

Validation and Psychometric Properties of the Sibling Bullying Questionnaire in Iranian Context

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Abstract

This study investigated the psychometric features of the Iranian adaptation of The Sibling Bullying Questionnaire (TSBQ). Throughout the academic year 2022-2023, a total of 469 high school students participated in the study by completing an online version of TSBQ. The Conflict Tactics Scale (CTS) was utilized to assess convergent validity. The questionnaire was translated into Persian by experts fluent in both Turkish and Persian. Both exploratory and confirmatory factor analysis were employed using the SPSS-26 and AMOS-24 software. A mean and variance adjusted estimator was utilized for conducting factor analysis. Validity was assessed using content validity, concurrent validity, and construct validity, utilizing both exploratory and confirmatory factor analysis. In addition, the tool's reliability was assessed using Cronbach's alpha test. The exploratory component analysis revealed the presence of three factors: relational abuse, psychological abuse, and verbal abuse.

These factors accounted for 61.29% of the total variance of the scale. The findings of the confirmatory factor analysis validated the findings of the exploratory factor analysis. The questionnaire demonstrated a high level of dependability, with an overall reliability coefficient of 0.90 using Cronbach's alpha technique. The reliability coefficients for the relational, psychological, and verbal subscales were 0.84, 0.80, and 0.80, respectively. Furthermore, a strong and statistically significant correlation was seen between the elements of this scale and the scale of conflict resolution approaches, providing evidence for the convergent validity. The study's findings demonstrated that this questionnaire has strong reliability and validity within Iranian society, making it suitable for use in diverse research domains.

Keywords: Family conflict assessment; Psychometric properties; Psychological abuse; Sibling bullying; Validation

Introduction

Siblings play a significant role in the lives of many children [1]. Approximately 90% of children in Western and Eastern nations grow up with at least one sibling [2]. The relationship between siblings is distinct and influential in social development [3,4], as it spans from infancy to adulthood and encompasses warmth, intimacy, aggression, and conflict [5]. Sibling abuse is the predominant type of family violence [6], characterized by a recurring pattern of physical or psychological hostility aimed at inflicting harm, driven by a deep-seated emotional desire for power and control [7]. Sibling violence, though sometimes perceived as a common occurrence, can have lasting adverse impacts [8]. Victims often report higher symptoms of anxiety and depression and an increased likelihood of non-suicidal self-injury, suicide ideation and suicide attempt [9-11] and behavioral problems, internalizing problems, externalizing problems, mental distress, decreased well-being, and low self-esteem [12]. research also indicates that individuals who experience sibling violence in childhood may experience long-term effects in adulthood. Using qualitative analysis, Wiehe (1997), identified several overall long-term effects of sibling violence. These effects on the victims of sibling violence include difficulty with interpersonal relationships, repeating the victim role in other

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relationships, over sensitivity, continued self-blame, anger toward the perpetrator, eating disorders, substance abuse, depression, and posttraumatic stress disorder [13].

Types of sibling violence

Sibling violence is categorized into three types: psychological, sexual, and physical [14]. Physical abuse by a sibling occurs when one sibling purposefully harms another sibling physically. This harm may result from physical acts such as pushing, hitting, slapping, kicking, biting, squeezing, scratching with nails, and pulling hair [7,15,16]. The most extreme type involves the use of objects such as hoses, handles, clothes hangers, hair brushes, belts, sticks, knives, guns, shattered glass, razors, and scissors, which are associated with injury and pain. The injuries mentioned have many effects, including bruises, boils, abrasions, tears, wounds, cuts, and bone fractures [17]. Sibling psychological abuse involves one sibling making comments to mock, insult, threaten, terrorize, bully, and humiliate the other sibling, as well as rejecting, exploiting, neglecting, and exposing them to violence by peers or other siblings [7]. Damage arises when one sibling dominates the relationship by instilling fear and diminishing the self-esteem of the other [14].

Sibling sexual abuse is one sibling engaging in sexual relations with another sibling without their consent, often using force or coercion due to a power imbalance, and it can occur between siblings of comparable or different ages. These examples involve instances where violence, coercion, force, harm, or the threat of harm, either frequently or infrequently happen, and may involve minor or more serious sexual acts. These examples encompass persistent sexual practices that are not fleeting or driven by curiosity and do not align with the affected child's development. It may or may not entail physical contact or coercion. Non-physical sibling sexual abuse involves actions aimed at sexually stimulating either the victimized or offender sibling. These situations may involve inappropriate sexual references in discourse, indecent exposure, making siblings witness sexual activities, shooting lewd images, or exposing siblings to pornography. It can involve sexual contact between siblings that is perceived as non-harassing by both the victim and perpetrator but is nevertheless classified as sexual harassment [18].

