Psychometric properties of the Portuguese version of the Conflict Tactics Scales: Parent-child Version (CTSPC) used to identify child abuse

Propriedades psicométricas da versão em português do instrumento *Conflict Tactics Scales: Parent-child Version* (CTSPC) utilizado para identificar violência contra a criança

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Abstract

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This article follows another, which presented the first phase of the cross-cultural adaptation process examining the psychometric properties of the Conflict Tactics Scales, Parent-child Version (CTSPC), Portuguese version. Fieldwork took place in three public maternity wards in Rio de Janeiro, Brazil, from March to September 2000. Interviews relate to siblings of randomly selected live births. Respondents were mothers. Information on partners was obtained by proxy. Almost all intra-observer reliability kappa estimates were above 0.75. Depending on the scale and type of perpetrator, internal consistency (a) estimates ranged from 0.49 to 0.68. Using the same sample, the iterated principal factor analysis identified four dimensions. Although most items performed well, some failed to adequately load in their expected factors. Construct validity involved exploring the relationship between several other theoretical dimensions and a variable encompassing the cumulative pattern of violence severity. All the hypotheses tested were corroborated. The current evaluation indicates that the CTSPC can be recommended for use in Portuguese-speaking contexts. Still, it also identified some important points needing further investigation and discussion.

Domestic Violence; Questionnaires; Reliability and Validity

Introduction

In different parts of the world, family violence has had an important impact on the health and mortality of children, adolescents, and women [1,2,3,4,5,6]. In Brazil, a clear picture has not yet been established, since information on the magnitude of family violence at the population level is scarce. Even so, some studies have shown violence at the family level as an escalating problem [7,8,9,10,11,12,13,14].

The bio-psycho-social consequences of domestic violence have led to increasing interest in the scientific community with regard to prevention, follow-up of victims, and the development of pertinent research programs. Identification of violence in families is a major challenge [15,16]. Accepting that comparing profiles between cultures in different settings is of great interest, it is essential that instruments conceived and widely researched in one country are also thoroughly adapted for use in the new context. Local or regional nuances need to be contemplated in order to achieve cross-cultural equivalence [17].

This quest has motivated the Epidemiological Research Program on Family Violence at the State University of Rio de Janeiro, Rio de Janeiro, Brazil, to focus on studies aiming at providing Portuguese versions of several key instruments widely used in the field of family violence [18,19,20,21,22]. Given the positive evalua-

tions of the Conflict Tactics Scales (CTS) and their successful use in at least 20 countries [7,12, 23,24,25,26], the Conflict Tactics Scales: Parent-child Version (CTSPC) was selected to be adapted to Portuguese for use in Brazil and possibly other Portuguese-speaking countries/communities.

Straus et al. [26] conceived the instrument in English as an offshoot of the first Conflict Tactics Scales (CTS1) released in 1979 [24]. The basic form of CTSPC consists of 22 items divided into three scales: non-violent discipline, psychological aggression, and physical assault. The latter is further split into three subscales according to severity, which are respectively called corporal punishment, physical maltreatment, and severe physical maltreatment. The questionnaire also contains supplementary scales on disciplinary methods, neglect, and sexual abuse in the preceding week (7 days).

The adaptation process underlying this paper is based on the guidelines proposed by Herdman et al. [27]. The first three phases of the procedure – concept, item, and semantic equivalences evaluations – and a provisional Portuguese version proposed for use and further testing were presented elsewhere [22]. The present paper carries the adaptation process a step further, formally assessing the psychometric properties of the Portuguese version of the instrument. The Portuguese version of the CTSPC is evaluated here in terms of intra-observer reliability, internal consistency, factor structure, and construct validity. Measurement equivalence between the original instrument developed in English and the version under test is granted if there is an overall similarity of estimates.

Methods

The Portuguese version of the CTSPC under test

As described in the previous section, the Portuguese version of CTSPC under test has already undergone the first three steps of formal evaluation. The assessment of conceptual and item equivalence included discussion groups with experts, as well as a comprehensive literature review to evaluate the pertinence of the concepts and items covered by the original instrument in the Brazilian context. The ensuing appraisal of semantic equivalence consisted of two translations and respective back-translations; an independent and blinded assessment of the equivalence between those and the original instrument with regard to referential (liter-

al) and general (connotative) meanings [27]; a discussion phase with specialists in order to re-examine and select items for the proposed version; and a pre-test on 30 women admitted to hospital for childbirth. Conceptual, item, and semantic equivalence could be ascertained.

The original instrument in English and the proposed version may be found in Table 1, where the reader also finds the item letters used throughout the rest of this paper. Note that due to reasons that will become clearer later in the discussion, the psychometric evaluation concerns four scales, namely, non-violent discipline (NVD), psychological aggression (PSY), corporal punishment (CP), and physical maltreatment (PM). As a result of underlying operational demands, the proposed version has been adapted to the second person for use in face-to-face interviews, and the items' score schemes restricted to two levels regarding the occurrence of the event (or lack thereof) during the recall period. In this study, only the main part of the instrument has been addressed. The scales covering the previous 7 days' neglect and sexual abuse alluded to in the introduction were left out.

Fieldwork and data analysis

The present study is part of a hospital-based case-control study exploring the relationship between violence in families of pregnant women and premature childbirth. The fieldwork took place from March to September 2000 in three large public maternity wards in Rio de Janeiro. Cases comprised all premature newborns accrued during the 6-month period. In order to comply with the pre-specified sample size, about 14% of the 3,800 eligible live births with gestational age above 36 weeks were randomly selected as controls. Subjects were drawn from a list of live births occurring in the previous 24 hours. Women with diabetes mellitus, systemic arterial hypertension, or who gave birth to neonates with severe congenital malformations, infections associated with prematurity, or twins were excluded. The effective sample sizes are shown along with the details on each analysis.

Specially trained interviewers collected data from mothers in the first 72 hours postpartum using a multidimensional questionnaire encompassing information on: (a) maternal socio-demographic and reproductive history; (b) prenatal care; (c) use of alcohol, drugs, and tobacco; (d) occupational history; (e) social support; and (f) violence between members of the family, including that pertaining to parent-

Table 1

Conflict Tactics Scales: Parent-child Version (CTSPC): original instrument in English and its Portuguese version.

