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Journal of Human Trafficking

ISSN: 2332-2705 (Print) 2332-2713 (Online) Journal homepage: www.tandfonline.com/journals/uhmt20

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To cite this article: Annelise Mennicke, Michael J. Brienzo, Sam Cacace, Ginny Sprang, Emily R. Clear, Ann L. Coker, Candace J. Brancato, Colleen M. Ray, Kara Tsukerman & Evelyn Thorne (09 Jul 2025): CSTOP Now!: Psychometric Evaluation of Child Sex Trafficking Prevention Measures for Use with Educators, Journal of Human Trafficking, DOI: 10.1080/23322705.2025.2525752

To link to this article: https://doi.org/10.1080/23322705.2025.2525752

Published online: 09 Jul 2025.

JOURNAL OF HUMAN TRAFFICKING
https://doi.org/10.1080/23322705.2025.2525752

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CSTOP Now!: Psychometric Evaluation of Child Sex Trafficking Prevention Measures for Use with Educators

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ABSTRACT

Child sex trafficking (CST) is a worldwide public health and social justice issue. Evaluations of prevention program effectiveness have been limited by the lack of validated measures to assess CST-related constructs. We drew from theory to adapt measures of adult sex trafficking and intimate partner violence precursors or risk factors to develop measures assessing CST constructs including CST myths, self-confidence to address CST, and comfort in asking and reporting students among middle school staff. The two measures that were validated (CST myths and self-confidence) can be used to evaluate the effectiveness of CST prevention programs. Reducing the prevalence of CST is an essential component of promoting gender equality.

KEYWORDS

Bystander intervention; child sex trafficking; confirmatory factor analysis; exploratory structural equation modeling; middle school

Child sex trafficking (CST) is a worldwide public health and social justice issue (Chisolm-Straker & Stoklosa, 2017; Greenbaum, 2020). In the United States (U.S.), CST is defined as any sexual exchange for something of value involving someone under 18 years of age. It can also include other forms of exploitation, including sexual imagery and videos (Laird et al., 2023). According to the Trafficking Victims Protection Act, it is not necessary to show any element of force, fraud, or coercion when the victim is a child (U.S. Department of Justice, 2025). Children are often trafficked by older adults, similar-aged peers, romantic partners, and family members (Reid et al., 2023).

It is hard to know the exact prevalence of CST due to underreporting (Franchino-Olsen et al., 2022); however, CST was recognized in the U.S. by the Justice for Victims of Trafficking Act of 2015 as a form of child abuse (2015), further documenting the importance of prevention efforts. The International Labour Organization (ILO, 2022) estimates that there are 1.7 million victims of CST worldwide. Among reporting states in the U.S., 1,365 individuals under the age of 18 were reported as victims of sex trafficking in 2022, according to the National Incident-Based Reporting System (Federal Bureau of Investigation, 2023). In addition, the National Center for Missing and Exploited Children (2025) received over 18,400 CST reports from across the U.S. and Puerto Rico in 2023.

Over the past two decades, CST intervention and prevention research has increased markedly, yet challenges remain in measuring the effectiveness of CST programming. Understandably, CST has been handled by law enforcement and considered a juvenile justice issue (Chisolm-Straker & Stoklosa, 2017). More recently, CST has been viewed as a public health issue amenable to prevention efforts

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(Basile, 2015; Greenbaum, 2020). To help prevent CST, risk factors need to be identified and targeted within CST prevention programming. Current CST prevention approaches that align with the public health model of prevention include educating families about human trafficking, providing resources for vulnerable families, educating professionals about human trafficking, providing prevention efforts in schools and community organizations, and advocating for policy and legislative changes (Greenbaum, 2020).

While the dynamics of CST differ from adult sex trafficking, much of the measurement for CST prevention is borrowed from studies of adult sex trafficking and adapted from tools developed for healthcare settings. For example, the Comprehensive Human Trafficking Assessment Tool (National Human Trafficking Hotline, 2011) and Trafficking Victim Identification Tool (Vera Institute of Justice, 2014) have been adapted to inform tools used to identify victims of CST. The Commercial Sexual Exploitation-Identification Tool (CSE-IT) has been validated as a screener for adult providers serving children to identify children experiencing commercial sexual exploitation and trafficking (Basson, 2017). More recently, a suite of attitudinal, behavioral, and contextual measures was developed to assess child sexual exploitation with high school students and school personnel (Wheeler et al., 2024). However, few measures that have been validated for middle school staff exist that can be used to evaluate the effectiveness of school-based CST prevention interventions. As part of our school-based CST prevention randomized control trial (Coker, 2023), we developed measures of CST that align with the theory of planned behavior (Ajzen, 1985) and engaged bystander theory (Burn, 2009) to assess middle school staffs' preparedness to address CST. Specific psychometric analyses addressed middle school staffs' asking and reporting CST among students, CST myths, and self-confidence to address CST.

Materials and Methods

Procedure

The data used for this psychometric analysis is derived from a Centers for Disease Control and Prevention (CDC) funded randomized controlled trial (RCT) of the CSTOP Now! intervention to prevent CST (Coker, 2023). The aim of the RCT is to create a cadre of middle school staff who can work as active bystanders to interrupt the development of CST risk and victimization in youth 11–14 years of age. The measures used in this trial were administered to school personnel and adapted for this RCT, and as such are the focus of this psychometric study.

