Community Preventive Services Task Force

Mental Health: Multi-Tiered Trauma-Informed School Programs to Improve Mental Health Among Youth, Updated 2026

Community Preventive Services Task Force
Finding and Rationale Statement
Ratified November 2023

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CPSTF Finding and Rationale Statement

Context

Trauma is a response to an event, series of events, or set of circumstances experienced by an individual as physically or emotionally harmful or life-threatening and can have lasting adverse effects on the individual's mental, physical, and emotional well-being (SAMHSA Concept of Trauma 2014 [https://ncsacw.acf.hhs.gov/userfiles/files/SAMHSA_Trauma.pdf]). Traumatic events in childhood, referred to as adverse childhood experiences, or ACEs, are experienced by more than two-thirds of children by the age of 16 (SAMHSA 2023). Childhood experiences of trauma may lead to learning or behavioral problems or both, such as inability to focus on schoolwork, or intense outbursts of anger (Burke et al 2011). In adolescence and adulthood, ACEs are linked to chronic health problems, poor mental health (e.g., post-traumatic stress disorder [PTSD], feeling sad or hopeless), and risk behaviors (e.g. substance use), as well as socioeconomic challenges in adulthood (CDC 2022). Preventing and reducing underlying trauma in childhood could reduce negative outcomes in adulthood and promote safer communities for children (CDC 2022).

Multi-tiered trauma-informed school programs aim to prevent and reduce the impact of trauma among all students while offering additional help to students who need intensive support (National Child Traumatic Stress Network, Schools Committee 2017). Multitiered programs aim to implement interventions at universal (tier 1), targeted (tier 2), or individualized (tier 3) levels (Fondren et al 2020). These programs may connect students, especially those with a higher likelihood of traumatic exposures (e.g., students from households with low socioeconomic status [SES] or racial or sexual minority groups, students living with disability; NCTSN 2023), to mental health services and academic supports (Chafouleas et al 2016), which may promote health equity.

Intervention Definition

Multi-tiered trauma-informed school programs aim to minimize students' exposure to adversity, strengthen their coping skills, and improve their mental health and well-being. These programs offer universal, targeted, and individualized approaches based on students' exposure to trauma and trauma-related symptoms.

For inclusion in this systematic review, studies must include interventions implemented at each of the three tiers.

- Tier 1 delivers universal interventions designed to create safe environments and support a trauma-informed school community for all students. Interventions must screen students for symptoms to identify those in need of more intense intervention at tiers 2 or 3. They also may offer training and psychoeducation (information on awareness and tools to help students regulate behavior) for teachers, staff, parents, or community partners, or social, emotional, and behavioral learning (self-awareness, self-control, and interpersonal skills) for all students. Interventions may be delivered by appropriate mental health providers or trained school staff.
- Tier 2 identifies and provides early intervention for at-risk students exposed to trauma who show mild symptoms (e.g., problems focusing on schoolwork). Interventions must include one or more of the following: psychoeducation for at-risk students, trauma-specific group therapy, or classroom supports (e.g. play therapy, social stories, schedule cards). Interventions are typically delivered by trained mental health providers. Training may be offered to teachers to help them screen students for symptoms and improve classroom management.
- Tier 3 provides mental health services for students who have experienced trauma and show severe symptoms (e.g., intense outbursts of anger). Trauma-informed counselors or other trained mental health providers deliver

services in school settings or refer students to appropriate mental health services outside of school. Interventions may include trauma-focused cognitive behavioral therapy or wraparound services that integrate support systems around the student, including parents or caregivers, mental health providers, and others to address the student's needs.

CPSTF Finding (November 2023)

The Community Preventive Services Task Force finds insufficient evidence to determine whether multi-tiered trauma-informed school programs reduce symptoms of post-traumatic stress disorder (PTSD) or improve mental health and school-related outcomes including student behaviors, disciplinary actions, and absenteeism. Studies showed reductions in PTSD symptoms but lacked comparison groups, had small sample sizes, and did not evaluate PTSD symptoms for all tiers of the intervention. There were not enough studies to determine intervention effects on other outcomes.

Additional studies are needed to determine the effectiveness of multi-tiered trauma-informed school programs. It is important to address this lack of evidence given the prevalence of childhood trauma and the important role schools play in children's lives.

Rationale

Basis of Finding

The CPSTF finding is based on evidence from 6 studies identified in a published systematic review (Berger et al. 2019; search period through May 2018) and 5 studies identified in an updated search for evidence (search period January 2018 to August 2022).

To assess intervention effectiveness, a team of systematic review methodologists and intervention subject matter experts synthesized outcomes for mental health (i.e., PTSD, student depression, student anxiety) and school-related outcomes (i.e., internalizing and externalizing student behaviors, student-staff relationships, absenteeism, disciplinary actions, quality of life).

Included studies used age-appropriate instruments with demonstrated validity and reliability for this population to assess PTSD symptoms, internalizing and externalizing behaviors, depression, and anxiety. Researchers collected data through surveys completed by students or on behalf of students by teachers, parents, caregivers, or interviewers.

Included studies evaluated multi-tiered trauma-informed school programs that offered a combination of interventions for students and adults (staff, parents, and caregivers) at each tier. Some of the programs also offered programmatic or policy support. Study authors did not always clarify how specific interventions were chosen for each tier.

Studies reported outcomes for students who received interventions at one or more tiers. The systematic review team used the following criteria to interpret assessments:

Tier 1 Assessment: students received tier 1 interventions and possibly tiers 2 or 3.
Tier 2 Assessment: students received tiers 1 and 2 interventions, and possibly tier 3.
Tier 3 Assessment: students received tiers 1 and 3 interventions, and possibly tier 2.

Included studies reported intervention effectiveness on PTSD symptoms, internalizing and externalizing behaviors, combined measures of internalizing and externalizing behaviors, depression, anxiety, student-staff relationships, disciplinary actions, absenteeism, and quality of life. The systematic review team could only calculate a summary effect estimate for PTSD. There were not enough studies reporting results for the other outcomes (Table 1).

Evidence from the included studies showed multi-tiered trauma-informed school programs reduced PTSD symptoms by a median of 34.8% (Interquartile interval [IQI]: -48.6% to -33.1%; 5 studies). CPSTF considered this reduction in PTSD symptoms to be consistent and meaningful (criteria used determine sufficient level of evidence) but downgraded the finding to insufficient evidence based on recurring gaps in study designs and methods (see the Community Guide Methods Manual [https://www.thecommunityguide.org/pages/methods-manual.html] for more information about criteria used to determine strength of evidence). The one study with a comparison group found small, not statistically significant, improvements in PTSD symptoms among younger students and no improvements among older students. The other four studies reported favorable outcomes but used a before-after without comparison design. Without control groups, CPSTF could not assess whether changes resulted from the intervention or the passage of time. Additionally, some of the studies had small sample sizes and only one study measured outcomes at all tiers. Lack of outcome assessment at all tiers prevented assessment of multi-tiered programs in those studies.

Table 1. Summary of Findings for Multi-Tiered Trauma-Informed School Programs

Outcome	Studies (Tiers Assessed) *	Effect	Direction of Effect	CPSTF Assessment
PTSD Symptoms	3 studies (Tier 3) 2 studies (Tier 2) 2 studies (Tier 1)	Relative Percent Change: -34.8% (IQI: -48.6% to -33.1%)	Favors intervention	Insufficient evidence due to recurring gaps in study designs and methods
Externalizing Student Behaviors	3 studies (Tier 3) 1 study (Tier 1)	All favorable, 2 statistically significant	Favors intervention	Too few studies
Internalizing Behaviors	1 study (Tier 3)	Favorable and statistically significant	Favors intervention	Too few studies
Combination of Externalizing and Internalizing Behaviors	1 study (Tier 3) 2 studies (Tier 1)	2 favorable and statistically significant, 1 no change	Mixed	Too few studies
Depression	2 studies (Tier 3) 1 study (Tier 2) 1 study (Tier 1)	Relative Percent Change: -35.9% (IQI: -37.4% to -34.1%)	Favors intervention	Too few studies
Anxiety	1 study (Tier 3)	Relative Percent Change: -34.5%	Favors intervention	Too few studies
Student-Staff Relationships	1 study (Tier 3) 2 studies (Tier 1)	3 favorable, 2 statistically significant; 1 no change	Favors intervention	Too few studies

Outcome	Studies (Tiers Assessed) *	Effect	Direction of Effect	CPSTF Assessment
Disciplinary Actions	1 study (Tier 1)	Favorable and statistically significant	Favors intervention	Too few studies
Absenteeism	1 study (Tier 1)	Favorable and statistically significant	Favors intervention	Too few studies
Quality of Life (QoL)**	2 studies (Tier 3) 1 study (Tier 2) 1 study (Tier 1)	2 Favorable and statistically significant, 1 no change	Mixed	Too few studies

*Tiers which measured outcomes were not mutually exclusive; some studies reported outcomes at more than one tier.
**Proxies for QoL (i.e., adjustment to trauma, impact of behavior on relationships and activities, resource hardships).

