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Sibling Bullying in Turkish Adolescents: Translation and Cross-Cultural Validation of the Sibling Bullying Questionnaire

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Abstract

The primary aim of this study was to translate the Sibling Bullying Questionnaire (SBQ) into Turkish and validate it. A secondary aim was to estimate the prevalence of sibling bullying in Turkish adolescents. The SBQ was translated by a team of English-Turkish bilinguals. Self-report data were collected from Turkish adolescents (N = 301) aged 10 to 18 years old (mean age = 14.25 years, SD = 2.46). Confirmatory factor analysis (CFA) was used to confirm the factor structure of the newly translated Turkish SBQ (T-SBQ). Descriptive analyses were then conducted to report the characteristics of the sample and the prevalence of sibling bullying. CFA confirmed the original two-factor structure of the T-SBQ indicating that a first-order correlated two-factor model shows the best fit: $x^{2=}160.33$ ($p < 0.001$), $df = 61$, RMSEA = 0.07, CFI = 0.95 and TLI = 0.93. The T-SBQ showed satisfactory levels of internal consistency in victimisation (α = 0.84) and perpetration (α = 0.83) subscales, excellent reliability in the overall test scale (α = 0.90), and a high level of convergent validity when compared with the Revised Sibling Bullying Questionnaire (α = 0.79). In terms of sibling bullying prevalence, approximately half of the adolescents (51%) reported having been involved in some form of sibling bullying in the preceding six months, either as pure-victim (18%), pure-bully (3%) or bully-victim (30%). This result aligns with the findings from other countries such as the United States (41%), Israel (51%), and the United Kingdom (49%). The T-SBQ is valid and reliable in measuring sibling bullying in Turkish adolescents and sibling bullying is prevalent in the lives of Turkish adolescents.

Keywords Sibling bullying · Prevalence Turkish questionnaire · Translation · Validation

Abbreviations

The SBQ	The Sibling Bullying Questionnaire
The T-SBQ	The Turkish Sibling Bullying Questionnaire
The R-SBQ	The Revised Sibling Bullying Questionnaire

Nearly 90% of children grow up with at least one sibling in both western and eastern societies (Eroğlu & Topkaya, 2019; Tippett & Wolke, 2015). Relationships between siblings bind them in both positive and negative ways (Vangelisti, 2009). While positive sibling interactions contribute to children's cognitive and social development by providing them precious early years experiences (Boer et al., 2013) negative sibling relationships are associated with social, emotional, and behavioural difficulties (Bank et al., 2004; Toseeb et al., 2018).

Negative sibling interactions tend to include conflict, aggression, fights, violence, abuse, and bullying (Whiteman et al., 2011). Although fights and conflicts are common and seen as normative in sibling relationships (Lamb et al., 2014), there is a lack of consensus surrounding the differences between ordinary sibling conflict and bullying. Sibling conflict is an inevitable part of sibling relationships which is often characterised by rivalry, envy, and jealousy, which are accepted as ordinary parts of sibling relationships (Sanders, 2004). Accordingly, sibling conflicts are categorised as *destructive* (unreasonable behaviours that damage relationships) or *constructive* (reasonable behaviours that contribute to child's development) conflicts, and either type is suggested to be taken seriously as both types have the potential to distress rivals (Caspi, 2011).

Sibling conflicts may result in more harmful behaviours,—bullying- if they start to show the following

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characteristics: (1) intention to harm, (2) frequent repetition, (3) happens between two children with power imbalance, (4) happens when there is lack of any manipulation by the other person (Olweus, 1984). In addition to Olweus's definition of bullying behaviour, Caffaro (2013) has added three behavioural characteristics that can be classified under sibling bullying as (1) physical aggression that aims to make a sibling feel unsafe or threatened, (2) an increasing frequency of aggression that is not easy to be spotted and stopped by bystanders, and (3) a refusing attitude/behaviour in relation to respect other sibling's views or emotions. A broader definition of sibling bullying that guides this study is made by Wolke et al. (2015) as: "any unwanted aggressive behaviour(s) by a sibling that involves an observed or perceived power imbalance and is repeated multiple times or is highly likely to be repeated; bullying may inflict harm or distress on the targeted sibling including physical, psychological, or social harm" (p.918).

Sibling bullying is the most frequent and yet the least recognised form of violence in most adolescents' lives (Eriksen & Jensen, 2009). Research has shown that around half of adolescents have been involved in sibling bullying at least once a week (Toseeb et al., 2018, 2020b; Wolke & Samara, 2004; Wolke & Skew, 2011), with boys being more likely to be perpetrators and girls being victims of bullying (Bowes et al., 2014; Camodeca et al., 2002; Dantchev & Wolke, 2019a; Toseeb et al., 2020a). Although sibling bullying is much more common between closely aged siblings (Tucker et al., 2013b), it seems to decrease with age (Toseeb et al., 2020b). Despite this, bullying among siblings has been ignored, as it is often considered by parents and professionals as a routine part of a child's development (Caffaro, 2013).

A growing body of literature suggests that sibling bullying has long-lasting negative effects on adolescents' mental health (Bowes et al., 2014; Dantchev et al., 2018; Natsuaki et al., 2009; Toseeb et al., 2020b). Previous longitudinal studies have shown that sibling bullying in early adolescence predicts a range of mental health outcomes in middle and late adolescence. Being involved in any type of sibling bullying at age 11 years, either as a victim or perpetrator, is associated with higher internalising and externalising problems at age 14 years (Toseeb et al., 2020b), and lower levels of wellbeing and self-esteem at age 17 years (Toseeb & Wolke, 2021). Additionally, children who experienced frequent sibling bullying at home were twice as likely to show psychiatric disorders such as anxiety, depression, and self-harm, than the ones who did not (Bowes et al., 2014; Wolke & Skew, 2011Dantchev et al.,2019b). Tucker et al. (2013a) found children and adolescents who were victims of any type of sibling aggression, physical, psychological, property-based, to show greater mental health distress than those who were not involved. Moreover, it is also suggested that sibling bullying in early adolescence is associated with nicotine dependence, antisocial and high-risk behaviours in late adolescence (Dantchev et al., 2018).

