

# Psychometric Properties of Revised Conflict Tactics Scales: Portuguese Sibling Version (CTS2-SP)

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**Abstract** The *Revised Conflict Tactics Scales* (CTS2, Straus et al. *Journal of Family Issues*, 17, 283–316, 1996) were conceived to measure Psychological Aggression, Physical Assault, Sexual Coercion, Injury and the use of Negotiation towards a partner in a marital, cohabiting or dating relationship. The CTS2-SP was designed for obtaining data on conflict tactics between siblings. The main objective of this study was to examine the psychometric properties of the CTS2-SP Portuguese version. Data were collected among 590 Portuguese university students. Reliability was assessed through Cronbach's alpha ranging from 0.65 to 0.81 for the perpetration scales and ranging 0.66 to 0.84 to victimization scales. Significant correlations between different forms of the CTS2 illustrate its construct validity. The psychometric characteristics of CTS2-SP Portuguese version were found to be adequate. The CTS2-SP offers a reliable and valid measure to be used within the Portuguese population.

**Keywords** Psychometric properties · Internal consistency · Perpetration · Victimization · Prevalence · Chronicity · CTS2-SP

Conflict theory (e.g., Straus 1979) defends that conflict is an inevitable part of all human interaction, whereas violence as a tactic to deal with conflict is not. A key factor differentiating what many professionals in social sciences regard as “high conflict families” is not the existence of conflict *per se*, but rather the tactics used to deal with it within the family (Straus 2005). Recently, Straus (2007) argued that what is harmful is not the conflict itself, but the use of coercion, namely, force and violence, as a tactic for resolving conflicts.

## The CTS

The *Conflict Tactics Scales* (CTS) was designed based on conflict theory and is the most widely used instrument for identifying domestic violence. It consists of a list of behaviors directed toward a partner or a child and deliberately excludes attitudes, emotions, and cognitive appraisal of the behaviors (Straus 2007) and can be replicated to any family role–relationship (Straus and Gelles 1990). The first study reporting data on intrafamily physical violence obtained by means of the *Conflict Tactics Scales* (CTS) was published in 1973 (Straus 1973). Since then, this instrument has been employed worldwide in studies examining the characteristics of violence in families and intimate relationships (Simonelli et al. 2002), abuse by siblings (Roscoe et al. 1987), family violence (e.g., Liu and Chao 2005), criminal justice research (Straus 1993), and clinical assessment (Aldarondo and Straus 1994).

For the first National Family Violence Survey conducted in the United States of America (Straus et al. 1980), the CTS questions began with the tactics used by children in conflicts with siblings. It was then repeated for tactics used in other family relationships. This survey indicated that children were the most violent members within the family, with 82 % of children confessing that at some point in their lives they had hit a brother or sister. More recently, Simonelli et al. (2002), in a study involving undergraduate college students, found that 71 % of male and 88 % of female respondents reported being victims of physical aggression by a sibling.

Research has illustrated that sibling violence is one of the most prevalent forms of family violence (e.g., Gelles and Cornell 1985; Roscoe et al. 1987; Straus et al. 1980); however, it is still underreported. Nonetheless, some studies report short and long-term consequences of sibling violence including difficulties in emotional adjustment (Graham-Bermann et al. 1994), conduct disorders (Wiehe 1998), and depression (Hoffman and Edwards 2004). There is empirical evidence that sibling violence influences other relationships

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negatively, namely with peers at school (Duncan 1999) and with intimate partners (Noland et al. 2004).

### The CTS2

The *Revised Conflict Tactics Scales* (CTS2) was developed in 1996 as a revision of the original CTS (Straus et al. 1996). This measure consists of 38 items grouped into three scales: (1) Reasoning (3 items), (2) Verbal Aggression (7 items), and (3) Physical Assault (9 items), in which each item is asked twice, once about the respondent's behavior toward a target, and then about the target's behavior toward the respondent. Changes were made in the formatting of the measure, within the scales and in the items themselves. It also added two new scales to measure injury resulting from an assault and sexual coercion by another person. Although the original CTS classified items in the physical assault scale into the categories minor and severe, the CTS2 provides a better operationalization of the distinction between minor and severe acts and can be divided into cognitive and emotional scales (see Table 1).