Cultural differences sibling bullying

The existing literature on sibling bullying primarily relies on research undertaken in Western, industrialized, educated, prosperous, and democratic countries, despite significant differences in prevalence, kinds, and repercussions found in various cultures [2]. Sibling relationships in Asian families may exhibit distinct structures and traits compared to those in Western cultures [19]. Research demonstrates that cultural factors, such as gender norms, familial expectations, and the level of emotional intimacy among siblings, can profoundly affect sibling relationships [20,21]. In Iranian culture, familial connections are frequently influenced by traditional and religious principles, highlighting reverence for elders, distinct responsibilities for siblings, and reciprocal emotional support [22]. These characteristics may

directly influence the severity, nature, and repercussions of sibling violence or bullying. Moreover, social transformations in Iran, including diminishing family size and the influence of modernity on conventional values, may further complicate sibling relationships [23]. These cultural nuances also pose challenges for child welfare workers and parents in identifying sibling abuse as abuse. Nonetheless, even the minimal prevalence percentages indicate a significant social issue [24,25].

Assessment tools for sibling violence

The precision of measurement, although recognized as an essential component of legitimate violence assessment, is frequently neglected in the choice of tools employed to evaluate sibling violence in psychological research [26]. The Olweus Bully/Victim Questionnaire (OBVQ), developed by Olweus, is acknowledged as the premier instrument for assessing bullying behavior in children and adolescents. Bowes, Wolke, and other researchers employed the OBVQ to examine the incidence of sibling bullying [27]. Another popular questionnaire the Sibling Bullying Questionnaire (SBQ) is a popular and commonly used scale derived from the Olweus [28] Bullying Questionnaire [29]. It includes the following items: (1) hitting/kicking, (2) taking/damaging belongings, (3) calling nasty names, and (4) making fun of. The SBQ has demonstrated reliability and validity across several cultures and languages, including the UK, Israel, and Italy as evidenced by studies conducted by [30-32].

Dantchev [33] recently revised the original SBQ and expanded it to a 14-item questionnaire with victimization and perpetration subscales [33]. The updated version includes three new items: (1) excluding individuals intentionally, (2) spreading rumors or lies to create dislike, and (3) bullying in alternative manners. The validity and reliability of the revised SBQ were assessed in Turkey [32,34], while the newer and more comprehensive SBQ has not yet been confirmed in Iranian culture [33]. To the best of our knowledge, no studies have documented the occurrence and frequency of sibling bullying among Iranian adolescents aged 15-18 years. Furthermore, it is crucial to bring attention to the issue of sibling bullying [35]. There is a lack of comprehensive research in Iran that investigates sibling violence, specifically physical and psychological abuse.

The majority of research concerning familial relationships, particularly sibling dynamics, has employed questionnaires validated in the context of family interactions. Prominent instruments include:

1. Sibling Behavioral Index [36]: Comprising three subscales-competition, aggression/conflict, and avoidance-this tool evaluates adverse sibling interactions.
2. Sibling Relationship Questionnaire (SRQ), long form, child version [37]: Measures warmth/closeness, familial power dynamics, conflict, and competition.
3. Conflict Tactics Scale (CTS), [38]: Assesses conflict resolution strategies, including reasoning, verbal aggressiveness, and violence, among family members.

While these instruments are valuable for understanding general sibling and familial interactions, they are insufficient for assessing sibling bullying in an Iranian context. Their limitations include:

- I. **Broad Scope:** These tools are designed to evaluate overall family dynamics rather than focusing specifically on sibling bullying.
- II. **Cultural Mismatch:** Developed in Western contexts, they may not account for unique cultural aspects of Iranian sibling relationships, such as traditional gender roles and familial hierarchies.
- III. **Limited Specificity:** They primarily capture modest or indirect forms of aggression, potentially overlooking severe or culturally nuanced manifestations of sibling violence.

By highlighting these limitations, the need for a culturally adapted tool, such as the Turkish Sibling Bullying Questionnaire (TSBQ), becomes evident. The TSBQ's focus on bullying behaviors, both perpetration and victimization, provides a more precise and contextually relevant measure for sibling bullying in Iranian adolescents. Instruments employed to evaluate sibling violence may be ineffective, as they were created to measure other, nonspecific behavioral components and are hence too broad in scope. On the other hand, they have focused on modest manifestations of sibling aggression. Although there is heightened awareness of the prevalence and harm of sibling violence, research endeavors are sometimes impeded by methodological limitations stemming from ambiguous definitions and inadequate or inconsistent measurement [26]. These behaviors necessitate suitable evaluation instruments. Conducting research on sibling bullying is essential not only to mitigate its psychological and legal consequences but also to provide practical applications in several key areas.

First, the validated questionnaire can inform policymakers by offering reliable data on the prevalence and characteristics of sibling bullying in Iran, aiding in the development of child protection laws and family support initiatives tailored to local cultural contexts. Second, it can support the creation of targeted intervention programs, enabling mental health professionals and family counselors to identify at-risk families and promote healthier sibling relationships. Third, in educational settings, the tool can help educators and child psychologists address the broader impacts of sibling bullying, such as academic challenges and social withdrawal, while also guiding training workshops for teachers and parents. Finally, the questionnaire establishes a foundation for future research, allowing for longitudinal studies to explore the long-term effects of sibling bullying on mental health, personality development, and family relationships. By addressing these aspects, the study contributes not only to filling a significant gap in the literature but also to fostering healthier family and societal environments.

