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Development and Psychometric Evaluation of Child Acute Stress Measures in Spanish and English

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Abstract

Clinicians and researchers need tools for accurate early assessment of children's acute stress reactions and acute stress disorder (ASD). There is a particular need for independently validated Spanish-language measures. The current study reports on 2 measures of child acute stress (a self-report checklist and a semi-structured interview), describing the development of the Spanish version of each measure and psychometric evaluation of both the Spanish and English versions. Children between the ages of 8 to 17 years who had experienced a recent traumatic event completed study measures in Spanish ($n = 225$) or in English ($n = 254$). Results provide support for reliability (internal consistency of the measures in both languages ranges from .83 to .89; cross-language reliability of the checklist is .93) and for convergent validity (with later PTSD symptoms, and with concurrent anxiety symptoms). Comparing checklist and interview results revealed a strong association between severity scores within the Spanish and English samples. Checklist-interview differences in evaluating the presence of ASD appear to be linked to different content coverage for dissociation symptoms. Future studies should further assess the impact of differing assessment modes, content coverage, and the use of these measures in children with diverse types of acute trauma exposure in English- and Spanish-speaking children.

Exposure to potentially traumatic events is an unfortunately common experience for children and adolescents. Up to 66% of urban adolescents and 40% of suburban adolescents report being the victim of violence (Campbell & Schwarz, 1996; Singer, Anglin, Song, & Lunghofer, 1995). Each year in the United States, 20 million children suffer accidental injuries, resulting in 8.7 million emergency room visits; and 241,000 children are injured seriously enough to be hospitalized (Grossman, 2000). Other potentially traumatic events such as residential fires, natural disasters, and serious medical events affect tens of thousands of youth each year (Shannon, Lonigan, Finch, & Taylor, 1994). Accurate early assessment of children's acute stress reactions, including acute stress disorder (ASD) symptoms, can help clinicians serve the immediate needs of distressed children and guide secondary prevention to reduce the severity of persistent distress, e.g. posttraumatic stress disorder (PTSD), after trauma exposure. Brief self-report measures can be used to efficiently triage children, identifying those with extreme acute distress as well as those at greater risk for long term mental health complications. Standardized interview measures can be used in research and clinical settings where more time and human resources are available. To date, prospective research investigations of child acute traumatic stress reactions have been scarce, and have not adequately included ethnically diverse populations, at least in part due to the lack of validated measures (Rabalais, Ruggiero, & Scotti, 2002).

Recent development of both checklist and interview measures of child acute stress promises to expand both clinical practice and research in this area. The first child self-report measure designed specifically to assess acute traumatic stress reactions, the Acute Stress Checklist for Children (ASC-Kids) was developed and validated in a sample of 176 English-speaking children with recent medical trauma, primarily injury (Kassam-Adams, 2006). The first standardized interview measure of child acute traumatic stress reactions, the Diagnostic Interview for Children and Adolescents – Acute Stress Disorder module (DICA-ASD) was developed and validated in a sample of 168 English-speaking children with acute burns or other injuries (Miller, Enlow, Reich, & Saxe, 2009). Recognizing the need for Spanish-language measures, our research team undertook a careful translation of the ASC-Kids into Spanish, creating the Cuestionario de Estrés Agudo – Niños (CEA-N). We then created a Spanish version of the DICA-ASD interview, the Entrevista Diagnóstica para Niños y Adolescentes – módulo de Trastorno de Estrés Agudo (EDNA-TEA), with the permission and collaboration of the DICA-ASD developers.