Although there is a consistent body of literature on sibling bullying experiences in childhood or early adolescence and its psychopathological associations in early or late adolescence, it is frequently argued that the current literature is heavily based on the research that has been conducted in Western, Industrialised, Educated, Rich, and Democratic (WEIRD) countries (Lin et al., 2020; Wolke & Samara, 2004). While clear variations in the prevalence, type, and consequences of sibling bullying across cultures have been reported (Ji et al., 2016; Lin et al., 2020), still very little is known about sibling bullying in some non-WEIRD cultures, such as Turkey.

In the Turkish literature, so far, a handful of Turkish researchers have investigated sibling relationships, conflict, and abuse in children and adolescents. For instance, Akduman (2010) investigated sibling abuse has reported a high prevalence of physical (83%), verbal (78%), relational (45%) and property-based aggression (69%) in Turkish preschool children. Another study focusing on sibling conflict strategies of adolescent girls found that behavioural characteristics of older and younger siblings were correlated with conflict resolution strategies of older siblings, although the study did not indicate any prevalence of sibling conflict (Bayram, 2014). In addition, a study that was conducted with undergraduate students (mean age = 21 years) has indicated that 18% of participants have been abused by a sibling and 25% have abused their sibling in early years (Demirbas, 2016). Apart from these, only one study has so far focused on sibling bullying in Turkish children (9–12-year-olds) in which a positive and significant association between sibling bullying and peer bullying was reported (Kandemir-Ozdinc, 2019).

The Sibling Bullying Questionnaire (SBQ) is a well-known and widely used scale that has been adopted from the Olweus Bullying Questionnaire (Olweus, 1991) by Wolke and Samara (2004) consisting of the following items: (1) hitting/kicking, (2) taking/ damaging belongings, (3) calling nasty names, and (4) making fun of. The SBQ has been frequently found to be reliable and valid by others in different cultures and languages e.g., in the UK (Tippett & Wolke, 2015; Wolke & Skew, 2011), in Israel (Wolke & Samara, 2004), and in Italy (Menesini et al., 2010). However, when using the SBQ in an Italian sample of adolescents, Menesini et al. (2010) reformulated items of the original SBQ and turned the questionnaire into a 10-item scale (five for bullying and five for victimisation). They took out an item (make fun of) and included two new items to the scale, namely excluding/ignoring and spreading rumours. Following this, Kandemir-Ozdinc (2019) translated the reformulated version of the SBQ

(Menesini et al., 2010) into Turkish and revised it by including three more bullying items and turning it into a nine-item sibling bullying scale.

More recently, however, Dantchev and Wolke (2019b) have revised the original SBQ and updated it to a 14-item questionnaire consisting of victimisation and perpetration subscales with three additional items: (1) keeping them out of things on purpose, leaving them out of their group of friends or completely ignoring them, (2) telling lies or spread rumours about them or trying to make others dislike them, and (3) bullying them in another way. Although the validity and reliability of the reformulated version of the SBQ (Menesini et al., 2010) have been previously conducted in Turkey (Kandemir-Ozdinc, 2019), the updated SBQ (Dantchev & Wolke, 2019b), which is a more comprehensive scale, has not been validated in the Turkish culture.

The Current Study

To the best of the authors' knowledge, no previous studies have reported the prevalence and frequency of sibling bullying in Turkish adolescents from early to late adolescence years (10–18). In addition, it is important to shed light on the possible association between sibling bullying and potential covariates such as age, gender, birth order, and the number of siblings (Camodeca et al., 2002; Wolke & Skew, 2011; Toseeb et al., 2018). Given the potential detrimental effects of sibling bullying on adolescents' psychopathological outcomes, it was crucial to explore and report the prevalence of sibling bullying in Turkish adolescents. In addition, there was a need for a new translation and validation study for the updated version of the SBQ in a Turkish sample of adolescents. Therefore, this study aimed: (1) to translate the original scale into Turkish and validate it in a Turkish sample of adolescents, (2) to assess the factor structure of the newly translated questionnaire, (3) to examine the reliability and validity of the new scale, and (4) to estimate and report the prevalence of sibling bullying in Turkish adolescents. To address these aims, the following research questions were asked:

(1) What is the factor structure of the newly translated T-SBQ?
(2) Is the newly translated T-SBQ a reliable instrument to measure sibling bullying in Turkish adolescents?
(3) Is the newly translated T- SBQ valid in measuring sibling bullying in Turkish adolescents?
(4) What is the prevalence of sibling bullying in Turkish adolescents?

Method

Ethical Statement

Ethical approval for the study was granted by the Department of Education Ethics Committee, University of York (Ref: FC20/1). A two-stage opt-in consent process was used to collect data for this study. At the first stage of the survey, parents were asked to consent to their child's participation. Parents who consented to their child's participation were mostly mothers (62%) with the remaining being the fathers (38%). Following parental consent, since the consent age in Turkey is 18 years, all adolescents were asked to provide assent and complete the survey.

Participants

A convenience sampling method was used to recruit the study participants. First, a cross-sectional online survey was administered to parents of adolescents using the Qualtrics software (Qualtrics, 2020). All parents were recruited via social media, parental online forums, and personal networks. In addition, a snowballing technique in which parents were asked to distribute the survey to the other eligible parents was also applied to reach the target sample. To encourage participation, a prize draw was held for a chance to win one of four Amazon.com.tr vouchers (25₺, 50₺, 75₺, 100₺). Four parents received one of four incentives, on behalf of their children, following the prize draw.

At the beginning of the survey, parents were asked to answer two questions, namely their gender and email addresses, and then allow their children to answer the rest of the survey. Adolescents were then asked to answer a short questionnaire containing demographic questions and two different measures of sibling bullying.