Applicability and Generalizability Issues

Applicability was not assessed because CPSTF did not have enough information to determine intervention effectiveness.

Studies were conducted in the United States (10 studies) and Australia (1 study). Studies were implemented in predominately urban settings (9 studies) among populations with increased likelihood of traumatic exposure. Students were from households with low-socioeconomic status (7 studies) or trauma-impacted communities (10 studies). Just over half of the study population was male (54.5% reported in 7 studies). Five studies from the United States that collected information about students' racial or ethnic background reported that a median of 39% of students were black or African American; 15% were Hispanic or Latino; and 3.5% were white. Studies represented all school levels from pre-k through high school. The median student age was 12.5 years old.

Included studies assessed programs reporting the following tiered interventions for students:

Tier 1 (for all students):

- Screening (11 studies)
- Social-emotional learning (7 studies), or
- Psychoeducational interventions (3 studies)

Tier 2 (for at-risk students):

- Additional screening (8 studies)
- Additional psychoeducation (6 studies), or
- Trauma-specific group therapy (3 studies)

Tier 3 (for students in need of intensive intervention):

- Individual trauma-specific therapy (10 studies), or
- Referral to local mental health providers outside of school (5 studies).

Included studies assessed programs reporting the following tiered interventions for adults:

Tiers 1 and 2:

- Training for teachers and staff (10 studies)
- Psychoeducation for parents and caregivers (6 studies).

Tier 3 (for trauma--impacted staff)

- Referrals or crisis support (3 studies)
- Parents or caregivers of trauma-impacted students received family therapy, or individual meetings (3 studies).

All included studies implemented their tier 1 and tier 2 interventions on-site, and most implemented tier 3 interventions on-site. Four studies included referrals or crisis support off-campus.

Data Quality Issues

Findings were limited due to recurring gaps in study designs and methods used in the included studies. Studies included before-after with concurrent comparison (2 studies) and single group before-after (9 studies) designs. For studies reporting PTSD outcomes, the study with comparison groups showed smaller (nonsignificant) effects, unlike the single-group studies. Studies had small sample sizes with a median of 187 (IQI 73.8 to 633.5) students across all studies. Sample sizes were further reduced for tier-specific or age-specific stratifications. While all included studies implemented interventions at all three tiers, most studies only reported measuring outcomes at a single tier. Of the five studies reporting PTSD outcomes, one study measured results at all three tiers with sample sizes of 11 students at tier 1, 8 students at tier 2, and 4 students at tier 3. The remaining four studies reported outcomes at tier 1 (1 study with 155 students), tier 2 (1 study with 17 students), and tier 3 (2 studies with 104 and 149 students, respectively).

All included studies were judged to be of fair quality of execution; nine studies had the least suitability of study design according to Community Guide quality scoring methods [https://www.thecommunityguide.org/pages/effectiveness-review-methods.html#abstract-relevant-information-selected-studies]. The most common study limitations were missing intervention descriptions (e.g., screening process, specific intervention deliverer, intervention delivered), unclear sampling frame or screening criteria for participant eligibility, and issues with data analysis (e.g., not controlling for design effect, differential exposure to interventions at each tier).

Potential Benefits and Harms

CPSTF examined potential additional benefits and harms from exposure to the intervention. Potential benefits noted in the broader literature or included studies were reduced staff turnover (Hales et al 2017), reduced financial and structural barriers to receiving mental health services (Frankland 2021), and sustained support among families who completed the intervention (Perry and Daniels 2016).

None of the included studies reported potential harms. CPSTF noted that culturally insensitive trauma-informed school programs could cause potential harm by invalidating experiences of historically disadvantaged groups. Two studies included culturally sensitive brokers to aid with implementation, and both reported statistically significant favorable results for PTSD, combination of student behaviors or depression (Beehler et al 2012, Ellis et al 2013).

Considerations for Implementation

CPSTF calls for more comprehensive and in-depth evaluations of multi-tiered trauma-informed school programs that address the study design and methodology concerns discussed below.

Evidence from included studies indicates that multi-tiered trauma-informed school programs produced some favorable results (see table 1). This body of evidence was limited, however, by lack of clear intervention descriptions, small sample sizes, lack of comparison groups, and lack of assessment at all tiers of the intervention. It is important that researchers include clear descriptions of all components of the intervention as well as how they were delivered as guidance to implementers. Comparison groups are important when assessing outcomes such as PTSD that may improve over time without intervention (Hiller et al 2016). Evaluating multi-tiered trauma-informed school programs using comparative study designs, such as random controlled trials (RCTs) or observational designs that use comparison groups would be helpful to separate the effect of the intervention from improvements that may happen over time. Too few studies reported student behavior outcomes using comparable measurements, making it difficult to determine the overall effect. Establishing a set of standardized measures for researchers to use could assist intervention evaluation, improve communication between researchers, and increase the possibility of summarizing this body of evidence across studies. Finally, evaluations that assess outcomes from all three tiers may provide useful information about how the tiers work together so that the potential benefits of a multi-tiered approach can be fully assessed.

Interventions implemented at each tier varied between studies and were often not well described, making it difficult to determine which combinations of interventions across the three tiers were most effective. Studies also implemented a mix of evidence-based and practice-based interventions and did not indicate whether they were implemented as intended.

Few studies reported information about funding for their multi-tiered trauma-informed school programs. It is important for researchers and implementers to build in plans that ensure schools will be able to continue providing individual interventions to students once the study ends.

Schools can use the tool below to assess their current mental health programming needs and access resources.

> The School Health Assessment and Performance Evaluation (SHAPE) System | Mental Health Technology Transfer Center (MHTTC) Network (mhttcnetwork.org) [https://mhttcnetwork.org/centers/mhttc-network-coordinating-office/news/school-health-assessment-and-performance-evaluation]
>
> Promoting Mental Health and Well-Being in Schools | CDC [https://www.cdc.gov/healthyyouth/mental-health-action-guide/index.html]

Below are several publicly available resources for more information about addressing trauma and building trauma-informed schools using evidence-based interventions

- The Center for Resiliency, Hope, and Wellness in Schools (traumaawareschools.org) [https://traumaawareschools.org/]
- Taking the First Step to Becoming a Trauma-Informed (TI) School | Comprehensive Center Network (compcenternetwork.org) [https://compcenternetwork.org/resources/resource/6931/taking-first-step-becoming-trauma-informed-ti-school]
- Learn: Continuing Education (nctsn.org) [https://learn.nctsn.org/course/index.php?categoryid=3]

- Understanding Trauma and Its Impact | National Center on Safe Supportive Learning Environments (NCSSLE) (ed.gov) [https://safesupportivelearning.ed.gov/understanding-trauma-and-its-impact]

Evidence Gaps

CPSTF identified several areas that have limited information. Additional research and evaluation could help answer the following questions and determine the effectiveness of multi-tiered trauma-informed school programs.

CPSTF identified the following questions as priorities for research and evaluation:

- Using comparative study designs and consistent outcome measures, are multi-tiered trauma-informed school programs effective in:
  - Reducing mental health symptoms, including PTSD, depression, and anxiety, among students?
  - Improving school-related outcomes, including student behaviors, absenteeism, and academic achievement?
- Does the effectiveness of multi-tiered trauma-informed school programs vary for students who may disproportionately experience trauma, such as students who identify as sexual or gender minorities, and students with disabilities?
- Does program effectiveness vary with different program and study characteristics, such as the specific interventions implemented within each tier, service deliverers, or intervention duration?
- What combinations of interventions across the tiers are most effective?
- What is the impact of multi-tiered trauma-informed school programs implemented after a crisis or mass exposure (e.g., school shooting, natural disaster) in the United States?

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Ellis BH, Miller AB, Abdi S, et al. Multi-tier mental health program for refugee youth. *Journal of Consulting and Clinical Psychology* 2013;81(1):129 -40.

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Frankland M. Meeting students where they are: trauma-informed approaches in rural Schools. *Rural Educator* 2021;42(2):51–71.

Hales TW, Nochajski TH, Green SA, et al. An association between implementing trauma-informed care and staff satisfaction. *Advances in Social Work* 2017;18:300–12.

Hiller RM, Meiser-Stedman R, Fearon P, et al. Research Review: Changes in the prevalence and symptom severity of child post-traumatic stress disorder in the year following trauma – a meta-analytic study. *Journal of Child Psychology and Psychiatry* 2016;57(8):884–98.