The CTS2 consists of 78 items grouped into five scales: (1) Negotiation (6 items), (2) Psychological Aggression (8 items), (3) Physical Assault (12 items), (4) Sexual Coercion (7 items), and (5) Injury (6 items), items that are also asked twice, as in CTS, because asked the participant about is own behavior and about is sibling. The authors (Straus et al. 1996) of this scale define *Negotiation* as actions taken to settle a disagreement

through discussion; the *Physical Assault* scale describes an act that includes physical violence without causing physical damage; the *Injury* scale measures physical injury that causes damage, a need for medical attention, or pain continuing for a day or more; the *Sexual Coercion* scale is defined as a behavior that is intended to compel the partner to engage in unwanted sexual activity and finally, Straus (1990) defends that *Psychological Aggression* includes verbal acts and non-verbal acts that are capable of hurting the other.

The internal consistency reliability of the CTS2 scales ranges from 0.79 to 0.95 (Straus et al. 1996). According to Straus (2007), alpha coefficients of reliability for the CTS2, reported in 41 articles, ranged from 0.34 to 0.94, with a mean of 0.77. The *Revised Conflict Tactics Scales* (CTS2) was validated for the Portuguese population by Paiva and Figueiredo (2006) using a sample of 551 university students. The five scales for perpetration and victimization had internal consistency rates ranging from 0.50 to 0.78 (Paiva and Figueiredo 2006). Psychometric findings have been reported for the version of the CTS2 (e.g., Paiva and Figueiredo 2006; Vega and O'Leary 2007); however, there is still insufficient data for examining the psychometric characteristics of the CTS2-SP beyond that performed by the authors.

The aim of this study is to examine the psychometric properties of the Portuguese version of the *Revised Conflict Tactics Scales—sibling version* (CTS2-SP). The study of sibling violence is of extreme importance because sibling ties are the longest family relationship in a person's life and its occurrence can be predictive of other forms of violence in other relationships (Duncan 1999; Noland et al. 2004). Additionally, there is no instrument validated for the Portuguese population, which prevents the development of research to understand this phenomenon in Portuguese siblings.

## Method

### Participants

A total of 694 Portuguese university students (see Table 2) were surveyed. Students who did not have siblings were excluded from this analysis ( $n=104$ ). Therefore, the final sample consisted of 590 students. The age of the participants ranged from 17 to 52 years old ( $M=20.3$ ;  $SD=4.5$ ) and more than half were female (62.5 %). Most of the participants were born in Portugal (91.9 %) and more than half of the participants had only one sibling (65.1 %). The majority (92.5 %) reported their parent's marital status as "married to one another", 75.3 % of the respondents always lived with their mother and 68.1 % always lived with their father. More than

**Table 1** Scales scored on the original CTS and CTS2

CTS (38 items <sup>a</sup> )	CTS2 (78 items)
Reasoning (3)	Negotiation (6) Cognitive (3) Emotional (3)
Verbal aggression (7)	Psychological aggression (8) Minor(4) Severe(4)
Physical assault (9)	Physical assault (12)
Minor(3)	Minor(5)
Severe(6)	Severe(7) Injury (6) Minor(2) Severe(4) Sexual coercion (7) Minor(3) Severe(4)

On the CTS and CTS2, all items are asked twice, once about the respondent's behavior toward a target, and then about the target's behavior toward the respondent (Straus et al. 2003)

<sup>a</sup> One item not scored

**Table 2** Socio-demographic characteristics ( $N=590$ )

Socio-demographic characteristics		(%)
Gender	Male	37.5
	Female	62.5
Age	17–18	35.9
Mean (SD)	19–21	48.8
	22–52	15.3
Country of birth	Portugal	91.9
	Other Europe country	5.6
	Other countries	2.5
Number of brothers/sisters	1	65.1
	2	23.7
	3	7.3
	4	2.7
	≥5	1.2
Parent's marital status	Divorced	7.5
	Married	92.5
Family aggregate	Always lived with the mother	75.3
	Always lived with the father	68.1
Father's education	Basic education	67.5
	High school (12 years)	12.8
	Graduate school	10.4
Mother's education	Basic education	63.6
	High school (12 years)	15.4
	Graduate school	12

half of their fathers (67.5 %) and mothers (63.6 %) had a basic level of education, and 10.4 % of fathers and 12 % of mothers had higher education degrees.