Sample Characteristics

The demographic characteristics of the sample are given in Table 1 and are described here. The sample consisted of a total of 301 adolescents, 162 girls (54%) and 139 boys (46%). Participants' ages ranged from 10 to 18 years, with a mean age of 14.25 (SD = 2.46). Among the participants, 41% (N = 124) were the firstborn, 26% (N = 78) were middle, 33% (N = 64) were the youngest. Of the sample, 36% had one sibling, 30% had two siblings, and 34% had three or more siblings. For the present study, similar to the classification of the United Nations International Children's Emergency Fund (UNICEF, 2005), ages between 10 to 12 years were classified as early adolescence (27%, N = 81), 13 and 15 as middle adolescence (36%, N = 108), and 16–18 as late adolescence (37%, N = 112).

Table 1 Sociodemographic characteristics of the sample (N = 301)

	N	Proportion
Gender		
Female	162	54.58
Male	139	45.42
Age		
10	26	8.64
11	28	9.30
12	27	8.97
13	39	12.96
14	33	10.96
15	36	11.96
16	46	15.28
17	36	11.96
18	30	9.97
Birth Order		
Eldest	123	41.13
Middle	77	25.78
Youngest	99	33.09
Number of Siblings		
1	110	36.21
2	89	30.36
3	102	33.43
Type of School		
Public School	235	78.07
Private School	24	7.97
Faith School	20	6.65
Other	22	7.30
Grade Level		
Primary School	7	2.33
Middle School	115	38.20
High School	163	54.25
Recently Graduated [a] (High School)	16	5.32

Recently Graduated (High School) refers to the participants who have recently graduated from high school and have not started their college degree yet due to the time of data collection (summer holiday).

Measures

Adolescents were asked to complete a number of questionnaires. These were all administered in the Turkish language. Full details are provided in the following sections.

The Turkish sibling bullying questionnaire

The 14-item English SBQ assesses how frequently adolescents have been perpetrators or victims of sibling bullying in the preceding six months (Dantchev & Wolke, 2019b). The perpetration question is "How often did you do any of the following to your brothers or sisters in the last six months": (1) I hit, kicked, pushed or shoved a brother or sister around, or threatened to do this, (2) I took money or other things from a brother or sister or damaged their belongings, (3) I called a brother or sister nasty and hateful names (4) I made fun of a brother or sister in other ways, (5) I kept a brother or sister out of things on purpose, leaving them out of my group or completely ignoring them, (6) I spread rumours about a brother or sister, or tried to make others dislike them, (7) I bullied in another way. The victimisation subscale of the SBQ consists of the same seven items that are reworded for the victimisation experiences: "How often did your brothers or sisters do any of the following to you in the last six months?". Items 1–2 refer to physical, 3–4 refer to verbal, 5–6 refer to relational, and item 7 refers to other types of sibling bullying/victimisation that are not covered by the first six items (Dantchev & Wolke, 2019b; Menesini et al., 2010; Wolke & Samara, 2004). Participants are asked to respond to both sets of questions on a five-point Likert scale (1 = *never*, 2 = *only ever once or twice*, 3 = *2 or 3 times a month*, 4 = *about once a week*, 5 = *several times a week*).

A Turkish version of the SBQ was developed for this study using the expert committee approach (Beaton et al., 2000). The expert committee consisted of five bilinguals. In the committee, two translators were aware of the concept of the questionnaire, two were experts in linguistics and one was a native speaker of both languages; however, the latter was blind to the questionnaire and the field. As the first step, two bilingual translators conducted the forward translation of the SBQ from English to Turkish, independently. Second, the expert committee discussed the discrepancies between the two translations and drafted the Turkish version of the SBQ. Third, two bilingual translators, blind to the English version of the SBQ, back-translated it to English to ensure the accuracy of the forward translation. Fourth, the expert committee checked and resolved the discrepancies between forward and backwards translations and revised the wording. Fifth, the expert committee agreed that the Turkish version of the questionnaire has had content validity and named the new scale as *the Turkish Sibling Bullying Questionnaire (T-SBQ)*. As the last step, the reliability and validity of the T-SBQ were tested in a Turkish sample of adolescents. The newly translated T-SBQ and the translation procedure can be seen in Table S1 and Fig. S1 (supplementary materials).

The revised sibling bullying questionnaire

The Revised Sibling Bullying Questionnaire (R-SBQ; Kandemir-Ozdinc, 2019), which is a Turkish adaptation of the questionnaire that Menesini et al. (2010) adapted, was also administered to the adolescents to test the convergent validity of the T-SBQ. The R-SBQ is a 9-item self-report questionnaire that measures adolescents' sibling bullying (perpetration-only) behaviours on a five-point Likert-type scale. The scale's inter-item reliability was measured as $a = 0.63$

and the one-factor structure of the R-SBQ (perpetration) was reported as follows: ($\times 2 = 68.00$, df = 24, p = 0.00; $\times 2$/df = 2.8; GFI = 0.98, CFI = 0.96, TLI = 0.94, SRMR = 0.03, RMSEA = 0.05). Although the Turkish R-SBQ does not show high internal consistency, it showed a similar reliability score ($a = 0.63$) as the original scale ($a = 0.65$; Menesini et al., 2010).

Data Analyses

All statistical analyses were conducted on STATA/ MP version 16.1 (Stata Corp., 2019).