Objective of the study

Considering the possible harmful impacts of sibling bullying

on the mental health of teenagers, it was important to investigate how common sibling bullying is among Iranian adolescents. Furthermore, there was a requirement for a fresh translation and validation research to be conducted on the revised edition of SBQ using a sample of Turkish teenagers. Given the absence of a reliable tool for assessing sibling abuse in Iran, it is essential to establish and evaluate a questionnaire specifically designed for use in Iranian society. The present study aims to demonstrate the validity and reliability of the Turkish Sibling Bullying Questionnaire (TSBQ) developed by [33] in the Iranian teenage community, given the significance of sibling bullying. This tool was specifically developed in Turkey and tailored to the cultural context of Turkey. It was chosen for validation in our current research due to its close resemblance to the cultural norms and practices of our country, Iran. An important characteristic of this tool is its specific focus on investigating sibling bullying, whether the individual is the perpetrator or the victim.

This tool is designed to address the issue using generic sibling relationship questionnaires or technical questions, which were previously used in research on sibling bullying. This tool is characterized by its concise format, making it highly ideal for assessing sibling bullying in large cohorts and for research endeavors. By providing a reliable and culturally adapted tool for assessing sibling bullying, this study seeks to contribute to the understanding and mitigation of the psychological and legal consequences of sibling abuse in Iran. Its findings not only address a critical gap in the literature but also offer practical applications for policymakers, educators, and mental health professionals, fostering healthier family dynamics and societal well-being. The current study aims to address the lack of research on sibling bullying among Iranian adolescents aged 15-18 years. To the best of our knowledge, no prior studies have documented the occurrence and frequency of sibling bullying in this population. Despite heightened awareness of sibling violence's prevalence and harmful effects, research efforts are often hindered by methodological limitations, such as ambiguous definitions and inadequate measurement tools [17].

Existing tools, such as the Sibling behavioral index [36], the Sibling relationship questionnaire [37], and the Conflict Tactics Scale [38], were primarily developed to assess broader family dynamics and are not specifically designed for sibling bullying. These instruments, while valuable, fail to capture the cultural and contextual nuances of sibling relationships in Iran. Given these gaps, this study validates the Turkish Sibling Bullying Questionnaire (TSBQ), developed by [33], for use in the Iranian context. The TSBQ was chosen due to its cultural relevance, concise format, and specific focus on sibling bullying, encompassing both perpetration and victimization. Its tailored design makes it ideal for large-scale research and practical applications in various psychological domains, including clinical, developmental, and educational psychology. By providing a reliable and culturally adapted tool for assessing sibling bullying, this study seeks to contribute to the understanding and mitigation of the psychological and legal consequences of sibling abuse in Iran.

Methods

Participants

A total of 480 high school pupils from Jahrom, a city in Iran, were selected through convenience sampling during the 2022-2023 academic year. The students were requested to complete

the translated online version of the Turkish Sibling Bullying Questionnaire (TSBQ). Furthermore, they completed the Conflict Tactics Scale (CTS) by [38]. Data from 469 participants were incorporated into the final analysis after incomplete responses were excluded. The demographic characteristics of the sample are summarized in Table 1.

Table 1: Demographic characteristic of the study sample.

Demographic Characteristic		EFA Sample (n=235) Number (%)	CFA Sample (n=234) Number (%)
Gender	Female	143 (60.9%)	149 (63.7%)
	Male	92 (39.1%)	85 (36.3%)
Grade	10 th Grade	93 (39.6%)	182 (77.8%)
	11 th Grade	86 (36.6%)	19 (8.1%)
	12 th Grade	56 (23.8%)	33 (14.1%)
Number of Siblings	1	139 (59.1%)	140 (59.8%)
	2	63 (26.8%)	59 (25.2%)
	3	19 (8.1%)	18 (7.7%)
	4	14 (6%)	12 (5.1%)
	5	0	2 (.9%)
Physical Illness	Missing	0	3 (1.3%)
	yes	13 (5.5%)	9 (3.8%)
	No	222 (94.5%)	225 (96.2%)
Psychiatric Medication Use	yes	3 (1.3%)	3 (1.3%)
	No	232 (98.7%)	231 (98.7%)
Age		M (SX)	M (SX)
		16.64 (.87)	15.97 (.93)

Analysis

Descriptive statistics, including frequency, percentage, mean, and standard deviation, were utilized to illustrate the sociodemographic characteristics of the gathered sample. The Sibling Abuse Questionnaire was validated by Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) approaches. To evaluate the appropriateness of the data for factor analysis, two indicators were utilized: The Kaiser-Meyer-Olkin measure of sample adequacy (KMO) and Bartlett's test of sphericity. The components were extracted utilizing Eigenvalue, Scree plot, and Kaiser's Rule, and the percentage of explained variance was computed. The methodology utilized was principal component analysis with varimax rotation. Covariance-Based Structural Equation Modeling (CB-SEM) and the robust Maximum Likelihood Estimator (MLR) were utilized to perform Confirmatory Factor Analysis (CFA).

The CFA analysis was conducted on IBM SPSS Amos Graphic 26. This study employed several model fit assessment indices, including Chi-square (χ^2), normed chi-square (CMIN/DF), Tucker and Lewis Index (TLI; values ≥ 0.90), comparative fit index (CFI; values ≥ 0.90), standardized root mean square residual (SRMR; values < 0.08), and root mean square of approximation (RMSEA; values from 0.0 to 0.08) [39]. A correlation matrix (Pearson's coefficients) was generated to evaluate the convergent validity of the two questionnaires, utilizing total scores. Sibling Abuse Questionnaire and Strauss

Conflict Resolution Techniques Questionnaire. The Sibling Abuse Questionnaire's reliability was assessed by evaluating its internal consistency using Cronbach's Alpha.