### Materials and Procedure

Data was collected in three public universities in Portugal. The survey was anonymous, self-administered, and participation was voluntary. In order to accommodate class schedules, survey administration times were pre-arranged with course instructors and the questionnaires were handed by the researcher. The questionnaire took approximately 1 hour to complete. The procedures were approved by an institutional review board.

### Instruments

*Revised Conflict Tactics Scale (CTS2-SP Sibling Version)*. The CTS2-SP is composed of 78 items. Half of the items (39) are about the perpetration of conflict tactics from the participant toward the sibling and the other 39 items are concerned with the participant's victimization of conflict tactics from his/her sibling. The response categories ask for the number

of times each action occurred in the year when the participant was about 13 years old, ranging from "Never" to "More than 20 times". When there was more than one sibling involved, participants were instructed to answer concerning the closest sibling in age.

*Revised Conflict Tactics Scales (CTS2)* assesses dating violence that occurred within the last 12 months, using psychological and physical aggression scales.

*A modified version of the Revised Conflict Tactics Scales (Parent-to-Child Version)* was used to measure past experiences of childhood maltreatment by their own parents (Straus et al. 1998), during the year when the participant were 13 years old.

*A modified version of the Revised Conflict Tactics Scales (Parent-to-Parent Version)* was used to measure testimony of violence between parents, also during the year the participant were 13 years old.

## Results

### Statistical Analyses

Internal consistency was assessed through item-total correlation, average inter-item correlation and Cronbach's alpha coefficients. Nunnally and Bernstein (1994) suggest that good internal consistency is indicated when Cronbach's alpha is over 0.70 and mean inter-item correlations exceed 0.15. Field (2005) also argues that item-total correlation should be over 0.30.

Descriptive statistics of the factor items was performed, as well as Pearson correlation analyses between the CTS2-SP scales. Construct validity was also evaluated using Pearson correlations between different forms of the CTS2 (Parent-child version; Parent-to-parent version and dating version).

### Internal Consistency

*Perpetration* The Cronbach's alpha coefficient was calculated for each of the five scales separately (Negotiation, Psychological Aggression, Physical Assault, Sexual Coercion and Injury). The values ranged from 0.65 (Injury scale) to 0.80 (Physical Assault scale) (see Table 3). On Psychological Aggression scale we have decided to exclude item 65 ("Accused this brother/sister of being a lousy lover") because in this scale the item-to-total correlations are over 0.30 in all items except for that item. Additionally, the mean inter-item correlation is over 0.15 in all items except for item 65. The authors (Straus et al. 1996) also suggest that this item should be dropped.

**Table 3** CTS2-SP Perpetration Scale: descriptive statistics of the items, item-to-total correlation, Cronbach's alpha and Cronbach's alpha if item deleted

