteria were included in the study. The data collection process was carried out in two phases. In the first phase, data were collected from 360 participants for EFA. In the second phase, to confirm the obtained structure, data were collected again from 336 participants with similar socio-demographic characteristics for CFA. Missing data (n = 13) were handled using listwise deletion, resulting in complete data sets for the analyses.

2.6 Data Analysis

Descriptive statistics and the IBM SPSS Statistics for Windows, Version 26.0 (IBM Corp., Armonk, NY, USA) software package for EFA, and the IBM SPSS Amos, Version 23.0 (IBM Corp., Armonk, NY, USA) software package for CFA were used in the data analysis phase. The structure validity was performed using EFA, and the structure obtained was validated using CFA. Item-total correlations were examined prior to factor analysis. Average variance extracted (AVE) and composite reliability (CR) values were calculated for convergent validity and discriminant validity. Cronbach's α coefficient, split-half reliability, and McDonald's Omega ω were calculated for the reliability of the scale.

2.7 Validity and Reliability

In order to determine the construct validity of the scale, "principal components analysis (PCA)" was used for EFA, and the "direct oblimin technique" was used as the factor rotation technique based on the assumption that the factors are interrelated. CFA was performed to analyze the fit of the factor structure of the model obtained from EFA, and the fit indices were examined. For the fit indices, $0.05 < \text{RMSEA} < 0.10$; $0.90 \leq \text{CFI} \leq 0.95$; $0.90 \leq \text{GFI} \leq 0.95$; AGFI >0.90; $0.90 \leq \text{CFI} \leq 0.95$ were considered acceptable limits (Wang and Wang, 2012; Meydan and Şeşen, 2011; Schermelleh-Engel et al., 2003). For convergent and discriminant validity, AVE and CR values were examined. For the convergent validity of the scale to be ensured, AVE values of the items should be 0.50 or above (Bagozzi and Yi, 1988); while the CR value, which is expressed as composite reliability (structural reliability), was determined to be 0.70 and above as acceptable values (Hair et al., 2019). For research scales, it is recommended that the Cronbach α reliability coefficient be 0.70 or higher (DeVellis, 2014). Therefore, if the Cronbach $\alpha > 0.70$, the scale is considered to have sufficient reliability.

3. Results

This section presents the validity and reliability findings of the scale, the validation of the obtained structure, and related discussions.

3.1 Validity

Validity is a concept that expresses the degree to which a measurement tool measures the concept it intends to measure accurately and completely. In this study, the validity of the scale was examined in terms of content validity, construct validity, and internal validity.

3.1.1 Content Validity

For content validity, the content validity ratio (CVR) and content validity index (CVI) were calculated using the Lawshe technique. The Lawshe technique provides a systematic approach for evaluating the content validity of scale items in scale development and validity studies and offers an objective evaluation based on expert opinions (Büyüköztürk, 2010; Lawshe, 1975; Polit and Beck, 2006).

In this study, opinions were obtained from 10 experts for content validity. The critical value calculated for 10 experts is 0.62. Four items (i8, i28, i29, i30) in the item pool were excluded from the study because their CVR values were below the threshold value of 0.62 for 10 experts. The CVR values for the remaining 26 items ranged from 0.80 to 1. The CVI value for the 26 items was calculated as 0.915, and the CVI value was found to be greater than the CVR value (CVI $>$ CVR). These findings indicate that the draft form consisting of the 26 items remaining in the item pool after item elimination ensures overall content validity (Table 1).

3.1.2 Construct Validity

Construct validity determines how well a measurement tool measures a theoretical construct (Strauss and Smith, 2009). The construct validity of the scale was tested using EFA.The primary aim of EFA is to determine how many factors the items in the scale can be grouped under (Costello and Osborne, 2005). It is recommended to examine the item-total correlations of the items before EFA. Item-total correlations are a widely accepted method in the literature to increase the validity and reliability of a scale. Item-total correlations should generally be 0.30 or above. This indicates that the item adequately represents the overall structure of the scale (Nunnally and Bernstein, 1994). Low item-total correlations may indicate that the item does not contribute sufficiently to the structure and may reduce the reliability of the scale (DeVellis, 2014). Therefore, if the item-total score correlation coefficient is below 0.30, the item should be considered problematic and either revised or removed from the scale (Çokluk et al., 2018; Şencan, 2005).