National Child Traumatic Stress Network. *Populations at risk*. Rockville (MD): NCTSN, 2023. Available at URL: https://www.nctsn.org/what-is-child-trauma/populations-at-risk. Accessed August 7, 2023.

Perry DL, Daniels ML. Implementing trauma-informed practices in the school setting: a pilot study. *School Mental Health* 2016;8:177–88.

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Disclaimer

The findings and conclusions on this page are those of the Community Preventive Services Task Force and do not necessarily represent those of CDC. Task Force evidence-based recommendations are not mandates for compliance or spending. Instead, they provide information and options for decision makers and stakeholders to consider when determining which programs, services, and policies best meet the needs, preferences, available resources, and constraints of their constituents.

Document last updated July 30, 2026

Appendices of Supporting Documents

Mental Health:
Multi-Tiered Trauma-Informed School Programs to Improve Mental Health Among Youth

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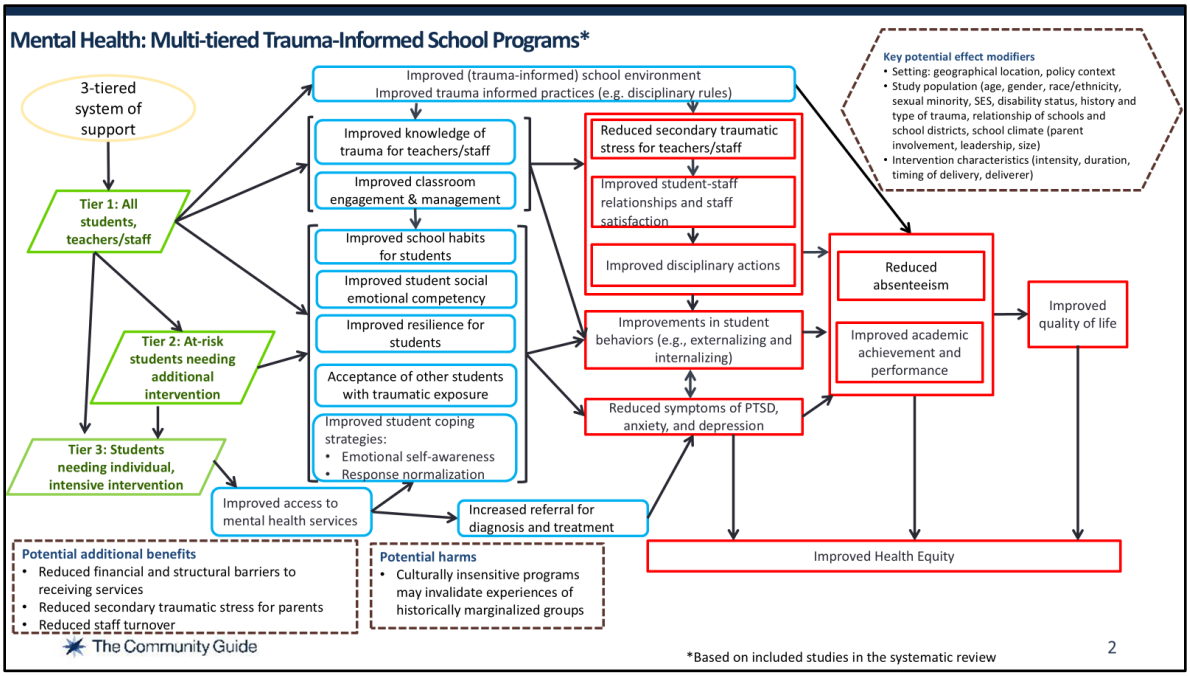
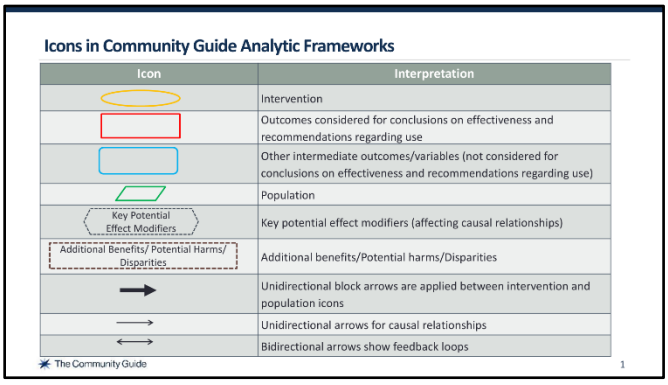
Appendix A
Analytic Framework (Effectiveness Review)
Mental Health: Multi-Tiered Trauma-Informed School Programs to Improve Mental Health Among Youth



Analytic Framework Text Description



The analytic framework depicts postulated pathways through which multi-tiered trauma-informed school programs might improve mental health among youth. Multi-tiered trauma-informed school programs include a 3-tiered system of support. At tier 1 strategies are delivered to all students, teachers, and staff in the school. At tier 2, students may be identified in need of additional intervention at tier 2; these strategies are delivered to students at-risk, and at tier 1 or tier 2 students may be identified in need of intensive intervention; these strategies are delivered at tier 3

Tier 1 strategies are expected to lead to improvements in the intermediate outcomes in blue at the top, which include improved school environment and trauma-informed practices, teacher and staff knowledge, and classroom engagement and management.

Tier 1 and tier 2 may work to improve school habits, student social emotional learning competency, resilience and acceptance of others with traumatic exposure, and coping strategies.

Tier 3 strategies may improve access to mental health services, which then impact coping strategies and referral for diagnosis and treatment. With improvements in the intermediate outcomes, we expect to see changes in the recommendation outcomes listed in red, including: reduced secondary traumatic stress for teachers and staff, improved student-staff relationships and staff satisfaction, improved disciplinary actions, improvements in

student behavior, reduced symptoms of PTSD, anxiety, and depression, reduced absenteeism, improved academic achievement, and ultimately improvements in quality of life and health equity.

In the top right corner, we have potential effect modifiers including setting, population characteristics and intervention characteristics

In the bottom left corner, we have potential additional benefits and potential harms of the intervention. We've identified reduced financial and structural barriers to receiving services, reduced secondary traumatic stress for parents, and reduced staff turnover as potential additional benefits. We also acknowledge that there is the potential for harms as a result of culturally insensitive programs that may invalidate the experiences of historically marginalized groups.
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Appendix B

Search Strategy (Effectiveness Review):

Mental Health: Multi-Tiered Trauma-Informed School Programs to Improve Mental Health Among Youth

Search Query: Based on review search strategy from Emily Berger (6/22/2022)

Multi-tiered Approaches to Trauma-Informed Care in Schools: A Systematic Review

("positive behavio*" OR pbs OR pbis OR "response to intervention" OR rti OR "trauma informed" OR "trauma-informed" OR "trauma sensitive" OR "trauma-sensitive" OR tier* OR multitier* OR "multi-tier*" OR mtss) AND ("posttraumatic stress disorder" OR "post-traumatic stress disorder" OR "post traumatic stress disorder" OR ptsd OR trauma* OR violence OR abuse OR neglect* OR maltreat* OR adverse OR disaster OR terroris* OR war) AND (school) AND la.exact("English")

Limit English

Search database inception through 2018

English only.

Add student and other MESH terms

Search Strategy:

Database	Strategy	Run Date	Records
Medline (OVID) 1946-	1 (posttraumatic stress disorder or (post-traumatic adj2 stress adj2 disorder) or post traumatic stress disorder or ptsd or trauma* or violence or abuse or neglect* or maltreat* or adverse or disaster or terroris* or war).ti,ab. 2 Stress Disorders, Post-Traumatic/ or violence/ or adverse childhood experiences/ or Child Abuse/ 3 1 or 2 1340483 4 ((Multi* or tier* or multitier* or multi-tier* or mtss or multilevel or multi-level or (multiple adj2 tier*)) adj7 ((positive adj2 behavio*) or pbs or pbis or intervention* or (response adj2 intervention) or (trauma adj2 informed) or (trauma adj2 sensitive))).ti,ab. 39992 5 (school* or Nursery or daycare or kindergarten or pre-school or preschool or (elementary adj2 education) or (secondary adj2 education) or K-12 or child* or youth or adoles* or student*).ti,ab,kw,kf.	9/14/22	900

