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Citation for final published version:

Fresno, Andres, Alvarado, Nadia Ramos, Nunez, Daniel, Ulloa, Jose Luis, Arriagada, Jessica, Cloitre, Marylene, Bisson, Jonathan , Roberts, Neil, Shevlin, Mark and Karatzias, Thanos 2023. Initial validation of the International Trauma Questionnaire (ITQ) in a sample of Chilean Adults. *European Journal of Psychotraumatology*

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Initial Validation of the International Trauma Questionnaire (ITQ) in a sample of Chilean Adults

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1 **Abstract**

2 **Background:** ICD-11 Posttraumatic Stress Disorder (PTSD) and Complex PTSD (CPTSD)
3 are stress-related disorders. The International Trauma Questionnaire (ITQ) is a widely used
4 instrument to assess PTSD and CPTSD. To date, there is no evidence of the psychometric
5 characteristics of the ITQ in Latin American countries.

6 **Objective:** The aim of this study was to assess the construct and concurrent validity of the
7 Latin American Spanish adaptation of the ITQ in a sample of Chilean adults.

8 **Methods:** A sample of 275 Chilean young adults completed the ITQ, a traumatic life events
9 checklist, the Adverse Childhood Experiences Questionnaire, the Depression Anxiety Stress
10 Scales-21, and the Columbia-Suicide Severity Rating Scale short version. Four alternative
11 confirmatory factor analysis models were tested. Correlation analyses were performed to
12 determine concurrent validity with associated measures (number of reported traumatic events,
13 number of adverse childhood experiences, anxiety, depression, and suicidal risk).

14 **Results:** The second-order two-factor (PTSD and DSO) and the correlated first-order six-
15 factor model provided acceptable fit; however, the first model showed a better fit based on the
16 BIC difference. The PTSD and DSO dimensions, as well as the six ITQ clusters showed
17 positive correlations with reported number of traumatic life-events, reported number of adverse
18 childhood experiences, levels of anxiety, depression, and suicidal risk.

19 **Conclusions:** The ITQ Latin American Spanish adaptation provides acceptable psychometric
20 evidence to assess PTSD and CPTSD in accordance with the ICD-11.

21

22 **KEYWORDS:** PTSD; Complex PTSD; ICD-11 Trauma Questionnaire; Spanish; trauma, Chile

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24

25 **Validación inicial del Cuestionario Internacional de Trauma (ITQ) en una muestra de**
26 **Adultos Chilenos**

27

28 **Antecedentes:** el trastorno de estrés postraumático (TEPT) y el TEPT complejo (TEPTC) son
29 dos de los trastornos relacionados con el estrés de la CIE-11. El Cuestionario Internacional
30 de Trauma (ITQ) es un instrumento ampliamente utilizado para evaluar el TEPT y el TEPTC.
31 A la fecha, no existe evidencia de las características psicométricas del ITQ en países
32 latinoamericanos.

33 **Objetivo:** El objetivo de este estudio fue evaluar la validez de constructo y concurrente de la
34 adaptación al español latinoamericano del ITQ en una muestra de adultos chilenos.

35 **Métodos:** una muestra de 275 adultos jóvenes chilenos completó el ITQ, una lista de
36 verificación de eventos traumáticos en la vida, el Cuestionario de Experiencias Adversas en
37 la Infancia, las Escalas de Depresión, Ansiedad y Estrés-21, y la Escala de Calificación de
38 Severidad del Suicidio de Columbia, versión corta. Se probaron cuatro modelos alternativos
39 de análisis factorial confirmatorio. Se realizaron análisis de correlación para determinar la
40 validez concurrente con medidas asociadas (número de eventos traumáticos informados,
41 número de experiencias adversas en la infancia, ansiedad, depresión y riesgo de suicidio).

42 **Resultados:** El modelo de dos factores de segundo orden (PTSD y DSO) y el modelo
43 correlacionado de seis factores de primer orden proporcionaron un ajuste aceptable; sin
44 embargo, el primer modelo mostró un mejor ajuste basado en la diferencia BIC. Las
45 dimensiones de PTSD y DSO, así como los seis clústeres de la ITQ mostraron correlaciones
46 positivas con el número informado de eventos traumáticos en la vida, el número informado de
47 experiencias infantiles adversas, los niveles de ansiedad, depresión y riesgo suicida.

1 **Conclusiones:** La adaptación al español latinoamericano del ITQ proporciona evidencia
2 psicométrica aceptable para evaluar TEPT y TEPTC de acuerdo con la CIE-11.

3
4 **PALABRAS CLAVE:** TEPT; TEPT complejo; Cuestionario de Trauma CIE-11; español;
5 trauma, Chile

6 7 **HIGHLIGHTS**

- 8 • This study is an initial validation of the Latin American Spanish adaptation of the ITQ with a
9 Chilean young adults sample.
- 10 • The latent structure of the Latin American Spanish ITQ was better supported by a two-factor
11 second-order model (PTSD/DSO); a six-factor correlated model was also acceptable.
- 12 • The six ITQ symptom clusters, as well as the PTSD/CPTSD dimensions were significantly
13 positively correlated with three criterion variables: anxiety, depression, and suicidal risk.
- 14 • The number of potentially traumatic experiences, as well as number of exposure to adverse
15 childhood experiences, was significantly associated with PTSD/CPTSD symptoms.