There are few validated Spanish-language measures of posttraumatic stress for children. To our knowledge the measures assessed here are the only Spanish-language measures developed specifically to assess acute traumatic stress in children and adolescents. There is a critical need for validated Spanish-language measures for children in the US, with 1.8 million Latino children in the US who are not fluent in English (Pew Hispanic Center, 2012), and an estimated 43% of first generation Latino children who speak English “less than well” (Pew Hispanic Center, 2009). Their under-representation in child health research leads to substantial gaps in our knowledge about the mental health needs of Latino children (Flynn & Fuentes-Afflick, 2002). When English-language measures are translated for use in practice or research, time and resource constraints have often precluded independent validation of the new Spanish version, however, best practices (Gudmundsson, 2009; Hambleton, Merenda, & Spielberger, 2005) include utilizing a systematic and thoughtful

process of translation and adaptation, piloting items and administration instructions with intended users in the new language, and collecting (and reporting) data that can form the basis for assessing reliability and validity of the newly translated measure.

The purpose of the current study was to examine psychometric properties (reliability and validity) of checklist and interview measures of acute traumatic stress in children, in both Spanish and English. This study expands upon prior validation studies for the English-language versions of both measures and is the first to examine the psychometric properties of each of the Spanish-language measures. We hypothesized that checklist and interview measures of acute stress would be strongly associated with each other, and that each acute stress measure would be associated with posttraumatic stress symptoms assessed 3 months later. Regarding convergent and discriminant validity, we hypothesized that each acute stress measure would show a low to moderate association with depression severity, but would be more strongly associated with general anxiety symptoms.

Method

Participants and Procedures

We enrolled 479 English- or Spanish-speaking children and adolescents with recent exposure to a potentially traumatic event, recruited in health care and community-based social service settings in three US cities: Philadelphia ($n = 210$), Los Angeles ($n = 237$), and Miami ($n = 32$). The study was conducted in accordance with a protocol approved by the IRB at each participating institution (Children's Hospital of Philadelphia; Childrens Hospital Los Angeles; University of Miami; St. Christophers' Hospital for Children; and Los Angeles County-University of Southern California Medical Center). Children were eligible for the study if they were age 8 to 17 years, had experienced a potentially traumatic event 2 days to 1 month earlier, and spoke English and/or Spanish. Because these measures are intended to assess early traumatic stress reactions after an acute, single-incident event, we excluded index events (i.e., family violence, disclosure of ongoing maltreatment or abuse) which represent repeated relational trauma. Also excluded were events in which the child sustained a moderate to severe head injury, the child or parent was a perpetrator of violence, or the child or parent had a realistic risk of legal liability.

Of the 479 children enrolled, 225 completed study measures in Spanish and 254 in English (referred to hereafter as the Spanish and English samples, respectively). Within the Spanish sample, a subsample of 62 bilingual children completed the acute stress checklist in both language versions (in counter-balanced order across this group) to assess cross-language reliability. See Table 1 for demographic and event characteristics. Spanish and English samples did not vary in the proportion of boys and girls, but mean age in the Spanish sample was slightly higher. All but one of the children in the Spanish sample, and 75 (30%) of the children in the English sample were of Hispanic/Latino origin (as reported by parents). The Spanish sample included more children from families with household income below \$30,000 or with a parent who had not completed high school. With regard to the index event, the Spanish sample included more children with medical events, and the English sample more children with unintentional injury.

After parental consent, children assented to participation in the study. Parents completed demographic questionnaires in their preferred language. Children completed the acute stress checklist measure in English (ASC-Kids) or Spanish (CEA-N), plus additional checklist measures of anxiety and depression symptoms. For any child who needed reading assistance, research assistants read checklist items aloud and the child marked his or her responses. A trained interviewer, blinded to the child's checklist responses, then administered the semi-structured interview in English (DICA-ASD) or Spanish (EDNA-TEA). To assess test-retest reliability, each child was given a copy of the checklist to be completed the next day and returned by mail (in a stamped, preaddressed envelope); in a reminder phone call approximately 3 days later, we offered to complete the retest checklist over the phone if the child preferred. Retest checklists were completed by a higher percentage of children in the English sample than in the Spanish sample (62% vs. 47%), $\chi^2(1, N = 479) = 11.63, p = .001$. Three months after the initial assessment, research assistants administered a posttraumatic stress checklist (in person if possible, by telephone if preferred by the participant). Follow-up assessments were completed by a higher percentage of children in the English sample than in the Spanish sample (60% vs. 47%) $\chi^2(1, N = 479) = 8.28, p = .004$. Given these different rates of retention, we used Chi square analyses to examine other potential correlates. No difference in retention to retest or to follow-up was observed for boys versus girls, for different types of acute trauma, or for children who met ASD symptom criteria (on any measure) in the initial assessment. Older children (age 13 to 17) were less likely to complete follow-up than younger children (age 8 to 12). Children from families with household income below \$30,000 or with a parent who had not completed high school were less likely to complete retest or follow-up assessments.