Scale items	Mean (SD)	ITC	A	$\alpha$ if item deleted
Negotiation				0.79
1. I showed I cared about this brother/sister even though we disagreed.	5.00 (1.64)	0.47		0.77
13. I showed respect for this brother/sister's feelings about an issue.	4.69 (1.79)	0.48		0.77
39. I said I was sure I could work out a problem.	3.13 (2.42)	0.60		0.74
3. I explained my side of a disagreement to this brother/sister.	4.69 (1.90)	0.49		0.77
59. I suggested a compromise to a disagreement with this brother/sister.	2.51 (2.37)	0.59		0.74
77. I agreed to try a solution to a disagreement.	2.33 (2.35)	0.61		0.73
Psychological aggression				0.76
5. I insulted or swore at this brother/sister.	2.77 (2.26)	0.47		0.74
35. I shouted or yelled at this brother/sister.	2.90 (2.29)	0.60		0.70
49. I stomped out of the room or house or yard when I had a disagreement with this brother/sister.	1.58 (2.03)	0.40		0.75
67. I did something to spite this brother/sister.	2.14 (2.23)	0.57		0.71
25. I called this brother/sister fat or ugly.	1.08 (1.89)	0.45		0.74
29. I destroyed something belonging to this brother/sister.	1.14 (1.93)	0.40		0.75
69. I threatened to hit or throw something at this brother/sister.	0.70 (1.52)	0.50		0.73
Physical assault				0.80
7. I threw something that could hurt at this brother/sister.	1.26 (1.96)	0.45		0.79
9. I twisted this brother/sister's arm or hair.	1.41 (2.13)	0.51		0.78
17. I pushed or shoved this brother/sister.	1.66 (2.18)	0.50		0.78
45. I grabbed this brother/sister.	0.60 (1.46)	0.63		0.77
53. I slapped this brother/sister.	1.29 (1.97)	0.49		0.78
21. I used a knife or gun on this brother/sister.	0.08 (0.63)	0.35		0.80
27. I punched or hit this brother/sister with something that could hurt.	0.45 (1.32)	0.49		0.78
33. I coked this brother/sister.	0.09 (0.63)	0.38		0.80
37. I slammed this brother/sister against a wall.	0.40 (1.23)	0.45		0.79
43. I beat up this brother/sister.	0.43 (1.30)	0.55		0.78
61. I burned or scalded this brother/sister on purpose.	0.12 (0.71)	0.18		0.81
73. I kicked this brother/sister.	0.78 (1.64)	0.53		0.78
Sexual coercion				0.77
15. I made this brother/sister have sex without a condom.	0.20 (0.99)	0.40		0.81
51. I insisted on sex when this brother/sister did not want to (but did not use physical force).	0.06 (0.52)	0.60		0.73
63. I insisted this brother/sister have oral or anal sex (but did not use physical force).	0.05 (0.44)	0.62		0.74
19. I used force (like hitting, holding down, or using a weapon) to make this brother/sister have oral or anal sex.	0.11 (0.69)	0.41		0.77
47. I used force (like hitting, holding down, or using a weapon) to make this brother/sister have sex.	0.07 (0.58)	0.63		0.73
57. I used threats to make this brother/sister have oral or anal sex.	0.04 (0.38)	0.67		0.74
75. I used threats to make this brother/sister have sex.	0.06 (0.55)	0.56		0.74
Injury				0.65
12. This brother/sister had a sprain, bruise, or small cut because of a fight with me.	0.83 (1.67)	0.29		0.76
72. This brother/sister still felt physical pain the next day because of a fight with me.	0.25 (0.95)	0.47		0.57
24. This brother/sister passed out from a hit on the head in a fight with me.	0.14 (0.80)	0.40		0.60
32. This brother/sister went to a doctor because of a fight with me.	0.10 (0.67)	0.57		0.56
42. This brother/sister needed to see a doctor because of a fight with me, but didn't go.	0.07 (0.52)	0.50		0.60
56. This brother/sister had a broken bone from a fight with me.	0.07 (0.45)	0.60		0.59

ITC item-to-total correlation

**Table 4** CTS2-SP Victimization Scale: descriptive statistics of the items, item-to-total correlation, Cronbach’s alpha and Cronbach’s alpha if item deleted