The following procedure was used to collect the data used in all subsequent analyses. Counties in Kentucky with at least two middle schools were randomized into an attention control ($n = 25$ counties) or intervention condition ($n = 25$ counties). Through extensive recruitment, a total of 12 intervention counties and 11 control counties enrolled in the study. All schools serving middle school students within the enrolled counties were invited into the study (109 total schools in treatment condition and 100 in the control condition). At the time of this analysis, a total of 14 schools in the intervention condition enrolled, and 15 schools from the control condition enrolled. Mail and e-mail invitations were sent to principals in each of the schools asking for permission for the middle school staff to participate in the study. If permission was granted, invitations to participate in the assigned condition (blinded to participants) were distributed via e-mail using contact information provided by the school leader, or via a global interest link that allowed participants to opt into the study. Participation in the study was voluntary, and school leaders had no information about who participated from their school.

Interested staff were provided a description of the study and consent to participate. Study consent forms and protocols were approved by the university's Institutional Review Board and when applicable, the county or district's human subjects' protection committee as well. All study methods were developed consistent with the Declarations of Helsinki (World Medical Association, 2024). Research Electronic Data Capture (REDCap) was used to administer and collect a battery of measures that took approximately 30 minutes to complete at baseline, at the completion of the intervention, and as a six-

month follow-up to the posttest, regardless of condition. Participants were provided an incentive of a $50 Amazon e-Gift card upon completion of the baseline measures, and $10 Amazon e-Gift cards at both posttest and follow-up assessments. Respondents whose school policy did not allow research participation payments were able to opt out of the incentive program. To measure training-associated changes in staff knowledge, attitudes and actions over time, a unique number was assigned to the participant within the school, identifying the condition and providing a way to link responses across data collection points.

A learning management platform was used to administer training content based on assigned condition. Those randomized into the intervention condition were provided seven modules that used bystander theory and actions to anchor study participants in concrete steps that progress from noticing risk, interpreting the situation as potentially harmful, assuming responsibility for taking action, having the skills to intervene and then intervening in a manner that is consistent with best practice and legal standards (Latane & Darley, 1970). This aligns with several recommended components of the public health approach to CST prevention (Greenbaum, 2020), including educating professionals and situation prevention in schools. The intervention took approximately seven hours to complete, and topics covered include developing expertise at recognizing CST; becoming an ally for children who have experienced trafficking; identifying signs and risk of harm as well as screening to promote action to prevent and respond; preventing CST via the use of individual and family supports; and using five bystander actions to stop CST including disrupting (e.g., challenging harmful stereotypes), deciding (e.g., using a screening tool), directly intervening (e.g., reporting suspicions of CST to proper authorities), delegating (e.g., referral to appropriate supportive resources), and documenting (e.g., noting results of screening). This training was highly interactive, involved multiple knowledge checks throughout, and provided study participants with the opportunity to utilize tools and strategies unique to the intervention (i.e., the See It to Stop It Indicator Tool, SITSII). Those in the control condition received information on how to recognize and report CST, without the active bystander components or strategies (i.e., approximately one hour of training). For both intervention and control, participants were given 12 weeks to finish the training. The learning management platform tracked progress and completion, and the modules were programed to disallow quickly advancing through the training. The sample used in this psychometric analysis include pretest responses from both conditions, representing data collected between September 2023 and April 2024.

Sample/Participants

The total sample of middle school staff who completed the pretest survey across both conditions (N = 297 total, n = 87 from intervention condition, n = 210 from control condition) identified primarily as women (81.8%), white (93.6%), and non-Hispanic (93.6%). The respondent pool was highly educated with 67.6% reporting they had a Master's degree or PhD in their discipline. In terms of role within the school, 46.1% were classroom teachers, 11.1% were mental health/guidance counselors, 6.1% were administrative personnel, 6.4% were academic or sports coaches, 2% identified as members of the nursing staff, and 28.3% selected other (e.g., instructional support, family resource staff, school resource officers, librarians, after school supports, custodians, school-based occupational or speech therapists, etc.).

Measures

Asking and Reporting Students

Six items were used to assess a participant's practices related to asking and reporting students about CST. In Kentucky, adults are required to report suspicions of CST to child welfare, therefore this scale included items related to "duty to report." Four items were modified from the 7-item Abuse Inquiry Scale (Gutmanis et al., 2007), selected for their conceptual relevance to the current study. Modifications included changing the focus to be about CST instead of "woman abuse." Two items

were created by study personnel to assess routine practices related to duty to report/mandatory reporting. Items are scored on a 6-point Likert scale ranging from 1 = strongly disagree to 6 = strongly agree and included a 7 = "Not applicable" option. For the purpose of analysis, "Not applicable" was treated as missing data.

CST Myths

Six items from the 17-item Human Trafficking Myths Scale (Cunningham & Cromer, 2016) were modified to ascertain a participant's endorsement of myths related to CST. Items were selected based on their conceptual relevance to the current study. Modifications included changing the term "human trafficking" to "child sex trafficking" or "people" to "children" throughout. The Human Trafficking Myths Scale demonstrates face validity but has not undergone statistical validation or psychometric testing. Responses were gathered using a 6-point Likert scale ranging from 1 = definitely false to 6 = definitely true.