	6 schools/ or schools, nursery/ or exp Child Day Care Centers/ or Child, Preschool/ or exp Child/ or Adolescent/ 3308460 7 5 or 6 4157371 8 3 and 4 and 7 1504 9 exp Animals/ not exp Humans/ 5043578 10 8 not 9 1502 11 limit 10 to (english language and yr="1946-2018		
Embase (OVID) 1947-	1 (posttraumatic stress disorder or (post-traumatic adj2 stress adj2 disorder) or post traumatic stress disorder or ptsd or trauma* or violence or abuse or neglect* or maltreat* or adverse or disaster or terroris* or war).ti,ab. 1726276 2 violence/ or adverse childhood experiences/ or Child Abuse/ or child neglect/ or posttraumatic stress disorder/ 146985 3 1 or 2 1764084 4 ((Multi* or tier* or multitier* or multi-tier* or mtss or multilevel or multi-level or (multiple adj2 tier*)) adj7 ((positive adj2 behavio*) or pbs or pbis or intervention* or (response adj2 intervention) or (trauma adj2 informed) or (trauma adj2 sensitive))).ti,ab. 56794 5 (school* or Nursery or daycare or kindergarten or pre-school or preschool or (elementary adj2 education) or (secondary adj2 education) or K-12 or child* or youth or adoles* or student*).ti,ab. 2483665 6 school/ or nursery school/ or Child Day Care/ or exp Child/ or Adolescent/ or Day Care/ 3315014 7 5 or 6 4183449 8 3 and 4 and 7 1955 9 exp Animals/ not exp Humans/ 4022746 10 8 not 9 1951 11 limit 10 to (english language and yr="1947-2018"		1183 -743 duplicates = 440 unique items

PsycINFO (OVID) 1806-	(posttraumatic stress disorder or (post-traumatic adj2 stress adj2 disorder) or post traumatic stress disorder or ptsd or trauma* or violence or abuse or neglect* or maltreat* or adverse or disaster or terroris* or war).ti,ab. 432006 2 violence/ or adverse childhood experiences/ or Child Abuse/ or child neglect/ or posttraumatic stress disorder/ 105855 3 1 or 2 441079 4 ((Multi* or tier* or multitier* or multi-tier* or mtss or multilevel or multi-level or (multiple adj2 tier*)) adj7 ((positive adj2 behavio*) or pbs or pbis or intervention* or (response adj2 intervention) or (trauma adj2 informed) or (trauma adj2 sensitive))).ti,ab. 15970 5 (school* or nursery or daycare or kindergarten or pre-school or preschool or (elementary adj2 education) or (secondary adj2 education) or K-12 or child* or youth or adoles* or student*).ti,ab. 1495676 6 schools/ or exp boarding schools/ or exp charter schools/ or exp elementary schools/ or exp high schools/ or exp junior high schools/ or exp kindergartens/ or exp middle schools/ or exp nursery schools/ or exp school environment/ or adolescent health/ or exp Child Health/ or exp Childhood Development/ 189900 7 5 or 6 1515698 8 3 and 4 and 7 1100 9 limit 8 to (english language and yr="1806 - 2018)		779 -318 duplicates = 461 unique items
ProQuest Dissertations and Theses	((noft((multitier* OR "multi-tier*" OR mtss OR multilevel OR multi-tier OR "multiple tier:")) noft((("positive behavior" OR "positive behavioral" OR "positive behaviors" OR "positive behaviour" OR "positive behaviours") OR pbs OR pbis OR "response to intervention" OR rti OR "trauma informed" OR "trauma-informed" OR "trauma sensitive" OR "trauma-sensitive"))) AND noft("post traumatic stress disorder" OR ptsd OR trauma* OR violence OR abuse OR neglect* OR maltreat* OR adverse OR disaster OR terroris* OR war) AND noft((school* OR Nursery OR daycare OR kindergarten OR pre-school OR preschool OR "elementary education" OR "secondary education"		11 -5 duplicates =6 unique items

	OR K-12 OR child* OR youth OR adoles* or student*))) AND yr(1743-2018)		
Cochrane Library	1 ("posttraumatic stress disorder" OR "post-traumatic stress disorder" OR "post traumatic stress disorder" OR ptsd OR trauma* OR violence OR abuse OR neglect* OR maltreat* OR adverse OR disaster OR terroris* OR war):ti,ab (Word variations have been searched) 242162 #2 (multitier* OR "multi-tier*" OR mtss or multilevel or multi-tie*) NEAR/7 ("posttraumatic tress disorder" OR "post-traumatic stress disorder" OR "post traumatic stress disorder" OR ptsd OR trauma* OR violence OR abuse OR neglect* OR maltreat* OR adverse OR disaster OR terroris* OR war):ti,ab (Word variations have been searched) 58 #3 (school* or Nursery or daycare or kindergarten or pre-school or preschool or "elementary education" or "secondary education" or K-12 or child* or youth or adoles* OR student*):ti,ab (Word variations have been searched) 205765 #4 #1 AND #2 AND #3 with Cochrane Library publication date from Jan 1800 to Jan 2018, in Cochrane Reviews, Cochrane Protocols, Trials, Clinical Answers, Editorials and Special Collection		1 -0 duplicates = 1 unique items
ERIC (1966-)	noft((multi or tier* or multitier* OR "multi-tier*" OR mtss OR multilevel OR multi-tier OR "multiple tier") N/7 ("positive behavior" OR "positive behavioral" OR "positive behaviors" OR "positive behaviour" OR "positive behaviours" OR pbs OR pbis OR "response to intervention" OR rti OR "trauma informed" OR "trauma-informed" OR "trauma sensitive" OR "trauma-sensitive")) AND noft("post traumatic stress disorder" OR ptsd OR trauma* OR violence OR abuse OR neglect* OR maltreat* OR adverse OR disaster OR terroris* OR war) AND noft((school* OR nursery OR daycare OR kindergarten OR pre-school OR preschool OR "elementary		19 -12 duplicates = 7 unique items

	education" OR "secondary education" OR K-12 OR child* OR youth OR adoles* or student*) Limits: English Pub Year: 1966-2018		
Scopus	(TITLE-ABS ("posttraumatic stress disorder" OR "post-traumatic stress disorder" OR "post traumatic stress disorder" OR ptsd OR trauma* OR violence OR abuse OR neglect* OR maltreat* OR adverse OR disaster OR terroris* OR war)) AND (TITLE-ABS (tier* OR multitier* OR "multi-tier" OR mtss OR multilevel OR multi-tier OR "multiple tier") W/7 ("positive behavio*" OR pbs OR pbis OR "response to intervention" OR rti OR "trauma informed" OR "trauma-informed" OR "trauma sensitive" OR "trauma-sensitive")) AND (TITLE-ABS (school* OR nursery OR daycare OR kindergarten OR pre-school OR preschool OR "elementary education" OR "secondary education" OR k-12 OR child* OR youth OR adoles* OR student*)) AND (LIMIT-TO (PUBYEAR , 2018) OR LIMIT-TO (PUBYEAR , 2016) OR LIMIT-TO (PUBYEAR , 2015) OR LIMIT-TO (PUBYEAR , 2014) OR LIMIT-TO (PUBYEAR , 2013))		10 -9 duplicates = 1 unique items

Notes: Duplicates were identified using the Endnote automated "find duplicates" function with preference set to match on title, author and year, and removed from your Endnote library. There will likely be additional duplicates found that Endnote was unable to detect.

Appendix C
Included Studies (Effectiveness Review):
Mental Health: Multi-Tiered Trauma-Informed School Programs to Improve Mental Health Among Youth

Baez, J. C., Renshaw, K. J., Bachman, L. E., et al. Understanding the necessity of trauma-informed care in community schools: A mixed-methods program evaluation. Children & Schools, 2019;41(2): 101-110.

Beehler, S., Birman, D., & Campbell, R. The effectiveness of cultural adjustment and trauma services (CATS): Generating practice-based evidence on a comprehensive, school-based mental health intervention for immigrant youth. American Journal of Community Psychology, 2012;50: 155-168.

Diggins, J. Reductions in behavioural and emotional difficulties from a specialist, trauma-informed school. Educational and Developmental Psychologist, 2012;38(2): 194-205.

Dorado, J. S., Martinez, M., McArthur, L. E., & Leibovitz, T. Healthy Environments and Response to Trauma in Schools (HEARTS): A whole-school, multi-level, prevention and intervention program for creating trauma-informed, safe and supportive schools. School Mental Health, 2016;8: 163-176.

Ellis, B. H., Miller, A. B., Abdi, S., et al. Multi-tier mental health program for refugee youth. Journal of Consulting and Clinical Psychology, 2013;81(1): 129.

Hansel, T. C., Osofsky, H. J., Osofsky, J. D., et al. Attention to process and clinical outcomes of implementing a rural school-based trauma treatment program. Journal of Traumatic Stress, 2012;23(6): 708-715.