Scale items	Mean (SD)	ITC	A	$\alpha$ if item deleted
Negotiation			0.77	
2. This brother/sister showed they cared about me even when we disagreed.	4.84 (1.77)	0.44		0.76
14. This brother/sister showed respect for my feelings about an issue.	4.34 (1.96)	0.44		0.76
40. This brother/sister said he was sure they could work out a problem.	3.08 (2.42)	0.56		0.73
4. This brother/sister explained their side of a disagreement to me.	4.60 (1.96)	0.52		0.74
60. This brother/sister suggested a compromise to a disagreement with me.	2.40 (2.36)	0.57		0.72
78. This brother/sister agreed to try a solution to a disagreement suggested by me.	2.35 (2.37)	0.57		0.72
Psychological aggression			0.75	
6. This brother/sister insulted or swore at me.	2.65 (2.25)	0.44		0.73
36. This brother/sister shouted or yelled at me.	2.86 (2.29)	0.60		0.70
50. This brother/sister stomped out of the room or house or yard when he had a disagreement with me.	1.46 (2.03)	0.40		0.74
68. This brother/sister did something to spite me.	2.21 (2.27)	0.57		0.70
26. This brother/sister called me fat or ugly.	1.19 (2.01)	0.45		0.73
30. This brother/sister destroyed something belonging to me.	1.22 (2.01)	0.45		0.73
70. This brother/sister threatened to hit or throw something at me brother/sister.	0.68 (1.48)	0.53		0.72
Physical assault			0.80	
8. This brother/sister threw something at me that could hurt.	1.32 (2.03)	0.45		0.78
10. This brother/sister twisted my arm or hair.	1.45 (2.17)	0.44		0.78
18. This brother/sister pushed or shoved me.	1.59 (2.14)	0.49		0.78
46. This brother/sister grabbed me.	0.57 (1.67)	0.55		0.77
54. This brother/sister slapped me.	1.11 (1.88)	0.53		0.77
22. This brother/sister used a knife or gun on me.	0.09 (0.64)	0.36		0.79
28. This brother/sister punched or hit me with something that could hurt.	0.44 (1.26)	0.48		0.78
34. This brother/sister coked me.	0.22 (1.01)	0.34		0.79
38. This brother/sister slammed me against a wall.	0.46 (1.42)	0.43		0.78
44. This brother/sister beat up me.	0.37 (1.20)	0.55		0.77
62. This brother/sister burned or scalded me on purpose.	0.09 (0.67)	0.30		0.79
74. This brother/sister kicked me.	0.88 (1.73)	0.53		0.77
Sexual coercion			0.84	
16. This brother/sister made me have sex without a condom.	0.17 (0.85)	0.45		0.86
52. This brother/sister insisted on sex when I did not want to (but did not use physical force).	0.06 (0.54)	0.71		0.80
64. This brother/sister insisted me have oral or anal sex (but did not use physical force).	0.05 (0.44)	0.59		0.83
20. This brother/sister used force (like hitting, holding down, or using a weapon) to make me have oral or anal sex.	0.08 (0.61)	0.63		0.81
48. This brother/sister used force (like hitting, holding down, or using a weapon) to make me have sex.	0.08 (0.52)	0.77		0.80
58. This brother/sister used threats to make me have oral or anal sex.	0.07 (0.50)	0.73		0.80
76. This brother/sister used threats to make me have sex.	0.12 (0.78)	0.54		0.83
Injury			0.66	
11. I had a sprain, bruise, or small cut because of a fight with this brother/sister.	0.84 (1.65)	0.30		0.70
71. I still felt physical pain the next day because of a fight with me.	0.32 (1.09)	0.48		0.58
23. I passed out from a hit on the head in a fight with this brother/sister.	0.08 (0.57)	0.42		0.63
31. I went to a doctor because of a fight with this brother/sister.	0.16 (0.90)	0.53		0.57
41. I needed to see a doctor because of a fight with this brother/sister, but didn’t go.	0.18 (0.92)	0.38		0.62
55. I had a broken bone from a fight with this brother/sister.	0.13 (0.79)	0.46		0.60

ITC item-to-total correlation

**Table 5** Prevalence and chronicity statistics, by gender of participants

Scale	Gender of Participant		Total
	Men	Woman	
<b>A. Tactic “expressed”, “enacted”, “perpetrated”, “inflicted”.</b>			
Negotiation			
Prevalence (%)	98	98	98
Chronicity mean (SD)	68.9 (39.4)	76.4 (41.6)	73.6 (40.9)
Psychological aggression			
Prevalence (%)	92	91	92
Chronicity mean (SD)	34.4 (35.5)	26.9 (28.1)	29.7 (31.3)
Physical assault			
Prevalence (%)	72	72	73
Chronicity mean (SD)	30.7 (40.2)	15.2 (24.1)	21.0 (31.9)
Sexual coercion			
Prevalence (%)	11	5	7
Chronicity mean (SD)	22.4 (17.9)	9.1 (12.2)	16.6 (16.9)
Injury			
Prevalence (%)	41	36	38
Chronicity mean (SD)	8.7 (14.5)	4.3 (6.4)	6.1 (10.6)
<b>B. Tactic “experienced”, “received”, “victimized”, “inflicted”</b>			
Negotiation			
Prevalence (%)	98	97	98
Chronicity mean (SD)	66.2 (38.5)	70.6 (41.8)	69.0 (40.6)
Psychological aggression			
Prevalence (%)	90	91	91
Chronicity mean (SD)	33.5 (34.8)	27.1 (28.5)	29.5 (31.1)
Physical assault			
Prevalence (%)	70	71	71
Chronicity mean (SD)	29.6 (38.8)	16.6 (23.8)	11.4 (30.8)
Sexual coercion			
Prevalence (%)	10	6	8
Chronicity mean (SD)	22.6 (21.0)	8.2 (10.6)	15.1 (17.8)
Injury			
Prevalence (%)	40	33	38
Chronicity mean (SD)	7.6 (12.9)	4.4 (10.6)	5.7 (11.7)

**Victimization** An internal consistency analysis was also performed using Cronbach’s alpha for each of the five scales above mentioned. The values ranged from 0.66 for the Injury scale to 0.84 to the Sexual Coercion scale (see Table 4). We also excluded item 66 of Psychological Aggression scale for the same reasons already presented.