Measures

Acute stress checklist - English—The Acute Stress Checklist for Children (ASC-Kids; Kassam-Adams, 2006) is a 29-item self-report questionnaire assessing subjective reactions (i.e., Criterion A2), child acute stress symptoms, impairment from those symptoms, and associated clinical features. The ASC-Kids was designed to be practical for use in clinical and research settings in the aftermath of acute traumatic events. An initial validation study found strong internal consistency for the ASC-Kids total and symptom category scores, strong test-retest reliability, evidence for construct validity based on exploratory factor analyses, and evidence for convergent and discriminant validity with other child self-report measures of traumatic stress, internalizing, and externalizing symptoms (Kassam-Adams, 2006).

Acute stress checklist - Spanish—The Cuestionario de Estrés Agudo – Niños (CEA-N) is a Spanish-language version of the ASC-Kids. In this adaptation, we aimed to keep the semantic and affective sense of the items from the ASC-Kids and to minimize regional Spanish language differences. We emphasized a “child-friendly” vocabulary, at a reading level acceptable for independent use by children age 10 years and over and by children age 8 and 9 years when read to them. The initial translated measure was reviewed by bilingual colleagues from various Spanish-speaking regional backgrounds (including the US, Argentina, México, Nicaragua, Spain, and Uruguay) with expertise in traumatic stress assessment in children. The wording of several items was revised based on this feedback, to

improve semantic equivalence, increase understanding by school-aged children, or alleviate regional language differences. An additional independent back-translation from Spanish to English demonstrated accuracy of translation. The CEA-N checklist was then piloted with several children within the intended age range to ensure its usability and comprehensibility.

Acute stress interview - English—The Diagnostic Interview for Children and Adolescents - Acute Stress Disorder module (DICA-ASD; Miller et al., 2009) is a 58-item semi-structured English-language clinical interview designed to assess acute traumatic stress symptoms and diagnostic criteria for ASD in children age 7 to 18 years. The DICA-ASD was adapted from the PTSD module of the DICA (Reich, Shayka, & Taibleson, 1991), changing tense to fit the acute post-event timeframe, and adding items to assess dissociation symptoms not included in the DICA-PTSD module (Miller et al., 2009). The DICA-ASD is appropriate for interviewers with training in a mental health field. In an initial validation study, the DICA-ASD demonstrated strong internal consistency for the total symptom scale and dissociation scale, as well as strong convergent and discriminant validity when compared to parent and nurse reports of child traumatic stress and parent reports of child emotional and behavioral symptoms (Miller et al., 2009).

Acute stress interview - Spanish—The Entrevista Diagnóstica para Niños y Adolescentes – módulo de Trastorno de Estrés Agudo (EDNA-TEA) is a Spanish-language version of the DICA-ASD. Paralleling the creation of the DICA-ASD in English, the EDNA-TEA items were based on items from an established Spanish-language version of the DICA-PTSD module (EDNA-TEPT; Ezpeleta, 1995; Ezpeleta, de la Osa, Doménech, Navarro, & Losilla, 1997) wherever possible, with tense changes to fit the acute time frame for assessment. Dissociation items not included in the EDNA-TEPT module were translated from the DICA-ASD dissociation items. The new Spanish-language interview was reviewed by bilingual colleagues from various Spanish-speaking regional backgrounds (including the US, Spain, México, Nicaragua, Peru, and Uruguay) with expertise in traumatic stress assessment in children. Based on this feedback, the wording of several items was revised to improve semantic equivalence with DICA-ASD items, increase understanding by school-aged children, or alleviate regional language differences.