Item	Scale	English	Portuguese
A	NVD	Explained why something was wrong?	Você explicou o/a XXX porque o que ele/a estava fazendo estava errado?
B	NVD	Put him/her in time out (or sent to his/her room)?	Você colocou ele/a de castigo do tipo: mandou ele ficar em seu quarto ou em qualquer outro lugar?
C	CP	Shook him/her?	Você sacudiu o/a XXX?
D	CP	Hit him/her on the bottom with something like a belt, hairbrush, a stick, or some other hard object?	Você bateu no bumbum dele/a com alguma coisa como um cinto, chinelo, escova de cabelo, vara ou outro objeto duro?
E	NVD	Gave him/her something else to do instead of what he/she was doing wrong?	Você deu a ele/a outra coisa para fazer ao invés daquilo que ele/a estava fazendo de errado?
F	PSY	Shouted, yelled, or screamed at him/her?	Você falou alto, berrou ou gritou com XXX?
G	PM	Hit him/her with a fist or kicked him/her hard?	Você bateu com a mão fechada ou deu um chute com força nele/a?
H	CP	Spanked him/her on the bottom with your bare hand?	Você deu uma palmada no bumbum de XXX?
I	PM*	Grabbed him/her around the neck and choked him/her?	Você agarrou ele/a pelo pescoço e o sacudiu?
J	PSY	Swore or cursed at him/her?	Você xingou ou praguejou, quer dizer, rogou praga, contra ele/a?
K	PM*	Beat him/her up, that is you hit him/her over and over as hard as you could?	Você bateu muito em XXX, ou seja, bateu nele/a sem parar, o máximo que V/S conseguiu?
L	PSY	Said you would send him/her away or kick him/her out of the house?	Você disse alguma vez que iria expulsar ele/a de casa ou enxotá-lo/a para fora de casa?
M	PM*	Burned or scalded him/her on purpose?	Você queimou ou derramou líquido quente em XXX de propósito?
N	PSY	Threatened to spank or hit him/her but did not actually do it?	Você ameaçou dar um tapa nele/a mas não deu?
O	PM	Hit him/her on some other part of the body besides the bottom with something like a belt, hairbrush, a stick, or some other hard object?	Você bateu em alguma parte do corpo dele diferente do bumbum com alguma coisa como um cinto, chinelo, escova de cabelo, vara ou outro objeto duro?
P	CP	Slapped him/her on the hand, arm, or leg?	Você deu um tapa na mão, no braço ou na perna de XXX?
Q	NVD	Took away privileges or grounded him/her?	Você tirou as regalias dele/a ou deixou ele/a sem sair de casa?
R	CP	Pinched him/her?	Você deu um beliscão em XXX?
S	PM*	Threatened him/her with a knife or gun?	Você ameaçou ele/a com uma faca ou arma?
T	PM	Threw or knocked him/her down?	Você jogou XXX no chão?
U	PSY	Called him/her stupid or lazy or some other name like that?	Você chamou ele/a de estúpido/a, burro/a, preguiçoso/a ou de outra coisa parecida?
V	PM	Slapped him/her on the face or head or ears?	Você deu um tapa/bofetada no rosto, na cabeça ou nas orelhas de XXX?

NDV = non-violent discipline; PSY = psychological aggression; CP = corporal punishment; PM = physical maltreatment.
* Identifies severe physical maltreatment as defined in Straus et al. [26].

child relationships. Except for (a), the recall period was confined to the time period covered by the main study, i.e., pregnancy. Information about the partner was obtained from the mother.

The analysis of intra-observer reliability relates to 155 (91 mothers and 64 partners) CTSPC modules replicated by the same interviewer 24-48 hours after the first sitting. This time restriction aimed at avoiding selectively losing subjects due to hospital discharge. Reliability was evaluated separately for each scale of the instrument, using both scores and as dichotomous variables. Regarding the latter, a positive event was defined as having at least one positive item in the scale. Simple kappa statistics are used as estimators and respective confidence intervals calculated according to Fleiss

et al. [28]. The overall scores result from the sum of items. Point-estimates are kappas with quadratic weights [29] and confidence intervals obtained via bootstrap [30]. Interpretation follows Shrout [31], who proposed classifying agreement as virtually none ($\kappa < 0.1$); slight ($\kappa = 0.11\text{-}0.40$); fair ($\kappa = 0.41\text{-}0.60$); moderate ($\kappa = 0.61\text{-}0.80$); and substantial ($\kappa = 0.81\text{-}1.0$).

The analysis of internal consistency concerns data from 439 and 335 questionnaires with complete sets of items pertaining to mothers or partners as perpetrators, respectively. The α coefficient is used as estimator [32,33], along with its one-sided 95% confidence bound [34,35]. The item-rest point-biserial correlations (r_{pb}) and the α coefficients on excluding each item from the analysis are also provided ($\alpha_{(k-1)}$) [33].

Factor analysis aims at reassessing the dimensional structure first reported by the proponents of the instrument [26]. On this perspective and to keep in line with the studies on the other CTS, the iterated principal factor method with varimax rotation was used. The analysis relates to the same sample as for internal consistency. In order to appropriately handle dichotomous items, the factor analysis has been applied to tetrachoric correlations matrices [36], which were previously smoothed in order to reduce or avoid the number of Heywood cases in the solutions. Results consider only factors with *eigenvalues* above one [37] and, following Nunnally & Bernstein [33], according to their theoretical interpretation. The analysis was carried out in Microfact 2.0.

In order to avoid the possibility of clustering effects arising from families where more than one mother-child or partner-child relationship had been investigated, only one child (CTSPC) per perpetrator was accepted in the three analyses outlined so far. To this effect, a further ad hoc random sampling was carried out on the entire original sample of the main case-control study.

In contrast, the evaluation of construct validity was restricted to the control group, although all tapped parent-child relationships in a household were now included. In all, there were 574 relationships occurring in 303 families. The ensuing clustering effects were dealt with by using suitable analysis [38,39]. The validity assessment explores the link between several related dimensions previously reported in the literature and a composite variable representing a pattern of increasing violence severity [40]. This entails a four-level variable whereby parent-child relationships are classified according to the most severe type of violence that took place within the recall period, regardless of whether another of lesser importance occurred. Thus, a relationship was ascribed to the "worst-scenario" (level 4) if at least one item of the physical maltreatment (PM) scale occurred within the recall period, regardless of whether a NVD, PSY, or CP act had been reported. Similarly, the "second-worst scenario" (level 3) required the occurrence of at least one corporal punishment (CP) item, regardless of whether a NVD or PSY item took place. By extension, the "best scenario" (level 1) encompassed only those relationships in which no violent act had been reported (i.e., only non-violent discipline – NVD – items are permissible) and the "second-best scenario" (level 2) involved relationships using psychological aggression (PSY), with or without NVD.