16 17 18 **1. Introduction**

19 The 11th revision to the World Health Organization's International Classification of Diseases
20 (ICD-11) includes two associated disorders following traumatic stressors, Post-Traumatic
21 Stress Disorder (PTSD) and Complex Post-traumatic Stress Disorder (CPTSD), within the
22 section on Disorders Specifically Associated with Stress (World Health Organization, 2022).
23 PTSD includes six symptoms associated with the experience of a potentially traumatic event
24 or series of events characterized by being extremely threatening or horrific. Symptoms are
25 organized into three clusters; re-experiencing of the trauma in the present (Re), avoidance of
26 the traumatic event reminders (Av), and a persistent sense of current threat (Th). This three-
27 factor structure is well supported in prior research (for a review see Redican et al., 2021). To
28 confirm a PTSD diagnosis, there must be evidence of at least one symptom from each cluster,
29 which must be present for a minimum of several weeks (Ti) and have caused significant
30 impairment in functioning in an important area of the person's life (Im). On the other hand, the
31 diagnosis of CPTSD includes the PTSD criteria as well as symptoms related to disturbances
32 in self organization (DSO), as well as the Ti and Im criteria associated with these symptoms.
33 The DSO symptoms are organized in three clusters; affective dysregulation (Ad), negative
34 self-concept (Nsc), and disturbances in relationships (Dr). These problems must result from
35 or exacerbated by a single event or a series of repetitive and prolonged traumatic events from
36 which escape is difficult or impossible (e.g. childhood sexual or physical abuse, prolonged
37 domestic violence, torture, slavery, genocide, etc.). In accordance with the ICD-11, the
38 evidence shows a positive association between number of traumatic events, adverse
39 childhood experiences, PTSD and CPTSD (Camden et al., 2023; Cloitre et al., 2019; Frewen
40 et al., 2019; Karatzias et al., 2021). In terms of associated clinical conditions, depression,
41 anxiety, and suicide risk are among the most prevalent comorbidities in individuals with PTSD
42 (Korte et al., 2020) and CPTSD, with a higher prevalence in CPTSD (Camden et al., 2023;
43 Cloitre et al., 2019; Karatzias et al., 2019).

44 The International Trauma Questionnaire (ITQ) (Cloitre et al., 2018) was developed in
45 accordance with the ICD-11 criteria for the assessment of PTSD and CPTSD. The ITQ is a
46 self-report questionnaire composed of 18 items. Six items represent the three PTSD clusters
47 and six items the DSO symptoms of CPTSD. The remaining six items assess functional
48 impairment for each group of symptoms. The ITQ has been translated into 33 languages

1 (International Trauma Consortium, n.d.). Validations of this scale have been published in
2 multiple different samples and cultures supporting mainly two factorial models, the correlated
3 first-order six-factor and the second-order two-factor (PTSD and DSO) models (Redican et al.,
4 2021). To date, no evidence on the reliability and validity of the ITQ has been reported for the
5 Spanish Latin American version.

6 The cross-cultural validity of PTSD and CPTSD, in general and in the Latin American
7 population in particular, is relevant to understanding the manifestations of these disorders
8 across different cultures (Alcántara & Lewis-Fernández, 2015; Heim et al., 2022; Hinton &
9 Lewis-Fernández, 2011; Maercker et al., 2022). Regarding PTSD, variations in the
10 expressiveness of symptoms, associated syndromes, backgrounds and cultural factors
11 related to its manifestation have been described in Latin American samples (for a review see
12 Alcántara & Lewis-Fernández, 2015). In the case of CPTSD, and because it is a new condition,
13 great interest has been pointed out in understanding the clinical manifestation of DSO
14 symptoms in different cultural contexts (Heim et al., 2022; Maercker et al., 2022). Possible
15 variations in DSO symptoms have been enunciated in relation to aspects of the Latino culture
16 with regard to emotional regulation and the development of interpersonal relationships (Heim
17 et al., 2022). To enable the study of cross cultural aspects of CPSTSD, it is necessary to have
18 instruments, such as the ITQ, culturally adapted to the target population (Bartram et al., 2018).
19 Considering the above, this study aimed at examining the construct validity of the ITQ and its
20 concurrent validity. Based on previous literature (Frewen et al., 2019; Ho et al., 2019;
21 Karatzias et al., 2019, 2021; Maercker et al., 2013; Redican et al., 2021), the factorial structure
22 of the ITQ is expected to conform to the correlated six-factor and the second-order two-factor
23 (PTSD and DSO) models. In relation to its concurrent validity, it was expected that PTSD and
24 DSO symptoms will correlate positively with the number of traumatic events and adverse
25 childhood experiences (Camden et al., 2023; Frewen et al., 2019; Karatzias et al., 2019,
26 2021). Specifically, PTSD symptoms are expected to be associated to a greater degree with
27 the number of traumatic events (PTSD criterion A) than DSO symptoms (Frewen et al., 2019;
28 Karatzias et al., 2021). PTSD and DSO symptoms will be similarly associated with the number
29 of adverse childhood experiences (Cloitre et al., 2019). With respect to comorbidity, a greater
30 association between symptoms of depression, anxiety and suicidal risk is expected with DSO
31 than with PTSD symptoms, as well as the presence of higher comorbid in the probable CPTSD
32 group than in the probable PTSD group (Camden et al., 2023; Cloitre et al., 2019; Karatzias
33 et al., 2019). We envisage that results from the study will inform the use of the ITQ in young
34 adults in Chile and Latin America.