Child anxiety symptoms—The Revised Children's Manifest Anxiety Scale (RCMAS) in English (Reynolds & Richmond, 1978) and Spanish (Richmond, Rodrigo, & de Rodrigo, 1988) is a 37-item self-report measure of anxiety in children. We used the 28-item Total Anxiety scale as a measure of general anxiety symptoms. The RCMAS has been normed for English- and Spanish-speaking children; both versions have solid psychometric data with regard to reliability, convergent validity, and factor structure (Argulewicz & Miller, 1984; Ferrando, 1994; Richmond et al., 1988; Rodrigo & Lusiardo, 1992). In the current study, the RCMAS Total Anxiety scale showed excellent internal consistency in Spanish ($\alpha = .86$) and in English ($\alpha = .88$).

Child depression symptoms—The Children's Depression Inventory (CDI) in English (Kovacs, 1992) and Spanish (Davanzo et al., 2004) is a 27-item self-report measure of depression symptoms in children. The CDI in English is widely used and well-validated and

the Spanish CDI used in this study has demonstrated strong psychometric properties in a large school-based survey in Los Angeles (Davanzo et al., 2004). In the current study, the CDI showed excellent internal consistency in Spanish ($\alpha = .86$) and in English ($\alpha = .84$).

Child PTSD symptoms—The Child PTSD Symptom Scale (CPSS; Foa, Johnson, Feeny, & Treadwell, 2001) is a 24-item self-report measure of PTSD symptom severity (17 items) and impairment (7 items). The CPSS (in English) has shown excellent internal consistency, test-retest reliability, and convergent/discriminant validity with other measures of traumatic stress and depression, respectively (Foa et al., 2001). The CPSS was translated into Spanish for a study of school-based treatment of traumatic stress symptoms (Kataoka et al., 2003). While a formal psychometric study was not undertaken, this translation evidenced excellent internal consistency and showed decreases in symptom severity scores with treatment for posttraumatic stress (Kataoka et al., 2003). In the current study, the CPSS showed excellent internal consistency in Spanish ($\alpha = .88$) and in English ($\alpha = .89$).

Data Analysis

We first described the distribution of scores, and the proportion of children who met ASD diagnostic criteria, for each acute stress measure. We examined internal consistency (Cronbach's α) for the total symptom scale and symptom category scales of each acute stress measure. We utilized bivariate associations (Pearsons' r), and paired t -tests where appropriate, to assess reliability (test-retest and cross-language) and validity (convergent and discriminant). Analyses were conducted with IBM SPSS Statistics Version 20.

Results

Descriptive Analyses

We summed severity ratings on symptom items to create total symptom severity scores for the acute stress checklist measure (19 symptom items; possible score range from 0 to 57) and the acute stress interview measure (40 symptom items; possible score range from 40 to 200). Total symptom severity scores on the CEA-N checklist (Spanish) ranged from 0 to 32 and scores on the ASC-Kids checklist (English) ranged from 0 to 36. Total symptom severity scores on the EDNA-TEA interview (Spanish) ranged from 40 to 180, and scores on the DICA-ASD interview (English) ranged from 40 to 170. See Table 2 for mean and standard deviation for total symptom severity and subscale scores for checklist and interview measures. Table 3 presents the frequency of meeting ASD symptom criteria based on each measure, in the Spanish and English samples.