When the item-total correlations were examined, three items (i1, i2, i17) were excluded from the study because their item-total correlations were below 0.30. Thus, 23 items remained in the item pool. The item-total correlations of the remaining items ranged from 0.680 to 0.845 (Table 2).

In order to perform EFA, the suitability of the data metric for factor analysis must be investigated. For this purpose, the Kaiser-Meyer-Olkin (KMO) value and Bartlett's sphericity test must be examined. The KMO test result is expected to be $\geq$0.70 and the Bartlett Sphericity Test result is expected to be significant at the $p < 0.05$ level (Alpar, 2016).

Based on the findings, the KMO value was determined as 0.945. Barlett's Globality test yielded significant results ($\chi^2 = 3785.446$; $p < 0.001$). These values, which fall within the limits recommended in the literature (Büyüköztürk, 2010), indicate that the sample size is adequate and that the data matrix is suitable for factor analysis (Table 3).

For EFA, "PCA" was used as the factor rotation technique, and based on the assumption that factors are interrelated, the "direct oblimin technique" was selected from the "oblique" rotation techniques, with 7 iterations performed. Items with factor loadings below 0.50 and cross-loaded on different factors were excluded from the study. The analysis resulted in a two-factor structure with eigenvalues greater than 1 (Table 3). The total variance explained by the scale was calculated as 76.3%.

Factor 1. "Justification" reflects individuals' tendency to view acts such as violence, harassment, or abuse against women as legitimate, understandable, or justified for various reasons. The statements included in this factor reveal the internalization of gender stereotypes, the perception that women's behavior is the cause of violence, and the victim is to blame. This attitude is the product of a mindset that ex-

Table 1. Content validity findings.

No	Nu	N	CVR	Critic value	No	Nu	N	CVR	Critic value
i1	9	10	0.80	0.62	i16	10	10	1.00	0.62
i2	9	10	0.80	0.62	i17	9	10	0.80	0.62
i3	10	10	1.00	0.62	i18	10	10	1.00	0.62
i4	9	10	0.80	0.62	i19	9	10	0.80	0.62
i5	10	10	1.00	0.62	i20	10	10	1.00	0.62
i6	10	10	1.00	0.62	i21	9	10	0.80	0.62
i7	10	10	1.00	0.62	i22	9	10	0.80	0.62
*i8	8	10	0.60	0.62	i23	10	10	1.00	0.62
i9	9	10	0.80	0.62	i24	10	10	1.00	0.62
i10	10	10	1.00	0.62	i25	10	10	1.00	0.62
i11	10	10	1.00	0.62	i26	10	10	1.00	0.62
i12	9	10	0.80	0.62	i27	10	10	1.00	0.62
i13	10	10	1.00	0.62	*i28	8	10	0.60	0.62
i14	9	10	0.80	0.62	*i29	8	10	0.60	0.62
i15	9	10	0.80	0.62	*i30	8	10	0.60	0.62
Number of Experts = 10									
Critic Value = 0.62									
CVI = 0.915									

*Items that were excluded from the study because they were deemed “Not Appropriate” or “Needs Revision” by experts and therefore did not meet the validity criteria; Nu, Number of experts who deemed the item “Necessary”; N, Number of experts who provided feedback on the item; CVR (Nu-N/2)/(N/2), Validity Rate; CVI, content validity index; CVR, content validity ratio.

plains violence against women not as an individual act, but as a result of women’s so-called “wrong” behavior. Such thoughts can lead to the normalization of violence, impunity for perpetrators, and the silencing of victims. Approaches that define violence as “acceptable if minor” also fall within this scope. This sub-dimension represents the belief patterns that should be the main target of social transformation and awareness-raising efforts. This factor explains 63.2% of the variance.

Factor 2. “Control” reveals individuals’ tendency to control and restrict women’s lives, behavior, clothing, spending, and social roles. It represents a perspective that justifies restricting women’s freedom, establishing dominance over them, and constantly monitoring their movements. This controlling attitude is fueled by the tendency to view women as passive, obedient, and dependent on male approval. Views such as “it is inappropriate for women to go out late at night”, “it is not natural for women to work”, or “women’s spending should be approved by men” are part of this structure. This understanding not only contradicts gender equality but also denies women’s autonomy as individuals and limits their role in society. The variance explained by this factor is 13.1% (Table 3).

3.1.3 Internal Validity

The internal validity of the items that make up the scale was tested using a 27% lower-upper group comparison. The 27% method measures the degree to which an item distinguishes between high-scoring and low-scoring participants. Participants are ranked based on their total scale scores, and the top 27% (upper group) are compared with the bottom 27% (lower group).

