Communities That Care

Toolkit technical report

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About Youth Endowment Fund

The Youth Endowment Fund's mission is to prevent children and young people becoming involved in violence. They do this by finding out what works and building a movement to put this knowledge into practice. The fund was established in March 2019 by children's charity Impetus, with a £200m endowment and ten-year mandate from the Home Office. For more information, please visit www.youthendowmentfund.org.uk.

About National Children's Bureau

The National Children's Bureau works collaboratively across the issues affecting children to influence policy and get services working together to deliver a better childhood. They were commissioned by the Youth Endowment Fund (YEF) as their Toolkit Partner 2023-2026.

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Abstract/Plain Language Summary

This report presents findings from a mixed methods systematic review of the *Communities That Care* (CTC) prevention system, which is designed to reduce youth problem behaviours by empowering local stakeholders to implement evidence-based interventions. It includes a multi-level meta-analysis (MLMA) of impact studies and a narrative review of associated implementation papers. The meta-analysis systematically assessed the effectiveness of CTC on reducing youth violence and offending behaviour, drawing on data from 13 studies and 41 effect sizes, and explored potential moderators that may explain variation in outcomes across studies. The meta-analyses found an overall seven percent reduction in risk of youth violence and offending behaviour for areas using the CTC interventions (RR = 0.93**;** 95% CI: 0.84 to 1.02) versus those that did not. This positive finding is substantial but not statistically significant. Given the small number of studies and resulting lack of statistical power to detect small differences, the level of certainty of this finding is low. There was no strong evidence to suggest that there were differences in effectiveness based on location (country) or presence of violent behaviour, though there was weak evidence suggesting that decreases in violent behaviour were larger than decreases in offending behaviour.

The narrative review of n=24 implementation papers found several barriers and facilitators related to implementation success, as well as some key strategies that may lead to better uptake and fidelity. For an area to effectively implement CTC, key factors include the community's adoption of a science-based approach to prevention, selecting areas that have a culture and history of evidence-based programme use and of evaluation, as well as the foundations for an active coalition in the form of community capacity and partnerships. By synthesising evidence from experimental, quasi-experimental designs and process evaluations, this report contains robust, policy-relevant insights into the conditions under which CTC is most effective.

Objective and Approach

The aim of the present mixed methods review is to systematically scrutinise the available evidence about the effectiveness of CTC in reducing youth violence and offending behaviour; identify potential barriers and facilitators of effective

implementation of CTC; and identify strategies that are likely to be associated with high quality implementation.

Our approach is to conduct a systematic review, including a meta-analysis, of:

1. High quality causal studies measuring the effectiveness of CTC on decreasing violence and offending behaviours.
2. Assess these and directly related implementation and process studies to obtain information about implementation efforts.

The detailed objectives of the meta-analysis are threefold. First, it seeks to estimate the overall effectiveness of the *Communities That Care* (CTC) prevention system in reducing youth violence and its antecedents. Second, it aims to examine the extent to which characteristics of the participants or intervention sites moderate the effects of CTC interventions. Third, the review investigates how features related to the intervention itself, its implementation, and the methodological design of the included studies may influence observed outcomes. Together, these provide a comprehensive and nuanced understanding of what is known about the conditions under which CTC is most effective. The detailed objectives for the implementation portion of the review are to identify key factors for successful implementation, potential implementation barriers and challenges, and strategies to support successful implementation.

Our specific research questions are as follows:

1. **CTC effectiveness:**

   RQ1: Is CTC effective at reducing youth violence and its antecedents?

   RQ2: Do contextual features of the place (e.g., geography, population size, local crime statistics etc.) and participants' characteristics (e.g., age, sex, ethnicity) affect the impact of the CTC youth violence intervention (i.e., sub-group analysis and/or meta-regression)?

   RQ3: Do features of the interventions, implementation, and methodology affect the impact of CTC youth violence and its antecedents?

2. **CTC implementation processes:**

RQ4: What are the enablers of and barriers to effective implementation (including participation and achieving outcomes), and what strategies and approaches, are identified?