Research Question 1 Prior to confirmatory factor analysis (CFA), a principal component analysis (PCA) with the Promax rotation method was performed to decide the number of factors related to the items on the T-SBQ. Further, to determine whether the factor structure of the T-SBQ adhered to the hypothesised structure, a CFA was conducted. Each of the items was treated as a continuous variable. The victimisation items were loaded onto a victimisation latent variable and the perpetration items were loaded onto a perpetration latent variable. The residuals between victimisation and perpetration method factors were also correlated. The Maximum Likelihood (ML) estimation with missing data algorithm was used to perform the CFA. The linearity, multicollinearity and univariate normality were tested to check any possible disturbance in the data, as the ML requires normal distribution. To check the linearity, data visualisation techniques were used (residual/scatter plots and histograms) and no violation was identified. Variance inflation factor (VIF, ≤ 5) and Tolerance (≥ 0.1) values were measured to check the multicollinearity. Collinearity tests indicated that the data met the assumption of multicollinearity; *Tolerance = 0.33—0.62 and VIF = 1.68–2.97* (Mean = 2.19, see Table S2, supplementary materials). Lastly, skewness and kurtosis values were checked for univariate normality and data indicated normal distribution with no skewed or flatty trends as all the values were ranged between 0 and 1. Model fit was considered as adequate where the comparative fit index (CFI) and Tucker-Lewis index (TLI) values were ≥ 0.90 (Hu & Bentler, 1999) and root mean squared error of approximation (RMSEA) values were ≤ 0.08 (Browne & Cudeck, 1992).

Research Question 2 Cronbach's alpha (α) coefficient was used to assess the internal consistency reliability of the T-SBQ. To do this, inter-item and intra-scale correlation coefficients were calculated. First, item-test and item-rest coefficients were estimated. Second, the correlation between subscales and the overall test scale were tested. Coefficients value ≥ 0.70 accepted as *adequate* internal consistency reliability (Nunnally, 1978).

Research Question 3 The validity of the T-SBQ was tested using two methods, construct and convergent validity. To evaluate the construct validity, a CFA was run on the original factor structure, and factor loadings of each item were reported. To assess the convergent validity, the total scores obtained from two measures were correlated and compared. First, inter-scale correlation coefficients between the T-SBQ and R-SBQ were calculated to report whether both scales measure the same construct consistently. Second, correlation coefficients between the subscales of the new measure and the overall test scale of the T-SBQ and R-SBQ were tested to see whether they are significantly correlated and measure the common construct.

Research Question 4 Descriptive statistics were generated to determine the prevalence of sibling bullying in Turkish adolescents. The total score of the T-SBQ was used to create three continuous variables -victimisation, perpetration, and overall sibling bullying- with higher scores reflecting the higher levels of involvement. A well-accepted cut-off value, *about once a week* (Dantchev & Wolke, 2019a; Toseeb et al., 2018; Wolke & Samara, 2014), was also used to derive binary variables to report the prevalence and frequency of sibling victimisation and perpetration. Participants were categorised as involved in sibling bullying if they reported any type of victimisation/perpetration at least about once a week in the preceding six months. Additionally, adolescents were assigned into four sibling bullying groups according to Dantchev and Wolke's (2019b) previous classification: (i) Non-involved: Adolescents who reported being victimised and perpetrating their sibling *less than once a week*, (ii) Pure Bullies: Adolescents who reported being victimised *less than once a week* but having perpetrated their sibling *at least once a week*, (iii) Pure Victims: Adolescents who reported having perpetrated their sibling l*ess than once a week* but being victimised *at least once a week*, and (iv) Bully-Victims: Adolescents who reported both being victimised and having perpetrated their siblings *at least once a week*. Lastly, to report the frequency of the different types of sibling bullying involvement, the following binary variables were derived: Physical (Items 1 & 2), Verbal (Items 3 & 4), Relational (Items 5 & 6), and Other-type (Item 7).

Missing Data

The following null hypothesis was proposed: The missing data would be missing completely at random (MCAR). To test this null hypothesis, *mcartest* was run in which a significant p-value rejects the probability of the null hypothesis being true, meaning that the data is not MCAR. The results suggested that the missing data in the data set were MCAR as the p-value was not significant (n = 301, $x^2 = 2178.72$, $df = 21$, $p = 0.29$).

Furthermore, the multiple imputation by chained equations (MICE) technique was used to deal with missing data and to maximise the power. First, the regression (regress) method was specified for imputing the continuous variables, ordered logistic regression (ologit) for categorical variables, and logistic regression for binary variables (logit). Second, all variables, including sociodemographic variables, were included in the imputation model to increase precision and avoid missing data bias. Third, 10 imputed data sets were created by using the MICE algorithm, fully conditional specification equations, with the specified methods for each variable. The proportions of missing data and the number of imputations for each variable are shown in Table S3 (supplementary materials). Further, all descriptive analyses were then conducted using this imputed dataset by the *mi estimate* command. Factor analyses, however, were conducted by using the "Maximum likelihood estimation with missing data" algorithm.

Results

Factor Structure of the T-SBQ

Prior to CFA, a PCA was conducted to test whether the original factor structure would be replicated on the newly translated scale. The PCA suggested that there were three components with eigenvalues greater than one ($\lambda > 1$). Although Kaiser (1960) claims that there are as many reliable factors as there are eigenvalues greater than one, the T-SBQ were loaded on two latent factors. The reasons for doing this were as follows: (1) the original SBQ has a two-factor structure, (2) the third component on the newly translated measure did not explain a big variance in the data (0.07), and (3) the semantic concept of the items on the scale is not suitable to be loaded onto the third component. Therefore, two factors were derived with eigenvalues of 6.28 and 1.60, respectively, and together accounted for 56.38 of variance explained (see Table S4, supplementary materials).

Furthermore, a CFA was run to confirm the measurement model, factor structure and dimensionality of the T-SBQ using the Maximum Likelihood (ML) algorithm. Since the original SBQ has a two-factor structure, two distinct models with a two-factor structure, Model 1: First order correlated two-factor model (two correlated method factors—*victimisation and perpetration*), and Model 2: Second order correlated two-factor bifactor model (a common factor -*sibling bullying*- and two correlated method factors -*victimisation and perpetration*), were tested. According to the CFA results, the model fit indices were as follows: Model 1: x^2 $p < 0.001$, $df = 61$, RMSEA = 0.07, CFI = 0.95 and TLI = 0.93, and Model 2: x^2 $p = 0.008$, $df = 47$, RMSEA = 0.043, CFI = 0.98 and TLI = 0.97 (see Table 2, Fig. 1, & Fig. S2). Although both models yielded adequate fit to the data, *Model 1* was accepted as the factor structure of the T-SBQ due to its more acceptable cut-offs of the factor loadings (see Table 3).