It was found that there was a statistically significant difference between the mean scores of the upper group, which had high mean scores in both factors and the scale total, and the lower group, which had low mean scores ($p < 0.001$). The obtained structure demonstrates that it accurately distinguishes individuals with positive attitudes toward violence against women from those with negative attitudes, thereby indicating internal validity (Table 4).

3.2 Reliability

Reliability is the degree to which a measurement tool demonstrates consistency and stability. Reliability aims to minimize the margin of error in a measurement tool and ensure that measurements are stable (Crocker and Algina, 2008).

The Cronbach α reliability coefficient for the obtained structure was calculated as 0.94 for the “Justification” factor, 0.92 for the “Control” factor, and 0.94 for the scale as a whole. Gutman values were calculated as 0.94, 0.92, and 0.94, respectively. The Spearman-Brown coefficient calculated for the two-half test reliability of the factors and the scale total ranged from 0.797 to 0.951. These values fall

Table 2. Item Means/Total Correlations, and Cronbach's Alpha values calculated upon deleting items.

No	x	sd	α	ITC	No	x	SD	α	ITC
*i1	1.52	1.48	0.970	0.209	i15	0.93	1.23	0.969	0.742
*i2	0.27	0.78	0.969	0.280	i16	0.53	0.93	0.968	0.845
i3	0.34	0.83	0.969	0.725	*i17	1.36	1.45	0.969	0.277
i4	0.42	0.92	0.969	0.712	i18	1.24	1.38	0.969	0.744
i5	0.44	0.91	0.968	0.753	i19	0.66	1.13	0.969	0.729
i6	0.50	0.95	0.969	0.680	i20	0.62	1.02	0.968	0.795
i7	0.40	0.86	0.968	0.763	i21	0.56	0.96	0.968	0.759
i9	0.58	0.99	0.968	0.817	i22	0.85	1.13	0.968	0.781
i10	0.31	0.75	0.969	0.792	i23	0.51	0.95	0.968	0.817
i11	0.67	1.11	0.968	0.791	i24	1.02	1.27	0.968	0.748
i12	0.46	0.93	0.969	0.736	i25	0.92	1.23	0.968	0.805
i13	1.14	1.38	0.969	0.695	i26	0.33	0.78	0.969	0.731
i14	0.59	1.10	0.969	0.779	i27	0.93	1.25	0.968	0.782

*Items with a total correlation <0.30 and excluded from the study; x, mean; α, Cronbach's Alpha when the item is deleted; ITC, item total correlation.

within the limits recommended in the literature (DeVellis, 2014). Based on all these findings, it was concluded that the reliability of the scale is sufficient (Table 5).

3.2.1 Validation of the Structure

The structure of the scale was validated using CFA. CFA is used to test the validity of a previously determined factor structure (Kline, 2016). During CFA, fit indices such as Root Mean Square Error of Approximation (RMSEA); comparative fit indices (CFI); goodness-of-fit index (GFI); adjusted goodness of fit index (AGFI); and normed fit index (NFI) were used as the basis for evaluation.

The two-factor structure of the Sahara Attitude Scale Towards Violence Against Women was tested using first-order multiple factor CFA. When examining the paths related to the structure of the scale, it was determined that both factors contributed significantly to the scale (Fig. 2). In addition, the items included in the factors load significantly on the factor they belong to ($p < 0.001$). When examining the goodness-of-fit indices for the structure, the values obtained were χ^2/df: 2.726, RMSEA: 0.072, CFI: 0.97, GFI: 0.93, AGFI: 0.90, and NFI: 0.96. These goodness-of-fit indices are within the levels recommended in the literature (Wang and Wang, 2012; Meydan and Şeşen, 2011; Schermelleh-Engel et al., 2003). The factor loadings ranged from 0.76 to 0.89 for the "Justification" factor and from 0.74 to 0.87 for the "Control" factor. Based on these findings, the two-factor structure of the scale was confirmed.

In addition to the overall fit indices, Table 6 presents the unstandardized estimates, standard errors, *p*-values, 95% confidence intervals, and standardized factor loadings for all items. All factor loadings were statistically significant ($p < 0.001$) and ranged from 0.74 to 0.89. The correlation between the two latent factors was also examined, showing a moderate positive association (r = 0.72, 95% CI [0.60–0.84], $p < 0.001$), indicating that while related, the Justification and Control dimensions represent distinct constructs.