Reliability Analyses

For both checklist and interview measures, the total symptom scales demonstrated excellent internal consistency in Spanish and in English (see Table 4). Internal consistency was moderate to good within most symptom categories, but lower for dissociation symptoms on the ASC-Kids checklist (English) and for avoidance symptoms on the interview in both languages. (The interview includes only two avoidance items.) For the English ASC-Kids checklist, test-retest reliability within 1 week was moderate for the total symptom scale ($r = .78$, 95% CI = [.71, .83]), and for subscales: dissociation ($r = .60$, 95% CI = [.49, .69]),

reexperiencing ($r = .68$, 95% CI = [.58, .75]), avoidance ($r = .66$, 95% CI = [.56, .74]), and arousal ($r = .67$, 95% CI = [.58, .75]). Test-retest reliability was weaker for the Spanish CEA-N total symptom scale ($r = .59$, 95% CI = [.44, .70]) and for its subscale scores: dissociation ($r = .63$, 95% CI = [.50, .73]), reexperiencing ($r = .55$, 95% CI = [.40, .67]), avoidance ($r = .58$, 95% CI = [.43, .69]), and arousal ($r = .56$, 95% CI = [.41, .68]). Paired *t*-tests to compare test and retest scores (total and subscales) revealed that retest scores on average were lower; for example, the mean test-retest difference in total symptom score was -1.9 for the ASC-Kids and -2.7 for the CEA-N.

In the subsample of 62 children who completed the checklist in both English and Spanish, cross-language reliability was excellent for the total symptom scale ($r = .93$, 95% CI = [.89, .96]), and good to excellent for each symptom category scale; dissociation ($r = .68$, 95% CI = [.52, .80]); re-experiencing ($r = .90$, 95% CI = [.85, .94]); avoidance ($r = .79$, 95% CI = [.67, .87]); arousal ($r = .83$, 95% CI = [.73, .89]). Paired *t*-tests revealed a significant but very small difference in scores (higher on the English-language measure) for total symptom severity (difference = 0.84) and reexperiencing (difference = 0.35).

Validity Analyses

Regarding convergent validity, in both Spanish and English samples, the acute stress checklist and interview measures showed a strong association with each other for the total symptom scale, and moderate associations for symptom category scales (Table 2). We examined categorical agreement between checklist and interview measures as to whether the child met symptom criteria (Criteria B, C, D, and E) for acute stress disorder. Checklist and interview assessments were in agreement for 155 (71%) children in the Spanish sample and 180 (71%) children in the English sample. Nearly all disagreements were those in which the child met criteria for ASD based on the interview but did not meet criteria based on the checklist: this was the case for 57 (26%) of all children in the Spanish sample and 72 (29%) of all children in the English sample. Further examination of these discrepant cases revealed that most of the time (52 of 57 (91%) Spanish; 64 of 72 (89%) English) the interview determined that dissociation symptoms were present when the checklist did not.

The total symptom scales of the checklist and interview measures were associated prospectively with posttraumatic stress severity assessed 3 months later (Table 5); in the Spanish sample this was only a modest association. With regard to discriminant validity, each acute stress measure showed a moderate association with concurrent general anxiety symptoms as hypothesized, and but contrary to our hypothesis showed a similar association with concurrent depression symptoms (Table 5).

Discussion

The current results expand upon prior validation studies of the English-language versions of the ASC-Kids checklist and the DICA-ASD interview, and provide the first psychometric data regarding the Spanish-language version of each measure. These results provide support for the internal consistency of each measure, and for the checklist's cross-language reliability in a subsample of bilingual children. Evidence for convergent validity comes from the strong association between acute stress checklist and interview measures and the

moderate association of the English-language measures with later PTSD symptoms. Factor models of posttraumatic stress disorder have pointed to non-trauma-specific symptoms (i.e. dysphoria) that are shared with anxiety and mood disorders (Kassam-Adams, Marsac, & Cirilli, 2010; Simms, Watson, & Doebbeling, 2002). We found that acute stress symptom severity on either measure was moderately associated with both anxiety and depression symptoms, contrary to our hypothesis that acute stress would be more closely associated with anxiety than with depression. This result highlights the need for further examination of discriminant validity for these measures, and of the overlap between acute traumatic stress and mood and anxiety symptoms.

