

The Continuous Traumatic Stress Response (CTSR) scale

Current diagnostic criteria for posttraumatic stress disorder (PTSD) do not include symptoms resulting from exposure to continuous or ongoing traumatic stress. Thus existing assessment tools do not fully capture stress symptoms associated with exposure to threats that extend over months or years. To address this void, we enumerated the symptoms associated with ongoing exposure to stress including those that are distinct from existing PTSD diagnostic criteria. The study's process comprised of a mixed methods approach combining qualitative and quantitative methods. Thematic analysis yielded three main themes: 1. PTSD in its current definition does not capture the whole “traumatic picture” observed in ongoing exposure to threat, 2. Some DSM-5 criteria are not applicable in ongoing exposure to threat, 3. The need for a new tool or modifications of commonly used assessment tools.

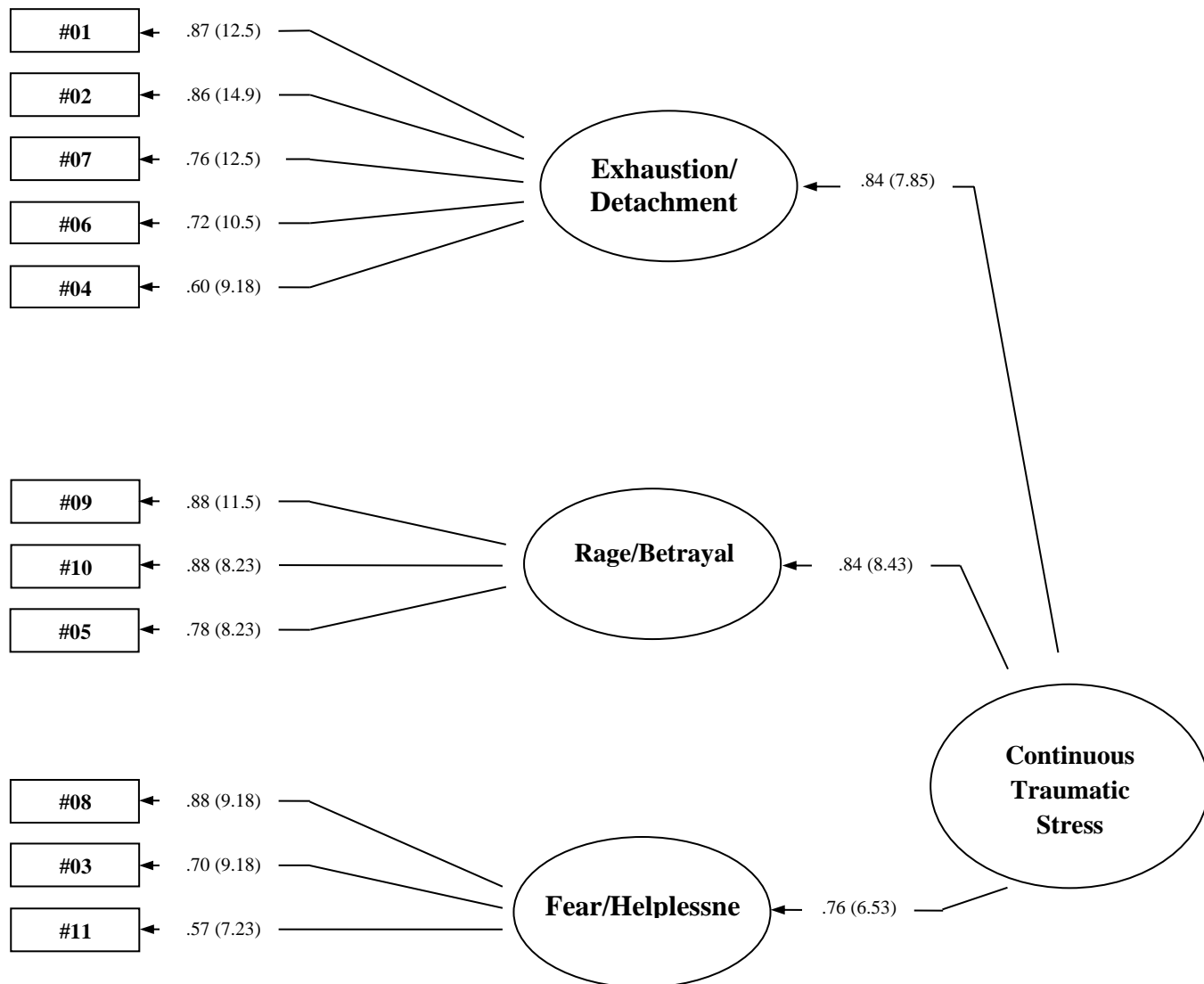
Following these results supporting the need for a new tool specifically designed for assessing traumatic stress in these situations, we developed the Continuous Traumatic Stress Response Scale (CTSR) based on data collected from a representative sample of 313 adults exposed ($n=138, 44.1\%$) and unexposed 175 (55.9%) to ongoing security threat. Exposed respondents lived in communities bordering the Gaza Strip in southern Israel (mean distance from the Gaza border = 7.73 km, $SD = 4.29$ km) where they are exposed to frequent rocket attacks, requiring they locate and find shelter in 15-30 seconds, unexposed participants had up to 90 seconds to find shelter (mean distance from Gaza = 66.58 km, $SD = 17.65$ km).