3.2.2 Convergent and Discriminant Validity

AVE and CR values were examined for the convergent and discriminant validity of the scale. To ensure the convergent validity of the scale, it is expected that the AVE values of the items be 0.50 or above and the CR values be 0.70 or above (Hair et al., 2019; Bagozzi and Yi, 1988).

When examining the convergent validity of the two-factor structure of the scale, the AVE value for the "Justification" factor was calculated as 0.71 and the CR value as 0.94, while the AVE value for the "Control" factor was calculated as 0.65 and the CR value as 0.92. Since the AVE values for both factors of the scale are greater than 0.50, it was concluded that the average explained variance of the items is significant. The CR coefficients exceeded 0.70, demonstrating adequate internal consistency of the scale. When the AVE and CR values are evaluated together, it is concluded that the scale has convergent validity since the conditions required for convergent validity, AVE $\geq$0.50, CR $\geq$0.70, and CR >AVE, are met. The square root results of the AVE values calculated for discriminant validity are given in parentheses and in bold. Since these values are higher than the correlation values in the same row and column, it can be stated that the scale has discriminant validity. Based on the factor loadings obtained from the CFA results, McDonald's Omega ω values were calculated for the factors and the scale total. Very high reliability was obtained for the factors and the scale total ($\omega_{\text{Justification}}$ 0.92, ω_{Control} 0.94, and ω_{Sahara} 0.96) (Table 7).

3.3 Consistency Over Time

The test-retest method was used to evaluate the consistency of the scale over time. Test-retest reliability is a

Table 3. EFA findings as to the factor structure of the scale.

No	Items	F1	F2
i3	If a woman is harassed, she should blame herself.	0.931	
i5	A woman's revealing clothing is a reason for her to be harassed.	0.923	
i7	It is normal for a woman who is out late at night to be harassed.	0.886	
i10	Unless the violence is severe, it is acceptable to beat a woman.	0.868	
i6	It is inevitable that some women will be harassed.	0.867	
i16	If a woman is beaten, she is also to blame.	0.715	
i18	It is not appropriate for a woman to be out late at night.		0.892
i13	It is not appropriate for women to work in every sector.		0.873
i27	Women having too much freedom can disrupt family order.		0.849
i25	A woman's actions, where she goes, and what she wears should be monitored.		0.849
i24	A woman's spending should be kept under control.		0.843
i11	A woman should only be allowed to spend money to the extent that she is permitted.		0.692
	Explained Variance:	63.23	13.07
	Total Variance	76.29	
	KMO: 0.945; Bartlett's Test of Sphericity: 3785.446; df: 66; $p < 0.001$		
	Method: PCA; Rotation: Direct Oblimin (7 iterations)		

F1, justification; F2, control; KMO, Kaiser-Meyer-Olkin.

Table 4. 27% upper-lower group comparison.

Factor	Group	n	x	SD	*t*	*p*
F1. Justification	Lower group	97	0	0	–15.501	<0.001
	Upper group		1.42	0.90		
F2. Control	Lower group	97	0	0	–34.849	<0.001
	Upper group		2.50	0.71		
Sahara	Lower group	97	0	0	–24.147	<0.001
	Upper group		1.85	0.75		

Sahara, Sahara Attitude Scale Towards Violence Against Women.

Table 5. Reliability findings.

Factor	r	Gutman	Cronbach α
F1. Justification	0.951	0.94	0.94
F2. Control	0.925	0.91	0.92
Sahara	0.797	0.95	0.94

r, Spearman-Brown Coefficient.

technique used to determine whether a measurement tool demonstrates consistency over time. For measurements of medium-term psychological characteristics such as motivation and attitude, a time interval of 2 to 4 weeks is recommended between measurements (Hinkin, 1998). In line with this, the scale was reapplied to a group of 72 participants at two-week intervals within the scope of the study. Test-retest reliability was first examined using Pearson correlation, which yielded a coefficient of r = 0.88 ($p < 0.001$). To provide a more rigorous evaluation of absolute agreement, an intraclass correlation coefficient (ICC) was also calculated using a two-way mixed-effects model with absolute agreement. The ICC was 0.87, 95% CI [0.81–0.91], indicating excellent temporal stability of the Sahara scale over a two-week interval.