Measures

Adolescents were directed to complete multiple questionnaires, all conducted in Persian. Comprehensive details regarding the measures are included in the subsequent sections.

Conflict Tactics Scale (CTS)

The Conflict Tactics Scale (CTS) [38], is a commonly employed tool for evaluating sibling bullying in Iran. This 15-item questionnaire aims to assess three fundamental strategies for conflict resolution-reasoning, verbal aggressiveness, and physical violence-within familial interactions. The questionnaire employs a 6-point Likert scale, extending from 0 (never) to 5 (more than once monthly). Items 1 through 5 evaluate logic, items 6 through 10 assess verbal hostility, and items 11 through 15-gauge physical violence [40]. The CTS has been employed in various research in Iran to assess sibling aggression and conflict, confirming its reliability and validity within Iranian familial contexts. Straus (1990) reported Cronbach's alpha values of 0.82 for the sibling violence subscale, and 0.56, 0.79, and 0.82 for the reasoning, verbal aggression, and physical violence subscales, respectively [40]. Hasannia et al. [41], further validated the questionnaire's dependability, reporting a Cronbach's alpha of 0.90 for the whole scale. The current study utilized the CTS to

assess sibling bullying, confirming the scale's dependability with a Cronbach's alpha of 0.90 in our sample.

Sibling Bullying Questionnaire (SBQ) and its adaptation

The Sibling Bullying Questionnaire (SBQ) [33], is a 14-item instrument designed to evaluate the prevalence of sibling bullying, encompassing both perpetration and victimhood. The SBQ encompasses inquiries regarding physical aggression (e.g., hitting, kicking, or pushing), verbal abuse (e.g., employing derogatory language or name-calling), and relational bullying (e.g., social ostracism or disseminating rumors). The questionnaire enables respondents to indicate their roles as either perpetrators or victims of sibling bullying within the last six months. The responses are recorded on a 5-point Likert scale, from 1 (never) to 5 (often). The questionnaire has exhibited robust reliability and validity across several groups, including the original use in countries that speak English. The perpetration subscale includes items such as: (1) I physically assaulted a sibling by hitting, kicking, pushing, or shoving them, or by threatening to do so. (2) I stole money or other possessions from a sibling, or intentionally damaged their belongings. (3) I verbally abused a sibling by using offensive and hateful language towards them. (4) I ridiculed a sibling in various ways. (5) I deliberately excluded a sibling from activities, either by not allowing them to join my group or by completely ignoring them. (6) I spread false information or rumors about a sibling, or attempted to manipulate others into disliking them. (7) I engaged in bullying behavior in a different manner.

The victimization subscale of the SBQ has seven items that have been rephrased to assess experiences of victimization. These items inquire about the frequency of certain actions carried out by siblings in the past six months. Items 1-2 pertain to physical sibling bullying, items 3-4 pertain to verbal sibling bullying, items 5-6 pertain to relational sibling bullying, and item 7 pertains to additional forms of sibling bullying/victimization that are not addressed by the previous six items [31-33]. The Turkish Sibling Bullying Questionnaire (TSBQ) is an adapted version of the original SBQ, translated and validated for use in Turkish culture by a team of experts using the expert committee approach [42]. The adaptation procedure preserved the original 14-item structure while incorporating three more items to more effectively encompass relational bullying behaviors. The T-SBQ has strong internal consistency in both the victim ($\alpha=0.84$) and perpetrator ($\alpha=0.83$) subscales. It also exhibits great reliability in the total test scale ($\alpha=0.90$) and shows a high degree of convergent validity when compared to the updated sibling bullying questionnaire ($\alpha=0.79$). The additional things are:

- I. Intentionally excluding a sibling from their social network, acquaintances, or entirely ignoring them.
- II. Disseminating falsehoods or participating in harmful discourse regarding a sibling to isolate them from others.
- III. Participating in other forms of psychological harassment not addressed by the initial items.

This study involved the translation of the Turkish version of the SBQ (TSBQ) into Persian using a meticulous translation-back translation methodology. The questionnaire was initially translated into Persian by linguistics experts who were native speakers of both languages. Subsequently, two bilingual translators, unaware of the original version of the SBQ, performed a back-translation to ensure the accuracy and equivalence of the forward translation. Subsequently, the first version, as well as its translated counterpart, underwent evaluation by five professors from the psychology department. The academics validated the content validity of both versions. In relation to the initial purpose of evaluating delinquency, the newly translated scale model and factor loadings demonstrated a satisfactory and strong alignment with a two-factor structure in a sample of Turkish teenagers.

Furthermore, this outcome aligns with the initial factor structure of the SBQ. In order to assess the reliability of the questionnaire, many methods were employed, including content validity, construct validity, factor validity, and concurrent validity. Content validity is commonly employed to evaluate the elements of a measurement instrument and is established by specialists. Thus, the initial factor structure of the SBQ was successfully duplicated and preserved as the T-SBQ. Subsequently, the T-SBQ identified two distinct factors: victim and perpetrator, mirroring the structure of the original scale [2]. Hence, the participants were instructed to respond to both sets of questions using a five-point Likert scale that ranged from 1 (indicating never) to 5 (indicating many times).