Data analysis included exploratory factor analysis (EFA) initially performed on a pool of 25 prospective items to achieve a working version of the scale. EFA results were supported by confirmatory factor analysis results showing 11 items in three distinct factors: exhaustion & detachment, rage & betrayal, and fear & helplessness (Table 1). Each factor significantly contributes to the measurement of a higher-order, continuous traumatic stress latent construct (Figure 1).

Table 1. EFA results on 25 ongoing exposure to threat items (n=113)

		Factor loadings		
No.	Item	Exhaustion & Detachment	Rage & Betrayal	Fear & Helplessness
1	I feel unmotivated	.85		
2	I feel mentally exhausted	.72		
7	I feel that no one understands me	.70		
6	I find it hard to trust the people around me	.68		
4	I feel that my life has no meaning	.51		
9	I have episodes of rage		.86	
5	I have difficulty controlling my emotions		.73	
10	I feel betrayed		.66	
3	I feel that my life is in danger			.74
11	I feel that I cannot protect the people who depend on me			.68
8	I have intense feelings of fear or horror			.43
Eigenvalues		5.31	1.38	1.20
% of variance		25.46	21.49	14.67
Cronbach's alpha		0.864	0.820	0.743
Factor mean (SD)		0.55(0.65)	0.42(0.63)	0.34(0.53)
Range		0-2.80	0-3.00	0-3.00

Figure 1. A 3-Factor, Higher-Order Model for continuous traumatic stress



Note: Standardized estimates for items and factors are presented. Parenthetical values represent significance estimates (all greater than 1.96).

Concurrent validity

Concurrent validity was assessed by examining the correlations between the PTSD and CTSR scales. Responses to both scales were strongly correlated ($r = 0.720$, $p < .001$) with smaller coefficients between the PTSD scale and each of the separate CTSR factors ($r = .60$ for fear / helplessness, and $r = .62$ for both exhaustion / emotional detachment and rage / betrayal factors; $p < .001$ for all). Nevertheless, since less than 40% of the variance in stress symptoms is accounted for by any single correlation between the PTSD scale and each CTSR factors (35% to 39%), it appears that the CTSR scale measures a construct, related to, but distinct from PTSD.

CTSR score predictors

CTSR score predictors include: age (AOR 0.96; 95% CI 0.94–0.99, $p = 0.003$, for a one year increase in age), female gender (AOR 1.81; 95% CI 1.05–3.14, $p = 0.03$) and perceived likelihood of future terror (AOR 1.11; 95% CI 1.03–1.20, $p = 0.007$). CTSR scores were strongly correlated with the level of distress ($r^2 = .573$, $p < 0.001$; Figure 2), functional impairment ($r^2 = .556$, $p < 0.001$; Figure 3) and with the distance from the Gaza border among exposed participants ($r^2 = .025$, $p = 0.002$; Figure 4) but not among unexposed participants ($r^2 = .003$, $p = 0.855$).

Figure 2. Correlation between the level of distress caused by CTSR symptoms and total CTSR scale scores