The multi-level meta-analysis (MLMA) is based on findings from n=4 primary studies and n=11 associated reports, most of them longer term follow-ups of Hawkins (2008) original study. A further n=24 associated implementation and process studies were also included[1]. The primary studies used in the meta-analysis (Table 1) consisted of one RCT (e.g., Hawkins, 2008) and three QEDs (e.g., Feinberg, 2007; Gorman-Smith, 2024). QEDs had a range of strategies to account for selection bias including marginal mean weighting (e.g., Gorman-Smith, 2024), and controlled time-series (e.g., Feinberg, 2007). Three of the four studies were conducted in the US (Hawkins et al., 2008; Chilenski et al., 2019; Gorman Smith et al., 2024) and one in Australia (Toumbourou et al., 2019). Studies were generally large in sample size (n=4,400 to 470,795) as the program was delivered to entire populations of distinct geographic locations (e.g., all children in a school district). Children and young people eligible to receive the intervention and who were surveyed tended to be age 11 years and older. Accredited CTC trainers were used to help design and deliver the CTC processes for the Australian (Toumbourou, 2019) and original multisite trial in the US (Hawkins, 2018) though it was unclear whether the other two sites were similarly administered. The delivery of services selected and delivered through the CTC process included services with strong evidence of effectiveness (e.g., Triple P) and those that were less well defined and evidenced and some that appeared to be bespoke programs unique to location (e.g., Bronzeville). All CTC programs were strongly rooted in schools and data collection was always conducted using specific cohorts of students in schools as the sampling frame.

Table 1. Distribution of 13 publications nested in 4 datasets for the multi-level meta-analysis.

[1] The total number of unique papers included in this review is 35 as the implementation review includes 5 impact papers where features of implementation were described.

Country	Publications	Publication Year	Data Collection Period	Place	Population	Type of Young People Involved (baseline)	Who Delivers the CTC	Who Delivers the EBP Programs	Setting	Program Length
Australia	2 studies	2019-2021	1999-2019	Victoria and Western Australia (Rural and Metropolitan)	N=41,328 (data only available for Toumbourou et al., 2019)	Students; M age=13.5 years; SD=1.7; M grade=8; 51.7% female (data only available for Toumbourou et al., 2019)	An accredited trainer	NR; example programs included Triple P-Positive Parenting Program, and Big Brothers Big Sisters	Schools	NR
USA-P	1 study	2019	2001-2011	Pennsylvania (Rural)	N=470, 795	Students in Grades 6, 8, 10, and 12	NR	NR; example programs included prenatal home visiting, adolescent school programs, and family therapy	Schools	NR
USA-C	1 study	2024	2010-2020	Bronzeville, Chicago (Urban)	NR	Students in the area, which was described as having some of the highest violent crime rates in Chicago	NR	Varied, e.g., family group leaders for the GREAT Families Program, and mentors for the Check & Connect program	Schools	NR
USA-M	9 studies	2008-2023	2004-2016	Multisite (Rural): Colorado, Illinois, Kansas, Maine, Oregon, Utah, and Washington (CYDS)	N=4,407	Students from grades 5–7 (M age=11.1 years, SD=0.4; 50% male)	Certified CTC trainers	Local providers, e.g., teachers, health and human service workers, and volunteers	Schools	Six to 12 months

The implementation and process component was based on a narrative synthesis of qualitative thematic findings (completed by the second author) from 24 publications that outline key enablers and barriers to effective implementation of CTC, as well as strategies and approaches to support implementation. Each of the 24 publications were related to impact studies reviewed in the meta-analysis, and

most of the publications were related to the USA-M study (15/24, 62.5%) with smaller numbers relating to the Netherlands study (3/24, 12.5%)[2], the Australia study (3/24, 12.5%), the USA-P study (2/24, 8.3%), and the USA-C study (1/24, 4.2%).

Description of the Intervention

Communities That Care (CTC) is a community-based prevention system designed to reduce adolescent engagement in substance use, delinquency, violence, and other risk behaviours by mobilising local stakeholders to implement evidence-based preventive interventions tailored to the specific needs of their communities. Developed by Hawkins and Catalano (1992), the model is grounded in the Social Development model, which posits that strengthening protective factors while mitigating risk factors can reduce the likelihood of youth engaging in problem behaviours.

CTC is not a direct service intervention but a coalition-based operating system that guides communities through a five-phase process, each consisting of defined milestones and benchmarks to guide implementation, ensure fidelity and monitor progress:

1. **Getting Started** (assessing community readiness and securing key leaders' support)
2. **Getting Organised** (establishing a diverse and representative community coalition)
3. **Developing a Community Profile** (using community-specific epidemiological data to identify risk factors and protective factors to prioritise)
4. **Creating a Community Action Plan** (selecting and planning the implementation of tested and effective programmes based on the findings from the community profile)

[2] The Netherlands study was later dropped from the meta-analysis for methodological reasons. Further justification is provided in the subsection on 'how effective is the evidence?'