Result

A total of 480 persons accessed the survey link and completed the two questionnaires. Eleven people did not complete all items and were consequently omitted from the study. The final sample comprised 469 people. The sociodemographic attributes of the subjects are delineated in Table 1. In exploratory factor analysis, a sample size that is tenfold the number of items is deemed suitable [43]. Furthermore, in confirmatory factor analysis, the ratio of sample size to free parameters must surpass 10 [44]. Simultaneously performing exploratory and confirmatory studies on the same sample may compromise the validity of the findings [45]. Consequently, to analyze the factor structure of the scale, the sample was randomly partitioned into two subsamples of 235 and 234 participants (Table 2). The initial subsample was employed for exploratory factor analysis, whilst the subsequent subsample was utilized for confirmatory factor analysis.

Table 2: Values estimation of KMO and Bartlett's Test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.909
Bartlett's Test of Sphericity	Approx. Chi-Square	3049.347
	df	91
	Sig.	0

Content validity

Five psychologists evaluated the thoroughly filled pilot form. They were initially directed to evaluate the questionnaire

by assigning ratings on a 5-point scale according to each item's relevance, importance, and applicability, with higher scores signifying a larger degree. Thereafter, the Content Validity Ratio (CVR) and Content Validity Index (CVI) were computed. The Content Validity Index (CVI) was established by soliciting expert evaluations of each item's simplicity, relevance, and clarity on a scale from 1 (not relevant, simple, or clear) to 4 (extremely relevant, simple, and clear) The CVI assesses the necessity of each item, whereas the CVR measures item relevance. During the CVR assessment, each professional evaluated the elements using a scale of 1 (important), 2 (helpful but not essential), or 3 (not essential). Lawshe's table indicates that items with a Content Validity Ratio (CVR) score of 0.62 or above were deemed acceptable and kept [46-48]. The questionnaire exhibited strong validity, with Content Validity Index (CVI) and Content Validity Ratio (CVR) values of 0.92 and 0.74, respectively. In light of these findings and expert consultations, the number of items remained unchanged; the

questionnaire preserved all 14 items from the original form.

Construct validity

An Exploratory Factor Analysis (EFA) was performed to ascertain the principal factors of the scale. The Kaiser-Meyer-Olkin (KMO) measure of sample adequacy was 0.896, and Bartlett's test of sphericity was significant ($\chi^2=1819.915$, $p<0.001$), affirming the data's suitability for factor analysis and demonstrating a substantial correlation among the variables. Consequently, the data was considered appropriate for this research. The principal component analysis approach with Varimax rotation was employed to extract the factors. The initial stage analysis revealed that three components with eigenvalues over 1 collectively accounted for 61.297% of the total variance (Table 3). No items were extracted from the scale. The scree plot indicated a three-factor solution (Figure 1). The factors and items analyzed are presented in Table 4.

Table 3: Rotation sums of squared loadings.

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
Relational Bullying	6.357	45.41	45.41
Psychological Bullying	1.187	8.475	53.885
Verbal Bullying	1.038	7.412	61.297

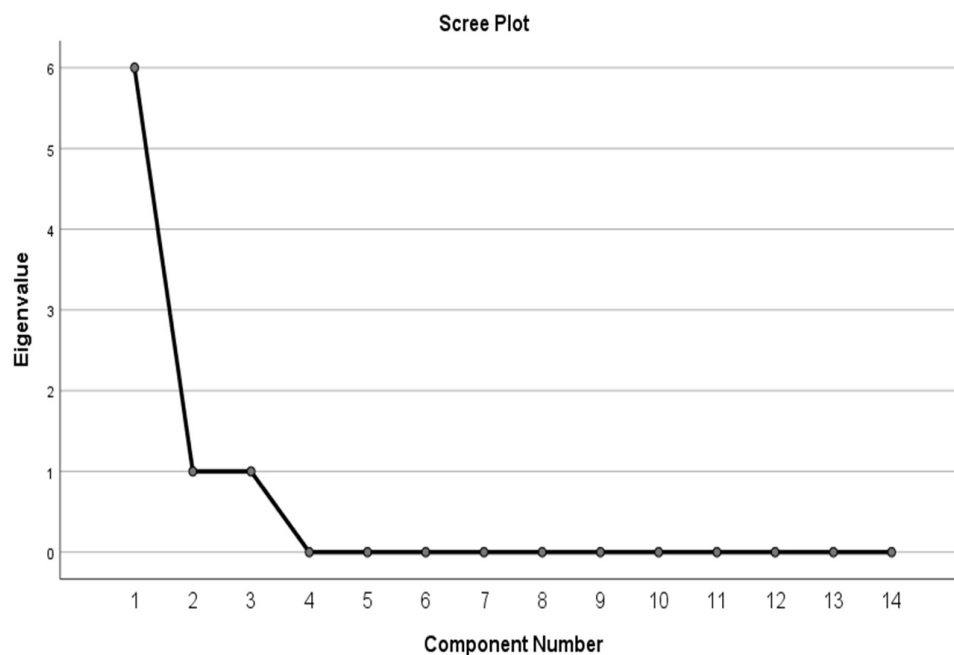


Figure 1: Slope diagram of the range of factors (scree plot) in factor analysis.