Self-Confidence to Address CST

Eight items were used to assess a participant's self-confidence to address the issue of CST. These items were modified from the 7-item Self-Confidence [to address woman abuse] scale (Gutmanis et al., 2007). Modifications included changing "women abuse" to "child sex trafficking," changing "discussing with a woman" to "discussing with a parent or other adult." One (modified) item was added from the Professional Supports scale (Gutmanis et al., 2007), including "I feel comfortable discussing child sex trafficking with colleagues to help them understand how to identify child sex trafficking in middle school students." Items are scored on a 6-point Likert scale ranging from 1 = strongly disagree to 6 = strongly agree and included a 7 = "Not applicable" option. For the purpose of analysis, "Not applicable" was collapsed into missing data.

Analytic Plan

For each scale we implemented a two-step approach to model development. The participant sample was split into two random samples of approximately equal size (Brown, 2015) and was conducted in IBM SPSS Statistics v.28 (IBM Corp, 2024). The first sample ($n = 149$) was used to conduct exploratory structural equation modeling (ESEM). ESEM can produce method factors (i.e., residual correlations between items) and allows for estimation of model fit indices, and is used as an intermediary step between factor enumeration and item reduction in previously used scales (Asparouhov & Muthén, 2009). The second sample ($n = 148$) was used to conduct confirmatory factor analysis (CFA). ESEM and CFA were conducted on random, split samples to reduce the likelihood of a localized solution and improve construct validation (see Asparouhov & Muthén, 2009; Kyriazos, 2018; Marsh et al., 2014). ESEM and CFA analyses were conducted using Mplus 8.10 (Muthén & Muthén, 2023). For both ESEM and CFA models, the degree of model fit was determined through a holistic examination of Chi-squared (χ^2), root mean square error of approximation (RMSEA), comparative fit index (CFI) and Tucker-Lewis index (TLI) fit indices, and standardized root-mean-square residual (SRMR) (Hu & Bentler, 1999).

A non-significant χ^2 ($p > .05$) indicates adequate fit; however, large sample sizes will often produce a significant χ^2 (Floyd & Widaman, 1995). An RMSEA estimate of $\leq$.06 indicates adequate fit (Hu & Bentler, 1999). In addition, CFI and TLI values $\geq$ .95 are indicative of adequate fit (Hu & Bentler, 1999), as are SRMR values $\leq$ .08 (Hu & Bentler, 1999). In cases where individual model fit statistic estimates fell outside the adequate range as per Hu and Bentler (1999), we consulted Van Zyl and Ten Klooster (2022) to augment decisions regarding marginal fit. We considered models in which marginal or adequate fit was obtained on two of the five indices to have overall marginal fit, and models with marginal or adequate fit on three or more of the five indices to have overall acceptable fit.

We conducted ESEM using Geomin rotation in the first sample to investigate whether the item loadings in the modified measurement tools mirrored those of the original measurement tools (Cunningham & Cromer, 2016; Gutmanis et al., 2007). Item reduction decisions were

based on omnibus fit indices, examination of localized ill-fit, and modification indices, as appropriate to theory and content expertise (Brown, 2015), before moving onto the next step of analysis for each scale. Model estimates were conducted using maximum likelihood (ML), except when items exceeded skewness ($\geq |3|$) or kurtosis ($\geq |10|$) cutoff points indicating non-normality of data (Weston & Gore, 2006), in which case estimations were conducted using maximum likelihood robust (MLR) due to its appropriateness for non-normal outcomes. We used several criteria in item deletion decisions, including (a) items with loadings of .30–.50, (b) items which did not offer unique conceptual contributions to a measurement tool, and (c) items with cross-loadings onto multiple factors (i.e., items with loading of $\geq$.30 on each factor). We used an iterative process for item removal; in cases where multiple items were considered for deletion from the model, we tested for incremental changes in model fit based on removal of single items (see Brown, 2015). We used a similar decision-making process for adding modifications to the models based on modification indices. Modifications eligible for inclusion in models were those whose predicted change in χ^2 was $\geq$10% of the model's χ^2, had a significant and substantial expected parameter change, and whose items had theoretical overlap; if multiple suggested modifications met these criteria, we used the same iterative process as described for item deletion.

We conducted CFA in the second sample to evaluate the model established from ESEM of each measurement tool. Model fit was determined through examination of omnibus model fit statistics and indicators of localized ill-fit (i.e., item correlations, residual correlations, and residual variance; Brown, 2015). After confirming the final confirmatory model, we conducted reliability analysis using McDonald's omega ω (McDonald, 2011) for each factor. Interpretations of cutoff scores for alpha and omega are equivalent (Kalkbrenner, 2024).

Results

First, we checked whether there were meaningful demographic differences between the two samples. Table 1 shows the demographic distributions of the total, ESEM and CFA samples, along with ESEM and CFA comparisons. There were no differences between the samples by race $\chi^2(4) = 3.16$, $p = .531$; ethnicity $\chi^2(3) = .154$, $p = .985$; school role $\chi^2(7) = 4.46$, $p = .725$; education $\chi^2(7) = 9.62$, $p = .211$; or years of employment $t(294) = -.085$, $p = .933$. The samples differed by sex, $\chi^2(1) = 4.94$, $p = .026$, as 86.9% of the ESEM sample were women compared to 76.9% of the CFA sample.