5. **Implementing and Evaluating** (implementing the selected programmes and monitoring outcomes).

The intervention typically unfolds over a two- to five-year period**,** with initial phases emphasising capacity building and later phases focusing on implementation and sustainability. CTC is delivered in a face-to-face format through structured workshops, facilitated meetings, and technical assistance sessions, including site visits, provided by certified trainers throughout. While most training and facilitation occurs in-person, some support components may be adapted for virtual or hybrid delivery depending on community context.

The five phases are further outlined in Table 2 below.

Table 2. Phases of the CTC Framework

Phase	Focus	Key Activities
1	Getting Started	• Assessing community readiness • Recruiting key leaders and stakeholders • Identifying any barriers to implementation
2	Getting Organised	• Establishing a community coalition • Attending training sessions on prevention science • Developing an implementation timeline and shared vision
3	Developing a Community Profile	• Administering CTC Youth Survey • Identifying priority risk and protective factors • Conducting a community resource assessment
4	Creating a Community Action Plan	• Developing an implementation and evaluation plan • Selecting tested and effective evidence-based programmes to address priorities • Setting measurable goals and outcomes
5	Implementing and Evaluating	• Implementing selected evidence-based programmes • Monitoring progress and changes in youth outcomes • Ensuring ongoing reviews and updates to action plan

- Raising awareness and support in the community

Delivery and Implementation

The CTC model is delivered by community coalitions composed of local stakeholders, including educators, public health officials, social workers, law enforcement, parents, and youth representatives. The CTC Coordinator**,** a trained local facilitator or project lead, oversees implementation and liaises with certified CTC trainers who deliver a series of structured training modules, such as:

- *Community Board Orientation*
- *Key Leader Orientation*
- *Youth Survey Data Interpretation*
- *Program Selection and Implementation Fidelity*

The CTC Coordinator role is employed by the local area delivering CTC, but is trained and supported by CTC centrally in the US (or their delegates in other countries). Training is manualised and standardised, ensuring fidelity across implementation contexts. Materials include printed handbooks, training guides, online resources, planning templates, and the *CTC Youth Survey*, which is administered to collect population-level data on risk and protective factors.

No specialised equipment is required for implementation. However, data collection software and survey analysis tools are used to gather and interpret community data which provides an evidence base for decision-making and action planning. Fidelity monitoring tools are provided to ensure adherence to the selected programs' protocols and to support continuous quality improvement.

Setting and Intensity

CTC activities are carried out in community-based settings**,** including schools, town halls, community centres, and local government offices. The intervention's intensity varies by phase but typically includes monthly coalition meetings**,** periodic full-day training sessions**,** ongoing technical assistance**.** Selected evidence-based programs (e.g., LifeSkills Training, Strengthening Families, Guiding Good Choices) are then implemented with target populations (e.g.,

school-aged children, families, caregivers) depending on the community's prioritised risk profile.

CTC operates as a preventive system-building strategy rather than a stand-alone intervention, offering communities a structured framework for aligning local efforts around tested and effective practices. Its emphasis on community ownership, data-driven planning, and rigorous implementation monitoring has been shown to produce sustained reductions in adolescent substance use, delinquency, and violence (Hawkins et al., 2009; Oesterle et al., 2015). The intervention's durability and scalability have been demonstrated across diverse geographic and sociocultural contexts, making it one of the most widely replicated community prevention models globally.

CTC Theory of Change

The CTC model is theorised to achieve population-level improvements in adolescent health and behaviour problems through changes in five key community-level constructs that make up a community's prevention system (Brown et al., 2014).

1. **Adoption of a science-based approach to prevention**

At the foundation of CTC's theory of change is the adoption of science-based approach to prevention. This involves the use of data-driven decision-making grounded in public health and community mobilisation principles. This construct is the primary driver behind the adoption and implementation of tested, effective evidence-based interventions at scale and with fidelity.

2. **Community collaboration on prevention initiatives**

The second construct focuses on the importance of collaboration across sectors, and involves strengthening networks, improving communication, and enhancing coordination and resource sharing across services and stakeholders. Improved collaboration supports both high-quality implementation of interventions and builds a shared sense of responsibility and collective ownership within the community.

