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INTRODUCTION

The UCLA PTSD Reaction Index (PTSD-RI; Steinberg et al., 2004) is one of the most widely-used assessment tools in the field of childhood posttraumatic stress [1-2].

The primary goal of the present study was to validate the UCLA PTSD Reaction Index for DSM-5 (RI-5), by examining its (1) reliability, (2) criterion validity, and (3) clinical utility. The following hypotheses were examined in two separate studies.

Hypothesis #1: In Study 1 & 2, the RI-5 would show high reliability (i.e., internal consistency) for boys and girls in both studies.

Hypothesis #2: In Study 1, the RI-5 would show evidence of criterion-referenced validity for boys and girls, such that RI-5 subscales and its total scale score would positively correlate with measures indicative of psychopathology (e.g., depression), and inversely correlate with measures of adaptive functioning (e.g., prosocial behaviors).

Hypothesis #3: In Study 2, the RI-5 would demonstrate discriminant and clinical utility via ROC analyses, such that total scale scores would discriminate participants who met PTSD criteria, and a cutoff score would be obtained to allow clinicians to identify children who are at high risk for PTSD.

METHODS

Study 1:

Participants & Procedure. A sample of 486 youth ($M_{age} = 13.32$; 54% girls; 43% Black; 37% White; 9% other; 2% Latino) exposed to potentially traumatic events were recruited through a practice-research network partnership, and completed the following measures of psychological functioning:

Measures

RI-5 [3] is an assessment tool, derived from the DSM-IV version of the measure [4], and designed to identify exposure to traumatic events and assess DSM-5 PTSD symptoms in children and adolescents aged 6 to 18.

Short Mood & Feelings Questionnaire (SMFQ) [6]. The SDQ is a behavioral screening questionnaire for children/adolescents, comprised of five scales: emotional problems, conduct problems, hyperactive/inattention, peer relationship problems, and prosocial behaviors; as well as an overall impact domain.

Strengths & Difficulties Questionnaire (SDQ) [5]. The SDQ is parent-report behavioral screening questionnaire for children and adolescents.

Study 2:

Participants & Procedure. A treatment-seeking sample of 41 youth ($M_{age} = 12.44$ years; 59% girls; 39% Latino; 27% Black; 19% White; 15% Biracial), completed the RI-5 and a "gold standard" structured interview, the CAPS-CA-5; Pynoos et al., 2015), as part of their evaluation at a trauma clinic.

Measures:

RI-5. (Same as Study 1).

Clinician-Administered PTSD Scale for DSM-5-Child/Adolescent Version (CAPS-CA-5) [7]. The CAPS-CA-5 is a clinician-administered PTSD scale based upon DSM-5 criteria for children and adolescents ages 7+.

Study 1 & 2: Reliability:

- All RI-5 subscales' internal consistencies, with the exception of Subscale C, were found to be acceptable or better [9].
- The RI-5 Total Scale Score exhibited "excellent" internal consistency across studies.
- The only sex difference was with regard to Subscale C, which was acceptable for girls, but poor for boys.

Table 1. Internal Consistencies of RI-5 Subscales and Total Scale Score.

RI-5 Indicator	Study 1		Study 2	
	Boys' α	Girls' α	Total α	α
Subscale B	.83	.87	.86	.85
Subscale C	.54	.74	.67	.69
Subscale D	.88	.89	.89	.92
Subscale E	.73	.79	.76	.81
Diss. Subtype Score	.87	.88	.87	.95
Total Scale Score	.93	.94	.94	.96

Note: α = Cronbach's alpha; Subscale B: intrusion symptoms; Subscale C: avoidance symptoms; Subscale D: negative alterations in cognitions and mood; Subscale E: arousal and reactivity symptoms; Diss. = Dissociative.

Study 1: Criterion Validity:

- RI-5 Total Scale Scores were correlated with depression scores ($r = .68, p < .001$).

For girls:

- All RI-5 subscales ($r_s = .40-.55, p < .01$) and RI-5 Total Scale Score ($r = .56, p < .001$) were positively related to SDQ Emotional Problems.
- Subscale E score ($r = .34, p < .05$) and Dissociative Subtype score ($r = .34, p < .05$) were correlated with SDQ Conduct Problems.
- Dissociative Subtype score was positively related to SDQ Peer Problems ($r = .35, p < .05$).
- Subscale D ($r = .39, p < .001$) and E scores ($r = .41, p < .001$), Dissociative Subtype score ($r = .41, p < .001$), and RI-5 Total Scale Scores ($r = .40, p < .001$) were positively correlated with the SDQ Total Problems.

For boys:

- Subscale B ($r = .35, p < .05$) and E score ($r = .34, p < .05$) were positively correlated with SDQ Emotional Problems, and Subscale E score positively correlated with SDQ Hyperactivity ($r = .34, p < .05$) and SDQ Total Problems Score ($r = .35, p < .05$).

Study 2:

Clinical Utility

- ROC analyses indicated that all RI-5 subscales had "fair" or better accuracy (i.e., maximized sensitivity and specificity) [10] discriminating participants with PTSD (AUC = .72-.94).
- The RI-5 Total Scale Score exhibited "excellent" diagnostic accuracy (AUC = .94).

Table 2. Study 2: AUCs from ROC Analyses.

RI-5 Indicator	AUC	SE	p	95% Confidence Interval	
				Lower	Upper
Total Number of Traumas	.78	.08	.005	.62	.93
Subscale B Score	.92	.04	<.001	.84	1.00
Subscale C Score	.87	.06	<.001	.76	.98
Subscale D Score	.90	.05	<.001	.81	.99
Subscale E Score	.94	.04	<.001	.86	1.00
Diss. Subtype Score	.72	.09	.03	.55	.89
Total Scale Score	.94	.03	<.001	.88	1.00

Note: AUC = Area Under the Curve; ROC = Receiver Operating Conditioning; d = Cohen's d ; Diss. = Dissociative.