The full description of item-level descriptive statistics appears in Table 2. For the six Asking and Reporting Students items, mean scores ranged from 2.5 to 5.8 (SD 0.6 to 1.5). For the six CST Myths items, mean scores ranged from 1.1 to 1.9 (SD 0.6 to 1.5). Finally, for the eight Self-Confidence to Address CST items, mean scores ranged from 3.3 to 4.4 (SD 1.1 to 1.3).

Asking and Reporting Students Model

The results of model fit statistics for each measure are found in Table 3. The model fit statistics for each Asking and Reporting Students model are found in Table 4.

Asking and Reporting Students: First Exploratory Model

The initial ESEM contained five items and was estimated using MLR due to non-normality of data. The model had poor fit to the data ($\chi^2(5) = 38.148$, $p < .001$; RMSEA = .211). The original measure contained six items; however, a problem was indicated for ASK4. Upon inspection of the correlation matrix, ASK4 and ASK5 were highly correlated ($r = .91$). Thus, the first exploratory model, and all subsequent models, were estimated without ASK4. Further, ASK5 and ASK6r had $\lambda < .30$. We tested iterative models with the removal of these items.

Table 1. Demographic Characteristics of Total and Group Sample Characteristics.

	Portion of Sample					
Demographic	Total Sample		ESEM Sample		CFA Sample	
Sex*	N	%	N	%	N	%
Man	53	18.2	19	13.1	34	23.1
Woman	239	81.8	126	86.9	113	76.9
Race						
Black or African American	10	3.4	5	3.4	5	3.4
Multi-racial	4	1.4	1	0.7	3	2.0
Native American or Alaskan Native	1	0.3	0	0.0	1	0.7
White	277	93.6	142	95.3	135	91.8
Prefer not to say	4	1.4	1	0.7	3	2.0
Ethnicity						
Hispanic or Latino	7	2.4	3	2.0	4	2.7
Non-Hispanic	276	93.6	139	93.9	137	93.2
Other	6	2.0	3	2.0	3	2.0
Prefer not to say	6	2.0	3	2.0	3	2.0
School Role						
Academic coach	6	2.0	3	2.0	3	2.0
Administrator	18	6.1	11	7.4	7	4.7
Classroom teacher	137	46.1	69	46.3	68	45.9
Guidance counselor	24	8.1	14	9.4	10	6.8
Mental health counselor	9	3.0	2	1.3	7	4.7
Nurse	6	2.0	3	2.0	3	2.0
Sports team coach	13	4.4	6	4.0	7	4.7
Other	84	28.3	41	27.5	43	29.1
Education Level						
Some high school	1	0.3	1	0.7	0	0.0
High school diploma or GED	14	4.7	9	6.0	5	3.4
Some college or associates degree	31	10.5	15	10.1	16	10.9
Bachelors degree	31	10.5	20	13.4	11	7.5
Some graduate training	12	4.1	6	4.0	6	4.1
Masters	182	61.5	91	61.1	91	61.9
PhD or other professional degree	18	6.1	5	3.4	13	8.8
Other	7	2.4	2	1.3	5	3.4
Years of Employment	$M = 7.9$	$SD = 7.4$	$M = 7.9$	$SD = 7.2$	$M = 7.9$	$SD = 7.6$

Significant group differences at the $p < .05$ level are indicated with an *.
ESEM = Exploratory structural equation model.
CFA = Confirmatory factor analysis.

Asking and Reporting Students: Second Exploratory Model

The second exploratory model contained four items and was estimated using MLR, and had removed ASK5. The model had poor fit to the data ($\chi^2(2) = 13.310$, $p = .001$; RMSEA = .195). For this model, ASK6r had an inadequate factor loading ($\lambda = .180$).

Asking and Reporting Students: Third Exploratory Model

The third exploratory model contained four items and was estimated using MLR, and removed ASK6r. The model had acceptable fit to the data ($\chi^2(2) = 4.92$, $p = .085$; RMSEA = .099). This model was retained as the final exploratory model.

Asking and Reporting Students: First Confirmatory Model

The initial confirmatory model contained four items and was estimated using MLR. The model had acceptable fit to the data ($\chi^2(2) = 2.087$, $p = .352$; RMSEA = .017). However, ASK5 had an inadequate factor loading ($\lambda = -.011$). This item was removed from the model.

Table 2. Descriptive Statistics of Measure Items.