Holmes, C., Levy, M., Smith, A., et al. A model for creating a supportive trauma-informed culture for children in preschool settings. Journal of Child and Family Studies, 2015;24: 1650-1659.

Hutchison, M., Russell, B. S., & Wink, M. N. Social-emotional competence trajectories from a school-based child trauma symptom intervention in a disadvantaged community. Psychology in the Schools, 2020;57(8): 1257-1272.

Perry, D. L., & Daniels, M. L. Implementing trauma—informed practices in the school setting: A pilot study. School Mental Health, 2016;8: 177-188.

Shamblin, S., Graham, D., & Bianco, J. A. Creating trauma-informed schools for rural Appalachia: The partnerships program for enhancing resiliency, confidence and workforce development in early childhood education. School Mental Health, 2016;8: 189-200.

Tabone, J. K., Rishel, C. W., Hartnett, H. P., & Szafran, K. F. Examining the effectiveness of early intervention to create trauma-informed school environments. Children and Youth Services Review, 2020;113: 104998.

Appendix D

Summary Evidence Table (Effectiveness Review): Mental Health: Multi-Tiered Trauma-Informed School Programs to Improve Mental Health Among Youth

This table outlines information from the studies included in the Community Guide systematic review of Family-based Interventions to Prevent Substance Use Among Youth. It details study quality, population and intervention characteristics, and study outcomes considered in this review. Complete references for each study can be found in the Included Studies section of the review summary

Abbreviations Used in This Document:

- Intervention components
  - TIS: trauma-informed schools
  - SEL: social-emotional learning
  - CBITS: Cognitive Behavioral Intervention for Trauma in Schools
- Measurement terms
  - CI: confidence interval
  - pct pts: percentage points
  - SD: standard deviation
- Study design
  - RCT: randomized trial
- Other terms:
  - NA: not applicable
  - NR: not reported
  - NS: not significant
  - SES: socioeconomic status
  - ACEs: Adverse Childhood Events
  - PTSD: post-traumatic stress disorder

Notes:

- Suitability of design includes three categories: greatest, moderate, or least suitable design. Read more >>
- Quality of Execution – Studies are assessed to have good, fair, or limited quality of execution. Read more >>
- Race/ethnicity of the study population: The Community Guide only summarizes race/ethnicity for studies conducted in the
- United States.

Study	Population Characteristics	Intervention Characteristics	Results
Author, Year Baez, 2019 **Location** US: NY **Study design** Before-after **Suitability of design** Least **Quality of Execution: Fair** **Limitations: 2** Sampling, loss to follow-up	**Eligibility criteria for inclusion in evaluation** Student in participating school **Total sample population** Schools: 2 Students: 500 **Demographics** Age: NR Sex: NR Race/Ethnicity: 83.7% Hispanic, 12.6% Black, <2% White, 1.8% Asian SES: Low, "high poverty" 30-42%; high parental unemployment: 16-18%; >80% free lunch Disability: Special needs: 22.5-24.6% Trauma: 77% experienced 1 or more ACEs; 37% 2-3 ACEs; 18% 4+ ACEs Types of trauma experienced: Two most common were neighborhood violence, separation/divorce of parents	**Setting** School level: Middle School School grades: NR **Dates of implementation** 2015-2017 **Evaluation duration** 21 months **Geographic scale** Urban **Intervention:** Intervention name: NR Framework: NR Tier 1 Student Strategies: Screening, SEL Adult Strategies: Training for teachers, teacher/staff psychoeducation, parent engagement Programmatic/Policy Strategies: Field trips and assemblies, milieu support: transitions, family events, group celebrations Tier 2	**Internalizing/Externalizing Student Behaviors Combined** Outcome measure: Problem behaviors (externalizing, bullying, hyperactivity/inattention, and internalizing) measured by the Social Skills Improvement System Rating. Tier measured: Tier 1 Results: Pre: 1.75 Post: 1.62 Absolute difference: -0.13, NS Relative difference: -7.4% **Paper conclusions:** The evaluation found that students reported lower social skills and higher problem behaviors as the level of reported traumatic experience increased. In addition, students with higher reported levels of trauma reported more problem behaviors over the course of a school year, in spite of receiving additional interventions.

Study	Population Characteristics	Intervention Characteristics	Results
		Student Strategies: Trauma-specific group therapy, mentoring for chronic absenteeism Adult Strategies: NA Programmatic/Policy Strategies: Crisis de-escalation and mediation Tier 3 Student Strategies: Individual trauma-specific therapy, referrals or partnering to other local mental health providers, home-based intervention, family meetings Adult Strategies: NA Programmatic/Policy Strategies: NA Comparison: NA	
Author, Year Beehler 2012 **Location** US: NJ **Study design** Before-after **Suitability of design** Least	**Eligibility criteria for inclusion in evaluation** Schools in Jersey City and Clifton, NJ **Total sample population** Schools: 9 Students: 1034 **Demographics** Mean age: 14.4 Sex: 63.1% female Race/Ethnicity: NR	**Setting** School level: Elementary, Middle, High School School grades: K-12 **Dates of implementation** NR; Data were collected every 3 months; study took place over 3 years **Evaluation duration** 3 years	**PTSD** Outcome measure: PTSD Symptomology measured using the UCLA PTSD Reaction Index (RI) Tier measured: Tier 3 Results: Pre: 24.22 Post: 15.52 Absolute difference: -8.7 ($p<0.05$)

Study	Population Characteristics	Intervention Characteristics	Results
Quality of Execution: Fair **Limitations: 3** Sampling, data analysis, bias	Immigrant Status: 50% born outside of the US SES: Middle/high Disability: NR Trauma: Average of 4 traumatic events Types of trauma experienced: Community violence, traumatic loss or bereavement, physical maltreatment/abuse/assault, and domestic violence	**Geographic scale** Urban and suburban **Intervention:** Intervention name: Cultural Adjustment and Trauma Services (CATS) Framework: Family, Adult, and Child Engagement Services model Tier 1 Student Strategies: Screening, support for students who are upset or distracted in class, wraparound support Adult Strategies: Training for teachers, education for caregivers Programmatic/Policy Strategies: NA Tier 2 Student Strategies: Psychoeducation for at-risk students, screening, also provided tangible assistance to students and wraparound support Adult Strategies: NR Programmatic/Policy Strategies: Programming (school and program staff created a system to ensure new	Relative difference: -35.9% **Internalizing/Externalizing Student Behaviors Combined** Outcome measure: Functional impairment measured using the Child and Adolescent Functional Assessment Scale Tier measured: Tier 3 Results: Pre: 48.71 Post: 21.33 Absolute difference: -27.4 ($p<0.01$) Relative difference: -56.2% **Paper Conclusions:** CATS services resulted in improved functioning and fewer PTSD symptoms for their clients. Functional impairment decreased as a result of greater cumulative totals of supportive therapy, TF-CBT, and CBT services. PTSD symptoms decreased as a result of greater cumulative totals of TF-CBT and coordinating services.

Study	Population Characteristics	Intervention Characteristics	Results
		immigrant students were introduced to CATS program staff within the first week of arriving at school and created a special acculturation group to help orient them to the new culture and school). Tier 3 Student Strategies: Individual trauma-specific therapy, wraparound support Adult Strategies: Family therapy/meetings Programmatic/Policy Strategies: NA Comparison: NA	
Author, Year Diggins 2021 **Location** Non-US: Australia **Study design** Before-after **Suitability of design** Least **Quality of Execution: Fair** **Limitations: 2**	**Eligibility criteria for inclusion in evaluation** All students at one of the school campuses were exposed to the intervention, but only students with two valid data points were included in the analyses. **Total sample population** Schools: 1 Students: 64 **Demographics** Mean age: 12.5 Sex: 11% female	**Setting** School level: Elementary, Middle, High School School grades: K-12 **Dates of implementation** December 2018-December 2019 **Evaluation duration** 12 months **Geographic scale** Urban **Intervention**	**Internalizing/Externalizing Student Behaviors Combined** Outcome measure: Total difficulties (combination of emotional symptoms, conduct problems, hyperactivity, & peer problems) measured by the Strength & Difficulties Questionnaire Tier measured: Tier 1 Results: Pre: 25.0 Post: 17.75 Absolute difference: -7.3 ($p<0.01$) Relative difference: -29.0%

Study	Population Characteristics	Intervention Characteristics	Results
Data analysis, loss to follow-up	Race/Ethnicity: 22% Aboriginal or Torres Strait Islander SES: NR Disability: Many of the students in the population had existing diagnoses including autism spectrum disorder (50%), ADHD (50%), and anxiety (56%). Occupational Defiance Disorder (ODD) diagnosis = 22% Trauma: NR Types of trauma experienced: NR	Intervention name: The Rethinking Learning and Teaching Environments (ReLATE) Framework: SAMHSA principles of trauma informed care, 'Helping Traumatized Children Learn', and the National Child Traumatic Stress Network literature Tier 1 Student Strategies: Screening, SEL, psychoeducation, safety plans for all students Adult Strategies: Training for teachers, teacher/staff psychoeducation Programmatic/Policy Strategies: NA Tier 2 Student Strategies: Psychoeducation for at-risk students, screening, trauma-specific group therapy Adult Strategies: NA Programmatic/Policy Strategies: NA Tier 3 Student Strategies: Individual trauma-specific therapy	**Quality of Life** Outcome measure: Total impact (impact of students' behavior on family, homelife, friendships, learning and leisure activities) measured by the Strengths & Difficulties Questionnaire Tier measured: Tier 1 Results: Pre: 7.14 Post: 4.14 Absolute difference: -3.0 (p=0.08) Relative difference: -42.0% **Paper Conclusions:** This study demonstrated that over 12 months, a schoolwide trauma-informed intervention model led to a range of emotional and behavioral benefits with moderate to large effect sizes.