Eight dimensions were formally tested, namely, the woman's schooling and age; her satisfaction with the latest pregnancy; suspicion of alcohol and illicit drug abuse by the respondent and/or partner; number of children under five years living in the household; level of social support received during pregnancy; and the family's socioeconomic status approximated by an indicator describing the housing conditions [3,4,41,42]. Corresponding variables are described in the last table presented in the *Results* section. Although most are self-evident, a few points need clarification: (a) schooling is presented as a four-level variable in accordance with the current Brazilian educational system. The first category (incomplete primary) included six illiterate individuals. The last category (complete secondary or more) also included six women who went on to attend university. (b) Suspicion of alcohol abuse was defined as either the respondent or her partner answering positively to two or more items from the CAGE (cut-down; annoyed; guilty & eye-opened) questionnaire [43]. (c) Use of illicit drugs was evaluated by way of the World Health Organization supported Non-student Drug Use Questionnaire (NSDUQ) [44]. Either the respondent or the partner having consumed at least one listed drug defined a positive case. (d) Level of social support was evaluated by the instrument developed by Sherbourne & Stewart [45] and adapted for use in Brazil [46]. Since there is no consensus as to how one should qualify social support, the overall score was converted into quintiles. For ease of presentation, the three middle strata were pooled, since the level of violence among them is virtually indistinguishable. (e) The indicator for housing conditions includes four characteristics: household crowding expressed as the ratio between the number of available rooms and dwellers; the type of predominant floor material; sewage disposal system; and domestic garbage disposal facilities.

Data entry and quality control were conducted, respectively, in Epi Info 6.04 (Centers for Disease Control and Prevention, Atlanta, Estados Unidos) and Stata 8.2 (Stata Corporation, College Station, Estados Unidos). The latter was also used for data processing and most of the analysis.

The study was formally approved by the Research Ethics Committee of the Rio de Janeiro Municipal Health Department. Participation in the study followed free and informed consent. Confidentiality of information was guaranteed. All the women received orientation on public facilities in Rio de Janeiro for managing fami-

lies suffering from violence and were encouraged to seek help if they felt it was necessary.

Results

The study population (respondents) comprised mostly young women (mothers) with average age 24.9 years (sd = 6.6); poorly educated with a mean of 6.3 years (sd = 2.9) of schooling; having attended an average of 6.1 (sd = 2.7) pre-natal visits; and coming from low income families – median per capita income of US$80.4 (c5: 23.5/c95: 221.2). One-fourth of households were headed by single or unmarried women at the time of interview (26.4%; 95%CI: 21.6-31.3). In almost all families non-violent discipline was used to solve conflicts during pregnancy (96%; 95%CI: 94.4-97.6). Still, four out of five used at least one act of verbal aggression as a disciplinary method (79.6%; 95%CI: 76.3-82.9), almost a third resorted to corporal punishment (61.8%; 95%CI: 57.8-65.8), and 12.7% (95%CI: 10.0-15.4) perpetrated some act of physical abuse against a child. Only two respondents refused to finish the interview.

Reliability

Intra-observer agreements are shown in Table 2. Weighted kappas were above 0.75 for all scales, except for PM when perpetrated by the partner. When analyzed dichotomously, estimates were also mostly above this limit. The exceptions were psychological aggression (PSY) perpetrated by the mother and NVD or PM by the partner.

Internal consistency

Table 3 shows α coefficients ranging from 0.48 to 0.67. Although most estimates were quite close to each other, the α relating to the NVD scale was slightly below average when mothers were perpetrators, whereas both CP estimates were above. As a whole, estimates for mothers were slightly lower than for partners. For comparison, the α coefficients reported by Straus et al. [26] for the non-violent discipline, psychological aggression, and physical assault scales when perpetrated by any "parent" are provided in the last column of the table. The respective figures in the present study were 0.52 (one-sided 95% lower confidence bound – LCB = 0.47), 0.60 (95%LCB = 0.56), and 0.73 (95%LCB = 0.70).

Systematically withdrawing items from their respective scales (item-rest analysis) did not show much change in estimates, apart from item E, which inflated the α beyond 10.0% among mothers. Most item-rest correlations (r_{pb}) were above 0.2. Only item V was below this threshold, irrespective of the perpetrator. Correlations below 0.2 were also found for items E and S when mothers were perpetrators and for items L and I when partners.

Factor analysis

Table 4 shows that, regardless of perpetrator, four factors with *eigenvalues* above 1.0 could be extracted. Their order corresponds roughly to the PSY, CP, PM, and NVD scales when the acts were committed by the mother. Positions

Table 2

Intra-observer reliability of the Portuguese version of the Conflict Tactics Scales: Parent-child Version (CTSPC).

Type of scale	Perpetrator*	Scales			
		NVD	PSY	CP	PM
Dichotomized**	Mother	0.80	0.56	0.89	0.85
		(0.40/1.00)	(0.32/0.81)	(0.78/1.00)	(0.69/1.00)
	Partner	0.55	0.69	1.00	0.38
		(0.10/1.00)	(0.51/0.88)	(–)	(0.00/1.00)
Ordinal (score)***	Mother	0.87	0.76	0.92	0.92
		(0.77/0.93)	(0.63/0.86)	(0.86/0.96)	(0.74/1.00)
	Partner	0.91	0.83	0.99	0.38
		(0.84/0.95)	(0.72/0.94)	(0.97/1.00)	(0.00/1.00)

NDV= non violent discipline; PSY = psychological aggression; CP = corporal punishment; PM = physical maltreatment.
* Sample size: mothers/respondents = 91; partners = 64;
** Simple kappa;
*** Weighted (quadratic) kappa.

Table 3

Internal consistency of the Portuguese version of the Conflict Tactics Scales: Parent-child Version (CTSPC).