35 36 **2. Materials and methods**

37 38 **2.1. Participants**

39 Data was collected between October and December 2020, in the context of a larger study
40 that evaluated different indicators of psychopathology in a sample of undergraduate students
41 in Maule region in Chile. The study was conducted during the COVID-19 pandemic and
42 coincided with general social distancing recommendations and a mandatory quarantine in the
43 province of Talca. The initial sample comprised 289 participants. After eliminating missing data
44 cases and those who did not report a potentially traumatic experience, the final sample was
45 275 participants (mean age =21.26, $SD = 2.42$, 74.2% female, 5 participants did not correctly
46 report their age). Of this sample, 16% ($n = 44$) indicated that they were currently in
47 psychological or psychiatric treatment, 32% ($n = 88$) reported having had a mental health

1 problem or having received a psychiatric diagnosis during their childhood or adolescence. All
2 participants signed an informed consent form before responding to the questionnaires.

3 4 **2.2. Procedure:**

5 An online questionnaire was developed to assess different indicators of psychopathology
6 in young adults as part of the “Associative Research Program” of the Faculty of Psychology of
7 the University of Talca. The invitation to participate in the study was published in the virtual
8 academic information platform (Educandus) used by the students of the University of Talca. If
9 students agreed to participate, a link to the online questionnaire was provided. The
10 management and collection of data was carried out using the computer system for Evaluation,
11 Measurement and Digital Organization of Data developed by the University of Talca. The study
12 protocol was approved by the Committee of Ethics in Science of University of Talca (Folio: 19-
13 2019-E), prior to data collection.

14 15 **2.3. Measures**

16 17 **2.3.1. International Trauma Questionnaire (ITQ)**

18 PTSD and CPTSD were evaluated using the International Trauma Questionnaire (Cloitre
19 et al., 2018), based on the International Classification of Diseases 11th Revision (ICD-11)
20 criteria for PTSD and CPTSD. It consists of 18 items on a 5-point Likert scale from 0 “Not at
21 all” to 4 “Extremely”. Participants respond to the items of the ITQ for a specific life event or
22 experience. The first six items measure the criteria for PTSD, while items 7 to 9 measure
23 functional impairment. Items 10 to 15 assess the criteria for complex PTSD, while items 16 to
24 18 measure their related functional impairment. The scale has been used dimensionally and
25 shown good levels of consistency (Gelezelyte et al., 2022; Ho et al., 2019). In this sample, the
26 PTSD and DSO scales showed acceptable levels of reliability ($\omega = .87$ and $\omega = .90$). The ICD-
27 11 diagnostic algorithm was used to estimate probable PTSD or CPTSD (Cloitre et al., 2018).
28 The adaptation to Latin American Spanish was used following the guidelines of the
29 International Test Commission [ITC], (Bartram et al., 2018; Fresno et al., 2019) (see report in
30 supplementary material).

31 32 **2.3.2. Potentially traumatic experiences.**

33 The Brief List of Traumatic Life Events was used which is a 7-item brief traumatic events
34 checklist was used. A total of 6 items assessed for exposure to natural disasters, sexual
35 assault/abuse during childhood or adulthood, physical assault committed by another person,
36 accident, unexpected and violent death of a close family member or a close person, and any
37 other stressful event where the person considered that there was a life-threatening danger or
38 serious injury or death (see supplementary document). An item was added that specifically
39 asked about exposure to COVID-19 (“As a result of COVID-19, you experienced life-
40 threatening or serious injury or death”). Participants were asked to report if the experience
41 occurred directly to them or if the person witnessed the situation happening to someone else.
42 This scale was developed by three academics with extensive knowledge in PTSD (A.F., N.R.
43 and R.S.) based on the LEC-5 and the CAPS-5 Spanish adaptation (Fresno et al., 2020). The
44 number of types of traumatic events experienced was estimated by adding the reported
45 experiences. If reported exposure included more than one type of event, participants were
46 asked to indicate which of those had caused them the most discomfort/impact/anguish to date.
47 In addition, the level of threat or horror of the selected event was evaluated on a 1 to 7 scale
48 (1 = not at all threatening or horrible, 7 = extremely threatening or horrible).

2.3.3. Adverse childhood experiences (ACEs)

The Adverse Childhood Experiences Questionnaire (ACE-Q) (Felitti et al., 1998) is a 10-item retrospective self-report measure that assesses experiences of abuse (psychological, physical, and sexual), and adversity at home (e.g., divorce or witnessing domestic violence, substance abuse in the family, family member incarceration) experienced during childhood. Items are scored using dichotomous responses (presence/absence). The scale score is obtained by adding all the items. A higher score represents a greater number of adverse experiences experienced during childhood. In order to distinguish between childhood adversities (CA_d), and traumatic events two ACE items that evaluate sexual and physical abuse were excluded from the analysis (Cloitre et al., 2019). The questionnaire was adapted to Spanish following guidelines suggested by Epstein et al., (2015).

2.3.4. Depression and Anxiety

The Depression and Anxiety Stress Scales-21 (DASS-21) (Lovibond & Lovibond, 1995), is a 21-item self-report questionnaire. Seven items measure depression, seven items anxiety and seven items stress symptoms. The items are scored on a four-point Likert scale (0–3). The score for each scale is obtained by adding the scores for each item. A higher score reflects a higher level of symptoms. Only the depression scales of the version validated in Chile were used (Antúñez & Vinet, 2012). Both scales showed good levels of reliability in this sample ($\alpha = .95$ and $\alpha = .85$ respectively).