Measures and Items	Mean	Standard Deviation
Asking and Reporting Students		
ASK1: If I suspect that a student is experiencing sex trafficking, I will ask the student about their experience.	3.2	1.2
ASK2r: I would not put a child on the spot by asking about child sex trafficking.	2.5	1.2
ASK3r: I am hesitant to ask a child about child sex trafficking in case they stop trusting or confiding in me.	3.2	1.2
ASK4: It is my duty to report child sexual abuse if a student discloses.	5.8	0.6
ASK5: It is my duty to report child sex trafficking if I suspect that a student is experiencing child sex trafficking.	5.7	0.6
ASK6r: In my school, it is not an expectation that I ask students whom I suspect may be experiencing child sex trafficking about their experience.	3.7	1.5
CST Myths		
MYTH3: Child sex trafficking does not happen in the United States.	1.1	0.6
MYTH5r: U.S. citizens are trafficked in their own country.	1.8	1.5
MYTH7: Children from other countries who are sex trafficked in the United States are always illegal immigrants.	1.9	1.1
MYTH11: If children are sex trafficked in the United States, they are always from poor, uneducated communities.	1.7	1.0
MYTH13: Only foreigners and illegal immigrants are sex trafficked as children.	1.3	0.7
MYTH17: Child sex trafficking only occurs in undeveloped countries.	1.3	0.7
Self-Confidence to Address CST		
SC1: I am confident in my ability to address child sex trafficking with my middle school students.	3.5	1.3
SC2: I feel that I am able to provide support to those who may be experiencing child sex trafficking.	3.9	1.1
SC3: I would feel confident discussing with a parent or other adult about my concern that their child may be experiencing child sex trafficking.	3.3	1.3
SC4: I feel comfortable supporting a middle school student who may be experiencing child sex trafficking even though they may not be ready to deal with this experience in the same way I would want them to.	3.8	1.2
SC5: I feel comfortable helping a middle school student access resources to address child sex trafficking.	4.2	1.3
SC6: I feel comfortable working with the parent or guardian of a middle school student who may be experiencing child sex trafficking has access to resources to address child sex trafficking.	3.9	1.3
SC7: I feel comfortable discussing child sex trafficking with colleagues to help them understand how to identify child sex trafficking in middle school students.	4.1	1.3
SC8: I feel comfortable working with other middle school staff to ensure that students who are experiencing child sex trafficking get the resources they need.	4.4	1.3

"r" suffix indicates that the item is reverse coded.

Asking and Reporting Students: Second Confirmatory Model

The final confirmatory model contained three items and was estimated using MLR. The model was a just-identified model ($\chi^2(0) = 0.000$, $p < .001$; RMSEA = 0.000). Therefore, a satisfactory model was not identified in this data.

CST Myths Model

The model fit statistics for each CST Myths model are reported in Tables 3 and 5.

CST Myths Model: First Exploratory Model

The factor model contained six items and was estimated using MLR due to non-normality of data. The model had acceptable fit to the data ($\chi^2(9) = 18.928$, $p = .026$; RMSEA = .086). In this model, one item (MYTH5r) did not have a substantive factor loading ($\lambda = .179$). This item was removed from subsequent models.

CST Myths Model: Second Exploratory Model

The model contained five items and was estimated using MLR. The model fit was comparable to the previous exploratory model ($\chi^2(5) = 14.025$, $p = .016$; RMSEA = .110), and had overall

Table 3. Measurement Model Fit Statistics.

	χ^2 Goodness of Fit				RMSEA						
Model	Estimate	SCF	*df*	*p*	Estimate	90% CI Lower	90% CI Upper	*p* RMSEA < .05	CFI	TLI	SRMR
Asking and Reporting Students											
ESEM Model 1	38.148	.387	5	<.001	.211	.152	.276	<.001	.615	.229	.060
ESEM Model 2	13.310	.810	2	.001	.195	.105	.301	.006	.834	.502	.055
ESEM Model 3	4.920	.554	2	.085	.099	.000	.214	.166	.961	.884	.036
CFA Model 1	2.087	.755	2	.352	.017	.000	.165	.477	.998	.995	.025
CFA Model 2	.000	1.000	0	<.001	.000	.000	.000	.000	1.000	1.000	.000
CST Myths											
ESEM Model 1	18.928	1.123	9	.026	.086	.029	.140	.124	.917	.861	.038
ESEM Model 2	14.025	1.455	5	.016	.110	.044	.180	.064	.903	.806	.042
CFA Model 1	9.766	3.767	5	.082	.081	.000	.155	.208	.932	.863	.065
CFA Model 2	2.302	2.088	4	.681	.000	.000	.096	.804	1.000	1.000	.031
Self-Confidence to Address CST											
ESEM Model 1	131.395	–	20	<.001	.193	.163	.225	<.001	.880	.832	.069
ESEM Model 2	42.662	–	13	<.001	.124	.084	.166	.002	.968	.931	.024
ESEM Model 3	23.236	–	8	.003	.113	.061	.168	.026	.980	.949	.017
CFA Model 1	53.030	–	14	<.001	.138	.100	.178	<.001	.951	.927	.071
CFA Model 2	51.722	–	13	<.001	.142	.103	.184	<.001	.952	.922	.060

ESEM = Exploratory structural equation model.
CFA = Confirmatory factor analysis.
RMSEA = Root mean square error of approximation.
CFI = Comparative fit index.
TLI = Tucker-Lewis index.
SRMR = Standardized root mean square residual.

Table 4. Asking and Reporting Students Item Loadings for each Model.