Scale/Item	Perpetrator: mother				Perpetrator: partner				
	α*	$\alpha_{(k-1)}$**	d***	r_{pb}#	α	$\alpha_{(k-1)}$	d	r_{pb}	αs##
NVD									
A	0.48 (0.41)	0.44 (0.35)	-9.3	0.28 (0.19/0.37)	0.54 (0.47)	0.48 (0.39)	-11.0	0.32 (0.23/0.42)	0.70
B		0.27 (0.16)	-43.9	0.41 (0.33/0.48)		0.38 (0.28)	-28.8	0.41 (0.31/0.49)	
E		0.53 (0.47)	10.9	0.15 (0.06/0.24)		0.52 (0.45)	-2.3	0.26 (0.16/0.35)	
Q		0.35 (0.26)	-26.9	0.33 (0.24/0.41)		0.46 (0.37)	-13.7	0.32 (0.23 /0.41)	
PSY									
F	0.57 (0.51)	0.49 (0.42)	-14.6	0.38 (0.29/0.44)	0.58 (0.52)	0.41 (0.32)	-29.4	0.50 (0.40/0.56)	0.60
J		0.53 (0.47)	-6.9	0.30 (0.24/0.38)		0.57 (0.50)	-1.56	0.26 (0.16/0.38)	
L		0.57 (0.51)	-0.7	0.25 (0.17/0.32)		0.60 (0.53)	2.9	0.19 (0.08/0.30)	
N		0.47 (0.40)	-17.1	0.40 (0.31/0.47)		0.44 (0.35)	-23.8	0.46 (0.37/0.56)	
U		0.49 (0.42)	-14.2	0.38 (0.31/0.45)		0.51 (0.44)	-11.7	0.36 (0.24/0.43)	
CP									
C	0.66 (0.62)	0.63 (0.58)	-4.9	0.36 (0.28/0.45)	0.67 (0.63)	0.64 (0.59)	-4.8	0.38 (0.25/0.49)	0.55
D		0.59 (0.53)	-10.9	0.46 (0.38/0.52)		0.58 (0.52)	-13.7	0.55 (0.46/0.65)	
H		0.57 (0.52)	-13.0	0.49 (0.43/0.56)		0.55 (0.49)	-18.0	0.60 (0.51/0.66)	
P		0.59 (0.54)	-10.3	0.46 (0.38/0.52)		0.53 (0.46)	-21.4	0.64 (0.56/0.69)	
V		0.67 (0.63)	1.9	0.19 (0.10/0.30)		0.71 (0.66)	4.6	0.01 (-0.01/0.04)	
R		0.62 (0.57)	-5.6	0.36 (0.28/0.45)		0.69 (0.64)	1.9	0.19 (0.02/0.33)	
PM###									
G	0.54 (0.48)	0.40 (0.32)	-25.3	0.45 (0.29/0.61)	0.62 (0.57)	0.56 (0.49)	-10.3	0.42 (-0.02/0.76)	
O		0.52 (0.46)	-4.2	0.38 (0.24/0.49)		0.67 (0.62)	7.2	0.43 (0.17/0.59)	
T		0.46 (0.39)	-15.2	0.43 (0.23/0.62)		0.53 (0.46)	-14.7	0.59 (0.02/0.82)	
I		0.49 (0.43)	-8.1	0.29 (0.09/0.47)		0.64 (0.59)	3.0	0.12 (0.01/0.28)	
K		0.51 (0.45)	-5.3	0.25 (0.05/0.50)		0.53 (0.46)	-15.3	0.51 (0.15/0.76)	
S		0.56 (0.50)	3.6	0.06 (0.02/0.11)		0.57 (0.51)	-8.0	0.54 (0.01/0.82)	

NDV = non-violent discipline; PSY = psychological aggression; CP = corporal punishment; PM = physical maltreatment.
* Scale's α coefficient. In brackets: 95% lower confidence bound calculated according to Woodward & Bentler [35];
** Coefficient α on excluding the item. In brackets: same as in *;
*** Percent change in · on excluding the item given by [-(α - $\alpha_{(k-1)}$)/α]. Value sign relates to the direction of change
(positive = increase; negative = decrease);
Item-rest point-biserial correlation. In brackets: two-sided 95% confidence bounds calculated via bootstrap (bias-corrected; B = 500);
α coefficients for the non-violent discipline, psychological aggression, and physical assault scales reported in Straus et al. [26];
Item M withdrawn from scale due to absence of positive responses. Sample size: mothers = 439; partners = 335.

change when the partner was involved, but the general pattern was retained.

Despite overall agreement with the original proposition by Straus et al. [26] regarding the underlying dimensionalities, a few items failed to conform to the anticipated factors/scales. Noting that loadings around or above 0.45 are highlighted for presentation in Table 4, the following items stand out when the mother was the perpetrator: (a) items F and N load high in *f2* (CP), instead of the expected PSY factor (*f1*). (b) Regarding the projected CP items in *f2*, item D loads higher in *f3* (PM) despite a concomitant borderline loading in its own factor. There was also a split in item C, with some loading in

f1 (PSY). (c) In turn, item V does not load at all in *f2*, appearing slightly in *f3* (PM) and also most strongly in *f1* (PSY). (d) Item R appears heavily in *f3* (PM). (e) In relation to the PM items foreseen in *f3*, items G and I clearly diverge from the rest, fitting in with *f1* (PSY) instead. (f) Items T and S are split between their own factor and *f1* (PSY).

The overall picture improves when the perpetrator was the partner, but some differences are still noticeable: (a) The NVD item E now loads in *f4* as expected. However, the pattern for item B is less clear than before. The item now loads more in *f2* (CP), although still borderline in its own factor. (b) Item F shares two

Table 4

Factor analysis of the Portuguese version of the Conflict Tactics Scales: Parent-child Version (CTSPC).