2.3.5. Suicidal risk

The brief version of the Columbia-Suicide Severity Rating Scale (C-SSRS) (Posner et al., 2011) was used. It is a self-report questionnaire, adapted to Spanish and composed of 7 items with dichotomous responses (YES/NO). These are organized hierarchically according to the level of severity of suicidal ideation (Núñez et al., 2019). Affirmative answers are considered with a value of one and negative responses zero. The increase in suicidal risk is estimated from the sum of the scores of the 7 items. Suicide risk in the past month was used in this study.

2.3.6. Sociodemographics

An ad-hoc questionnaire was developed to collect information on age, gender and health history of participants.

2.4. Data Analysis

Means, standard deviations, frequencies, and percentages were calculated for relevant variables. Differences by gender were estimated using chi-square, T-test and analysis of variance (ANOVA). The latent structure of the ITQ was explored using confirmatory factor analysis (CFA). The items corresponding to the PTSD and DSO symptoms were used. Four models reported in previous studies were tested (Brewin et al., 2017; Ho et al., 2019). Model 1, is a single first-order factor that represents CPTSD. Model 2, represents six correlated factors based on ICD-11 theoretical symptom clusters. Model 3 adds a second order factor (CPTSD) to model two. Model 4 proposes two associated second-order factors (PTSD, DSO). The models were estimated using robust maximum likelihood (MLR; Yuan & Bentler, 2000). To estimate models' fit, the following procedures were used: Chi-square test (χ^2); Comparative Fit Index (CFI), Tucker-Lewis Index (TLI) and Root-Mean-Square Error of Approximation with 90% confidence intervals (RMSEA 90% CI) and Standardised Root-Mean-Square Residual

1 (SRMR). The Fisher's exact test was additionally reported when the expected frequency was
2 less than 5 in the Chi-square test. Values of .90 or greater for CFI and TLI, and values of .08
3 or less for RMSEA and SRMR reflect an acceptable model fit. Furthermore, to estimate the
4 best fit model, the Bayesian Information Criterion (BIC) was used, for which the smaller value
5 in each case indicates the best fitting model. A difference greater than 10 is indicative of a
6 'significant' difference (Raftery, 1995). Since not all models were hierarchically nested, the
7 BIC was used instead of chi-square to compare the level of fit between models. Reliability of
8 the PTSD and DSO items, based on the estimated factor loadings, was estimated using
9 Omega (ω) (Viladrich et al., 2017). Convergent validity was determined by correlation analysis
10 between the scores of the items corresponding to the factors of the model with the best fit and
11 the associated variables (number of reported traumatic events, number of childhood
12 adversities, anxiety, depression, and suicidal risk). The difference in the correlations between
13 the score of the best fit factors and the criterion variables were tested using the method for
14 comparing correlated correlation coefficients (Meng et al., 1992). The analyses were
15 performed by using MPlus v 8.2 (Muthén & Muthén, 2017) and SPSS v21.
16