RESULTS

- A Total Scale Score of 35 in the RI-5 demonstrated maximum efficiency in discriminating between youth with PTSD versus those without PTSD as determined by the CAPS-CA-5 (see Figure 2).

Table 3. Study 2: Maximum Kappa Threshold for RI-5 Total Scale Score.

RI-5 Score	Sensitivity	Specificity	DLR+	Prevalence of 32%		Prevalence of 15%	
				Prior	Posterior	Prior	Posterior
35	1.00	.86	6.99	.32	.76	.15	.55

Note: DLR+ = Positive Diagnostic Likelihood Ratio.

Figure 1. ROC Curve for RI-5 subscales and Total Scale Score.

This figure illustrates the compromise between sensitivity and specificity of each indicator. The closer the curves comes to the diagonal line, the less accurate the test.

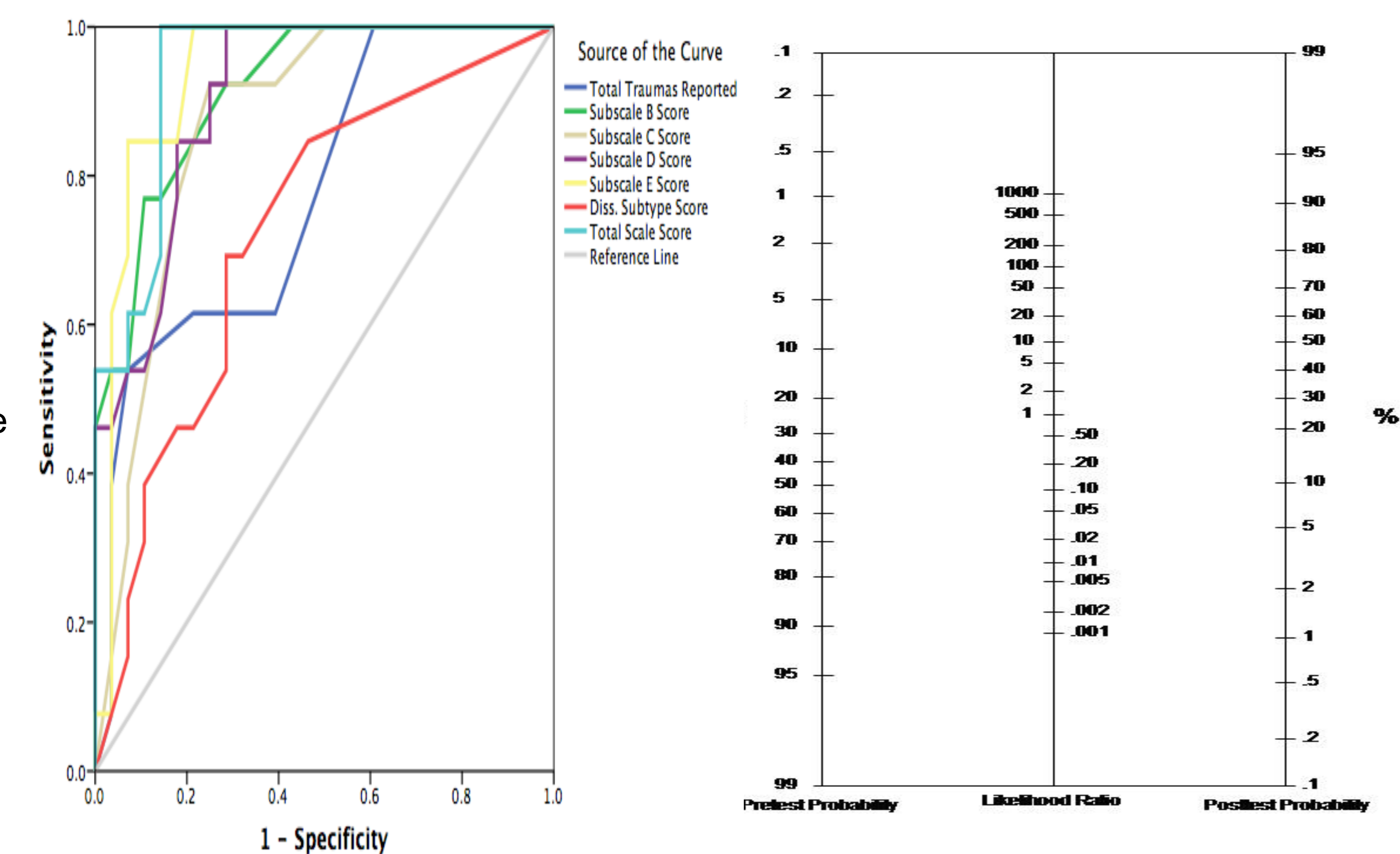


Figure 2. Probability Nomogram.

This figure illustrates a probability nomogram (Straus et al., 2011), a tool used to estimate posterior probabilities based on base rate and diagnostic likelihood ratios.

CONCLUSIONS

The present study examined the psychometric properties and clinical utility of the RI-5, a newly developed measure to assess DSM-5 PTSD criteria in trauma-exposed youth. Results indicated the following conclusions:

- The RI-5 demonstrated overall excellent internal consistency.
- The RI-5 was found to exhibit criterion validity, as it positively correlated with measures of psychopathology, and was not correlated with measures of adaptive functioning in girls.
- The RI-5 discriminated children diagnosed with PTSD from other trauma-exposed children who did not meet criteria for PTSD.
- The RI-5 was demonstrated to be a clinically useful tool, as its Total Scale Score can be used to identify PTSD risk in different settings.

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