4. Discussion

In this study, factor analysis techniques were used to reveal the structure of the "Sahara Attitude Scale Towards Violence Against Women". Before factor analysis, it is necessary to examine whether the items contribute sufficiently to the scale. For this aim, the item-total correlations of the items in the pilot form were examined. Item-total correlations are a widely accepted method in the literature to enhance the validity and reliability of a scale. Item-total correlations should generally be 0.30 or above. This demonstrates that the item adequately represents the overall structure of the scale (Nunnally and Bernstein, 1994). Low item-total correlations may indicate that the item does not contribute sufficiently to the construct being measured and may reduce the reliability of the scale (DeVellis, 2014). Therefore, if the item-total score correlation coefficient is below 0.30, the item should be considered problematic and either revised or removed from the scale (Çokluk et al., 2018; Şencan, 2005). In this study, three items had item-total correlations below 0.30 and were excluded from the study. The remaining items had item-total correlations above 0.30, indicating that they contributed sufficiently to the scale, and it was decided to include them in the factor analysis (Table 2).

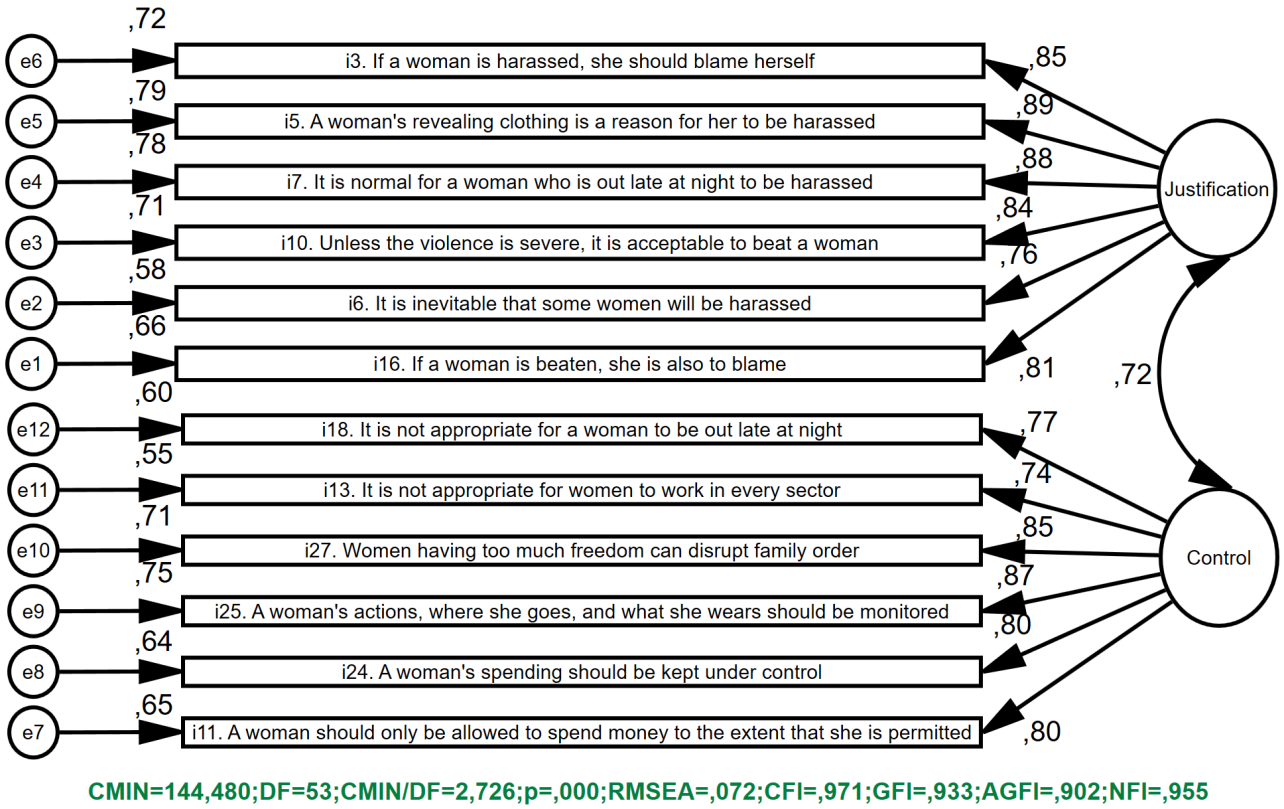

Fig. 2. CFA findings as to the factor structure of the scale. CFA, confirmatory factor analysis; RMSEA, Root Mean Square Error of Approximation; CFI, comparative fit indices; GFI, goodness-of-fit index; AGFI, adjusted goodness of fit index; NFI, normed fit index; CMIN, chi-square; DF, degrees of freedom.