Scale/Item	Perpetrator: mother*				Perpetrator: partner*			
	f1 (PSY)	f2 (CP)	f3 (PM)	f4 (NVD)	f1 (PM)	f2 (CP)	f3 (PSY)	f4 (NVD)
NVD								
A	-0.062	0.222	-0.074	**0.657**	-0.220	0.140	-0.062	**0.726**
B	-0.015	0.341	0.314	**0.671**	-0.049	**0.576**	0.125	**0.446**
E	0.042	-0.025	-0.024	0.360	-0.079	0.125	-0.093	**0.602**
Q	0.210	0.173	0.369	**0.658**	0.074	0.371	0.255	**0.475**
PSY								
F	0.260	**0.730**	0.005	0.300	-0.014	**0.686**	**0.540**	-0.013
J	**0.680**	0.328	0.220	0.010	**0.500**	0.217	**0.517**	-0.420
L	**0.842**	-0.089	0.130	0.189	**0.624**	-0.135	**0.588**	-0.396
N	0.290	**0.744**	0.114	0.275	0.040	**0.705**	0.411	0.197
U	**0.712**	0.143	0.049	0.428	0.262	0.280	**0.642**	0.025
CP								
C	**0.476**	**0.504**	0.240	-0.069	0.308	**0.617**	0.249	0.044
D	0.172	**0.477**	**0.617**	0.177	0.358	**0.838**	0.026	0.202
H	-0.079	**0.759**	0.314	0.079	0.080	**0.859**	-0.091	0.211
V	**0.635**	0.229	0.429	-0.122	**0.776**	-0.038	0.424	0.218
P	0.201	**0.718**	0.194	0.119	0.061	**0.934**	0.017	0.107
R	0.185	0.387	**0.626**	0.165	**0.516**	0.478	0.313	-0.137
PM**								
G	**0.853**	0.218	0.217	-0.013	**0.730**	0.188	0.351	-0.080
O	0.416	0.400	**0.500**	0.024	**0.482**	**0.702**	0.198	0.018
T	**0.603**	0.123	**0.653**	0.034	**0.746**	0.178	0.179	-0.168
I	**0.613**	0.258	0.345	-0.018	**0.937**	0.113	-0.099	-0.125
K	0.382	0.215	**0.686**	0.182	**0.720**	0.340	0.375	-0.094
S	**0.495**	-0.360	**0.648**	-0.378	**0.937**	0.113	-0.099	-0.125
Eigenvalue	4.652	3.659	3.205	2.107	5.468	5.240	2.284	1.928
PTEV*	0.221	0.174	0.153	0.100	0.260	0.249	0.109	0.091

NDV = n-violent discipline; PSY = psychological aggression; CP = corporal punishment; PM = physical maltreatment.
* Sample size: mothers = 439; partners = 335;
** Item M withdrawn from scale due to absence of positive responses;
*** Proportion of total explained variation.

factors, now also loading high in its envisaged PSY factor (*f3*) alongside the CP factor as before (mother). (c) A similar split-pattern also emerges regarding items J and L. (d) Whereas item D loads with its expected factor (*f2*), item V is still off, now clearly accompanying *f1* (PM). (e) Conversely, the CP-expected item R that is attached preferentially to the PM factor when the mother was the perpetrator, is rather split for perpetration by the partner. (f) Turning to the PM items, whereas item G appears to cluster mainly in its own factor (*f1*), the reverse holds for item O, which is now inclined towards *f2* (CP).

Construct validity

Table 5 shows the relationship between child abuse and selected construct-related variables identifying population subgroups. Accepting a more lenient decision level of 10%, all tested associations with the variable tapping the increasing severity of violence are statistically significant. The overall profile is quite consistent, with opposite trends found in the extreme groups (NVD and PM) and rather balanced frequencies in the middle (PSY and CP). This bi-faceted picture is present in relation to whether the mother was at ease with the latest pregnan-

Table 5

Construct validity of the Portuguese version of the Conflict Tactics Scales: Parent-child Version (CTSPC): frequency (%) of increasing violence severity* in selected population sub-groups.

Construct variables	Increasing violence severity (%)				p**
	NVD	PSY	CP	PM	
Educational status/schooling (mother)					0.079
Incomplete primary (up to 7 years)	18.1	19.9	47.9	14.1	
Complete primary (8 years)	16.1	18.3	55.9	9.7	
Incomplete secondary (9 or 10 years)	12.5	12.5	72.5	2.5	
Complete secondary (11 or more)	24.6	24.6	35.4	15.4	
Maternal age (years)					0.001
< 20	12.8	18.6	58.1	10.5	
20-29	16.9	20.5	53.5	9.1	
≥ 30	23.6	18.5	36.3	21.7	
Maternal satisfaction with pregnancy					0.025
No	14.5	16.4	53.1	16.0	
Yes	21.1	22.3	46.5	10.1	
Suspicion of alcoholism among parents					0.017
No	20.3	20.3	49.0	10.3	
Yes	12.2	17.9	50.6	19.2	
Illicit drug consumption among parents					0.005
No	19.2	20.5	49.8	10.5	
Yes	12.2	15.6	47.8	24.4	
Presence of children under five years of age					0.017
None	23.9	21.1	41.6	13.4	
1 or 2	15.3	18.8	54.5	11.4	
3 or more	0.0	23.1	38.5	38.5	
Social support					0.000
Low	8.3	18.8	52.8	20.1	
Moderate	18.0	19.8	50.0	12.1	
High	33.7	20.7	42.4	3.3	
Housing conditions					0.067
Adequate	19.8	24.1	48.1	8.0	
Inadequate	17.3	17.6	50.1	15.0	

NDV = non-violent discipline; PSY = psychological aggression; CP = corporal punishment; PM = physical maltreatment.
* See text for the definition;
** Design-based Pearson F-statistic p-value based on n = 574 (subjects) and c = 303 (family clusters). See text for details.

cy; alcoholism or illicit drug consumption among any of the child's caregiver; the number of under-fives in the family; and the degree of social support received during this period. For instance, the exclusive use of non-violent forms of discipline declines from 33.7% to 8.3% as the amount of social support drops, yet resorting to physical maltreatment increases from 3.3% to 21.1%. There are three exceptions to this pattern. First, both NVD and PM tend to increase with maternal age. Second, only PM appears to change (i.e., doubles) with the family's socioeconomic status as expressed by housing condi-

tions. Third, while NVD increases tenuously with maternal schooling, there is an apparent U-shaped trend in relation to PM.

Discussion

Taken as a whole, the picture conveyed by the analysis presented in Tables 1 to 3 is encouraging in terms of the adequacy of the cross-cultural adaptation process under scrutiny, and (indirectly) in relation to the instrument's appropriateness for capturing the envisaged con-

struct. The present findings show that the CTSPC, if properly applied, is reproducible, internally consistent, and somehow able to discriminate several underlying dimensions.