Model	Item	Loading	*S.E.*	*p*	R^2
ESEM Model 1					
	ASK1	.375	.151	.013	.140
	ASK2r	.942	.275	.001	.887
	ASK3r	.632	.194	.001	.400
	ASK5	−.153	.118	.193	.024
	ASK6r	.136	.235	.562	.019
ESEM Model 2					
	ASK1	.394	.114	.001	.155
	ASK2r	.870	.131	<.001	.757
	ASK3r	.681	.113	<.001	.464
	ASK6r	.180	.158	.254	.032
ESEM Model 3					
	ASK1	.316	.132	.017	.100
	ASK2r	1.118	.258	<.001	Undefined
	ASK3r	.531	.140	<.001	.282
	ASK5	−.158	.082	.055	.025
CFA Model 1					
	ASK1	.572	.111	<.001	.327
	ASK2r	.786	.127	<.001	.618
	ASK3r	.589	.111	<.001	.347
	ASK5	−.011	.100	.911	.000
CFA Model 2					
	ASK1	.573	.109	<.001	.328
	ASK2r	.784	.122	<.001	.615
	ASK3r	.590	.106	<.001	.349

ESEM = Exploratory structural equation model.
CFA = Confirmatory factor analysis.
S.E. = Standard Error.

Table 5. CST Myths Item Loadings for each Model.

Model	Item	Loading	*S.E.*	*p*	R^2
ESEM Model 1					
	MYTH3	.413	.177	.020	.171
	MYTH5r	.179	.093	.055	.032
	MYTH7	.579	.080	<.001	.335
	MYTH11	.725	.085	<.001	.526
	MYTH13	.810	.090	<.001	.656
	MYTH17	.882	.058	<.001	.778
ESEM Model 2					
	MYTH3	.414	.177	.019	.172
	MYTH7	.578	.079	<.001	.334
	MYTH11	.725	.084	<.001	.525
	MYTH13	.810	.090	<.001	.657
	MYTH17	.883	.058	<.001	.779
CFA Model 1					
	MYTH3	.364	.083	<.001	.133
	MYTH7	.744	.073	<.001	.553
	MYTH11	.902	.072	<.001	.813
	MYTH13	.634	.119	<.001	.401
	MYTH17	.594	.105	<.001	.353
CFA Model 2					
	MYTH3	.346	.123	.005	.120
	MYTH7	.485	.112	<.001	.235
	MYTH11	.677	.100	<.001	.459
	MYTH13	.823	.124	<.001	.677
	MYTH17	.757	.059	<.001	.573
	MI MYTH7 MYTH11	.584	.086	<.001	–

ESEM = Exploratory structural equation model.
CFA = Confirmatory factor analysis.
S.E. = Standard Error.

acceptable fit to the data. In contrast to the previous exploratory model, all items had substantive factor loadings, ranging from $\lambda = .414$ to $\lambda = .883$. We elected to retain this as the final exploratory model. The modification indices (MI) suggested that allowing for correlated errors between MYTH7 and MYTH11, and MYTH13 and MYTH17 could lead to improved model fit. We added these MI's iteratively to confirmatory models until a satisfactory model was estimated.

CST Myths Model: First Confirmatory Model

The initial factor confirmatory model contained five items, was estimated using MLR, and contained no MI's. The model had acceptable fit to the data ($\chi^2(5) = 9.766$, $p = .082$; RMSEA = .081). Further, all items had adequate factor loadings, ranging from $\lambda = .364$ to $\lambda = .902$. We decided to retain the item with the lowest factor loading (MYTH3, "Child sex trafficking does not happen in the United States.") due to its unique theoretical contribution to the model. The currently described confirmatory model was retained as the final confirmatory model. McDonald's Omega was $\omega = .827$, 2.5% CI [.702, .877]. The second confirmatory model with MI's was a just-identified model and is described below for reporting purposes.

CST Myths Model: Second Confirmatory Model

The second factor confirmatory model contained five items, was estimated using MLR, and included the MI between MYTH7 and MYTH11. Conceptually, these items signal an otherizing of victims of CST (i.e., are illegal immigrants or are from poor, uneducated communities). The model was a just-identified model ($\chi^2(4) = 2.302$, $p = .681$; RMSEA = .000) and was not retained.

Self-Confidence to Address CST Model

Tables 3 and 6 include the model fit statistics for each Self-Confidence to Address CST model.

Self-Confidence to Address CST Model: First Exploratory Model

The factor model contained eight items and was estimated using ML due to normality of data. The model had poor fit to the data ($\chi^2(20) = 131.395$, $p < .001$; RMSEA = .193). The research team met to discuss potential theoretical reasons for poor model fit. Specifically, the team examined whether item content aligned with a one-factor model, but concluded that a one-factor model did not align with the items. It appeared that there were two distinct item types: those that pertained to confidence (SC1, SC2, SC3) and those that pertained to comfort (SC4, SC5, SC6, SC7, SC8) with addressing the issue of CST. A revised two-factor model was tested.

Table 6. Self-Confidence to Address CST Item Loadings for each Model.