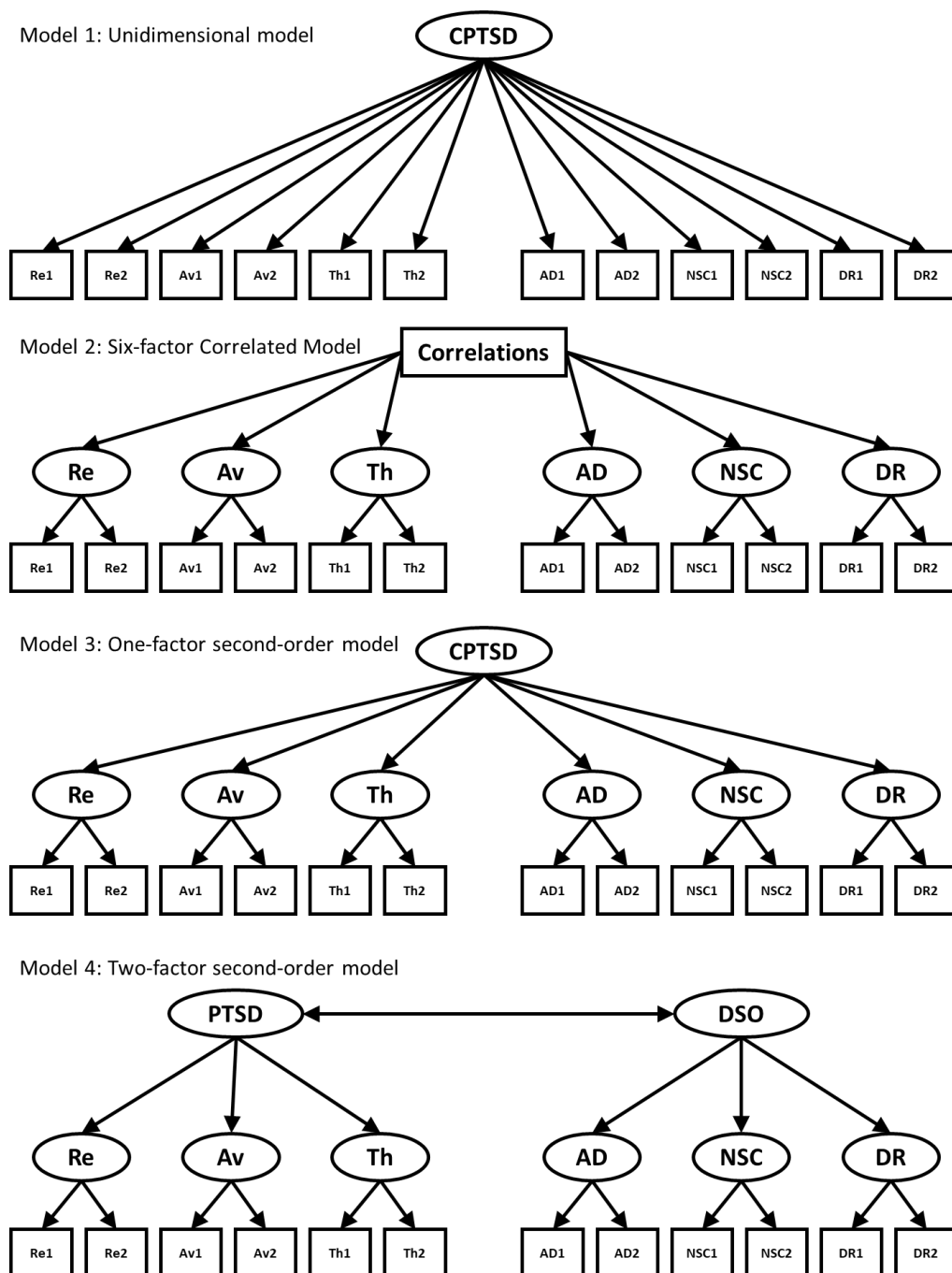


Fig. 1. Alternative models of the latent structure of Complex PTSD symptoms

3. Results

Participants reported an average of 3.29 ($SD = 1.70$) traumatic events (direct or indirect exposure). The most reported events were natural disasters (69.1%), sexual assault (48.4%) and unexpected and violent death of a relative or close person (46.5%). Females presented a higher frequency of sexual assaults and experiences associated with COVID-19 than males (see table 1).

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Table 1. Frequency of traumatic life events (direct or indirect exposure) by gender

Traumatic life event	Male (n= 71)	%	Female (n=204)	%	χ^2	Total sample	%
1 Natural disasters	51	71.8	139	68.1	0.336	190	69.1
2 Sexual aggression	22	31.0	111	54.4	11.574*	133	48.4
3 Physical aggression	25	35.2	74	36.3	0.026	99	36.0
4 Accident	32	45.1	88	43.1	0.080	120	43.6
5 Unexpected death	35	49.3	93	45.6	0.291	128	46.5
6 COVID injury/death	21	29.6	88	43.1	4.048*	109	39.6
7 Other	27	38.0	98	48.0	2.129	125	45.5

* $p < .05$, ** $p < .001$

The most frequently reported worst events were unexpected and violent death of a family member or close person (24.4%), sexual assault (21.8%), other events (14.5%), and natural disasters (14.2%). Females presented a higher frequency of sexual aggression than males (see table 2). The average level of threat for the selected experiences was 5.11 ($SD = 1.43$), showing a higher level of threat in females than in males (see table 3). No differences in threat levels were observed between event types ($F(6, 268) = .717, p > .05$).

Table 2. Self-identified worst event to answer the ITQ by gender

Selected traumatic life	Male (n= 71)	%	Female (n=204)	%	χ^2	Total sample	%
1 Natural disasters	14	19.7	25	12.3	2.411	39	14.2
2 Sexual aggression	4	5.6	56	27.5	14.697**	60	21.8
3 Physical aggression	9	12.7	22	10.8	.188	31	11.3
4 Accident	4	5.6	22	10.8	1.632	26	9.5
5 Unexpected death	21	29.6	46	22.5	1.412	67	24.4
6 COVID injury/death	4	5.6	8	3.9	.370 ^a	12	4.4
7 Other	15	21.1	25	12.3	3.335	40	14.5

Note. ^a Fisher's exact test = .514. ** $p < .001$

The number of childhood adversities ranged from 0 to 8 with a mean of 1.77 ($SD = 1.63$) and median of 1.00. 203 participants (73.8% of the sample) reported at least one childhood adversity (1 CAAd = 27.6%, 2 CAAd = 18.9%, 3 CAAd = 12.4%, 4 or more CAAd = 14.9 9%). Between those who did not report any childhood adversity and those who reported at least one childhood adversity, there were no differences by age ($t(273) = .709, p = .160$) or gender ($\chi^2(1) = .17, p = .898$). The most commonly reported childhood adversity was mental illness in the home (44.4%), emotional neglect (30.9%) and verbal abuse (29.8%).

The rate for probable PTSD was 4.7% (5.9% female, 1.4% male) and for CPTSD was 11.3% (12.7% female, 7% male). No statistically significant gender differences were observed for PTSD ($\chi^2(1) = 2.341, p = .126$, Fisher's exact test = .195) and CPTSD ($\chi^2(1) = 1.713, p = .191$). In addition, females obtained higher scores in threat level, PTSD and anxiety than males (table 3).