Focusing on Table 2, the majority of intra-observer agreements are moderate or substantial. The eccentric values relating to the PM scale when the partner is the perpetrator may be overlooked, since they are more under the influence of the idiosyncrasies of the kappa estimator *vis-à-vis* the data at hand, than a substantive finding. In fact, only 1 out of 69 cases is in disagreement, which shows how sensitive the estimator is to extreme prevalence.

The α coefficients are sufficiently large to convey reasonable internal consistency, yet are not so extreme as to indicate redundancies and thus affect content validity and efficiency [47]. Another positive aspect is that the vast majority of component items acceptably correlate with the scores formed by the remaining items of the respective scale, showing that there is not much heterogeneity within the studied constructs/dimensions. According to Streiner & Norman [47], these correlations ought to exceed 0.2, which on the whole are easily attained in the present study. A third interesting feature is that the present coefficients for the scales covering physical violence are considerably higher than those presented by Straus et al. [26]. Contrary to what the authors found – little improvement over the internal consistency reported for the CTS1 (0.58) – the current findings are more reassuring, possibly showing that developing a new instrument to specifically tap parent-child relationships actually paid off.

Despite some inconsistencies, the results from the factor analysis broadly overlay the picture suggested by Straus et al. [26]. Still, the present study identifies just four dimensions, which is somewhat at odds with the dimensionality proposed by those authors. As conveyed in the introduction, Straus et al. [26] suggested splitting physical violent acts into three blocks of increasing severity, comprising one scale for punishment and two for maltreatment, the latter further divided according to severity of abuse. The present findings suggest that these two form a single scale and should thus not be used separately in practice. An ensuing aspect is that the results also tend to undermine the proposition to use all "physical" items in a single scale as originally proposed under the label of physical assault. As suggested by the factor analysis, the CP scale is fairly distinct from the PM scale. At any rate, these findings need to be replicated and further debated.

While a positive appraisal about the instrument and/or its adaptation to a Portuguese-speaking setting is certainly possible, it would be appropriate to specifically identify the items which, if not compromising the respective scales *en bloc*, do have problems and are open to reassessment, improvement, or revision. Item M could not be evaluated at all in the present study due to a complete lack of positive subjects. This finding may suggest that "burning or scalding a child on purpose" is not part of the Brazilian socio-cultural context and, added to the fact that an item that does not vary is uninformative, that the item should be withdrawn from the Portuguese version. Although a tempting procedure at first, the authors defend refraining at all cost from removing an item, as an important psychometric principle. Thus, before taking any measure, further studies should be encouraged, not only to corroborate this finding, but should this happen, to enable exploring psychometrically equivalent questions as replacement [48].

Beyond item M, the remaining 21 items may be broken down into four groups for scrutiny. The first includes items that did not show any psychometric problem in the present study (A, Q, U, H, P, and K). The second group is formed by 9 items with minor problems confined to only one parent, most of those comprised of high loadings sharing the projected scale with another (B, J, L, C, D, O, T, and S) and one item narrowly failing to provide an adequate "signal" when mothers are involved (E).

Of particular interest here is the fact that the present psychometric evaluation rejects some charges brought upon five of those items as lacking pertinence or semantic adequacy [22]. As the results convey, suggested language idiosyncrasies from the standpoint of the new culture in which the instrument was being adapted were not detected in either item J (swearing at or cursing a child) or Q (taking away privileges or grounding a child). Similarly, alleged age incompatibility for portions of the target population could not be confirmed. Spanking an older child or adolescent on the bottom (H), threatening to send away or kick a toddler out of the house (L), or calling an infant stupid or lazy (U) do not appear to carry much weight as first envisaged.

Regarding item E, a contextual semantic explanation is quite plausible. Asking whether something else was given for the child to do instead of what he/she was doing wrong appears to have lead to some misunderstanding, at least when the mother was involved. In contrast, interpretations for items D and O may be more

culturally determined. One may conjecture that in the setting where the study was conducted, striking the child with a belt or hairbrush on the bottom (item D; mother) or some other part of the body (item O; partner) may be perceived as something at the limit between a sanctioned – sometimes "necessary" – punishment and an act of overt maltreatment. Whether this feature is also intrinsic to any CTSPC needs to be further explored.

A third group encompasses two items (G and I), which again showed a problem confined exclusively to one perpetrator, yet involved a total change of scale. One cannot rule out that the low item-rest correlation found for items I has more to do with sparseness of the data since, there were fewer than 1% positives, and those few took place in different subjects. Similarly to what has been argued by the instrument's authors with regards to the original setting (USA) [26], a concomitance of severe types of physical maltreatment seems to be uncommon in Brazil as well. Parents who purposely choke or grab a child are unlikely to use a gun or knife within the response time frame covered by the instrument. Another more substantive explanation is that mothers tend to threaten rather than to enact the specific item, entailing a shift towards the psychological (verbal) aggression dimension. The same is conceivable in regards to item G (hitting with fist or kicking).

The fourth and most troublesome group consists of four items (F, N, V, and R) that show problems in both relationships and/or in both analyses sought to determine the structure of relations among measures. Considering the act of slapping a child in the face as "minor" was debated at length by experts, who came to the conclusion that, at least in the Brazilian milieu, it would be better to place the item among the others connoting physical maltreatment. The current psychometric evaluation captures this, showing that if perpetrated by the father (partner), item V appears to really belong to the latter scale rather than to CP. Although less sharply, an analogous picture arises if perpetrated by the mother. An ad hoc internal consistency evaluation analyzing the item in tandem with the other PM items could shed some light on the "borderline" loading found in $f3$ (PM). On placing the item with the other six from this scale, the a coefficient increases from 0.54 to 0.61 (about 13%), whereas the item-rest correlation, formerly below the 0.2 threshold, increases sharply to 0.450. However, it is still not understood why the item also tends to load in $f1$ (PSY). More studies are clearly needed.

The same point can be made for item R. "Pinching" a child may well be interpreted as physical maltreatment rather than "simple" punishment, and more evidence is needed here as well. As for the PSY items F and N hanging together with the CP items, it may well be that shouting/yelling and threatening to spank/hit consistently precede an ensuing act of physical punishment and, if perpetrated jointly, are intended to intimidate and achieve a change in behavior by the child. An analogous concomitance was observed in another study focusing on violence within couples [19].