Reliability of the T-SBQ

Cronbach's alpha coefficients indicated that the T-SBQ has excellent internal consistency in the overall test scale ($\alpha = 0.90$) and good reliability in the subscales (Victimisation, $\alpha = \mathbf{0.8}4$; Perpetration, $\alpha = 0.83$). The inter-scale and intra-scale correlation coefficients are shown in Table 4, S5 and Fig. S3 (supplementary materials). Additionally, the T-SBQ items showed sufficient inter-item correlations ranging from 0.21 to 0.70. Although some items showed weak correlations ($\beta < 0.3$), this was observed mostly between the victimisation and perpetration subscales' items, as they intended to measure slightly different constructs. Since the cut-off value for the minimum standardised coefficient was accepted as 0.2, as suggested by Rummel (1988), no items were removed from the scale because of weak inter-item correlations. Further information regarding the item's Cronbach's alphas, item-test, and inter-item correlations can be seen in Tables S6 and S7 (supplementary materials).

Validity of the T-SBQ

The convergent validity of the T-SBQ was good as inter-scale correlations between the T-SBQ and R-SBQ were found to be high ($\alpha = 0.79$), suggesting that both scales measure sibling bullying in Turkish adolescents, consistently. Additionally, the correlation between the perpetration subscale of the T-SBQ and the overall test scale of the R-SBQ was significantly higher than the correlation

Table 2 *Fit summary of CFA models (N = 301)*

CFA models	X^2 (*p*)	df	RMSEA	RMSEA CI 90%	CFI	TLI
Model 1- First order correlated two-factor model	160.333 (.000)	61	.07	.06 ~ .08	.95	.93
Model 2- Second-order correlated bifactor model	73.473 (.008)	47	.04	.02 ~ .06	.98	.97
Suggested cut-off value			< .08[a]		> .90[b]	> .90[b]

[a]Browne and Cudeck (1992), [b]Hu and Bentler (1999)

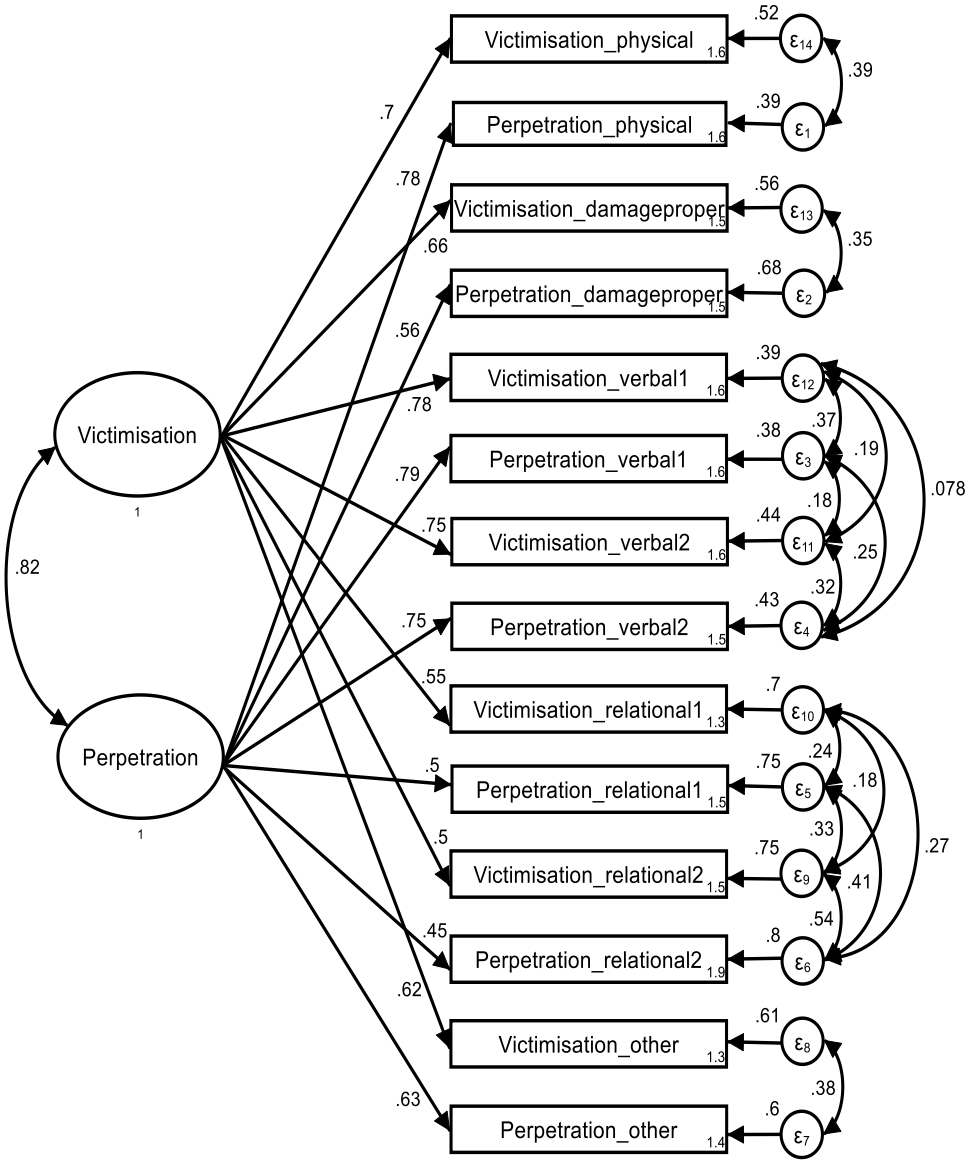

Fig. 1 Model 1: First order correlated two-factor model

between the victimisation subscale of the T-SBQ and overall R-SBQ. This was an expected result as the R-SBQ only consisted of perpetration items and did not aim to measure victimisation. Inter-scales and between subscales correlations of the T-SBQ and R-SBQ supported the convergent validity of the new measure (see Fig. S3).