Table 4: Loading the eigenvalues of items after Varimax rotation in exploratory factor analysis (n-235).

Items	Factor 1	Factor 2	Factor 3
11- I made fun of a brother or sister	0.741		
8- I hit, kicked, pushed or shoved a brother or sister around, or threatened to do this	0.726		
14- I bullied in another way	0.697		
10- I called a brother or sister nasty and hateful names	0.691		

9- I took money or other things from a brother or sister or damaged their belongings	0.632		
5- They kept me out of things on purpose, leaving me out of their group of friends or completely ignoring me.		0.755	
6- They told lies or spread rumours about me, or tried to make others dislike me		0.693	
13- I spread rumours about a brother or sister or tried to make others dislike them		0.67	
7- I was bullied in another way		0.617	
12- I kept a brother or sister out of things on purpose, leaving them out of my group or completely ignored them.		0.542	
2- I had things damaged or taken from me, including money		0.413	
3- I was called nasty and hateful names			0.836
4- I was made fun of			0.811
1- I was hit, kicked, pushed or shoved around or they threatened to do this			0.558

In the exploratory factor analysis of the Sibling Bullying Questionnaire, all 14 items exhibited a factor loading exceeding 0.40, and no items were eliminated from the questionnaire. Subsequent to the extraction of the model, the next phase involved designating the extracted factors. The variables were named based on both the substance of the items and pertinent literature. Table 4 reveals that the Sibling Bullying Questionnaire (2019) comprises three factors:

- I. Relational Bullying-This factor encompasses items 8, 9, 10, 11, and 14, exhibiting factor loadings between 0.63 and 0.74, accounting for 45.41% of the scale’s variance.
- II. Psychological Bullying-This factor comprises items 2, 5, 6, 7, 12, and 13, exhibiting factor loadings between 0.41 and 0.75, accounting for 8.47% of the scale’s variance.
- III. Verbal Bullying-This factor comprises items 1, 3, and 4, exhibiting factor loadings between 0.59 and 0.84, accounting for 7.41% of the scale’s variance.

Confirmatory factor analysis

At this stage, an appropriate model was created utilizing the results of exploratory factor analysis, and the factor loadings in the model were examined and assessed by Amos software. Figure 2 illustrates the optimal model fit for the questionnaire. Covariance matrices were employed, and fit indices were computed. The majority of the fit indices were satisfactory Table 5. The relative chi-square (χ^2/df) was 2.29 ($p < .001$). The model’s RMSEA was 0.029. The model indices, including CFI, GFI, and NFI, exceeded 0.8, with values of 0.91, 0.91, and 0.90, respectively. The results indicate that the created model is suitable, exhibits a good match, and is adequate for future research applications. The concurrent validity of the Sibling Bullying Scale was evaluated by analyzing its correlation with the Sibling Conflict Tactics Scale developed by [38]. Table 6 presents the correlations among the components of the two

scales. Table 6 reveals that the correlations between the elements of the Sibling Bullying Scale and the components of the Sibling Conflict Tactics Scale by [38], exhibit a significant relationship at the 1% level. This finding indicates appropriate concurrent validity between the two scales.

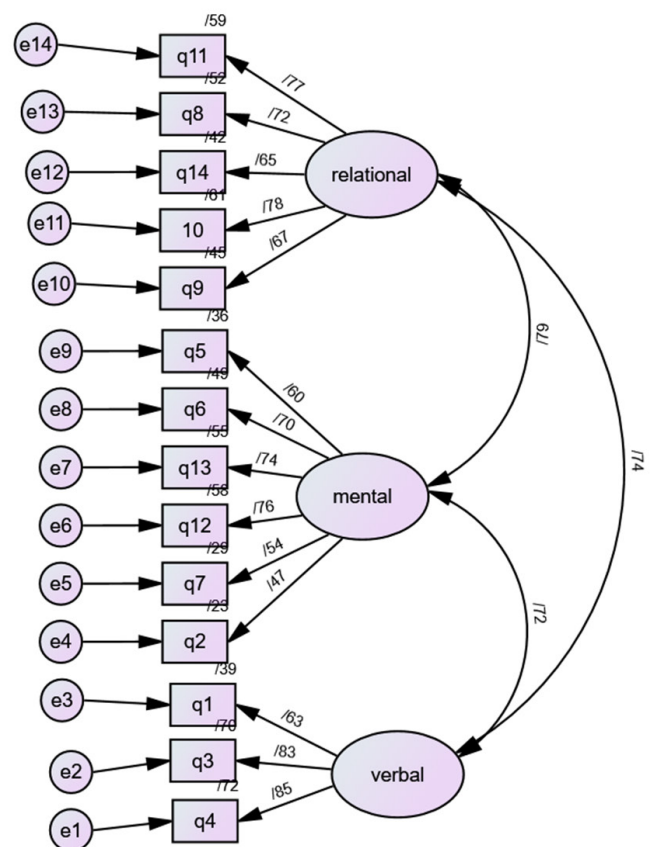


Figure 2: Confirmatory factors analysis diagram of the questionnaire using Amos software.