Study	Population Characteristics	Intervention Characteristics	Results
		Adult Strategies: Referrals/crisis support for trauma-impacted school staff Programmatic/Policy Strategies: NA Comparison: NA	
Author, Year Dorado 2016 **Location** US: CA **Study design** Before-after **Suitability of design** Least **Quality of Execution: Fair** **Limitations: 3** Description, measurement: exposure, other changes occurred simultaneously	**Eligibility criteria for inclusion in evaluation** Schools were chosen based on need, principal buy-in and good-enough infrastructure. **Total sample population** Schools: 4 Students: 1243 **Demographics** Mean age: 8.5 Sex: 47% female Race/Ethnicity: 38% African American, 4% Asian, 8% Pacific Islander, 4% Filipino, 2% White, 4% two or more Races, 1% American Indian or Alaska Native, 4% race/ethnicity not reported 34 % Hispanic or Latino of any race SES: Low, 76% students qualifying for free or reduced lunch Disability: NR Trauma: NR Types of trauma experienced: NR	**Setting** School level: Elementary, Middle School School grades: K-8th **Dates of implementation** 2009-2014 **Evaluation duration** 60 months **Geographic scale** Urban **Intervention** Intervention name: Health Environments and Response to Trauma in Schools (HEARTS) Framework: RTI, PBIS, RJ, The Attachment, Self-Regulation, and Competency (ARC) framework Tier 1	**Externalizing Student Behaviors** Outcome measure: Arousal regulation measured by the Child and Adolescent Needs and Strengths Tier measured: Tier 3 Results: Pre: 1.93 Post: 1.54 Absolute difference: -0.4 (p=0.000) Relative difference: -20.2% **Internalizing Student Behaviors** Outcome measure: Intrusions measured by the Child and Adolescent Needs and Strengths Tier measured: Tier 3 Results: Pre: 0.61 Post: 0.33 Absolute difference: -0.3 (p=0.026) Relative difference: -45.9%

Study	Population Characteristics	Intervention Characteristics	Results
		Student Strategies: Screening, SEL, psychoeducation Adult Strategies: Training for teachers, education for caregivers, community engagement Programmatic/Policy Strategies: school policy change Tier 2 Student Strategies: Psychoeducation for at-risk students Adult Strategies: Strategies for caregivers, wellness support for teachers/staff Programmatic/Policy Strategies: On-site consultation Tier 3 Student Strategies: Individual trauma-specific therapy, referrals or partnering to local mental health provider Adult Strategies: Referrals/crisis support for trauma-impacted school staff, family therapy/meetings	**Disciplinary actions** Outcome measure: # of disciplinary incidents measured by office referrals and suspensions Tier measured: Tier 1 Results: Pre: 674 Post: 87 Absolute difference: -587 ($p<0.001$) Relative difference: -87.1% Outcome measure: # of incidents involving physical aggression measured by office referrals and suspensions Tier measured: Tier 1 Results: Pre: 407 Post: 58 Absolute difference: -349 ($p<0.001$) Relative difference: -85.7% Outcome measure: # of out of school suspensions measured by office referrals and suspensions Tier measured: Tier 1 Results:

Study	Population Characteristics	Intervention Characteristics	Results
		Programmatic/Policy Strategies: District-wide focus to improve access to tier 3 services Comparison: NA	Pre: 56 Post: 3 Absolute difference: -53 (p<0.001) Relative difference: -94.6% **Quality of Life** Outcome measure: Adjustment to trauma (how students are able to function in daily living) measured by the Child and Adolescent Needs and Strengths Tier measured: Tier 3 Results: Pre: 1.96 Post: 1.50 Absolute difference: -0.46 (p=0.00) Relative difference: -23.5% **Paper Conclusions:** School personnel who responded to the Program Evaluation Survey reported significant increases in their understanding of trauma and use of trauma-sensitive practices, as well as significant improvements in their students' ability to learn, time on task and school attendance. Authors also report a significant drop in disciplinary office referrals, incidents involving physical aggression and out-of-school suspensions. HEARTS clients improved in their adjustment to trauma (how they are able to function in daily

Study	Population Characteristics	Intervention Characteristics	Results
			living), affect regulation (ability to identify, express and modulate emotions), intrusions (thoughts related to the trauma that impact attention and behavior), attachment (ability to relate to others and develop healthy relationships) and dissociation.
Author, Year Ellis 2013 **Location** US: New England **Study design** Before-after **Suitability of design** Least **Quality of Execution: Fair** **Limitations: 3** Description, loss to follow-up, bias	**Eligibility criteria for inclusion in evaluation** 1 school with Somali and Somali Bantu students who are English language learners **Total sample population** Schools: 1 Students: 30 **Demographics** Mean age: 13 Sex: 36.7% female Race/Ethnicity: 60% Somali, 40% Somali Bantu SES: NR Disability: NR Trauma: NR Types of trauma experienced: NR	**Setting** School level: Middle School School grades: 6-8 **Dates of implementation** 2008-2009 **Evaluation duration** 12 months **Geographic scale** Urban **Intervention** Intervention name: Project SHIFA (Supporting the Health of Immigrant Families and Adolescents) Framework: Inter-Agency Standing Committee's intervention pyramid for mental health and psychosocial support	**PTSD** Outcome measure: PTSD Symptomology measured by the UCLA PTSD RI-1 Tier measured: Tier 1, 2, and 3 Results: Pre: Tier 1 0.66, Tier 2 0.93, Tier 3 1.01 Post: Tier 1 0.43, Tier 2 0.36, Tier 3 0.66 Absolute difference: Tier 1 -0.23, Tier 2 -0.57, Tier 3 -0.35 Relative difference: Tier 1 -34.8%, Tier 2 -61.3%, Tier 3 -34.7% **Depression** Outcome measure: Depression symptoms measured by the Depression Self-Rating Scale Tier measured: Tier 1, 2, and 3 Results: Pre: Tier 1 0.35, Tier 2 0.49, Tier 3 0.65 Post: Tier 1 0.22, Tier 2 0.32, Tier 3 0.4

Study	Population Characteristics	Intervention Characteristics	Results
		Tier 1 Student Strategies: Screening, SEL Adult Strategies: NA Programmatic/Policy Strategies: NA Tier 2 Student Strategies: Screening, school-based skill-building psychotherapy Adult Strategies: NA Programmatic/Policy Strategies: NA Tier 3 Student Strategies: Individual trauma-specific therapy, referrals or partnering to local mental health providers, home-based interventions Adult Strategies: NA Programmatic/Policy Strategies: NA Comparison: NA	Absolute difference: Tier 1 -0.13, Tier 2 -0.17, Tier 3 -0.25 Relative difference: Tier 1 -37.1%, Tier 2 -34.7%, Tier 3 -38.5% **Quality of Life** Outcome measure: Resource hardship measured by the Post-War Adversities Scale Tier measured: Tier 1, 2, and 3 Results: Pre: Tier 1 0.15, Tier 2 0.16, Tier 3 0.18 Post: Tier 1 0.05, Tier 2 0.05, Tier 3 0.22 Absolute difference: Tier 1 -0.1, Tier 2 -0.11, Tier 3 0.04 Relative difference: Tier 1 -66.7%, Tier 2 -68.8%, Tier 3 22.2% **Paper Conclusions:** Participants in Tiers 2, 3, and 4 (equivalent to tiers 1, 2, and 3 by Community Guide's intervention definition) showed reductions in PTSD symptoms. Participants in all tiers showed reductions in symptoms of depression and participants in tiers 1 and 2 showed reductions in resource hardships over time.
Author, Year Hansel 2010 **Location** US: LA	**Eligibility criteria for inclusion in evaluation** Student in school that signed up for program, parental consent **Total sample population**	**Setting** School level: Elementary, Middle, High School School grades: 1-12 **Dates of implementation**	**PTSD** Outcome measure: Proportion meeting PTSD diagnostic criteria measured by the UCLA PTSD RI-1 Tier measured: Tier 3