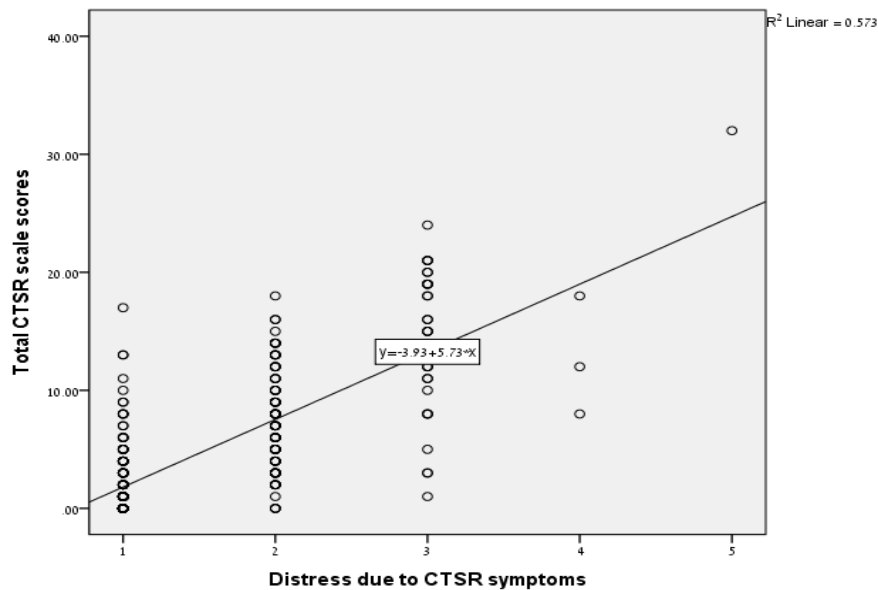


Figure 3. Correlation between the level of impaired functioning caused by CTSR symptoms and total CTSR scale scores

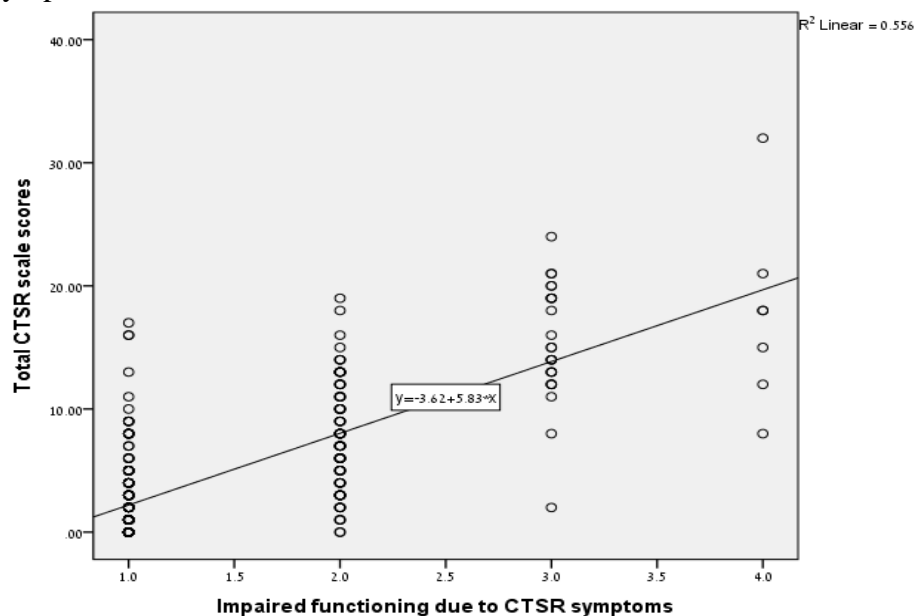
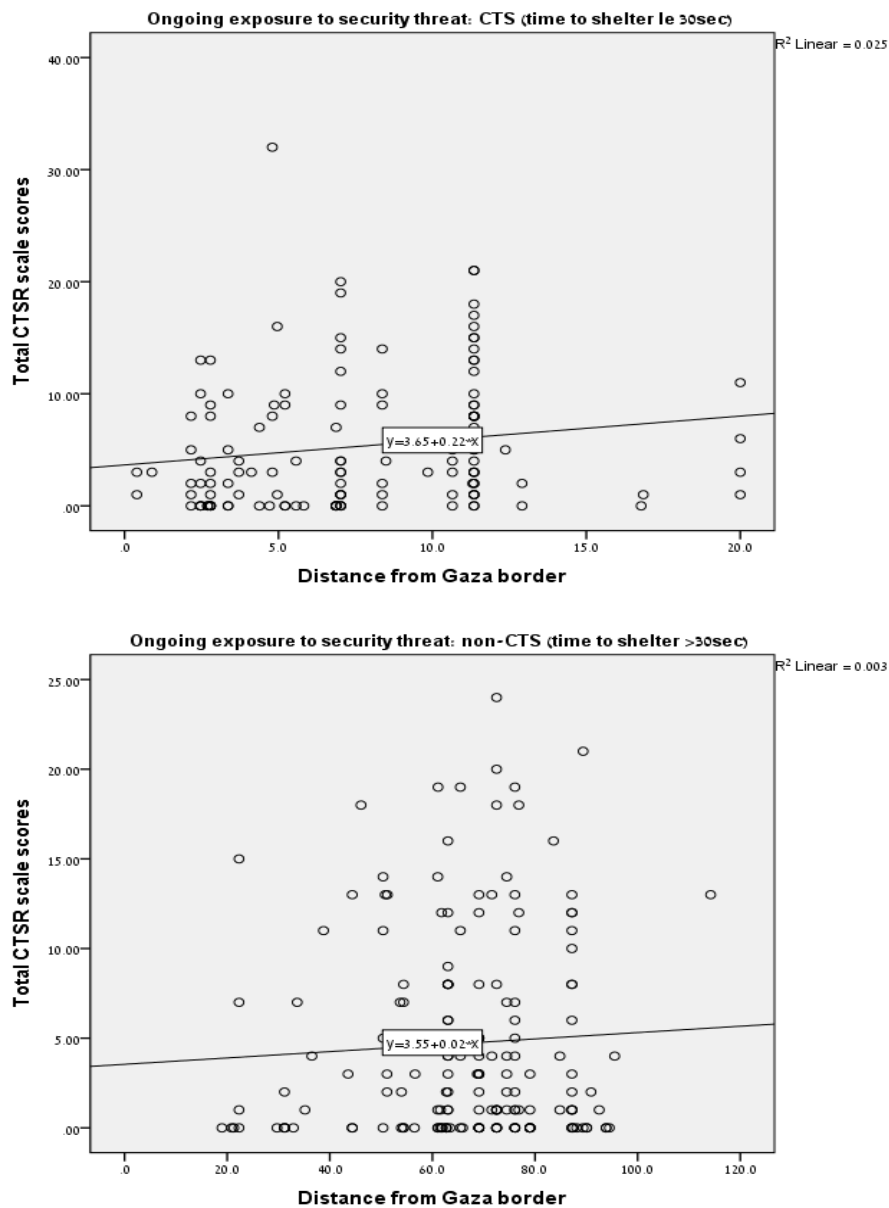