Table 5: Factor loadings of the sibling bullying questionnaire.

Component	Items	Factor loading	CR	P. value
Relational	Q14	1	-	-
	Q11	1.287	13.826	.001
	Q10.	1.237	13.961	.001
	Q9	0.873	12.381	.001
	Q8	1.251	13.206	.001
Psychological	Q12	1	-	-
	Q2	0.728	9.71	.001
	Q7	0.715	11.154	.001
	Q6	0.881	14.655	.001
	Q5	0.742	12.369	.001
	Q13	0.73	15.483	.001
Verbal	Q3	0.59	10.4	.001
	Q4.	0.65	10.45	.001
	Q1	0.72	11.16	.001

Table 6: Correlation matrix between components of the two scales.

Sibling Conflict Tactics Scale	Reasoning	Physical Violence	Verbal Aggression
Sibling Bullying Scale			
Relational	-0.22*	0.19**	0.46**
Psychological	-0.27**	0.18**	0.38**
Verbal	-0.23**	0.18**	0.54**

Reliability

The internal reliability was assessed using Cronbach's alpha, with all values surpassing acceptable criteria. The Cronbach's alpha

for the entire questionnaire was 0.84. The Cronbach's alpha values for the subscales of relational, psychological, and verbal bullying were 0.84, 0.80, and 0.80, respectively, for the full sample, with an overall scale value of 0.90. The results are displayed in Table 7.

Table 7: Reliability estimates for scale and subscales of questionnaire.

Factor	Number of Items	Cronbach's Alpha(n=235)	Cronbach's Alpha(n=234)	Cronbach's Alpha(n=469)
1.Relational	8,9, 10,11,14	0.86	0.82	0.84
2.Mental	7,6,5,2, 12,13	0.82	0.72	0.8
3. Verbal	4,3,1	0.86	0.74	0.8
Total	14	0.92	0.89	0.9

Discussion

This study confirms the validity and reliability of the Sibling Abuse Scale in Iranian society, highlighting the critical need to address sibling bullying as a significant form of familial violence. Cronbach's alpha was employed to assess the internal consistency of the sibling abuse scale. The Cronbach's alpha coefficient was 0.90 for the entire scale, 0.84 for the relational subscales, 0.80 for the psychological subscales, and 0.80 for the verbal subscales (Table 7). In the last three decades, limited research has investigated sibling bullying or sibling aggressiveness overall [49]. Although the legislator has made a significant effort to provide criminal protection for victims of sibling violence, the issue remains that not all forms and instances of this violence have been addressed by the legislator, and the legislative umbrella of protection is only up to the age of 18; while many reports show that some violence is committed outside this age range [50].

The deficiency of research and intervention programs targeting the reduction of violence in sibling relationships can be attributed to the normalcy of sibling violence and the disparate standards applied to usual behavior among siblings relative to other relationships. This viewpoint has resulted in sibling violence being disregarded as a kind of familial violence. Enhancing knowledge of initiatives designed to mitigate conflict and violence in sibling relationships, hence fostering positive sibling dynamics, is essential for enhancing overall family functioning [15]. Notwithstanding a recent increase in scholarly and clinical focus on Sibling Violence (SV), dependable and valid assessments of its intensity have not yet been psychometrically validated in non-offender populations [26]. The current study's findings demonstrated strong validity in the sibling abuse scale, as evidenced by content validity, concurrent validity, and construct validity, which were assessed by exploratory and confirmatory component analysis.

A 14-item exploratory factor analysis was conducted. The first findings of the study conducted on the key components of the research instrument, as presented in Table 7, indicate that all items have a satisfactory factor load. The concurrent validity of the sibling abuse test under investigation was established by assessing its correlation with Straus [38], significant sibling conflict approaches. The results of confirmatory factor analysis align with multiple studies [2,29,32,33], and provide support for the three-factor structure of the scale, which includes psychological violence, relationship, and verbal aspects. There is undoubtedly overlap between the different forms of bullying; victims of bullying are usually subjected to a number of bullying behaviors [51]. This discovery elucidates that siblings engage in psychological, verbal, or communicative violence towards one another. Psychological sibling abuse include the deliberate use of ridiculing, insulting, threatening, intimidating, bullying, and humiliating words by one sibling towards another, with the intention of causing harm. The mistreatment of siblings can manifest in several forms, such as rejection, humiliation, and exploitation.

It may also involve the intentional destruction of a sibling's personal belongings. Additionally, neglecting siblings and subjecting them to violence from classmates or other siblings are all forms of harmful conduct [7,14]. Another form of psychological abuse occurs when a sibling uses another for advantage or profit [24]. Verbal abuse encompasses the utilization of explicit comments to ridicule, offend, menace, coerce, or degrade a sibling [4,52]. Relational aggression has a similar behavioral pattern to physical aggression, resulting in harm and harassment of others through interpersonal connections. This form of aggressiveness undermines amicable connections and results in the child's exclusion from the peer group. A belligerent youngster will be excluded from the group through the dissemination of gossip, slander, or coercion to disrupt the amicable relationships among others. The individual subjected to this form of conduct experiences difficulties in adapting, as well as psychological and social challenges [53].