Table 3. Differences by gender One-Way Analysis of Variance

	Female		Male		Total		<i>F</i> (1,273)
	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	
N° Traumas	3.39	1.70	3	1.65	3.29	1.70	2.763
Level of threat	5.25	1.35	4.70	1.58	5.11	1.43	8.022*
Childhood adversities	1.77	1.63	1.56	1.54	1.72	1.61	.906
PTSD score	7.55	5.52	4.21	5.32	6.69	5.65	19.596**
DSO score	10.65	5.93	9.65	6.43	10.39	6.07	1.445
Depression	9.00	5.84	7.61	5.57	8.64	5.79	3.098
Anxiety	7.57	5.24	5.58	4.46	7.05	5.12	8.173*
Suicidal risk	.88	1.85	.69	1.73	.83	1.81	.590

p* < .05, *p* < .001

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3.1. Construct validity

The CFA analysis showed that model 2 (six correlated factors) and model 4 (two second-order factors, PTSD/DSO) presented an acceptable fit. Although the differences between the fit indexes were not substantive (Chen, 2007; Cheung & Rensvold, 2002), the BIC difference was more than 10 points, indicating that model 4 has the best fit (see table 4).

Table 4. Model fit statistics for alternative models of ICD-11 PTSD based on the ITQ (n = 275).

Models	χ^2	df	<i>p</i>	CFI	TLI	RMSEA (90% CI)	SRMR	BIC
M1	794.556	54	.000	.522	.415	.223 (0.210-0.237)	.178	9.841.521
M2	47.578	39	.163	.994	.991	.028 (0.000-0.053)	.030	9.098.500
M3	269.364	48	.000	.857	.803	.129 (0.115-0.145)	.148	9.300.067
M4	67.463	47	.027	.987	.981	.040 (0.014-0.060)	.036	9.075.563

χ^2 = Chi-square Goodness of Fit statistic; df = degrees of freedom; *p* = probability value; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA (90% CI) = Root-Mean-Square Error of Approximation with 90% confidence intervals; SRMR = Standardised Square Root Mean Residual; BIC = Bayesian Information Criterion.

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1 It was observed that the items load on their respective theoretical actors (table 6). The
 2 correlation between the second order factors PTSD and DSO was .37.
 3

Table 5. Standardized Factor Loadings for Model 4

	Re	Av	Th	AD	NSC	DR	PTSD	DSO
Re1	.752							
Re2	.883							
Av1		.845						
Av2		.801						
Th1			.859					
Th2			.815					
AD1				.475				
AD2				.781				
NSC1					.937			
NSC2					.910			
DR1						.899		
DR2						.787		
Re							.856	
Av							.887	
Th							.815	
AD								1.101
NSC								.841
DR								.877

All loading statistically significant ($p < .001$).

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3.2. Concurrent validity

PTSD ($r = .271$) and DSO ($r = .133$) scores were significantly and positively correlated with the number of traumatic events, indicating a statistically significant difference between the two scales ($p = .041$). Among the PTSD and DSO symptoms, re-experiencing (Re) and persistent sense of current threat (Th) presented the highest associations with the number of traumatic life events ($r = .260 - .244$). In contrast, disturbances in relationships (Dr) was not associated with the number of traumatic life events. In relation to the number of childhood adversities, results showed a moderate positive association with PTSD ($r = .331$) and DSO ($r = .356$). The affective dysregulation (Ad) symptom showed the highest association with childhood adversities ($r = .353$). Both PTSD and DSO scales and their symptom clusters showed low to high positive associations with the criterion variables (see table 6). Positive associations were observed between symptom clusters and depression ($r = .260 - .815$), anxiety ($r = .383 - .576$) and suicidal risk ($r = .252 - .506$). The DSO scale showed a statistically significant higher correlation with depression and suicide risk than the PTSD scale ($p < .001$, $p = .022$). Anxiety was the variable most strongly associated with PTSD ($r = .491$), and depression with DSO ($r = .778$). Among symptom clusters, the negative self-concept (Nsc) cluster had the highest association with depression, anxiety, and suicidal risk ($r = .815$, $.576$, and $.506$).

Table 6. Correlations between the ITQ symptom clusters with the number of Traumatic life event, number of Childhood adversities, Depression, Anxiety and Suicide risk

	Trauma n°	CAd n°	Depression	Anxiety	Suicide Risk
Re	.260**	.291**	.260**	.400**	.273**
Av	.196**	.299**	.263**	.383**	.261**
Th	.244**	.261**	.308**	.468**	.252**
Ad	.158**	.353**	.657**	.485**	.355**
Nsc	.128*	.294**	.815**	.576**	.506**
Dr	.075	.306**	.572**	.448**	.309**
PTSD	.271**	.331**	.327**	.491**	.306**
DSO	.133*	.356**	.778**	.573**	.449**
Δr PTSD-DSO	.138	-.025	-.451	-.082	-.143
<i>z</i>	2.034	-.390	-8.917	-1.490	-2.280
<i>p</i>	.041	.696	< .001	.135	.022

Note. CAd = Childhood adversities. * $p < .05$, ** $p < .001$

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The group of people with probable CPTSD had a higher degree of depression, anxiety, and suicidal risk than people with probable PTSD and those without a diagnosis (table 7). Although there were small differences in levels of depression and suicide risk between the non-diagnosis and PTSD group, these were not statistically significant.