Additionally, CFA results showed that the factor loadings of the T-SBQ items range from 0.45 to 0.79. This suggests that the T-SBQ has adequate construct validity as each observed item was adequately correlated with a method factor.

Prevalence of Sibling Bullying

As shown in Table 5, more than half of adolescents, 51% (n = 154), reported at least one type of sibling bullying at least once a week. In regards to the bullying roles, the majority of adolescents who experienced sibling bullying were bully-victims (30%), whereas they were least likely to be pure-bullies (3%). Regarding the frequency of the types of sibling bullying, verbal bullying was the most common type of sibling bullying (39%), whereas other-type of sibling bullying was reported as the least common one (14%).

Concerning the overall patterns of sibling bullying throughout adolescence, it increased slightly from early adolescence (54%) to middle (57%), and decreased from middle to late adolescence (42%). In addition, the

Table 3 *Standardized Estimates of Item Factor Loadings based on the CFA (N = 301)*

Item	Model 1		Model 2		
	F1	F2	F1	F2	CF
	Vic	PrP	Vic	PrP	SB
1- I was hit, kicked, pushed or shoved around or they threatened to do this	.70		.23*		.81
2- I had things damaged or taken from me, including money	.66		.50		.44*
3- I was called nasty and hateful names	.78		.45		.58
4- I was made fun of	.75		.45		.55
5- They kept me out of things on purpose, leaving me out of their group of friends or completely ignoring me	.55		.60		.23*
6- They told lies or spread rumours about me, or tried to make others dislike me	.50		.53		.20*
7- I was bullied in another way	.62		.69		.26*
8- I hit, kicked, pushed or shoved a brother or sister around, or threatened to do this		.78		.23*	.90*
9- I took money or other things from a brother or sister or damaged their belongings		.56		.37*	.41*
10- I called a brother or sister nasty and hateful names		.79		.42*	.61
11- I made fun of a brother or sister		.75		.48	.53
12- I kept a brother or sister out of things on purpose, left them out of my group or completely ignored them		.50		.44*	.27*
13- I spread rumours about a brother or sister or tried to make others dislike them		.45		.57	.13*
14- I bullied in another way		.63		.66	.30*

F = Factor, CF = Common factor, * $r < .45$

Table 4 *The reliability coefficients (Cronbach's alpha) of the scales and subscales (N = 301)*

Scales / Subscales	The SBQ (α)	The R-SBQ (α)	The T-SBQ (α)
1- Victimisation (subscale)	.80*	-	.84
2- Perpetration (subscale)	.74*	-	.83
3- Overall test scale	-	.63**	.90

Cronbach's alpha for the overall test scale of the SBQ was not reported and the R-SBQ has no subscales. * (Dantchev et al., 2019), ** (Kandemir-Ozdinc, 2019)

frequency of the types of sibling bullying showed an inconsistent trend during adolescence. On the one hand, physical bullying showed a downward pattern from early (44%) through the middle (42%) and late adolescence (26%). On the other hand, verbal, relational and other-type of sibling bullying increased from early to mid-adolescence and decreased from middle to late adolescence.

Regarding birth order, the number of siblings, and sibling bullying involvement, as shown in Table S8 (supplementary materials), the eldest adolescents showed a higher rate of sibling bullying (63%) than the middle (50%) and youngest (37%) ones, showing that there may be a potential correlation between sibling bullying and birth order. Additionally, adolescents who had one-only sibling showed the highest sibling bullying rate (58%) compared to the ones who had two (49%), and three or more (45%) siblings. Furthermore, they also showed a higher prevalence of physical sibling bullying involvement (47%) than the adolescents with two (35%) and, three or more (27%) siblings.

Where gender differences are concerned, boys were more likely to be involved in overall sibling bullying (53%), victimisation (49%), and perpetration (33%) than girls (SB = 49; V = 47; P = 32). They were also more likely to take pure-bullies (pb = 4%) and pure-victims (pv- = 19%) roles than girls (pb = %3%; pv = 17%). With respect to the gender differences in sibling bullying types, boys were more likely to be involved in any types of sibling bullying, physical (p; 39%), verbal (v; 40%), relational (r; 17%), and other-type (o;15%), than girls (p = 35%; v = 38%; r = 14%; o = 12%).

Looking at the age-gender related differences in sibling bullying involvement, girls in early adolescence were more likely to be involved in victimisation (55%) and perpetration (41%) than the girls in middle (v = 46%; p = 34%) or late (v = 41%; p = 25%) adolescence. Additionally, girls in late adolescence were less likely to be victimised and to perpetrate than those in early and middle adolescence. In terms of boys, however, those in middle adolescence were more likely to be involved in victimisation (68%) and perpetration (54%) than the ones in early and late

Table 5 *Sibling bullying involvement by age and gender (N = 301)*

	Girls	Boys	Overall	Early adolescence (Boys/Girls)	Middle adolescence (Boys/Girls)	Late adolescence (Boys/Girls)
	%	%	%	%	%	%
Sibling bullying involvement						
Victimisation	47	49	48	50 (43/55)	56 (68/46)	38 (36/41)
Perpetration	32	34	33	29 (16/41)	43 (55/34)	27 (29/25)
Overall sibling bullying	49	53	51	54 (47/61)	57.6 (70/48)	42 (42/43)
Sibling bullying groups						
Uninvolved	50	47	49	44 (53/36)	42 (30/52)	58 (58/57)
Pure-Victims	17	19	18	25 (30/21)	15 (16/14)	15 (13/17)
Pure-Bullies	3	4	3	5 (3/6)	2 (2/2)	3 (5/2)
Bully-Victims	30	30	30	25 (13/36)	41 (52/32)	23 (23/23)
Type of sibling bullying						
Physical	35	39	37	44 (38/51)	42 (51/36)	26 (29/23)
Verbal	38	41	39	32 (23/42)	48 (62/39)	35 (35/35)
Relational	14	17	15	11 (11/11)	20 (30/13)	13 (9/16)
Other	12	16	14	11 (6/15)	16 (26/8)	13 (13/13)

Values in parentheses are percentages showing the prevalence of boys and girls, respectively

adolescence. Moreover, boys were less likely to be victimised during late (36%) and to perpetrate during early (16%) adolescence than the boys of other ages (see Table 6).