3. **Community support for prevention**

The third construct is community support for prevention, which refers to wide-spread positive beliefs and attitudes toward prevention efforts, as well as a demonstrated willingness to allocate funding and resources, despite competing community prioritises.

4. **Community norms against adolescent drug use**

Rooted in social normative theory (Ajzen and Fishbein, 1980, as cited in Brown et al., 2014), the fourth construct focuses on widely held community beliefs about the acceptability of adolescent drug and substance use. Strengthening anti-drug norms is theorised to reduce normative approval of risk behaviours, therefore reducing these behaviours among youth.

5. **Use of the Social Development Strategy**

The final construct is the use of the Social Development Strategy, which is a theoretical framework that promotes youth wellbeing through the provision of:

a) Opportunities for prosocial engagement
b) Development of social, emotional and cognitive skills
c) Positive recognition and reinforcement.

These act as methods to create strong attachments and commitment to prosocial peers, adults and the wider community, therefore reducing the likelihood of engagement in problem behaviours.

Together these five constructs form the CTC theory of change. Improvements in these constructs are theorised to act as mediators through which CTC leads to improvements in adolescent health and behaviour outcomes. Empirical evidence presented by Brown et al. (2014) provide support for this theory of change, demonstrating that communities achieving sustained progress in these constructs show reductions in youth problem behaviours over time. Specifically, findings from Brown et al. (2014) emphasise the uptake of a science-based approach to prevention (e.g. training participation, technical support and assistance) as critical to delivering the effects of the CTC intervention on youth problem behaviours.

How Effective is the Intervention?

Communities That Care (CTC) is associated with a low impact, corresponding with a 10% reduction in violence outcomes. This result is based on 41 effect sizes drawn from 13 studies, and substantial variation was observed in the results.

Table 2 Summary of findings on violence and crime outcomes

Outcome	*D*[a] (% reduction)	CI (95%)	P	Impact rating	Number of studies (No. of ES)	Evidence security rating
Overall	−0.040 (5%)	[−0.096 to 0.011]	ns	Low	13 (41)	Low
Offending behaviour[3]	-0.01 (1%)	[-0.083, 0.068]	ns	No effect	10 (19)	Low
Violence	-0.07 (10%)	[-0.159, 0.006]	ns	Low	7(22)	Very low

Note:

a. As requested by the funder, we have transformed RR into Standardised Mean Difference to estimate the Impact Rating. We suggest using this transformation with caution. Evidence from methodological experimentation suggests that transforming RR into SMD could introduce bias when interventions are place based and commonly occurring assumptions are not met (Wilson, 2021).

To contextualise our analytic strategy, it is important to note that many included studies are not fully independent. Although the review cites 13 publications, these draw on only four unique datasets from distinct implementations of the Communities That Care (CTC) system: (1) Victoria, Australia; (2) Pennsylvania, USA; (3) Chicago, USA; and (4) a multi-state dataset spanning Colorado, Illinois, Kansas, Maine, Oregon, Utah, and Washington, USA—hereafter the Community Youth Development Study (CYDS). In several instances, multiple publications report on the same project or population, often with overlapping samples, outcome measures, or time points. Treating them as independent in a traditional meta-analysis would risk underestimating the standard errors and overestimating the precision of our estimates.

[3] One of the outcomes included in this review was defined as delinquency, encompassing both criminal acts and antisocial behaviour. For consistency with YEF terminology, we refer to this outcome as offending behaviour' throughout the report.

To appropriately account for this dependency, we employed a **multilevel meta-analysis**. This approach allows us to model the data at two levels: effect sizes nested within studies or datasets. In practical terms, it means we can estimate the overall effect of CTC while properly accounting for the fact that some studies are based on shared sources of data. It also enables us to examine between-study and within-study variation in effect sizes more accurately (Harrer et al 2021, Pustejovsky et al. 2022). This method provides a more robust and realistic estimate of the impact of CTC and allows us to explore moderators while maintaining the integrity of the statistical analysis.