Table 6. Standardized and unstandardized factor loadings, standard errors, *p*-values, and 95% confidence intervals for CFA.

Item	Factor	Unstandardized	SE	*p*	Standardized	95% CI	95% CI
		Estimate			Loading	Lower	Upper
i16	Justification	1.000	-	***	0.813	-	-
i6	Justification	0.959	0.061	***	0.761	0.839	1.079
i10	Justification	0.842	0.046	***	0.842	0.752	0.932
i7	Justification	0.998	0.051	***	0.885	0.898	1.098
i5	Justification	1.038	0.053	***	0.888	0.934	1.142
i3	Justification	0.898	0.048	***	0.851	0.804	0.992
i11	Control	1.000	-	***	0.804	-	-
i24	Control	1.129	0.069	***	0.797	0.994	1.264
i25	Control	1.157	0.064	***	0.865	1.032	1.282
i27	Control	1.193	0.067	***	0.845	1.062	1.324
i13	Control	1.159	0.078	***	0.740	1.006	1.312
i18	Control	1.201	0.076	***	0.775	1.052	1.350

*** $p < 0.001$.

According to the literature, for factor analysis to be performed appropriately, the KMO test result must be $\geq$0.70 and the Bartlett Sphericity Test result must be found significant at the $p < 0.05$ level (Alpar, 2016; Erdoğan et al., 2014). In this study, the KMO test yielded a value above 0.70 (KMO: 0.945), and the sphericity test produced a significant result (Bartlett's: 3785.446; df: 66; $p < 0.001$). These findings were evaluated as indicating that the study sample was of sufficient size and that the data set was suitable for factor analysis (Table 3).

The construct validity of the scale was determined using EFA. For EFA, "PCA" was used, and based on the assumption that factors are interrelated, the "direct oblimin technique" was used as the factor rotation technique. To

Table 7. Convergent and discrimination validity.

	n	AVE	CR	Omega (ω)
F1 (Justification)	6	0.71	0.94	0.92
F2 (Control)	6	0.65	0.92	0.94
Sahara	12	–	–	0.96
Discriminant Validity				
	F1	F2		
F1 (Justification)	(0.843)			
F2 (Control)	0.661**	(0.806)		

** $p < 0.001$. AVE, average variance extracted; CR, composite reliability; ω, McDonald's Omega.

determine factorization in the scale, factors with eigenvalues greater than 1 were considered, and a line graph was examined. It was preferred that each factor explain at least 5% of the variance, and that the total variance explained by the scale be at least 50%. For item elimination from the factors, item factor loadings were at least 0.50 (Finch et al., 2016). Items with cross-loadings of less than 0.10 in different factors were considered as redundant items and excluded from the study (Büyüköztürk, 2010). As a result of the analyses, a two-factor structure with eigenvalues greater than 1 was obtained, and seven iterations were performed. After removing items with factor loadings below 0.50 and cross-loadings on different factors, a two-factor structure with 76.3% of the variance explained was obtained. Considering that at least 40% of the total variance should be explained by factors in multi-factor measurement tools and at least 30% in single-factor measurement tools (Field, 2018), the explained variance of the scale is sufficient for a three-factor scale (Table 3).

To analyze the internal validity of the scale, a 27% lower-upper group comparison was conducted. The discriminative power of the items was evaluated based on the significant difference ($p < 0.05$) between the lower and upper groups (DeVellis, 2014). In this study, statistically significant differences ($p < 0.001$) were observed between the lower group with lower scale scores and the upper group with higher scale scores, both in the total scale and in the factors, and this finding was considered important in terms of establishing internal validity (Table 4).

In this study, Cronbach α and Gutman reliability coefficients and two-half test reliability were used to assess the reliability of the scale. For research scales, a Cronbach α reliability coefficient of 0.70 or higher is recommended (DeVellis, 2014). Split-half reliability is one of the reliability methods used to assess the internal consistency of a scale and takes values between 0 and 1. A value of 0.70 or higher indicates an acceptable level of reliability for the scale. In this study, the reliability coefficients ranged from 0.92 to 0.94 for the factors and 0.94 for the total scale. The Cronbach α values obtained are of sufficient magnitude. The two split-half test reliability coefficients calculated for internal validity indicate a positive and high correlation between the halves of the scale. These findings suggest that the scale has high internal validity (Table 5).