Discussion

The aims of this study were to test the psychometric properties of the newly translated T-SBQ and to estimate the prevalence of sibling bullying involvement in Turkish adolescents. The analyses were based on cross-sectional sibling bullying data, self-reported by Turkish adolescents. Results indicated that the T-SBQ is a reliable and valid scale in measuring sibling bullying in Turkish adolescents, confirming its two-factor structure (victimisation and perpetration) as in the original scale. Moreover, it was found that sibling bullying is prevalent in the lives of Turkish adolescents, suggesting that it should be seen as a serious problem by parents and policymakers rather than a normative sibling interaction.

Factor Structure of the T-SBQ

In regards to the first aim, the newly translated scale showed adequate model fit and good item-factor loadings with a correlated two-factor structure in a Turkish sample of adolescents. This also aligns with the original factor structure of the SBQ (Dantchev & Wolke, 2019b). Thus, the original factor structure of the SBQ was replicated and retained as the factor structure of the T-SBQ. The two factors on the T-SBQ were then named victimisation and perpetration, identical to the original scale.

Reliability

Further analyses were conducted to ensure the internal consistency reliability of the scale. According to the findings, the T-SBQ showed excellent reliability in the test scale suggesting that all the items on the T-SBQ measured the same construct, consistently. Moreover, both subscales of the T-SBQ were also satisfactorily correlated with each other and compatible with the original SBQ (Dantchev &

Table 6 *Frequency of Type of Sibling Bullying by Gender (N = 301)*

Type	Items	Total (%)	Girls (%)	Boys (%)
Victimisation				
Physical	1- I was hit, kicked, pushed or shoved around or they threatened to do this	31	29	33
	2- I had things damaged or taken from me, including money	11	11	11.5
Verbal	3- I was called nasty and hateful names	25	23	28
	4- I was made fun of	29	27	32
Relational	5- They kept me out of things on purpose, leaving me out of their group of friends or completely ignoring me	11	11	10
	6- They told lies or spread rumours about me, or tried to make others dislike me	5	5	4
Other	7- I was bullied in another way	10	10	10
Perpetration				
Physical	8- I hit, kicked, pushed or shoved a brother or sister around, or threatened to do this	22	23	21
	9- I took money or other things from a brother or sister or damaged their belongings	6	4	9
Verbal	10- I called a brother or sister nasty and hateful names	19	19	20
	11- I made fun of a brother or sister	20	20	20
Relational	12- I kept a brother or sister out of things on purpose, leaving them out of my group or completely ignored them	6	4	7
	13- I spread rumours about a brother or sister or tried to make others dislike them	2	1	3
Other	14- I bullied in another way	7	5	10

Wolke, 2019b); this suggests that both subscales measured similar constructs (victimisation and perpetration). As it has repeatedly been found reliable in previous studies (Dantchev & Wolke, 2019b; Kandemir-Ozdinc, 2019; Menesini et al., 2010; Tippett & Wolke, 2015; Wolke & Samara, 2004; Wolke & Skew, 2011), our results also suggest that the Turkish translation version of the new SBQ is a reliable scale in measuring sibling bullying.

Validity

With reference to the convergent validity of the scale, good inter-scale correlations between the T-SBQ and R-SBQ confirms that both scales are in agreement in measuring sibling bullying in Turkish adolescents. Additionally, although the perpetration subscale of the T-SBQ was found to be highly correlated with the R-SBQ, a moderate association was found between the victimisation subscale and the R-SBQ test scale. This might be due to the construct of the R-SBQ, as it consists of only perpetration items, not victimisation. In regards to the construct validity of the T-SBQ, all items on the SBQ were found to be highly correlated with the rest and had good item-factor loadings. Likewise, to other versions (Dantchev & Wolke, 2019b; Kandemir-Ozdinc, 2019; Menesini et al., 2010; Wolke & Samara, 2004), our findings suggest that the Turkish version of the new SBQ is also a valid scale in measuring sibling bullying.

Prevalence of Sibling Bullying

To the second aim, the prevalence of sibling bullying in Turkish adolescents was estimated, for the first time, and compared with the results of the previous research that have been carried out in other populations. Our findings suggested that more than half of the adolescents reported having been involved in at least one type of sibling bullying at least once a week, in the past six months. This result aligns with the findings from other cultures such as the United States of America (Duncan, 1999), Israel (Wolke & Samara, 2004), and the United Kingdom (Toseeb et al., 2018, 2020b; Wolke & Skew, 2011).

The overall patterns of sibling bullying fluctuated during adolescence. It increased from early to middle adolescence and decreased from middle to late adolescence. While the current finding that shows an increase in sibling bullying from early to middle adolescence accords with a previous report from the UK (Toseeb et al., 2020b), the later decrease with age also accords with what Tucker et al., (2013b, 2019) reported in terms of sibling victimisation rates in the U.S. However, it is not consistent with results reported by Kandemir-Ozdinc (2019) and Finkelhor et al. (2006) who reported sibling victimisation perpetration to decrease with age, with the latter being reported the peak sibling violence between six and nine years of age. (from 10 to 11 years). This difference may be attributed to differences in the age of the adolescents, individual and family characteristics of the research samples.