The analysis of construct validity reveals a satisfactory picture. The pattern of associations between child abuse and selected construct-related variables corroborated almost all the tested hypothesis. The use of non-violent disciplinary methods tended to increase with the family's socioeconomic status (schooling); more experience (increasing age); maternal care-giving capability (fewer children under five, less alcohol or drug consumption in the household, and satisfaction with the latest pregnancy); and increasing social support. The inverse was largely true for the opposite extreme. Worse scenarios tended to go hand in hand with increasing physical maltreatment, a profile consistent with previous studies [3,4,49,50].

The current results must be examined in light of some operational decisions that had to be made. First, in line with the requirements of the main case-control study, the recall reference period was narrowed to cover only the pregnancy period. Second, logistic constraints limited information on partners to mothers' perceptions and responses. Third, the re-interview for the intra-observer reliability assessment had to be restricted to the first 48 hours after delivery in order to avoid selectively losing subjects due to hospital discharge. Such a short interval might have lead to overestimation due to a "recall effect", while the opposite due to "boredom" or "senselessness" in having to go through the same set of questions again so quickly. Finally, the analysis involved exclusively two-level items (happened/did not happen), again a practical constraint imposed by the fact that information on violence was collected along with other aspects as part of an extensive, time-consuming multidimensional questionnaire. A careful debate on the consequences of each of these options would not only be extensive, but at this stage, rather too speculative in terms of the influences on the psychometric findings. Thus, to settle issues, it would be best to further invest in studies using the original 12-month recall period, interview-

ing both parents independently, re-interviewing a subgroup at home at wider intervals, and using a more refined scoring system.

The present evaluation of the psychometric properties of the CTSPC Portuguese version complements the work initiated with the assessment of concept, item, and semantic equivalence. Beyond the restrictions described above, on the whole, the results reinforce previous findings and suggest that this version may be used in the Brazilian context and, following further fine-tuning, in other Portuguese-speaking settings and countries. Still, our evaluation of measurement equivalence identified some important points that need discussion and additional investigation in order to improve the proposed version. A thorough assessment would also require comparisons with results obtained in other contexts. For one, there are important socio-demographic differences between this study population and that underlying the original work by Straus et al. [26]. Besides, studies on the adaptation of the CTSPC to different cultures are still few and far between. More evaluation instances, preferably carried out through integrated, multi-center, and international consortiums, are highly important to foster the research program on the instrument. In this spirit, the authors propose that a discussion concerning the main properties of a Portuguese version is useful beyond an assessment of the quality of the cross-cultural adaptation process *per se* and should thus not be restricted to a "local" forum. Some if not all of the present findings can serve a wider audience working in other areas of the world.

Resumo

Este artigo segue outro que apresentava a primeira fase do processo de adaptação transcultural, examinando as propriedades psicométricas da versão em português do instrumento Conflict Tactics Scales: Parent-child Version *(CTSPC). O trabalho de campo ocorreu de março a setembro de 2000 em três maternidades públicas de grande porte do Rio de Janeiro, Brasil. Irmãos de recém-nascidos foram amostrados aleatoriamente. Entrevistas foram realizadas com mães. Informações sobre parceiros foram obtidas por* proxi. *A maioria das estimativas de confiabilidade intra-observador (kappa) se mostrou acima de 0,75. Consistência interna (a) variou de 0,49-0,68, dependendo da escala e tipo de perpetrador. Usando a mesma amostra, a análise de fatores principais iterativa identificou quatro dimensões. Ainda que a maioria dos itens se saísse bem, alguns não carregaram adequadamente nos fatores esperados. Validade de construto envolveu uma exploração entre diversas dimensões teóricas e uma variável abarcando um padrão cumulativo de gravidade de violência. Todas as hipóteses foram corroboradas. A presente avaliação indica que CTSPC pode ser recomendada para uso em contextos lusófonos. Ainda assim, foram identificados alguns pontos importantes que necessitam mais investigações e discussão.*