Study	Population Characteristics	Intervention Characteristics	Results
Study design Before-after **Suitability of design** Least **Quality of Execution: Fair** **Limitations: 4** Description, sampling, loss to follow-up, bias	Schools: NR Students: 157 **Demographics** Mean age: 14.0 Sex: 47.8% female Race/Ethnicity: NR SES: Low, 73% (median) eligible for free/reduced price lunch; 19% median of 3 parishes below federal poverty level Disability: NR Trauma: Mean number of ACEs = 2.3 Types of trauma experienced: 63% traumatic loss/bereavement, 39% domestic violence, 28% impaired caregiver, 20% natural disaster, 11% community violence, 10% school violence, 9% sexual assault/rape, 9% emotional abuse, 6% sexual abuse, 5% physical abuse, there are others reported.	2003-2007 **Evaluation duration** NR **Geographic scale** Rural **Intervention** Intervention name: NR Framework: NR Tier 1 Student Strategies: Screening Staff/Caregiver Strategies: Training for teachers, teacher/staff psychoeducation, teacher/staff consultation Programmatic/Policy Strategies: NA Tier 2 Student Strategies: Screening Staff/Caregiver Strategies: NA Programmatic/Policy Strategies: On-site consultation Tier 3	Results: Pre: 26.1 Post: 17.9 Absolute difference: -8.2, p<.01 Relative difference: -31.5% **Externalizing Student Behaviors** Outcome measure: Anger measured by the Trauma Symptoms Checklist for Children Tier measured: Tier 3 Results: Pre: 8.1 Post: 6.8 Absolute difference: -1.3 Relative difference: -15.6% **Depression** Outcome measure: Depression symptoms measured by the Trauma Symptom Checklist for Children Tier measured: Tier 3 Results: Pre: 6.8 Post: 4.6 Absolute difference: -2.2, p<0.01 Relative difference: -32.1%

Study	Population Characteristics	Intervention Characteristics	Results
		Student Strategies: Individual trauma-specific therapy Staff/Caregiver Strategies: NA Programmatic/Policy Strategies: NA Comparison: NA	**Anxiety** Outcome measure: Anxiety measured by the Trauma Symptom Checklist for Children Tier measured: Tier 3 Results: Pre: 5.9 Post: 3.9 Absolute difference: -2.0, p<0.01 Relative difference: -34.5% **Paper Conclusions:** The result of the three-tiered approach proved effective in reducing trauma symptoms for some students exposed to traumatic events.
Author, Year Holmes 2015 **Location** US: Midwest **Study design** Before-after **Suitability of design** Least **Quality of Execution: Fair** **Limitations: 2**	**Eligibility criteria for inclusion in evaluation** Preschools with Head Start program **Total sample population** Schools: 3 Students: 1100 Teachers: 400 Parents/Caregivers: 81 **Demographics** Mean age: 4.25 Sex: 36% female Race/Ethnicity: 39% African American, 15% White, 8% Latino/Latina, 3% other, 35% no response	**Setting** School level: Pre-school School grades: Pre-K **Dates of implementation** 2011-2012 School Year **Evaluation duration** 24 months **Geographic scale** Urban **Intervention** Intervention name: Head Start Trauma Smart	**Externalizing Student Behaviors** Outcome measure: Externalizing behaviors measured by the Achenbach Teacher Report Tier measured: Tier 3 Results: Pre: 63.4 Post: 60.9 Absolute difference: -2.5, p<0.05 Relative difference: -3.9% **Student-Staff Relationships** Outcome measure: Emotional support domain measured by the Classroom Assessment Scoring System (CLASS)

Study	Population Characteristics	Intervention Characteristics	Results
Sampling, data analysis	SES: Low Disability: NR Trauma: 74% of the caregivers reported that their child had been exposed to at least one traumatic event, 60% reported at least two traumatic events, and close to one-half (45%) reported exposure to three or more traumatic events Types of trauma experienced: Most commonly reported trauma was having a family member in jail/prison or taken away by police (see Table 2 for trauma type frequency)	Framework: The Attachment, Self-Regulation, and Competency (ARC) framework Tier 1 Student Strategies: Screening Staff/Caregiver Strategies: Training for teachers, education for caregivers, parent engagement, staff mentoring/support, teacher/staff consultation, community engagement Programmatic/Policy Strategies: Structural change Tier 2 Student Strategies: Screening, staff provided individualized interventions for the child, such as play therapy Staff/Caregiver Strategies: Strategies for caregivers/community, classroom support Programmatic/Policy Strategies: NA Tier 3 Student Strategies: Individual trauma-specific therapy Staff/Caregiver Strategies: NA	Tier measured: Tier 3 Results: Pre: 4.6 Post: 5.33 Absolute difference: 0.73 Relative difference: 15.9% **Paper Conclusions:** Significant improvements were seen in the teacher report of key externalizing outcomes. Parents noted positive changes in both internalizing and externalizing behaviors. Parents, teachers, and administrators generally reported satisfaction with the HSTS program.

Study	Population Characteristics	Intervention Characteristics	Results
		Programmatic/Policy Strategies: NA Comparison: NA	
Author, Year Hutchison 2019 **Location** US: CT **Study design** Before-after with concurrent comparison **Suitability of design** Greatest **Quality of Execution** Fair **Limitations: 2** Measurement (exposure), data analysis	**Eligibility criteria for inclusion in evaluation** Students must attend participating school. Schools selected based on comparable characteristics. Consent to participate. **Total sample population** Total sample population Schools: 2 Students: 245 **Demographics** Mean age: 8.7 years old Sex: 44.5% female Race/Ethnicity: 71% Black, 15% Hispanic, 7% Multi-racial, 8% other or unknown SES: Mixed, 54% from households with low income Disability: NR Trauma: NR Types of trauma experienced: NR, communities characterized by indicators of increased risk to community violence including high unemployment, high poverty, and high crime rates	**Setting** School level: Elementary, Middle School grades: K-8 **Dates of implementation** Varies; measures completed in September, January, and May for a two-year school period **Evaluation duration** 24 months **Geographic scale** Urban **Intervention** Intervention name: Aspire Connect Thrive (ACT) program Framework: Aspire, Connect, Thrive Tier 1 Student Strategies: Screening, SEL, student-peer support, academic support Staff/Caregiver Strategies: Training for teachers, parent engagement	**PTSD** Tier measured: Tier 1 Outcome measure: Total score from trauma checklist measured by the Trauma Symptom Checklist for Young Children - Short Form (TSCYC); ages 3-8. Results: Intervention Control Pre 24.2 24.8 Post 24.1 25.6 Absolute difference: -0.92 Relative difference: -3.7% Outcome measure: Total score from trauma checklist measured by the Trauma Symptom Checklist for Children - Short Form (TSCC); ages 8-16 Results: Intervention Control Pre 7.1 6.6 Post 7.2 6.4 Absolute difference: 0.26 Relative difference: 3.5%

Study	Population Characteristics	Intervention Characteristics	Results
		Programmatic/Policy Strategies: Programming Tier 2 Student Strategies: Psychoeducation Staff/Caregiver Strategies: NA Programmatic/Policy Strategies: NA Tier 3 Student Strategies: Individual trauma-specific therapy, referrals or partnering to local mental health provider Staff/Caregiver Strategies: Referrals/crisis support for trauma impacted school staff Programmatic/Policy Strategies: NA Comparison: Comparable elementary school that did not receive the intervention	**Paper Conclusions:** No significant changes were found in PTSD symptoms. The authors found increased levels of social-emotional competence (SEC) as indicated by the teacher-completed rating scale for those who participated in the ACT intervention compared to those who did not. Those with elevated trauma scores at baseline reported increased SEC benefits.
Author, Year Perry 2016 **Location** US: CT **Study design**	**Eligibility criteria for inclusion in evaluation** Must be a New Haven public school; willing to implement the program **Total sample population** Schools: 1	**Setting** School level: School serving pre-k-middle school aged children School grades: School serves pre-k-8th grade, intervention implemented in 5th and 6th grades	**PTSD** Outcome measure: Proportion of participants with PTSD Symptomology measured using the UCLA PTSD Reaction Index (RI)