They also include damage or threat of damage to reputation. Behaviours may be verbal or non-verbal, direct or indirect. They are often subtle, have a profound effect on the victim, but may be less easy for an outsider to identify. Both males and females engage in relational aggression but it is often associated more with girl [54]. Victims of name-calling have reported higher rates of anger, embarrassment, shame, and unhappiness. Often these victims have coped with relational bullying by withdrawing from friendships and school activities [55]. The findings suggest that sibling bullying in Iranian families may reflect broader cultural norms, including hierarchical family dynamics and traditional gender roles, which could influence patterns of psychological and verbal abuse. According to the culture of Iran society, and especially in traditional cultures, parents make differences between girls and boys and give more attention to boys. These discriminations and differences will lead to incompatibility and problems in relationships between children. Discrimination between children creates a sense of competition and jealousy in children.

Injustice and discrimination between children, comparing them with others and ignoring their individual differences, applying methods such as punishment, including negative and incorrect parental reactions to these situations, exacerbate and in some cases stabilize competition and jealousy between children, resulting in incompatibility and relationship problems for both children [41]. Also, Sibling bullying can be due to fear of the older sibling's status. Overall, various factors contribute to bullying resulting from fear of the older sibling's position, such as the presence of discriminatory structures in the family, gender roles, culture, power imbalance among siblings, the younger siblings' lack of self-esteem, an instrumental view of violence for problem-solving, and the lack of knowledge and skills in younger siblings to prevent bullying from the older sibling. Furthermore, the findings indicate that in societies where the culture of male dominance is prominent in family relationships, the fear of bullying among children is higher [56].

The concurrent validity of the sibling abuse questionnaire was established by its correlation with the conflict resolution skills questionnaire, indicating a significant association between the components of the two surveys. According to the background of the research, sibling bullying raises the likelihood of experiencing behavioral disorders and mental health issues [52]. According to researchers [14], it has been seen that sibling relationships involving physical abuse might result in future consequences such as melancholy, insecurity, perceived powerlessness, and self-esteem issues. Sibling bullying is linked to a range of adverse psychological effects, including emotional issues (such as feelings of isolation, anxiety, sadness, and self-inflicted damage), behavioral difficulties (such as excessive activity, conduct disorders, and risky behavior), and even thoughts of suicide [33,49]. Hence, next research should explore the dynamics of sibling interactions during childhood. Therefore, the results indicate that there is a necessity for targeted treatments to enhance sibling relationships in instances of child maltreatment. The sibling abuse scale demonstrates strong reliability and validity within Iranian society, making it a valuable and widely applicable tool for psychological study. The sibling abuse questionnaire has high validity and reliability coefficients, as well as being brief and easy to administer. This makes it a broadly applicable scale for researchers to utilize.

Limitations and future directions

It is important to acknowledge that this research, despite its virtues, has certain drawbacks. Sociodemographic variables such as family size, socioeconomic status, parental education, marital status, Age gap between siblings, birth order was not analyzed, which could provide additional insights into sibling bullying dynamics. Also, variations between different geographical areas could not be assessed. Researchers are advised to examine this in the future. The study sample consisted solely of high school students, limiting the generalizability of findings to other age groups. Sexual violence was not examined, leaving a critical dimension of sibling abuse unaddressed. To mitigate these constraints and improve the comprehension of sibling bullying, forthcoming research should

investigate a wider age spectrum, encompassing younger children and older adolescents, to analyze developmental variations in bullying dynamics.

Furthermore, integrating sexual violence as an aspect of sibling abuse would yield a more thorough comprehension of its occurrence and effects. Sociodemographic characteristics, including family size, socioeconomic level, parental education, and marital status, ought to be examined to determine their possible impact on sibling bullying behaviors. Longitudinal studies are essential to examine the enduring psychological, social, and behavioral consequences of sibling bullying on both victims and offenders. Additionally, the development and evaluation of culturally specific intervention programs may mitigate sibling bullying and promote stronger familial ties. Addressing these deficiencies will enhance understanding in this domain and aid in formulating effective measures to alleviate the detrimental impacts of sibling bullying on persons and families.

Conclusion

The present study aimed to linguistically and empirically establish the reliability and validity of a tool for assessing sibling bullying in the Persian language. The recently translated T-SBQ has sufficient reliability and validity. Hence, the measure is a suitable metric for assessing sibling bullying among Iranian teenagers. The subject of research on sibling abuse is quickly expanding as academics are being invited to investigate this topic across different age groups and considering diverse characteristics such as gender, ethnicity, culture, and personality-social factors. Given the high occurrence of sibling abuse in children, it is crucial to identify and examine the effective factors of violent communication. It is also important for parents, teachers, and educators to take responsibility for addressing the abuse of children. This should be done through rigorous research. These findings indicate that sibling bullying during adolescence is a matter of concern in Iran and should be seen as a significant issue by parents, policymakers, and researchers, considering its firmly proven connections to negative mental health consequences.

Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki. The University of Payame Noor Iran, Tehran, Ethics Committee approved and permission for the study (protocol code IR.PNU.REC.1401.444 and date of approval 21 December 2022).

Data Availability Statement

Data that substantiate the conclusions of this investigation are accessible from the corresponding author upon reasonable request.

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