The literature indicates that the structure determined by EFA must be validated by CFA. To determine whether a model has been validated or not, certain model fit index values are examined. However, the fit indices in the literature are diverse, and it is challenging to determine which fit index should be considered standard (Orcan, 2018; Çokluk et al., 2018; Koyuncu and Kılıç, 2019). In this study, fit indices such as χ^2/df, RMSEA, CFI, GFI, AGFI, and NFI were used, and the ranges of excellent and acceptable fit indices recommended in the literature were used as references (Wang and Wang, 2012; Meydan and Şeşen, 2011; Schermelleh-Engel et al., 2003). When examining the fit values of the structure, χ^2/df: 2.726, RMSEA: 0.072, CFI: 0.97, GFI: 0.93, AGFI: 0.90, and NFI: 0.96 were obtained (Fig. 2). These fit values of the indices were found to be at the level recommended by the literature. Based on these findings, it was concluded that the two-factor structure of the scale was confirmed.

The correlation analysis between the two latent dimensions revealed a moderate positive relationship (r = 0.72, 95% CI [0.60–0.84], $p < 0.001$). This finding indicates that individuals who tend to justify or legitimize violence against women are also more likely to endorse controlling attitudes toward women's behavior. However, the moderate level of correlation suggests that these are related yet distinct constructs, supporting the two-factor structure of the Sahara scale. This distinction is important, as it allows researchers and practitioners to identify not only the tendency to normalize violence but also the inclination to monitor and restrict women's autonomy, both of which are crucial for understanding and addressing attitudes toward violence against women (Table 6).

AVE and CR are two important indicators used in structural equation modeling and scale development studies to assess the validity and reliability of a scale. AVE represents the ratio of the total variance that can be explained by the items representing a structure. In other words, AVE shows the extent to which the items of a scale represent the entire scale. The AVE value should be 0.50 or higher. This value indicates that the items of the structure explain at least 50% of the total variance. An AVE value below 0.50 indicates that the structure has low explanatory power and that the items should be reviewed (Fornell and Larcker, 1981). CR is a reliability coefficient that evaluates the internal consistency of a structure. It is accepted as an alternative measure to Cronbach's α and calculates reliability by considering the factor loadings of the items. The CR value should be 0.70 or higher. This value indicates that the structure has high internal consistency. AVE evaluates the discriminant and convergent validity of a structure. CR measures the consistency of the items in a scale (Hair et al., 2019). For a valid and reliable measurement, AVE should be 0.50 or higher, and CR should be 0.70 or higher. In this study,

since the AVE >0.50 and CR >0.70 values calculated for each factor and the square root results of the calculated AVE values are higher than the correlation values in the same row and column, it can be stated that the scale has discriminant validity (Table 7). In this study, McDonald's Omega ω value was also calculated based on the factor loadings obtained from the CFA results (Table 7). McDonald's Omega ω is an internal consistency coefficient that indicates how much of the scale items are explained by the true structure (latent construct). Cronbach's Alpha assumes that all items contribute equally (tau-equivalent). Omega eliminates this limitation and provides a more realistic reliability value by considering factor loadings. In this study, the Omega ω value was calculated for factors and the scale total, yielding values of ωJustification 0.92, ωControl 0.94, and ωSahara 0.96. The obtained values indicate very high reliability for both factors and the scale total (Dunn et al., 2014).

Limitations

This study has several limitations. First, the data were collected through online surveys using purposive sampling, which may limit the generalizability of the findings to the broader population. Second, the sample was restricted to adults aged 18 and above from a single cultural context, and thus the psychometric properties of the Sahara scale should be further examined in larger and more diverse populations. Third, all data were based on self-report, which may be subject to response and social desirability bias. Future studies are recommended to validate the scale in different cultural settings, with more representative sampling methods, and by incorporating multiple sources of information.

5. Conclusions

This study aimed to determine attitudes toward violence against women among individuals aged 18 and older by assessing the validity and reliability of the "Sahara Attitude Scale Toward Violence Against Women" in Turkish culture. The results of content validity, construct validity, convergent and discriminant validity, reliability analyses, and model confirmation indicated that the scale has adequate validity and reliability and can provide consistent measurements in Turkish culture.

5.1 Scale Instructions

"Sahara Attitudes Scale Toward Violence Against Women" was developed to determine the level of attitudes toward violence against women in the population aged 18 and older (Appendix Table 8). As a result of exploratory and confirmatory factor analyses, a two-factor, 12-item structure was obtained. The scale explains 76.3% of the variance, with Cronbach's α of 0.94, Gutman's 0.95, and McDonald's Omega ω of 0.96.