Asking children directly about their own traumatic stress reactions is essential, whether via self-report questionnaire or an interview conducted with the child. While observer reports can be useful, relying solely on the reports of others (even parents) has limitations (Dyb, Holen, Brønne, Indredavik, & Aareth, 2003; Kassam-Adams, Garcia-España, Miller, & Winston, 2006; Meiser-Stedman, Smith, Glucksman, Yule, & Dalgleish, 2007). It is highly desirable for clinicians and researchers evaluating children after acute trauma to be able to select among validated tools that assess reactions from the child's own perspective and are practical for use when time and personnel are limited. The two measures examined in this study are promising in this regard. Both are suitable for school-age children and adolescents. The ASC-Kids / CEA-N checklist requires 5 – 10 minutes for administration; the DICA-ASD / EDNA-TEA interview requires 15–20 minutes and can be administered by clinical personnel after brief training.

Given different time and resource requirements for administration of the checklist and the interview, it would be useful to know when a self-report checklist is sufficient. One challenge in direct comparison of these two measures is that item content coverage varies, especially with regard to dissociation symptoms. In the interview, 26 of 40 symptom items concern dissociation; the checklist has roughly even coverage across symptom categories. In this study and prior validation samples, the acute stress interview resulted in much higher prevalence of ASD (23% to 36%) than the checklist (1% to 8%); it appears that the primary reason for this finding is the higher prevalence of dissociation symptoms when assessed by the interview. This may imply that the clinical interview's greater coverage of dissociation allows the interviewer greater sensitivity in identifying these symptoms, or that the sheer number of ways in which the interviewer inquires about dissociation increases the chance that the child will report dissociation. Future studies using this interview might vary the number of dissociation items to examine this phenomenon.

Test-retest reliability in both language versions of the checklist deserves further study. Small mean decreases in symptom severity scores from test to retest were observed. There is limited empirical evidence regarding the stability of acute stress symptoms in children (or adults). To our knowledge, test-retest reliability of self-reported acute stress symptoms has been examined in only one adult study (reliability for total symptom severity = .94; Bryant, Moulds, & Guthrie, 2000) and in two child studies (reliability for total symptom severity = .79 and .76; Kassam-Adams, 2006; Winston et al., 2002). Findings in the current English sample are consistent with prior child studies. However, limitations of this study include lower rates of retention for retest and follow-up assessment in the Spanish sample and in

children from households with lower income or lower parental education. This makes the weaker performance of Spanish measures in these particular analyses more difficult to interpret as they may be confounded with differences based on socioeconomic status (SES), and highlights the need for additional studies that specifically target higher retention in lower SES groups.

The study also embodies the challenges inherent in validating newer measures when all available gold standards are also relatively new and untested. Examining acute stress interview and checklist measures together for mutual validation is an imperfect solution, but we believe it is a reasonable first step. Future studies might incorporate designs that systematically vary assessment mode and content coverage, and assess the performance of these measures in children with even more diverse types of acute trauma exposure.

Although the Spanish and English samples were recruited simultaneously in the same settings, the samples varied somewhat in age and trauma type, and varied more markedly in SES. Most findings were strikingly similar across language versions of each measure. The exceptions are test-retest reliability of the checklist and predictive validity of both checklist and interview for persistent traumatic stress, both analyses in which lower retention in the Spanish sample (and among lower SES children) complicates interpretation. Data from bilingual respondents who complete both language versions of a measure can be valuable in resolving the issue of accounting for both group differences and translation differences simultaneously (Sireci & Berberoglu, 2000). We were able to assess the cross-language reliability of the checklist measure in a small bilingual sample, and found promising results. A limitation of the current analyses is that they do not examine measurement invariance across language versions via structural equation modeling.

