



# Factor Structure of the Trauma Symptom Checklist for Children: Invariance Across Gender and Race

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## INTRODUCTION

- Accurate measurement of trauma-related symptoms is critical for understanding and treating youth's mental health problems.
- The Trauma Symptom Checklist for Children (TSCC)<sup>1</sup> covers a broad, transdiagnostic spectrum of problems associated with single-event and chronic trauma exposure.
- At present, few studies have investigated the factor structure of the TSCC.<sup>2,3</sup> Non have examined its invariance across race/ethnicity and gender.

**AIMS:** (1) Test one-, six-, and eight-factor structures of the TSCC, as originally conceptualized by the test developer and previous literature; (2) Examine measurement invariance across Black and non-Black and male and female participants; (3) Examine reliability, convergent, and discriminant validity of the subscales against other measures of dimensional psychopathology.

**Hypothesis:** We expected that the six-factor solution would fit the data adequately as it has in previous samples, and that the scales would demonstrate adequate reliability and validity. Given the lack of invariance testing to date, we made no *a-priori* hypotheses in this regard.

## METHODS

**Participants** included ( $N = 738$ ) 16-year-olds and their caregivers who participated in the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN), a consortium of prospective studies focused on the development outcomes of children who were identified as being at risk for maltreatment during early childhood, and were victimized by interpersonal violence on at least one occasion between birth and age 16.

### Measures:

- TSCC<sup>1</sup>** is a 54-item, Likert-type youth self-report instrument measuring posttraumatic symptomatology in the following domains: Anxiety (ANX), Depression (DEP), Posttraumatic Stress (PTS), Sexual Concerns (SC), Dissociation (DIS), and Anger (ANG).
- Trauma exposure** was assessed biannually using a combination of self- and parent-report interviews and official CPS records. Participants were included if they were exposed to physical or sexual abuse, or if they had witnessed family or community violence. These dichotomous indicators were summed to produce a cumulative poly-victimization score.
- Child Behavior Checklist (CBCL)<sup>4</sup>** is Likert-type, parent-report measure of youth internalizing and externalizing behavior problems during the previous six months.

### Data Analysis:

- Factor structure was assessed using Confirmatory Factor Analysis (CFA). A series of nested models were compared to examine configural, metric, and scalar invariance between groups. When model fit was inadequate, model modification indices were examined to inform adjustments to subsequent models.

## FIGURES AND TABLES

**Figure 1.** Standardized Factor Loadings Across TSCC Items in Eight-Factor Structure

Item	DEP	ANX	ANG	PTS	SP	SD	OVT	FAN
7. Feeling lonely	.870*							
9. Feeling sad or unhappy	.875*							
14. Crying	.687*							
20. Wanting to hurt myself	.934*							
26. Washing myself because I feel dirty inside	.799*							
27. Feeling stupid or bad	.832*							
28. Feeling like I did something wrong	.786*							
42. Feeling like nobody likes me	.873*							
52. Wanting to kill myself	.870*							
2. Feeling afraid something bad might happen		.739*						
15. Getting scared all of a sudden and don't know why		.818*						
24. Feeling scared of men		.649*						
25. Feeling scared of women		.617*						
32. Feeling nervous or jumpy inside		.797*						
33. Feeling afraid		.851*						
39. Being afraid of the dark		.580*						
41. Worrying about things		.720*						
50. Feeling afraid somebody will kill me		.757*						
6. Arguing too much			.642*					
13. Wanting to yell and break things			.853*					
16. Getting mad and can't calm down			.778*					
19. Wanting to yell at people			.840*					
21. Wanting to hurt other people			.770*					
37. Feeling mean			.783*					
46. Feeling like I hate people			.888*					
49. Feeling mad			.830*					
1. Bad dreams or nightmares				.617*				
3. Scary ideas or pictures just pop into my head				.764*				
10. Remembering things that happened that I didn't like				.796*				
12. Remembering scary things				.861*				
35. Can't stop thinking about something bad that happened to me				.855*				
4. Wanting to say dirty words					.814*			
8. Touching my private parts too much					.781*			
17. Thinking about having sex					.653*			
22. Thinking about touching other people's private parts					.679*			
23. Thinking about sex when I don't want to					.804*			
44. Having sex feelings in my body					.804*			
47. Can't stop thinking about sex					.742*			
34. Not trusting people because they might want sex					.795*			
40. Getting scared or upset when I think about sex					.759*			
54. Getting upset when people talk about sex					.786*			
11. Going away in my mind, trying not to think						.800*		
18. Feeling dizzy						.632*		
29. Feeling like things aren't real						.810*		
30. Forgetting things, can't remember things						.697*		
31. Feeling like I'm not in my body						.817*		
45. My mind going empty or blank						.747*		
48. Trying not to have any feelings						.744*		
5. Pretending I am someone else							.672*	
38. Pretending I am someone else							.865*	
53. Daydreaming								.616*

Note. DEP = Depression scale; ANX = Anxiety scale; ANG = Anger scale; PTS = Post-Traumatic Stress Scale; SP = Sexual Preoccupation scale; SD = Sexual Distress scale; OVT = Overt Dissociation scale; FAN = Fantasy Dissociation scale  
\* $p < .001$