		Factor 1			Factor 2			
Model	Item	Loading	*S.E.*	*p*	Loading	*S.E.*	*p*	R^2
ESEM Model 1[a]								
	SC1	.649	.051	<.001				.422
	SC2	.699	.045	<.001				.489
	SC3	.664	.049	<.001				.441
	SC4	.788	.034	<.001				.621
	SC5	.877	.022	<.001				.768
	SC6	.900	.019	<.001				.809
	SC7	.878	.022	<.001				.772
	SC8	.838	.028	<.001				.702
ESEM Model 2								
	SC1	.847	.086	<.001	−.010	.086	.904	.706
	SC2	.872	.061	<.001	.005	.042	.900	.766
	SC3	.562	.106	<.001	.221	.107	.039	.540
	SC4	.370	.093	<.001	.492	.088	<.001	.637
	SC5	.001	.045	.985	.886	.041	<.001	.786
	SC6	.002	.045	.967	.907	.040	<.001	.824
	SC7	−.050	.084	.553	.930	.068	<.001	.802
	SC8	.046	.091	.614	.807	.076	<.001	.705
ESEM Model 3								
	SC1	.906	.044	<.001	−.010	.012	.403	.809
	SC2	.747	.127	<.001	.124	.135	.358	.696
	SC3	.509	.105	<.001	.270	.109	.013	.515
	SC5	−.004	.012	.712	.886	.025	<.001	.780
	SC6	.017	.071	.813	.892	.054	<.001	.816
	SC7	−.055	.084	.512	.937	.064	<.001	.813
	SC8	.051	.089	.569	.810	.070	<.001	.714
CFA Model 1								
	SC1	.845	.031	<.001	–	–	–	.714
	SC2	.860	.029	<.001	–	–	–	.740
	SC3	.833	.033	<.001	–	–	–	.693
	SC5	–	–	–	.851	.018	<.001	.724
	SC6	–	–	–	.880	.023	<.001	.774
	SC7	–	–	–	.897	.022	<.001	.804
	SC8	–	–	–	.796	.032	<.001	.633
CFA Model 2								
	SC1	.849	.031	<.001	–	–	–	.720
	SC2	.863	.029	<.001	–	–	–	.745
	SC3	.831	.033	<.001	–	–	–	.690
	SC5	–	–	–	.838	.022	<.001	.702
	SC6	–	–	–	.866	.026	<.001	.751
	SC7	–	–	–	.910	.023	<.001	.829
	SC8	–	–	–	.807	.032	<.001	.652
	MI SC5 SC6	.155	.125	.215				–

[a]The first exploratory model was a single factor model. ESEM = Exploratory structural equation model; CFA = Confirmatory factor analysis; S.E. = Standard Error.

Self-Confidence to Address CST Model: Second Exploratory Model

The two-factor model contained eight items and was estimated using ML. The model had acceptable fit to the data ($\chi^2(13) = 42.662$, $p < .001$; RMSEA = .124). All items had adequate factor loadings ($\lambda > .50$), aside from one item (SC4: "I feel comfortable supporting a middle school student who may be experiencing child sex trafficking even though they may not be ready to deal with this experience in the same way I would want them to.") which cross-loaded onto both factors. For this item, factor loadings were both $\lambda \geq .30$. This item was removed, and a revised exploratory model was tested.

Self-Confidence to Address CST Model: Third Exploratory Model

The two-factor model contained seven items and was estimated using ML. The model had acceptable fit to the data ($\chi^2(8) = 23.236$, $p = .003$; RMSEA = .113). In this model, all items loaded onto their hypothesized factors, and there were no cross-loading items. This model was retained as the final exploratory model. The modification indices (MI) suggested that allowing for correlated errors between SC5 and SC6, and SC7 and SC8 could lead to improved model fit. We added these MI's iteratively to confirmatory models until a satisfactory model was estimated (i.e., the first confirmatory model).

Self-Confidence to Address CST Model: First Confirmatory Model

The initial two-factor confirmatory model contained seven items and was estimated using ML. The model had acceptable fit to the data ($\chi^2(14) = 53.030$, $p < .001$; RMSEA = .138). All items had adequate loadings. McDonald's Omega for the self-confidence factor $\omega = .887$, 2.5% CI [.847, .917]. McDonald's Omega for the comfort factor was $\omega = .927$, 2.5% CI [.896, .948]. In the second confirmatory model we added the MI between SC5 and SC6. Although this model had improved fit compared to the first confirmatory model, the MI did not have a significant contribution; however, model results are reported below. Thus, the first confirmatory model was retained as the final confirmatory model.

Self-Confidence to Address CST Model: Second Confirmatory Model

The second CFA model contained seven items, was estimated using ML, and included the MI between SC5 and SC6. The conceptual overlap of these items pertains to assisting with resource access to address CST. The model had acceptable fit to the data ($\chi^2(13) = 51.722$, $p < .001$; RMSEA = .142). However, the MI did not contribute significantly to the model ($\lambda = .155$). The final items for the CST Myths and Self Confidence to Address CST scales are reported in Table 7.

Discussion

The purpose of this study was to evaluate the psychometric properties of measures assessing CST screening behaviors, CST myths, and self-confidence to address CST among middle school staff. Intervention and prevention efforts to address CST are limited by a lack of reliable and valid measures of CST-related constructs, illustrating a need for this work. Through ESEM and CFA, we were able to arrive at two models with acceptable fit (CST Myths and Self-Confidence to Address CST) and one model that was just-identified (Asking and Reporting Students). These measures capture important constructs that can be used to inform development and evaluation of prevention interventions.

Asking and Reporting Students

While we were able to identify a reasonably well-fitting exploratory model containing four items, further investigation revealed an inadequate loading of a single item which produced a just-identified three-item factor model due to scaling correction inherent in MLR estimation. This circumstance prevented us from making further conclusions that could generalize outside of the model's fit to the sample data. While the final model demonstrated significant and substantial loadings, the fit is absolute to the sample, and signifies potential theoretical misfit; that is, there may not be an underlying

Table 7. Items Retained in Final Confirmatory Models.