It is an unfortunate reality that many measures developed in one language are translated and utilized in clinical or research settings without sufficient attention to their conceptual or psychometric validity in the new language version. Several authors have described best practices in translating and adapting measures into a second language (Canino & Bravo, 1999; Geisinger, 1994; Hambleton, 2001; Van de Vijver & Hambleton, 1996). Hambleton (2001) highlights the importance of distinguishing among content, conceptual, and linguistic equivalence, and of providing validity evidence in each language into which a test is translated. The multi-step process undertaken by our team in translating the ASC-Kids and the DICA-ASD aimed to achieve content and linguistic equivalence for each measure across its English and Spanish versions. The results of the investigations reported here represent important steps toward establishing conceptual equivalence, and toward independent validation for each measure within each language.

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Table 1

Demographic and Event Characteristics for Spanish and English Samples

Variable	Spanish (<i>n</i> = 225)		English (<i>n</i> = 254)		<i>t</i> or χ^2
	<i>M</i> or <i>n</i>	<i>SD</i> or %	<i>M</i> or <i>n</i>	<i>SD</i> or %	
Child age	13.4	2.5	12.7	2.7	3.13*
Child sex – male	131	58	163	64	<i>ns</i>
Child race ⁺					
White	32	14	116	46	
Black	2	<1	68	27	
Other race	0		18	7	
Not reported	193	86	52	20	
Socioeconomic indicators					
Parent completed high school	71	32	201	79	110.06**
Household income over \$30,000	24	11	141	56	106.26**
Type of acute event (N (%))					32.56**
Medical event (non-injury)	71	32	29	11	
Injury (unintentional)	137	61	196	77	
Interpersonal violence (victim or witness)	16	7	21	8	
Disaster / Fire / Other	1	<1	8	3	

Note⁺ Groups not compared due to missing data. Although current US Census practice is to treat Hispanic / Latino ethnicity as orthogonal to race, most parents who identified their child's ethnicity as Hispanic / Latino did not identify a race category for their child.

* t-test, *p* = .002

** Pearson's chi square, *p* < .001

Table 2
Mean, Standard Deviation, and Correlation Between Checklist and Interview Child Acute Stress Measures

Symptom Category	Checklist				Interview				Checklist-interview association			
	CEA-N		ASC-Kids		EDNA-TEA		DICA-ASD		Spanish		English	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	95% CI	<i>r</i>	95% CI	<i>r</i>
Total	14.1	7.6	13.2	7.1	82.7	28.0	80.8	25.7	.70	.63, .76]	.69	.62, .75]
Dissociation	3.8	2.5	3.9	2.2	52.9	17.7	52.6	16.5	.56	.46, .64]	.47	.37, .56]
Reexperiencing	3.3	2.6	3.1	2.5	10.1	5.2	9.3	5.2	.61	.52, .69]	.61	.53, .68]
Avoidance	3.5	2.4	3.4	2.4	4.2	2.7	4.3	2.7	.56	.46, .64]	.63	.55, .70]
Arousal	3.5	2.5	2.9	2.5	15.5	7.4	14.7	7.0	.66	.58, .73]	.64	.56, .71]

Note. Spanish sample ($n = 225$), English sample ($n = 254$).

CEA-N = Cuestionario de Estrés Agudo – Niños (Spanish); ASC-Kids = Acute Stress Checklist for Children (English); EDNA-TEA = Entrevista Diagnóstica para Niños y Adolescentes – modulo de Trastorno de Estrés Agudo (Spanish); DICA-ASD = Diagnostic Interview for Children and Adolescents – Acute Stress Disorder module (English)

Table 3

Percentage of Children Meeting ASD Diagnostic Criteria Based on Checklist or Interview Assessment.