Concerning the gender differences in sibling bullying, although some previous studies argue that boys are more likely to perpetrate and girls are more likely to be victimised by their siblings (Camodeca et al., 2002; Wolke & Samara, 2004; Wolke & Skew, 2011), our findings indicate that boys were more likely to be involved in both victimisation and perpetration than girls. Although this inconsistency could be attributed to the presence of cross-cultural differences regarding the roles that are attributed to siblings due to their gender (Cicirelli, 1995), our findings also accord with some other western studies' reports. For instance, Duncan (1999) also found boys to be more likely to involve in any type of sibling bullying. Additionally, another recent study has reported that boys are more likely to be victims and perpetrators of traditional bullying compared to girls (Zsila et al., 2019). One reason underlying this inconsistency can be the bullying measure that is used in the studies. Hara (2002) argued that bullying measures that include more indirect bullying items than direct bullying would provide a higher prevalence of bullying for girls, while another measure with more direct bullying items would provide a higher prevalence for boys.

In addition, aligning with Tippet and Wolke's (2015) findings, the current study indicates that eldest siblings are more likely to get involved in sibling bullying than the middle and youngest ones. Moreover, this result also accords with the findings from a different socio-economic culture, the UK, which suggest that first-born children are more likely to be bullies and bully-victims compared to second and later-born siblings (Toseeb et al., 2020a). Although Menesini et al., (2010, p.933) suggested that "sibling bullying is related to the quality of the sibling relationship and not to birth order", they further concluded that "the presence of an older brother per se seems to be a risk factor for the emergence of victimisation at home" which may alienate with the findings of the current study.

Regarding the type of sibling bullying involvement, in line with the previous findings, *verbal* bullying was found to be the most common type of sibling bullying (Skinner & Kowalski, 2013; Wolke & Samara, 2004), whereas the *other-type* of sibling bullying was reported as the least common one (Dantchev & Wolke, 2019b). Additionally, also consistent with the reported literature, physical bullying has been found as the most common type of sibling bullying during early adolescence (Eriksen & Jensen, 2009; Tippett & Wolke, 2015).

Strengths, Limitations, and Implications

Like all other research, this study has some strengths and limitations. One major strength is that this study provides a new valid and reliable scale to the Turkish literature to measure self-report sibling bullying in Turkish adolescents. Since the factor structure of the original scale has been replicated and confirmed on the T-SBQ, the scale also provides future researchers with a cross-culturally comparable tool in which the results from English-Turkish SBQs can be reliably compared. Also, an additional strength could be the intensive translation process of the SBQ in which the expert committee approach was adapted by five bilinguals to provide an accurate Turkish translation. Another strength is that this is the first study in providing the prevalence of sibling bullying in Turkish adolescents from early to late adolescence years (10–18). Even though parents might not be aware of instances of sibling bullying among their children, as it usually happens behind closed doors, some previous researchers have reported the prevalence of sibling bullying based on parents' responses (Eriksen & Jensen, 2009). In this sense, reporting the prevalence of sibling bullying in Turkish adolescents based on their self-report data could be seen as another strength of this study. A further contribution of this research is that it is expected to gather scientists', experts', parents', and Turkish society's attention to the topic by reporting a prevalent sibling bullying rate in Turkish adolescents.

There were also some potential limitations in this study. First, the instrument used in this study, the R-SBQ, for parallel test reliability and convergent validity of the T-SBQ served as one limitation. Since this scale is a translated version of the old version of the SBQ, six questions out of 14 items on the T-SBQ were the same with or similar to the items of the R-SBQ. Thus, this similarity might have led to the high correlation found between the R-SBQ and T-SBQ test scales. Second, convenience sampling was used to recruit participants to fill out an online survey, further research with randomly recruited representative samples could improve the generalisability of the results. Therefore, all the findings of the present study shall be considered within pointed limitations.

Despite the limitations, the findings of the current study may have several implications for future research on sibling bullying, and the need for prevention and intervention programs at home. First, the current study highlights that sibling bullying is prevalent in most Turkish adolescents' lives and raise the importance of developing and implementing valid intervention programs specifically developed for Turkish adolescents. Second, there is an emerging need to raise bystanders' awareness in seeing bullying among their children as *non-normative*, as it is defined as one of the potential deterrents of prevention and intervention of sibling bullying (Skinner & Kowalski, 2013). Third, a longitudinal study with a nationally representative sample is needed to shed light on the trajectory of the prevalence of sibling bullying during adolescence and to shed light on the potential covariates of sibling bullying. Likewise, there is a significant need for big scaled

cross-cultural studies to identify differences in sibling bullying in different sociocultural contexts. Finally, this study also encourages other researchers to replicate the current study in the Turkish context, to gain a better understanding of the prevalence and precursors of sibling bullying in Turkish adolescents.

Conclusions

The current study sought to translate and validate a measure of sibling bullying in the Turkish language. The newly translated T-SBQ has adequate reliability and validity. Therefore, the measure is a suitable and appropriate scale to measure sibling bullying in Turkish adolescents. The prevalence of sibling bullying in Turkish adolescents is high, in both girls and boys, and hits the peak during middle adolescence years. These findings suggest that sibling bullying during adolescence is cause for concern in Turkey and should be seen as a serious problem by parents, policymakers, and researchers, given its well-established links to poor mental health outcomes.

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Authors Contribution Emre Deniz conceptualised and designed the study, coordinated the forward and backward translation, and carried out main data collection and analysis procedures. Ms Derinalp and Ms Gulkanat carried out the forward translation, and Ms Kaz and Ms Ozhan carried out the backward translation. They also assisted in data collection, drafting, reviewing, and revising the manuscript. Dr Toseeb consulted the data collection and analysis procedures, reviewed and revised the latest manuscript. All authors approved the final manuscript and agreed to be accountable for all aspects of the work.

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Data availability The fully anonymised dataset generated and/or analysed during the current study will be made available in the Center for Open Science (OSF) repository via https://osf.io/5w9fb/ upon completion of the funded PhD project.

Declaration

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