#### Correlation Analyses

**Prevalence** The total prevalence for the Negotiation (98 %) and Psychological Aggression (90 %) scales are very high, with almost everyone reporting at least one instance (see Table 5). Analyzing the other scales, 70 % of the men and 71 % of the women reported at least one instance in which they Physically Assaulted their brother or sister; 40 % of the men and 33 % of the woman reported at least one instance in which Injury occurred; and 10 % of the men and 6 % of the woman reported at least one instance of Sexual Coercion.

**Chronicity** Chronicity was calculated only from among those participants who reported at least one act on a given scale and it refers to the sum total of all reported occurrences of all acts from that scale (see Table 5). Chronicity means for perpetration are higher for the Negotiation scale and lower for the Injury scales for both men (68.9 % and 8.7 %, respectively) and women (76.4 % and 4.3 %, respectively).

Tables 6 and 7 shows the correlation matrix between scales and scales/total. Some scales are significantly inter-correlated and all scales are significantly correlated with the CTS2-SP total score.

**Construct Validity** To demonstrate construct validity for a measure “...it is necessary to establish that the measures are appropriately related to measures of the same or similar constructs” (Pulos 2007, p. 743). Thus, to establish construct validity we have used the *Revised Conflict Tactics Scales* (CTS2) to evaluate violence in family and dating violence. Psychological Aggression and Physical Assault scales were

**Table 6** Correlation between CTS2-SP Scales for self-report perpetration

CTS2-SP Scale	Gender	Negotiation	Psychological aggression	Physical assault	Sexual coercion	Injury
Negotiation	Men	–				
	Women	–				
Psychological aggression	Men	0.37**	–			
	Women	0.34**	–			
Physical assault	Men	0.12	0.74**	–		
	Women	0.15**	0.68**	–		
Sexual coercion	Men	0.01	0.19**	0.30**	–	
	Women	–0.08	0.10*	0.14**	–	
Injury	Men	0.02	0.37	0.55**	0.31**	–
	Women	–0.05	0.30**	0.48**	0.25**	–

\* $p < 0.05$  \*\* $p < 0.001$

**Table 7** Correlation between CTS2-SP Scales for self-report victimization

CTS2-SP Scale	Gender	Negotiation	Psychological aggression	Physical assault	Sexual coercion	Injury
Negotiation	Men	–				
	Women	–				
Psychological aggression	Men	0.36**	–			
	Women	0.31**	–			
Physical assault	Men	0.08	0.72**	–		
	Women	0.10	0.63**	–		
Sexual coercion	Men	–0.09	0.21**	0.36**	–	
	Women	–0.07	0.13*	0.14**	–	
Injury	Men	–0.02	0.40**	0.59**	0.43**	–
	Women	–0.11*	0.33**	0.40**	0.23**	–

\* $p < 0.05$  \*\* $p < 0.001$

used. Table 8 shows a significant correlation between perpetration of sibling violence and testifying father to mother violence ( $r=0.332, p=0.000$ ) and mother to father violence ( $r=0.219, p=0.000$ ), as well as being victim of mother violence ( $r=0.411, p=0.000$ ) and father violence ( $r=0.453, p=0.000$ ). The results also show a significant correlation between perpetration of sibling violence and perpetration of partner violence ( $r=0.324, p=0.000$ ).

**Discussion**

Several research suggests that sibling violence is highly prevalent and is thought to be the most common form of family violence (e.g., Finkelhor et al. 2006; Herzberger 1996; Straus et al. 1980). However, in Portugal, this problem still underreported. Therefore, is extremely important the validation of instruments to Portuguese cultural context on this field.