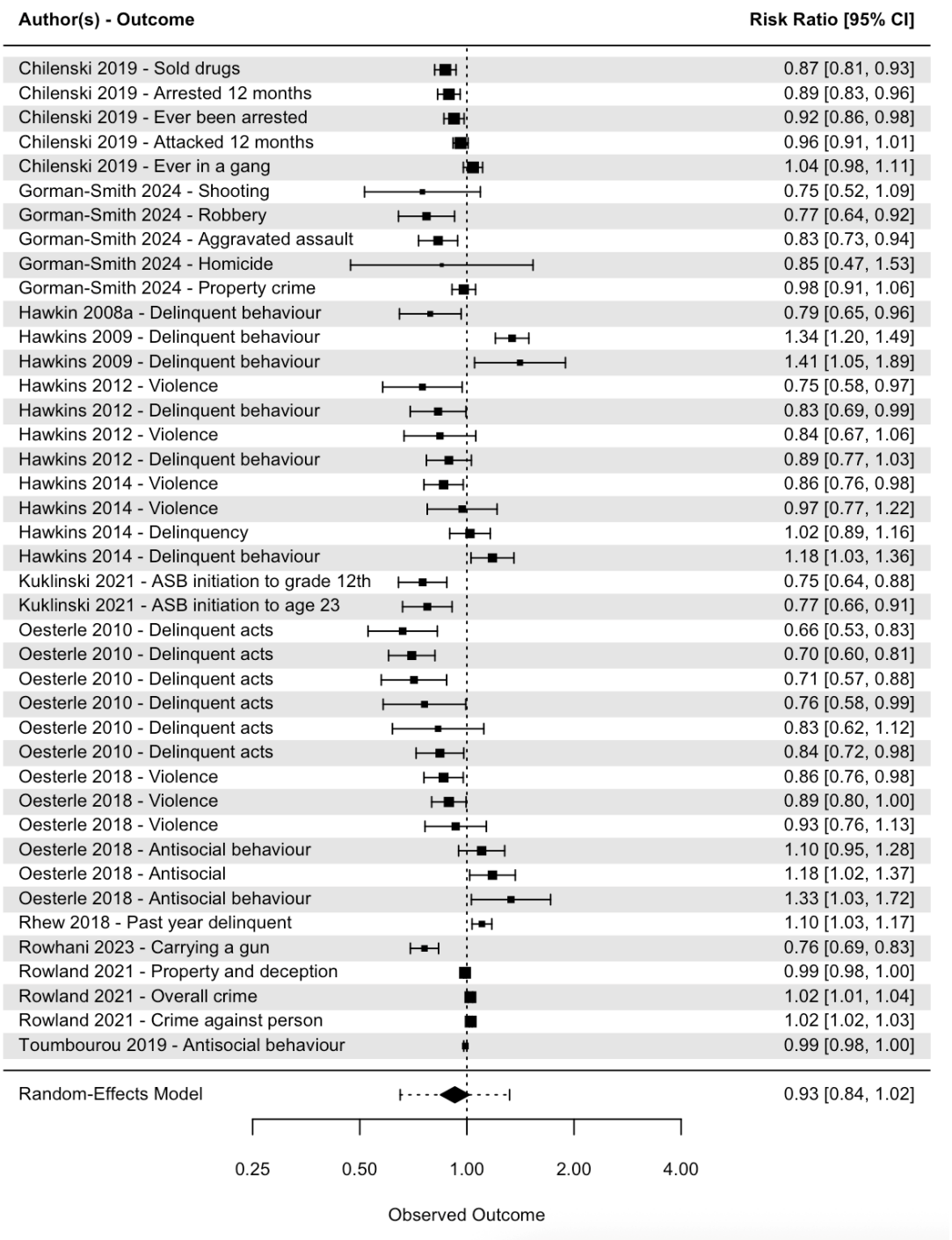
To account for potential dependence among effect sizes within studies, a robust variance estimation model assuming a constant within-study correlation ($\rho = 0.8$) was fitted. The choice of $\rho = 0.8$ reflects a conservative assumption commonly used in human research fields such as psychology and education, where effect sizes derived from the same sample (e.g., multiple outcomes or time points) are likely to be strongly correlated (Williams, Yan, Warton and Nakagawa (2025). A three-level random-effects meta-analysis was conducted using robust variance estimation to account for dependence among effect sizes. The analysis included 41 effect sizes derived from 13 studies (see Figure 1 for study-level details).

Overall, the pooled estimate of the log Risk Ratio (logRR) was −0.078 (robust SE = 0.0437; *df* = 11.68), corresponding to a Risk Ratio (RR) of 0.93 (95% CI: 0.84 to 1.02). Based on YEF impact categorisation, the effect size (*d* = -0.05) corresponds to a **"low impact"** rating, corresponding with a 5% reduction on crime and violence outcomes.