Table 7. Differences by probable PTSD/CPTSD diagnosis One-Way Analysis of Variance

	No Diagnosis (n =231)		PTSD (n = 13)		CPTSD (n = 31)		<i>F</i> (2, 272)
	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	
Depression	8.09	5.62	5.54	3.10	14.06	4.84	18.621**
Anxiety	6.25	4.66	8.54	4.72	12.45	5.28	24.124**
Suicide risk	.69	1.62	.00	.00	2.23	2.74	12.098**

Note: In all cases Tukey's post-hoc analysis showed significant differences between CPTSD and the other two groups, between PTSD and No diagnosis, groups the differences were not significant ($p > .05$). ** $p < .001$.

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4. Discussion

The objective of this study was to provide initial evidence on the internal and concurrent validity of the Latin American Spanish adaptation of the ITQ in a sample of undergraduate students in Chile. In this sample, the two second-order factor model (M4) was the one with the best fit, showing the distinction between PTSD and DSO symptoms described in the ICD-11 and extensively supported in previous literature (Redican et al., 2021). On the other hand, the first-order model with correlated factors (M2) also showed an acceptable fit, however, the difference in the BIC indicates a better fit for model 4.

The best fit of the second-order model in a non-clinical sample is an unexpected result since this has been more frequently reported in clinical samples (Karatzias et al., 2017;

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1 Redican et al., 2021). However, there is also evidence of a good fit for this model in non-
2 clinical samples (Cyr et al., 2022; Ho et al., 2019).

3 Positive and significant correlations were observed between PTSD symptoms and the
4 number of traumatic life events and childhood adversities, as reported in previous studies
5 (Cloitre et al., 2019; Frewen et al., 2019; Ho et al., 2019; Karatzias et al., 2021). PTSD
6 symptoms presented with a significant positive correlation with the number of traumatic events
7 which was higher than that of DSO symptoms. This could be due to the fact that the trauma
8 questionnaire used in the present study predominantly includes events considered more
9 closely related to PTSD based on criterion A of the DSM-5 than for difficulties associated with
10 DSO symptoms, such as childhood adversities or events of an extremely threatening,
11 prolonged or repetitive from which escape is difficult or impossible, as stated by the ICD-11
12 (ICD 11) (World Health Organization, 2022).

13 Regarding the significant positive association with the number of childhood adversities, no
14 differences were detected between the correlation coefficients of PTSD and DSO symptoms
15 similarly to Cloitre et al., (2019). In both studies the ACE scale did not include physical or
16 sexual abuse to avoid overlapping of events in the assessment of the number of negative
17 events. A similar level of association may also be due to the fact that the items considered on
18 the ACEs questionnaire include extremely threatening experiences, which can be
19 simultaneously and highly associated with both PTSD and DSO symptoms (Cicchetti, 2016;
20 Kobak et al., 2004). Effects such as those mentioned are consistent with the conceptualization
21 of CPTSD (Cloitre, 2021; Courtois & Ford, 2009; Maercker et al., 2013) and the available
22 evidence showing an association between these experiences and the DSO symptoms of
23 CPTSD (Cloitre et al., 2019; Karatzias et al., 2017, 2021).

24 In terms of concurrent validity, PTSD and DSO showed a significant positive association
25 with depression, anxiety and suicidal risk, consistent with previous literature (Hyland et al.,
26 2018). Negative self-concept (Nsc) was the symptom that presented the highest association
27 with the criterion variables ($r = .506$ -.815). This is in line with previous evidence that posits
28 the negative effect of trauma on self-concept (Bremner, 2016; Keshet & Gilboa-Schechtman,
29 2017; Slaninova & Stainerova, 2015), and that negative self-appraisals are important risk
30 factor for the development of psychopathology (Zeigler-Hill, 2011). Consistent with other
31 studies, participants with probable CPTSD had higher levels of comorbidity than those with
32 probable PTSD (Hyland et al., 2018). No significant differences were found in the levels of
33 comorbidity between participants without a diagnosis and those with probable PTSD, which
34 could be due to the small number of people with probable PTSD in this sample ($n = 13$).

35 Most participants (95%) reported exposure to more than one type of traumatic experience
36 which is consistent with the high rate of traumatic events described in samples of
37 undergraduate students in the United States (74.8% - 85%) (Camden et al., 2023; Frazier et
38 al., 2009; Vrana & Lauterbach, 1994), and in Chile (95%) (Fresno et al., 2020). The most
39 prevalent event was natural disasters, which is in accordance with what was observed in a
40 sample with similar characteristics (Fresno et al., 2020). The high rate of traumatic events and
41 the prevalence of natural disasters can be explained by the fact that the participants live in a
42 region that has historically been exposed to high intensity disasters such as earthquakes,
43 tsunamis and forest fires (Leiva Bianchi & Araneda, 2013; Sandoval et al., 2019).

44 The rate of sexual assaults (48.4%, 54.4% female, 31% male) was above the proportion
45 reported worldwide (Borumandnia et al., 2020) and in Chile (26.4%) (Pinto-Cortez & Guerra,
46 2019). One possible explanation is that the frequency could be overestimated given that direct
47 and indirect experiences of sexual abuse were reported together. This was confirmed by
48 observing the rate of direct sexual assaults (17.8%, 22.1% female, 5.6% male), and the rate

1 of sexual abuse in the ACE questionnaire (20,7%) (see table 1s in supplementary material),
2 whose proportion is closer to that described in Chile (Pinto-Cortez & Guerra, 2019) and the
3 prevalence of sexual assaults reported by higher education students in a recent meta-analysis
4 (Steele et al., 2021).