Violência Doméstica; Questionários; Confiabilidade e Validade

References

1. Kashani JH, Daniel AE, Dandoy AC, Holcomb WR. Family Violence: impact on children. J Am Acad Child Adolesc Psychiatry 1992; 31:181-9.
2. Heise L, Pitanguy J, Germain A. Violence against women: the hidden health burden. Washington DC: World Bank; 1994. (Discussion Paper, 255).
3. Straus MA, Gelles RJ. Physical violence in American families: risk factors and adaptations to violence in 8,145 families. New Brunswick: Transaction Publisher; 1995.
4. Gelles RJ. Intimate violence in families. London: SAGE Publications; 1997.
5. Bardi M, Borognini-Tarli SM. A survey on parent-child conflict resolution: intrafamily violence in Italy. Child Abuse Negl 2001; 6:839-53.
6. Watts C, Zimmerman C. Violence against women: global scope and magnitude. Lancet 2002; 359:1232-7.
7. Assis SG. Trajetória sócio-epidemiológica da violência contra crianças e adolescentes: metas de prevenção e promoção [Tese de Doutorado]. Rio de Janeiro: Escola Nacional de Saúde Pública, Fundação Oswaldo Cruz; 1995.
8. Guedes LG. Violência doméstica: prevalência e fatores associados em famílias atendidas num serviço de emergência pediátrica [Dissertação de Mestrado]. Rio de Janeiro: Instituto de Puericultura e Pediatria Martagão Gesteira, Universidade Federal do Rio de Janeiro; 1996.
9. Ferreira AL, Gonçalves HS, Marques MJV, Moraes SRS. A prevenção da violência contra a criança na experiência do Ambulatório de Atendimento à Família: entraves e possibilidades de atuação. Ciênc Saúde Coletiva 1999; 4:123-30.
10. Gonçalves HS, Ferreira AL, Marques MJV. Avaliação de serviço de atenção a crianças vítimas de violência doméstica. Rev Saúde Pública 1999; 33:547-53.
11. Ministério da Saúde. Política nacional de redução da morbimortalidade por acidentes e violências. Brasília: Ministério da Saúde; 2001.
12. Moraes CL, Reichenheim ME. Domestic violence during pregnancy in Rio de Janeiro, Brazil. Int J Gynaecol Obstet 2002; 79:269-77.
13. Moura ATMS, Reichenheim ME. Estamos realmente detectando violência familiar contra a criança em serviços de saúde? A experiência de um serviço público do Rio de Janeiro, Brasil. Cad Saúde Pública 2005; 21:1124-33.
14. Schraiber LB, d'Oliveira AF. Violence against women and Brazilian health care policies: a proposal for integrated care in primary care services. Int J Gynaecol Obstet 2002; 78 Suppl 1:S21-5.
15. Djeddah C, Facchin P, Ranzato C, Romer C. Child abuse: current problems and key public health challenges. Soc Sci Med 2000; 51:905-15.
16. Krug EG, Sharma GK, Lozano R. The global burden of injuries. Am J Public Health 2000; 90:523-6.
17. Behling O, Law KS. Translating questionnaires and other research instruments: problems and solutions. Thousand Oaks: Sage Publications; 2000.
18. Reichenheim ME, Moraes CL, Hasselmann MH. Equivalência semântica da versão em português do instrumento *Abuse Assessment Screening* para rastrear a violência contra a mulher grávida. Rev Saúde Pública 2000; 34:610-6.
19. Moraes CL, Hasselmann MH, Reichenheim ME. Adaptação transcultural para o português do instrumento *"Revised Conflict Tactics Scales (CTS2)"* utilizado para identificar violência entre casais. Cad Saúde Pública 2002; 18:163-76.
20. Moraes CL, Reichenheim ME. Cross-cultural measurement equivalence of the Revised Conflict Tactics Scales (CTS2) Portuguese version used to identify violence within couples. Cad Saúde Pública 2002; 18:783-96.
21. Hasselmann MH, Reichenheim ME. Adaptação transcultural da versão em português da *Conflict Tactics Scales Form R* (CTS-1), usada para aferir violência no casal: equivalências semântica e de mensuração. Cad Saúde Pública 2003; 19:1083-93.
22. Reichenheim ME, Moraes CL. Adaptação transcultural do instrumento *Parent-Child Conflict Tactics Scales* (CTSPC) utilizado para identificar a violência contra a criança. Cad Saúde Pública 2003; 19:1701-12.
23. Archer J. Assessment of the reliability of the conflict tactics scales: A meta-analytic review. J Interpers Violence 1999; 14:1263-89.
24. Straus MA. Measuring intra-familiar conflict and violence: the conflict tactics (CT) scales. J Marriage Fam 1979; 41:75-88.
25. Straus MA, Hamby SL, Boney-McCoy S, Sugarman DB. The revised Conflict Tactics Scales (CTS2): development and preliminary psychometric data. J Fam Issues 1996; 17:283-316.
26. Straus MA, Hamby SH, Finkelhor D, Moore DW, Runyan D. Identification of child maltreatment with parent-child conflict tactics scales: development and psychometric data for a national sample of American parents. Child Abuse Negl 1998; 22:249-70.
27. Herdman M, Fox-Rushby J, Badia X. A model of equivalence in the cultural adaptation of HRQoL instruments: the universalist approach. Qual Life Res 1998; 7:323-35.
28. Fleiss JL. Statistical methods for rates and proportions. New York: John Wiley & Sons; 1981.
29. Cohen J. Weighted kappa: nominal scale agreement with provision for scaled disagreement or partial credit. Psychol Bull 1968; 70:213-20.
30. Efron B, Tibshirani R. An introduction to the bootstrap. London: Chapman & Hall; 1993.
31. Shrout PE. Measurement reliability and agreement in psychiatry. Stat Methods Med Res 1998; 7:301-17.
32. Cronbach LJ. Coefficient alpha and the internal structure of tests. Psychometrika 1951; 16:297-334.
33. Nunnally JCJ, Bernstein I. Psychometric theory. New York: McGraw-Hill; 1995.
34. Bleda M-J, Tobias A. Cronbach's alpha one-sided confidence interval (insert sg143). Stata Technical Bulletin 2000; 56:26-7.
35. Woodward JA, Bentler PM. A statistical lower bound to population reliability. Psychol Bull 1978; 85:1323-6.
36. Divgi DR. Calculation of the tetrachoric correlation coefficient. Psychometrika 1979; 44:169-72.

37. Kaiser HF. Varimax criterion for analytic rotation in factor analysis. Psychometrika 1958; 23:187-200.

38. Skinner CJ, Holt D, Smith TMF. Analysis of complex surveys. New York: John Wiley & Sons, 1989.

39. Korn EL, Graubard BI. Analysis of health surveys. New York: John Wiley & Sons; 1999.

40. Straus MA, Gelles RJ. Physical violence in American families: risk factors and adaptations to violence in 8,145 families. New Brunswick: Transaction Publishers; 1995.

41. Tajima EA. The relative importance of wife abuse as a risk factor for violence against children. Child Abuse Negl 2000; 24:1383-98.

42. Muller RT, Goebel-Fabbri AE, Diamond T, Dinklage D. Social support and the relationship between family and community violence exposure and psychopathology among high risk adolescents. Child Abuse Negl 2000; 24:449-64.

43. Mayfield D, McLeod G, Hall P. The CAGE questionnaire: validation of a new alcoholism screening instrument. Am J Psychiatry 1974; 131:1121-3.

44. Smart RG, Arif A, Hughes P, Medina-Mora ME, Navaratnam V, Varma VK, et al. Drugs use among non-student youth. Geneva: World Health Organization; 1981. (WHO Offset Publication, 60).

45. Sherbourne CD, Stewart AL. The MOS social support survey. Soc Sci Med 1991; 32:705-14.

46. Chor D, Griep RH, Lopes CS, Faerstein E. Medidas de rede e apoio social no Estudo Pró-Saúde: pré-testes e estudo piloto. Cad Saúde Pública 2001; 17:887-96.

47. Streiner DL, Norman GR. Health measurement scales: a practical guide to their development and use. Oxford: Oxford University Press; 1995.

48. van der Linden WJ, Hambleton RK. Handbook of modern item response theory. New York: Springer; 1996.

49. Belsky J. Etiology of maltreatment: a developmental-ecological analysis. Psychol Bull 1993; 114:413-34.

50. Gough D. Defining the problem. Child Abuse Negl 1996; 20:993-1002.