Heterogeneity was present at both levels of the model. Between-study variance (τ^2 level 2) was estimated at 0.0165 ($\tau = 0.1284$), while within-study variance (τ^2 level 3) was 0.0096 ($\tau = 0.0978$). The proportion of total variability attributable to between-study differences (I^2 level 2) was 46.2%, and within-study differences (I^2 level 3) accounted for 26.8% of the variability. The total heterogeneity (I^2 total) was 73.0%.

Figure 1. Overall impact of Communities That Care on the selected outcomes[4]

[4] For precision, the observed outcomes in the figure are presented using the labels defined by the authors of the primary studies



As shown in Figure 1, the 95% **prediction interval** -represented by the dotted line extending across the diamond for the overall effect- ranged from 0.65 to 1.32. This indicates that the true effect in a future study may be smaller or larger than the pooled effect and may include the possibility of no benefit (Borenstein, 2023).

Violence: Independent multilevel meta-analysis.

Given construct differences, we estimated separate multilevel meta-analyses for violence and delinquency; results for violence are reported here. The analysis included 7 studies contributing 22 effect sizes. The pooled effect was a log risk ratio of -0.14 (95% CI: -0.29 to 0.01), equivalent to a risk ratio of 0.87 (95% CI: 0.75 to 1.01; p = 0.07). Based on YEF impact categorisation, the effect size (*d* = -0.07) corresponds to a **"low impact"** rating on violence outcomes, corresponding with a 10% reduction in violence outcomes. The uncertainty around the adjusted estimate means the evidence should be interpreted cautiously.

Heterogeneity was evident at both levels of the three-level model. Between-study variance (τ^2 level 3; Author) was 0.02 (τ = 0.12), and within-study variance (τ^2 level 2; Author/id) was 0.01 (τ = 0.09). The proportion of total variability attributable to between-study differences (I^2 level 3) was 55.47%, and within-study differences (I^2 level 2) accounted for 31.79%. Total heterogeneity was high (I^2 total = 87.26%).

Offending behaviour: Independent multilevel meta-analysis.

The analysis of offending outcomes included 19 effect sizes nested in 10 studies. The pooled log risk ratio was -0.03 (95% CI: -0.15 to 0.12), corresponding to a risk ratio of 0.97 (95% CI: 0.86 to 1.13; p = 0.72) Based on YEF's categorisation, the estimated effect size (d = -0.01) is associated with a "no effect" impact rating, corresponding with a 1% reduction in crime outcomes.

Heterogeneity was present at both levels of the model. Between-study variance (τ^2 level 3; Author) was 0.03 (τ = 0.16), while within-study variance (τ^2 level 2; Author/id) was 0.00 (τ = 0.05). The proportion of total variability attributable to between-study differences (I^2 level 3) was 89.85%, and within-study differences (I^2 level 2) accounted for 9.40%. Total heterogeneity was high (I^2 total = 99.25%).

Interpreting this finding requires consideration of the characteristics of the included studies. Most impact evaluations were conducted in rural or small-town contexts, where community-based coalitions may benefit from greater cohesion, more

stable institutional partnerships, and probably fewer implementation barriers (see Table 1). The only full urban implementation included in the review was the study conducted in Chicago (Gorman-Smith, 2024), where the estimated impact was notably equated to 9% reduction in crime and violence (i.e., property crime, robbery, aggravated assault, shooting and homicide). Urban environments often pose additional challenges for preventive interventions due to higher levels of social disorganisation, population mobility, and entrenched patterns of crime and inequality (Sampson & Groves, 1989; Sampson, Raudenbush & Earls, 1997).

Moreover, CTC operates not as a discrete intervention but as a community-level system for selecting and implementing locally appropriate evidence-based programmes (EBPs). These EBPs vary by site and may include interventions of considerable strength, such as Multisystemic Therapy (MST). However, most primary evaluations do not report in detail which specific EBPs were adopted in each community. This lack of transparency makes it difficult to disentangle the proportion of observed effects attributable to the CTC system itself versus those arising from the EBPs implemented under its guidance. In some instances, the effectiveness may reflect the impact of these EBPs more than the CTC process per se.

Additionally, as a universal prevention strategy, CTC is designed to reach entire populations, including individuals with widely differing levels of baseline risk. It is therefore plausible that the intervention does not yield uniform effects across all recipients. Youth at elevated risk for violence or offending behaviour may respond differently to the same intervention components than those at lower risk, potentially diluting the average treatment effect observed at the population level (Chilenski et al. 2019).