Figure 4. Correlation between total CTSR scale scores and distance from the Gaza border among CTS and non_CTS participants



Plans for the future CTSR-15, CTSR-25

We are in the stages of examining extended tools (CTSR-15 and CTSR-25) possibly containing items not included in the CTSR scale (Table 2). We will publish processing recommendations in the future.

Table 2. Items not included in final scale

No.	Item
12	I have appetite changes
13	I feel helpless
14	I feel that I am a victim
15	I feel that I have no control over the future
16	I feel depressed
17	I hate myself
18	I tend to use medications more than I normally do
19	I am sick more than usual
20	I feel like I have become a different person
21	I feel changes in atmosphere at home/work
22	I have a tendency to easily get hurt
23	I am experiencing difficulties with my partner
24	I feel as if I was a prisoner
25	I feel frustrated if my needs and desires are not fulfilled immediately

Final thoughts

This study is the **first** to systematically measure the effects of ongoing traumatic stress, based on cutting-edge research and statistical analysis. The **CTSR scale** is a unique, valid tool offering translational science research for a better understanding and management of traumatic stress symptoms, which in turn, further fosters community resilience in the face of trauma.

The CTSR scale is currently being translated, validated and used as a valid assessment tool in various research projects and languages including Hebrew, Ukrainian, Lithuanian and German among others.

In the wake of the October 7th horrific events in Israel, the ongoing war in Ukraine, and the hostile atmosphere and violence directed at civilian populations in various regions of the world, the need for such a diagnostic tool is clear and Salient. We recommend incorporating the CTSR scale when assessing traumatic stress in prolonged exposure to allow an efficient diagnosis and alleviate unnecessary suffering.

Please use the following citation in any publication using the CTSR scale:

1. Goral, A., Feder-Bubis, P., Lahad, M., Galea, S., O'Rourke, N., & Aharonson-Daniel, L. (2021). Development and validation of the Continuous Traumatic Stress Response scale (CTSR) among adults exposed to ongoing security threats. PLOS ONE 16(5): e0251724. <https://doi.org/10.1371/journal.pone.0251724>

Additional articles on the subject:

- 1) Goral, A., Lahad, M., & Aharonson-Daniel, L. (2017). Differences in posttraumatic stress characteristics by duration of exposure to trauma. *Psychiatry research*, 258, 101-107.
- 2) Goral, A., Feder-Bubis, P., Lahad, M., & Aharonson-Daniel, L. (2022). “In the Middle, between Anxiety Victims and PTSD, There Are People That Have Some Kind of a Disorder That Has No Name Yet” Insights about the Traumatic Stress Consequences of Exposure to Ongoing Threat. *Trauma Care*, 2(2), 185-196.

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