The factor "Justification" reveals individuals' tendency to view acts such as violence, harassment, or mistreatment against women as legitimate, understandable, or justified for various reasons. The statements included in this factor reveal the internalization of gender stereotypes, the perception that women's behavior is the cause of violence, and that the victim is to blame. This attitude is the product of a mindset that explains violence against women not as an individual act but as a result of women's so-called "wrong" behavior. Such beliefs can lead to the normalization of violence, impunity for perpetrators, and the silencing of victims. Approaches that define violence as "acceptable if minor" also fall within this scope. This sub-dimension represents the belief patterns that should be the main target of social transformation and awareness efforts. This factor consists of items 1–6 and explains 63.2% of the variance, with a Cronbach α of 0.94, Gutman 0.94, and McDonald's Omega ω 0.92.

The factor "Control" reveals individuals' tendency to control and restrict women's lives, behavior, clothing, spending, and social roles. It represents a perspective that justifies restricting women's freedom, establishing dominance over them, and constantly monitoring their movements. This controlling attitude feeds on the tendency to view women as passive, obedient, and dependent on male approval. Views such as that it is "inappropriate" for women to go out late at night, that their work is "not naturally accepted", or that their spending must be "approved by men" are part of this structure. This understanding is contrary to gender equality and denies women's autonomy as individuals, limiting their role in society. This factor consists of 7–12 items and explains 13.1% of the variance, with a Cronbach's α of 0.91, Gutman's 0.91, and McDonald's Omega ω of 0.94.

The Sahara Attitude Scale Toward Violence Against Women is a 5-point Likert-type scale (0 = Strongly Disagree, 4 = Strongly Agree). There are no reverse-scored items in the scale. The total scale score is obtained by summing the scores of all items, and the raw score ranges from 0 to 48 points. The raw score must be standardized to a range of 0 to 100 points according to the guidelines. An increase in the score indicates an increase in favorable attitudes toward violence against women.

5.2 Standardization

Standardization has been applied to the scoring of this scale to enable easy and consistent comparisons between samples in studies using the scale and in future adaptation studies.

The following formula should be used to standardize the scores obtained from the scale to 100.

$$\text{Standardized score} = \left(\frac{\text{Raw Score}}{\text{Scale Range (48)}} \right) \times 100$$

For example, if a person scored 24 points on the scale, their standardized score can be calculated as follows:

Table 8. The Sahara attitude scale toward violence against women.

	Please rate your level of agreement with the following statements.	Rating (0–4)
1	If a woman is harassed, she should blame herself.	
2	A woman's revealing clothing is a reason for her to be harassed.	
3	It is normal for a woman who is out late at night to be harassed.	
4	Unless the violence is severe, it is acceptable to beat a woman.	
5	It is inevitable that some women will be harassed.	
6	If a woman is beaten, she is also to blame.	
7	It is not appropriate for a woman to be out late at night.	
8	It is not appropriate for women to work in every sector.	
9	Women having too much freedom can disrupt family order.	
10	A woman's actions, where she goes, and what she wears should be monitored.	
11	A woman's spending should be kept under control.	
12	A woman should only be allowed to spend money to the extent that she is permitted.	

Rating scale: (0) I don't agree at all; (1) I disagree; (2) I partially agree; (3) I agree; (4) I completely agree.

$$\text{Standardized score} = \left(\frac{24}{48}\right) \times 100 = 50$$

In this case, the standardized score of a person who scored 24 points on the scale is 50 points. It is mandatory to use the standardized form of the scores obtained from the scale in the studies to be conducted.

Availability of Data and Materials

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions

YK: data curation, validation, conceptualization, formal analysis, supervision, writing–original draft. AA: conception and design, acquisition of data, interpretation of data. EB: conception and design, acquisition of data, analysis and interpretation of data. HKÖ: data curation, writing–review & editing. SK: data curation, writing–review & editing. All authors contributed to critical revision of the manuscript for important intellectual content. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

The study was carried out in accordance with the guidelines of the Declaration of Helsinki. The studies involving humans were approved by Artvin Çoruh University Scientific Research and Publication Ethics Committee (Approval Date and Number: 13.02.2025-168412). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

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Conflict of Interest

The authors declare no conflict of interest.

Appendix

See Table 8.

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