	Checklist				Interview			
	CEA-N	ASC-Kids	EDNA-TEA	DICA-ASD				
Diagnostic Criteria	N	%	N	%	N	%	N	%
A2: Subjective distress	177	79	208	82	174	77	214	84
B: Dissociation	40	18	41	16	160	71	206	81
C: Re-experiencing	118	52	114	45	150	67	159	63
D: Avoidance	124	55	130	51	106	47	123	48
E: Arousal	129	57	113	45	174	77	202	80
F: Impairment	95	42	107	42	205	91	219	86
Meet all ASD symptom criteria (B, C, D, and E)	27	12	14	6	76	34	85	34
Meet ASD criteria (A, B, C, D, E, F)	18	8	13	5	52	23	70	28

Note. All participants (Spanish, $n = 225$, English, $n = 254$) had experienced a potentially traumatic event meeting Criterion A1, and all were assessed between 2 days and 4 weeks of this event (Criterion G).

CEA-N = Cuestionario de Estrés Agudo – Niños (Spanish); ASC-Kids = Acute Stress Checklist for Children (English); EDNA-TEA = Entrevista Diagnóstica para Niños y Adolescentes – modulo de Trastorno de Estrés Agudo (Spanish); DICA-ASD = Diagnostic Interview for Children and Adolescents – Acute Stress Disorder module (English)

Table 4
Cronbach's alpha for Total Symptom Scale and Subscales for Checklist and Interview Measures.

Symptom Category	Checklist				Interview			
	CEA-N		ASC-Kids		EDNA-TEA		DICA-ASD	
	# of items	α	95% CI	α	# of items	α	95% CI	α
Total	19	.84	[.80, .87]	.83	40	.89	[.86, .91]	.87
Dissociation	5	.59	[.49, .67]	.45	26	.82	[.79, .86]	.79
Re-experiencing	5	.68	[.60, .74]	.71	5	.64	[.55, .71]	.71
Avoidance	4	.70	[.63, .76]	.76	2	.43	[.26, .56]	.50
Arousal	5	.63	[.55, .70]	.69	7	.73	[.67, .78]	.71

Note. Spanish sample ($n = 225$), English sample ($n = 254$).

CEA-N = Cuestionario de Estrés Agudo – Niños (Spanish); ASC-Kids = Acute Stress Checklist for Children (English); EDNA-TEA = Entrevista Diagnóstica para Niños y Adolescentes – modulo de Trastorno de Estrés Agudo (Spanish); DICA-ASD = Diagnostic Interview for Children and Adolescents – Acute Stress Disorder module (English)

Convergent and Discriminant Validity of Acute Stress Checklist and Interview: Association (*r*) with Later Traumatic Stress and with Concurrent Anxiety and Depression Symptoms.

Table 5

Variable	Acute stress checklist				Acute stress interview			
	CEA-N		ASC-Kids		EDNA-TEA		DICA-ASD	
	<i>r</i>	95% CI	<i>r</i>	95% CI	<i>r</i>	95% CI	<i>r</i>	95% CI
CPSS 3 months later	.31	[.13, .48]	.54	[.42, .64]	.30	[.11, .47]	.57	[.45, .67]
Concurrent general anxiety symptoms (RCMAS)	.55	[.44, .65]	.56	[.46, .64]	.59	[.49, .68]	.57	[.48, .65]
Concurrent depression symptoms (CDI)	.39	[.25, .51]	.42	[.29, .52]	.57	[.46, .66]	.48	[.36, .57]

Note. For concurrent measures, Spanish sample (*n* = 225), English sample (*n* = 254); For CPSS at 3 months, Spanish sample (*n* = 106), English sample (*n* = 153)

CEA-N = Cuestionario de Estrés Agudo – Niños (Spanish); ASC-Kids = Acute Stress Checklist for Children (English); EDNA-TEA = Entrevista Diagnóstica para Niños y Adolescentes – módulo de Trastorno de Estrés Agudo (Spanish); DICA-ASD = Diagnostic Interview for Children and Adolescents – Acute Stress Disorder module (English); CPSS = Child PTSD Symptom Scale; RCMAS = Revised Children’s Manifest Anxiety Scale; CDI = Children’s Depression Inventory