**Figure 2.** Comparison of Overall Model Fit Indices of Tested Factor Solutions

	$\chi^2$ (df)	CFI	TLI	RMSEA [95% CI]	$\Delta\chi^2$ (df)
Structural validity					
Eight-factor	2494.67* (1246)	0.96	0.96	0.037 [0.035, 0.039]	--
Six-factor	2845.66* (1259)	0.95	0.95	0.044 [0.042, 0.046]	248.27* (13)
One-factor	4349.71* (1274)	0.91	0.90	0.057 [0.055, 0.059]	832.69* (15)
Gender invariance					
Girls	1843.91* (1196)	0.97	0.97	0.037 [0.034, 0.041]	--
Boys	1518.73* (1196)	0.97	0.97	0.028 [0.023, 0.032]	--
Configural invariance					
Metric invariance	3308.17* (2393)	0.97	0.97	0.032 [0.029, 0.035]	--
Scalar invariance	3167.70* (2435)	0.98	0.98	0.029 [0.026, 0.031]	50.17 (42)
	3426.01* (2576)	0.97	0.97	0.030 [0.027, 0.033]	281.21* (183)
Racial invariance					
Black	1828.87* (1246)	0.97	0.96	0.034 [0.031, 0.037]	--
Non-Black	1784.34* (1246)	0.97	0.96	0.036 [0.032, 0.040]	--
Configural invariance					
Metric invariance	3608.46* (2492)	0.97	0.96	0.035 [0.032, 0.037]	--
Scalar invariance	3425.58* (2536)	0.97	0.97	0.031 [0.028, 0.033]	55.24 (44)
	3625.82* (2680)	0.97	0.97	0.030 [0.028, 0.033]	330.14* (144)

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; CI = confidence interval; df = degrees of freedom. \* $p < .05$

**Figure 3.** Correlations Between TSCC scales, CBCL Problem Scales, and Indicators of Victimization

	ANX	PTS	DEP	OVT	FAN	SP	SD	ANG
External validators								
Black	-0.13*	-0.09*	-0.17*	-0.18*	-0.06	-0.07	-0.01	-0.08*
Girls	0.39*	0.25*	0.39*	0.15*	0.16*	-0.17*	0.46*	0.19*
Physically abused	0.11*	0.17*	0.20*	0.17*	0.17*	0.19*	0.08	0.19*
Sexually abused	0.17*	0.15*	0.19*	0.12*	0.09*	0.00	0.18*	0.11*
Witnessed family violence	0.10*	0.13*	0.12*	0.11*	0.10*	0.14*	0.02	0.13*
Witnessed non-family violence	0.07	0.06	0.06	0.10*	0.03	0.12*	0.02	0.09*
CBCL Subscales								
Attention problems	0.15*	0.14*	0.24*	0.20*	0.17*	0.10*	0.09	0.18*
Social problems	0.21*	0.18*	0.25*	0.19*	0.17*	0.05	0.18*	0.22*
Externalizing								
Aggression	0.20*	0.21*	0.27*	0.21*	0.13*	0.12*	0.16*	0.28*
Delinquency	0.12*	0.15*	0.20*	0.17*	0.09	0.15*	0.04	0.23*
Internalizing								
Depressed/anxious	0.23*	0.23*	0.31*	0.25*	0.19*	0.09*	0.18*	0.24*
Depressed/withdrawn	0.24*	0.22*	0.30*	0.26*	0.19*	0.10*	0.17*	0.24*
Somatic complaints	0.24*	0.19*	0.25*	0.22*	0.18*	0.03	0.16*	0.18*

Note. ANX = Anxiety scale; PTS = Post-Traumatic Stress scale; DEP = Depression scale; OVT = Overt Dissociation scale; FAN = Fantasy scale; SP = Sexual Preoccupation scale; SD = Sexual Distress scale; ANG = Anger scale; CBCL = Child Behavior Checklist. \* $p < .05$

**Figure 4.** Descriptive Statistics

Female	386 (52%)	Physically abused	418 (57%)
White	175 (24%)	Sexually abused	169 (23%)
Black	402 (54%)	Witnessed family violence	430 (58%)
Latinx	51 (7%)	Witnessed non-family violence	665 (90%)
Mixed/2+ races	102 (14%)		
Other	8 (1%)		

## RESULTS

- An adjusted eight-factor structure, consisting of distinct clinical scales for Post-Traumatic Stress, Anxiety, Depression, Anger, Overt Dissociation, Fantasy Dissociation, Sexual Preoccupation, and Sexual Distress, demonstrated the best fit, with two items removed (Figures 1 and 2).
- Invariance test supported configural (i.e., baseline measurement models), and metric (i.e., factor loadings)—but not scalar (i.e., item thresholds)—invariance across Black and Non-black you and across girls and boys (Figure 2).
- All TSCC scale scores were positively associated with participants' poly-victimization scores ( $rs > .22$ ,  $ps < .001$ ), as well as with most forms of violence individually (Figure 3).
- TSCC scales correlated with CBCL Total Problem, Internalizing, and Externalizing Problems scale scores, with stronger relationships observed for scales that theoretically align (e.g., DEP with CBCL Internalizing:  $r = .31$ ; ANG with CBCL Externalizing:  $r = .27$ )

## DISCUSSION

- An eight-factor structure that treats the Sexual Concerns and Dissociation subscales as unique factors was generally confirmed, with minor modifications.
    - Sexual distress and preoccupation, and fantasy and overt dissociation, may be better conceptualized as distinct constructs rather than subdomains of general "sexual concerns" and "dissociation."
  - Lack of support for scalar invariance across gender and racial groups justifies the use of existing separate gender norms,<sup>1</sup> and suggests the need for separate normative data for different racial/ethnic groups in order to accurately score and compare individuals.
- Future Directions**
- Future work should examine invariance across a wider range of racial/ethnic groups, particularly Latinx youth, the fastest growing ethnic minority group in the U.S.
  - Studies should attempt to confirm the proposed eight-factor structure in younger, but similarly diverse, samples of children (e.g., eight-year-olds)

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