Study	Population Characteristics	Intervention Characteristics	Results
Before-after **Suitability of design** Least **Quality of Execution** Fair **Limitations: 3** Sampling, measurement (exposure), bias	Students: 77 **Demographics** Age: 10-12-year-olds Sex: NR Race/Ethnicity: 82% African American, 5% White, 13% Hispanic SES (info is for entire school): Low, 76% of students eligible for Free Lunch; 5% eligible for Reduced Lunch Disability: NR Trauma:41% saw someone in their town being beaten, shot, or killed; 65% knew about violent death or serious injury of a loved one Types of trauma experienced: Community and family violence	**Dates of implementation** NR **Evaluation duration** Intervention implemented over the school year **Geographic scale** Urban **Intervention** Intervention name: Professional Development; Care Coordination, Clinical Services workshops, Clinical Services CBITS Framework: Milwaukee Wraparound philosophy Tier 1 Student Strategies: Screening, Psychoeducation Staff/Caregiver Strategies: Training for teachers and nonteaching staff Programmatic/Policy Strategies: NR Tier 2 Student Strategies: Screening, psychoeducation, trauma-specific group therapy (CBITS)	Tier measured: Tier 2 Results: Pre: 100.0 Post: 17.0 Absolute difference: -83.0 pct pts (p-value NR) Relative difference: -83.0% **Paper Conclusions:** The Clifford Beers Clinic (CBC) was able to provide some guidance that assisted school staff and/or community members in learning about trauma sensitive practices (tier 1); identifying students in need of trauma-informed support (tier 2); implementing systems to provide trauma-informed services to students (tier 3); and helping students learn skills in how to cope with current symptoms and how to respond to future stress (tier 3).

Study	Population Characteristics	Intervention Characteristics	Results
		Staff/Caregiver Strategies: Strategies for caregivers Programmatic/Policy Strategies: NR Tier 3 Student Strategies: Wraparound support Staff/Caregiver Strategies: NR Programmatic/Policy Strategies: NR Comparison: NA	
Author, Year Shamblin 2016 **Location** US: OH **Study design** Before-after **Suitability of design** Least **Quality of Execution** Fair **Limitations: 3** Description, sampling, data analysis	**Eligibility criteria for inclusion in evaluation** Pre-K classrooms funded by the HRSA Outreach Grant or through Project LAUNCH **Total sample population** Schools: 5 Students: 217 **Demographics** Age: NR Sex: NR Race/Ethnicity: NR SES: Low, reported as population with economic hardship Disability: NR Trauma: NR Types of trauma experienced: NR	**Setting** School level: Preschool School grades Pre-K **Dates of implementation** 2011-2012 **Evaluation duration** 12 months **Geographic scale** Rural **Intervention** Intervention name: Project LAUNCH (Linking Action to Unmet Needs) and Partnerships Program Framework: Early Childhood Mental Health Consultation (ECMHC) models	**Externalizing behavior** Outcome measure: Self-control measured by Devereux Early Childhood Assessment (DECA) Tier measured: Tier 1 Results: DECA results for the intervention group outperformed the control (increased scores on child self-control) **Student-staff relationships** Outcome measure: Positive attributes measured by Classroom Environment and Teacher Practices Tier measured: Tier 1 Results:

Study	Population Characteristics	Intervention Characteristics	Results
		Tier 1 Student Strategies: Screening, SEL Staff/Caregiver Strategies: Teacher training, staff peer mentoring/support, Programmatic/Policy Strategies: NR Tier 2 Student Strategies: Screening, behavior plans for students Staff/Caregiver Strategies: Strategies for caregivers, classroom support Programmatic/Policy Strategies: NR Tier 3 Student Strategies: Individual trauma-specific therapy Staff/Caregiver Strategies: NR Programmatic/Policy Strategies: NR Comparison: NA	Pre: 4.29 Post: 4.28 Absolute difference = -0.01 (p=0.91) Outcome measure: Negative attributes measured by Preschool Mental Health Climate Scale Tier measured: Tier 1 Results: Pre: 1.38 Post: 1.15 Absolute difference = -0.23 (p=0.004) (Favorable) **Paper Conclusions:** By positively impacting the resilience of children through the development of compassionate teacher relationships, the Partnerships Program, Project LAUNCH and participating schools have potentially made contributions toward diminishing the effects of trauma.
Author, Year Tabone 2020 **Location** US: WV **Study design**	**Eligibility criteria for inclusion in evaluation** Schools needed to be in the rural panhandle of West Virginia Total sample population Schools: 11	**Setting** School level: elementary School grades: pre-K thru first grade **Dates of implementation**	**Student-Staff Relationships** Outcome measure: Emotional support domain of the Classroom Assessment Scoring System (CLASS) Tier measured: Tier 1

Study	Population Characteristics	Intervention Characteristics	Results
Before-after with concurrent comparison group **Suitability of design** Greatest **Quality of Execution** Fair **Limitations: 4** Description, sampling, loss to follow-up, bias	Students: 94 classrooms (does not report # of students) **Demographics** Age: assume 4-7 based on grade level Sex: NR Race/Ethnicity: NR SES: NR Disability: NR Trauma: NR, but mentions over half of children in West Virginia experience at least one traumatic event including parental opioid overdose Types of trauma experienced: Over half of children in West Virginia experience at least one traumatic event including parental opioid overdose	2015/16 school year through 2018/19 school year **Evaluation duration** 36 months **Geographic scale** Rural **Intervention** Intervention name: Trauma-Informed Elementary Schools (TIES) Framework: The Attachment, Self Regulation, and Competency (ARC) framework Tier 1 Student Strategies: Screening, SEL Staff/Caregiver Strategies: Classroom training for teachers, training for other school staff, education for parents/caregivers Programmatic/Policy Strategies: NR Tier 2 Student Strategies: Screening, psychoeducation Staff/Caregiver Strategies: Wellness support for school staff	Results: Intervention Control Pre 5.35 5.65 Post 5.96 5.61 Adjusted difference = 0.95 ($p<0.001$) (favorable) **Paper Conclusions:** The current study found evidence of beneficial effects of the TIES program in cultivating a trauma-sensitive school climate and culture.

Study	Population Characteristics	Intervention Characteristics	Results
		Programmatic/Policy Strategies: NR Tier 3 Student Strategies: Individual trauma-specific therapy, Referrals or partnering with local mental health provider Staff/Caregiver Strategies: NR Programmatic/Policy Strategies: NR Comparison: classrooms that did not receive the TIES intervention	

Study	Setting and Population Characteristics	Intervention Characteristics	Results
Author year: Abu-Fraiha 2023 **Study design:** before-after with concurrent comparison group **Suitability of design:** greatest **Quality of execution:** good	**Location:** Israel **Population density:** mixed (urban, suburban, rural) **Eligibility criteria:** all LTC communities within Israel **Sample size**: # of communities: 1107 # of residents: 100,046 # of staff: 62,159 **Community type:** LTC communities, all included **Community characteristics:** 315 NHs; 792 not NHs **Population served:** older adults, people with disabilities **Demographics for residents in intervention group:** NR	**Intervention period examined:** 19 weeks **Evaluation period:** intervention ongoing **Intervention details**: Infectious agent: SARS-CoV-2 NPIs evaluated: Individual: NR Community: testing (routine testing; SHS and PD when tested positive) Environmental: NR Additional services provided: resource deployment (assistance with personnel to replace staff in isolation) Guidelines used for decision making: national Decision maker for implementing NPIs: national **Comparison group**: Israeli national data from pre- and post-intervention	**Outcomes reported:** hospitalization due to infection; mortality due to infection overall; mortality due to infection, ≥75 years; proportion of LTC communities with reduced sized outbreaks **Infection lab confirmed or self-report:** N/A **Results**: Hospitalization due to infection: Absolute difference: -2.2 pct pts Relative difference: -16.0% Mortality due to infection, overall: Absolute difference: -15 pct pts Relative difference: -33.1% Mortality due to infection, ≥75 years of age: Absolute difference: -11.5 pct pts Relative difference: -21.7% Proportion of outbreaks designated as decreased sized outbreaks (less than 5 residents infected in the 2 weeks following a staff member tested positive for SARS-CoV-2): Absolute difference: 62.4 pct pts Relative difference: 305.3%
Author year: Allan-Blitz 2022 **Study design:** single group before-after **Suitability of design:** least	**Location:** Florida, U.S. **Population density:** mixed (urban, suburban, rural) **Eligibility criteria:** employees and residents of LTC communities in Florida	**Intervention period examined:** 42 weeks **Evaluation period:** NR **Intervention details:** Infectious agent: SARS-CoV-2 NPIs evaluated:	**Outcomes reported:** relationship between testing frequency and reduction in COVID cases among residents **Infection lab confirmed or self-report:** lab-confirmed **Results:** Narrative summary