Model		Item
CST Myths		MYTH3: Child sex trafficking does not happen in the United States.
		MYTH7: Children from other countries who are sex trafficked in the United States are always illegal immigrants.
		MYTH11: If children are sex trafficked in the United Sates, they are always from poor, uneducated communities.
		MYTH13: Only foreigners and illegal immigrants are sex trafficked as children.
		MYTH17: Child sex trafficking only occurs in undeveloped countries.
Self-Confidence to Address CST	Subscale	
	Confidence	SC1: I am confident in my ability to address child sex trafficking with my middle school students.
		SC2: I feel that I am able to provide support to those who may be experiencing child sex trafficking.
		SC3: I would feel confident discussing with a parent or other adult about my concern that their child may be experiencing child sex trafficking.
	Comfort	SC5: I feel comfortable helping a middle school student access resources to address child sex trafficking.
		SC6: I feel comfortable working with the parent or guardian of a middle school student who may be experiencing child sex trafficking has access to resources to address child sex trafficking.
		SC7: I feel comfortable discussing child sex trafficking with colleagues to help them understand how to identify child sex trafficking in middle school students.
		SC8: I feel comfortable working with other middle school staff to ensure that students who are experiencing child sex trafficking get the resources they need.

latent variable influencing the Asking and Reporting Students items that were retained. Future researchers may explore additional items that contribute to the underlying latent factor with a larger sample size to address whether the measure captures a true latent trait. Additional items to consider including could relate to use of screening tools to identify CST, and knowledge or trust in reporting resources

CST Myths

The measure related to CST myths aligns with a broader misperception of what trafficking looks like in the U.S. Given that most individuals are not regularly talking or learning about topics like human trafficking, they rely on media representations to inform their beliefs and attitudes (Rodríguez-López, 2018). Media attention related to trafficking often relies on perceptions of who an "ideal victim" might be, and thus white girls from affluent backgrounds are most often used in media representations (Rodríguez-López, 2018).

Individuals in the U.S. often think of trafficking as an issue for other countries, but do not recognize that trafficking also occurs domestically (Houston-Kolnik et al., 2020). For these reasons, it is imperative to understand a baseline for endorsement of CST myths and to find ways to counter this existing mind-set when preparing individuals, in this case educators, to identify and respond to suspected CST. Some research among human trafficking prevention advocates highlights successful strategies to counteract these myths (Houston-Kolnik et al., 2020. These strategies include using images and other representations that go beyond the stereotyped victims (e.g., images of boys) and having sensitive and informed conversations to challenge harmful existing stereotypes and myths (Houston-Kolnik et al., 2020). The development of a psychometrically sound measure of CST myths will allow for assessment of the effectiveness of strategies aimed at correcting myths to prevent CST.

Self-Confidence to Address CST

Two factors emerged from the Self-Confidence to Address CST measures, one focused on the confidence to intervene and the other on one's comfort in doing so. These constructs are distinct

and may be important for prevention programming efforts on bystander intentions. The effects of violence prevention programs may wane over time without follow-up activities (Hale et al., 2014; Niolon et al., 2024). For bystander interventions in particular, the intention to intervene may lessen with time if opportunities to do so are not present (Kuntz & Searle, 2023). Previous research has shown that both confidence to intervene and a closer relationship with the potential victim are linked to a higher intention to intervene (Mainwaring et al., 2023). Researchers can use this psychometrically validated measure of Self-Confidence to Address CST in their planning and evaluation of CST prevention interventions.

Limitations

Data used in these analyses were derived from an overwhelmingly white, women, non-Hispanic and highly educated sample in Kentucky, suggesting that a more heterogeneous group may respond differently to item sets based on perceived meaning, and nomological or linguistic norms. Further, because the study sample was comprised of middle school staff, the results found herein may not be applicable to other populations of educators (e.g., high school staff). Validity of the tools with other populations should be established prior to its use in new settings, including subjecting the measures validated herein to invariance testing. The items used to develop the scales tested in this study were adapted from scales focused on adults. While the items were adjusted to be about children, there may be unique aspects of CST that are not captured.

Implications for Research and Practice

Future research should redress the limitations of the current investigation by developing and testing additional items for the Asking and Reporting scale. Additionally, measurement invariance could be conducted with more heterogeneous samples to ensure the validity of the CST Myths and Self-Confidence to Address CST scales across demographic characteristics. With these validated instruments, practitioners can use these scales to appropriately tailor intervention content, and assess the effectiveness of prevention interventions.

Conclusion

CST is a significant public health issue that warrants rapid, evidence-informed prevention and intervention efforts. However, the field has been hindered by a dearth of validated measures to capture constructs specifically related to CST. This investigation developed and validated two measures for CST prevention efforts – CST Myths and Self-Confidence to Address CST. Based on the findings of this study, both measures can be used to inform theory, interventions, and evaluation of efforts to reduce the prevalence and harmful impact of CST. Specifically, the developed and validated scales will be used to evaluate a CST prevention intervention in Kentucky (Coker, 2023).

Acknowledgments

The authors would like to thank the research staff and program participants who contributed to this project.

Funding

This research was funded by a CDC Research Cooperative Agreement [1U01CE003394–01] to the University of Kentucky.

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Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention (CDC).

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