5 The most frequently reported worst traumatic event was unexpected and violent death of
6 a family member or a close person. It has been noted that this is one of the most reported
7 traumatic events in the world (Benjet et al., 2016) with a significant association with PTSD
8 symptomatology (Keyes et al., 2014). In agreement with previous literature, females showed
9 a higher rate of sexual assault than males both in the reporting of traumatic events and in the
10 selection of the worst event used to answer the ITQ (Borumandnia et al., 2020; Pinto-Cortez
11 & Guerra, 2019).

12 No significant differences in threat levels were observed between worst event types
13 (natural disasters, sexual aggression, physical aggression, accident, unexpected death, covid
14 injury/death, other). The average level of threat/horror associated with the worst reported
15 event were above the midpoint of the scale (mean = 5.11, *SD* = 1.43) closer to considering
16 the event as threatening or horrible, which is consistent with the level of threat and horror that
17 ICD-11 proposes for a stressful event that can cause either PTSD or CPTSD (World Health
18 Organization, 2022).

19 The prevalence of probable PTSD (PTSD + CPTSD) (16%) was higher than that reported
20 in a previous study with a similar sample in Chile (8.2%) that used the PCL-5 instead of the
21 ITQ to assess PTSD symptomatology (Fresno et al., 2020). A higher proportion of CPTSD
22 than PTSD was observed, which is consistent with what was reported in a community sample
23 exposed to trauma (Karatzias et al., 2019). Even though the present study was conducted in
24 a sample of students, there is a high probability that this group was overexposed to traumatic
25 stressors that are more likely associated with CPTSD. In Chile, approximately 70% of children
26 report having experienced some type of abuse by their parents (Larraín, 2015). This is
27 consistent with the fact that in this sample, 73.8% reported at least one adverse childhood
28 experience, 14.4% experienced 4 or more, and that the frequency of sexual and physical
29 abuse during childhood was 20.7% and 16% respectively (table 1s supplementary material).
30 On the other hand, the high proportion of CPTSD could be due to the overrepresentation of
31 women in this sample who report a higher frequency of sexual assaults than men, which has
32 been shown to be a strong risk factor for CPTSD (Elklit et al., 2014; Hyland et al., 2017). Both,
33 the elevated proportion of PTSD and the ratio between CPTSD and PTSD in this sample could
34 also be explained by the nature of our data collection (i.e. self-report as opposed to clinical
35 interviews).

36 Regarding the possible relationship between the COVID-19 pandemic situation and the
37 presence of PTSD or CPTSD, it was observed that 39.6% of the participants reported direct
38 and indirect traumatic events associated with COVID-19 (table 1). However, its consideration
39 as the worst event was comparatively marginal (4.4%) in relation to the other stressors (table
40 2). This would imply that although, during the pandemic, the participants were clearly exposed
41 to COVID-19 related traumatic stressors, their traumatic potential associated with possible
42 PTSD was minimal, a finding that is consistent with what was reported by (Lewis et al., 2022).

43 44 **5. Limitations**

45 The present study was based on a sample of young undergraduate students, mostly
46 female, which limits the generalization of the results to populations with other characteristics.
47 Furthermore, we have not used clinical interviews for the assessment of PTSD and CPTSD.
48 Although the Brief List of Traumatic Life Events evaluated potentially traumatic events that

1 showed a positive association with ITQ symptoms, it is a questionnaire that evaluates sexual
2 aggression that occurred in adulthood or childhood through a single item. Not being able to
3 explore the impact of developmental periods might have had an impact on the strength of
4 association that this variable formed with PTSD and CPTSD symptoms (Cloitre et al., 2019).
5 Further research is required to replicate our findings on larger community and clinical samples
6 in Chile and other Latin American countries, using clinical interviews and instruments that
7 differentiate traumatic exposure across different developmental *époques* (Hyland et al., 2021).
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9 **6. Conclusions**

10 To our knowledge, this is the first study that provides initial evidence of the internal and
11 concurrent validity of the Latin American Spanish adaptation of the ITQ in a sample of
12 undergraduate students in Chile. Our results are in agreement with previous studies in the
13 area (Redican et al., 2021). Further research is now required to replicate these findings in
14 clinical samples and non-clinical samples in Chile and Latin America in order to better
15 understand the expression of PTSD and CPTSD in this part of the world. In line with previous
16 research in the field (Hyland et al., 2018), results suggest that CPTSD is a more debilitating
17 condition than PTSD.
18

19 **Availability of data and material**

20 The datasets used and/or analyzed during the current study are available from the
21 corresponding author on reasonable request.
22

23 **Disclosure statement**

24 No potential conflict of interest was reported by the authors.
25

26 **Ethics approval and consent to participate**

27 This study received ethics approval and consent from the Committee of Ethics in Science of
28 Universidad de Talca.
29

30 **Funding**

31 This work was supported by the Associative Research Program (PIA) on Cognitive Sciences,
32 Research Center on Cognitive Sciences (CICC), Faculty of Psychology, Universidad de Talca,
33 and the Fondo Nacional de Desarrollo Científico y Tecnológico [AF, grant number 1230715].
34

35 **Acknowledgements**

36 We thank Carolina Salgado and Rosario Spencer for their contribution in the cross-cultural
37 translation process, and relevant support in the development of this article.
38

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