The current study was designed to establish the reliability and validity of the CTS2-SP in the Portuguese population. Results suggest that the CTS2-SP has good internal consistency and reliability in all scales, except for the Injury scale, the Cronbach’s alpha for the perpetration and victimization scales indicate levels of consistency above 0.70. These results

are similar to other studies (e.g., Lucente et al. 2001), namely to those obtained for the preliminary psychometric data of the CTS2 (Straus et al. 1996), in which the Cronbach’s alpha of the perpetration scales ranged from 0.79 to 0.95. Anderson and Leigh (2010) also found good internal consistency with 7 of the 10 scales of the CTS2, with Cronbach’s alpha above 0.70. Additionally, in several other studies the CTS2 alpha coefficients ranged from 0.34 to 0.94, with a mean of 0.77 (Straus 2007). According to Straus (2007), the occasional low alpha coefficient occurred when the behavior measured by some of the items are absent or nearly absent in some samples. In our sample, the incidence of Injury is extremely low, and this might be the cause of the low alpha coefficient (Straus 2007).

Results also revealed that the most used perpetration and victimization tactic was Negotiation, followed by Psychological Aggression, Physical Assault, Injury and Sexual Coercion. Straus et al. (1996) also found this pattern indicating that Sexual Coercion was used more as a tactic of conflict than Injury. Another important finding was the high prevalence rates of Physical Assault and Psychological Aggression between siblings. These results are consistent with other studies (e.g., Hardy 2001; Straus et al. 1980). Despite sibling violence is highly prevalent, little attention has been given to this form of violence because it is considered to be normal (Finkelhor et al. 2005) and thus acceptable within the family (Simonelli et al. 2002).

Compared to Straus et al. (1996) findings, this study reveals higher means for chronicity in all the perpetration scales except for Sexual Coercion and Injury, as well in all the victimization scales except for Sexual Coercion. This study provides evidence that violence between siblings cannot be underestimated.

There is also evidence of construct validity. The correlation between different forms of CTS2 and CTS2-SP (*sibling version*) shows a positive and statistical association. Sibling violence seems to be highly correlated with other forms of violence, namely parent-to-parent and parent-to-child (e.g., Graham-Bermann et al. 1994; Haj-Yahia and Dawud-Noursi 1998) and this can have impact on later life relationships

**Table 8** Correlations between siblings violence/parent-to-parent violence/parent-to-child violence and dating violence

CTS2-SP Scale	Perpetration of sibling violence	Victim of sibling violence
Mother-to-child violence	0.41**	0.39**
Father-to-child violence	0.45**	0.37**
Mother-to-father violence	0.22**	0.23**
Father-to-mother violence	0.33**	0.19**
Victim of dating violence	0.27**	0.30**
Perpetrated dating violence	0.39**	0.32**

\* $p < 0.05$  \*\* $p < 0.001$

(e.g., Noland et al. 2004; Simonelli et al. 2002). According with "...social learning perspective, witnessing violent and abusive acts by significant others provide a pattern of behaviors for children to emulate with their siblings" (Hoffman and Edwards 2004, p. 192).

The Portuguese CTS2-SP version has adequate psychometric properties. However, this study has several limitations, namely the use of a convenient sample limited to university students it is not representative of the Portuguese population and, therefore, additional caution is needed when generalizing from such data. Future research should analyze the psychometric properties of the CTS2-SP in other samples (e.g., clinic population, younger and older people). Another limitation, was the use of retrospective reporting, that is not always a reliable assessment, although it has been used in others studies (e.g., Wiehe 1998). Because all the measures used a self-report format, the results are dependent of participant's perceptions of the facts. Another limitation was the lack of information regarding the context of the reported violence and it is not possible to know whether the reported violence was offensive or defensive behavior.

As mentioned above, considering that sibling violence can start very early in life and can be predictive of other forms of violence in other relationships, the study of this issue is highly relevant in order to prevent the use of violence as a tactic for solving conflicts. Sibling violence is highly prevalent in many countries, even in Portugal, with short and long term impact as we saw previously. However the first step in this direction it was psychometric validation of the CTS2-SP. The validation of the CTS2-SP for the Portuguese population will place, at the disposal of researchers and clinicians (e.g., as a checklist), an instrument that can contribute to a deeper understanding of siblings relationship, and would offer researchers, along with others measures, a more comprehensive studying of family violence.

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