Based on our coding of study characteristics, the majority of evaluations included in this review were not conducted by independent evaluators. Following the definition used in a prior systematic review (Valdebenito et al., 2018), independent evaluation refers to research conducted by individuals or teams with no involvement in the design or delivery of the intervention under study. In contrast, we found that a high proportion of studies were authored by researchers who were directly or indirectly involved in the development or implementation of the Communities That Care (CTC) model. Only 15% of the included studies met the

criteria for independent evaluation, and just two evaluations were entirely conducted by a team with no apparent affiliation to the intervention design (Chilenski et al., 2019; Gorman-Smith et al., 2024). While we cannot determine the presence of bias, the limited number of independent evaluations highlights the value of independent replication. Such evaluations would strengthen the overall evidence base by enhancing the credibility and perceived neutrality of study design, reporting, and interpretation. These findings underscore the importance of supporting and prioritising independent replications of complex social interventions to ensure the robustness and generalisability of the evidence base. No moderator analysis was conducted due to the small number of studies in one of the categories (Borenstein, 2013).

In summary, while the pooled effect suggests that CTC can contribute to a small risk reduction, especially in rural contexts, variation in implementation, setting, and participant risk profiles complicates the attribution of effectiveness. Further research is needed to isolate the core components of the CTC system that drive change and to clarify how local implementation choices and individual-level heterogeneity mediate intervention impact.

Sensitivity analysis

A sensitivity analysis was conducted using a robust variance estimation model assuming a within-study correlation of $\rho = 0.60$ to assess the robustness of the pooled effect estimate. Based on 13 studies contributing 41 effect sizes, the pooled log risk ratio was −0.077 (Robust SE = 0.044, df = 11.75). When exponentiated, this corresponds to a pooled risk ratio (RR) of 0.93 (95% CI: 0.84 to 1.02), suggesting an estimated 7% reduction in risk associated with the intervention, however the confidence interval includes the null and the result is therefore highly uncertain.

Between-study heterogeneity (τ^2) at Level 2 was 0.013 ($\tau = 0.18$), and within-study heterogeneity (Level 3) was $\tau^2 = 0.0093$ ($\tau = 0.008$). The proportion of variance attributable to heterogeneity was $I^2 = 50.17\%\%$ at Level 2 and 22.99% at Level 3, resulting in a total I^2 of 73.16%, indicating substantial variability across studies.

Both models yielded consistent results under the $\rho = 0.60$ assumption. Overall, findings suggest that CTC interventions may reduce risk for youth violence and

related outcomes, but uncertainty remains due to heterogeneity and overlapping confidence intervals with the null.

Publication bias

An Egger regression test was conducted to examine the presence of small-study effects. The model regressed the effect size (RR) on its standard error using robust variance estimation to account for clustering at the study level. The intercept was statistically significant (β = -0.05, 95%CI -0.14 to 0.052, p = 0.33), suggesting no evidence of asymmetry. The slope of the regression (β = -0.542, 95%CI -2.11 to 1.03 p = 0.438) was not statistically significant, indicating no evidence of small-study effects or publication bias.

How Secure is the Evidence?

Violence outcomes

Our confidence in the findings on violence is **Very low.** The meta-analysis included 22 violence-related outcomes drawn from seven studies that assessed the impact of communities that care on children and young people. Using the YEF-EQA tool, four moderate-quality studies fell within **Type C impact evaluations** (2 RCT and 2 QEDs), while three low-quality studies were categorised as **Type D impact evaluations** (2 RCTs and 1 QED), resulting in an evidence security rating of Level 2. Since high heterogeneity was observed (I^2 = 87%) the evidence security rating was downgraded to a **Level 1.**

Crime and offending outcomes

Our confidence in the findings on offending behaviour is **Low**. The meta-analysis included 19 crime and offending related outcomes drawn from 10 studies that assessed the impact of communities that care on children and young people.

Study quality, as assessed by the YEF-EQA, ranged from very low to moderate. The studies included:

- 6 RCTs: of these, four were rated as moderate quality **(Type C)**, and two were rated as low quality **(Type D)**.
- 4 QEDs: of these, two were rated as moderate **(Type C),** one was low quality**(Type D),** and one was very low quality **(Type D)**.

As a result, a **Level 3** evidence security rating was applied. Due to high heterogeneity (I^2 = 99%), the evidence security rating was downgraded to a **Level 2.**

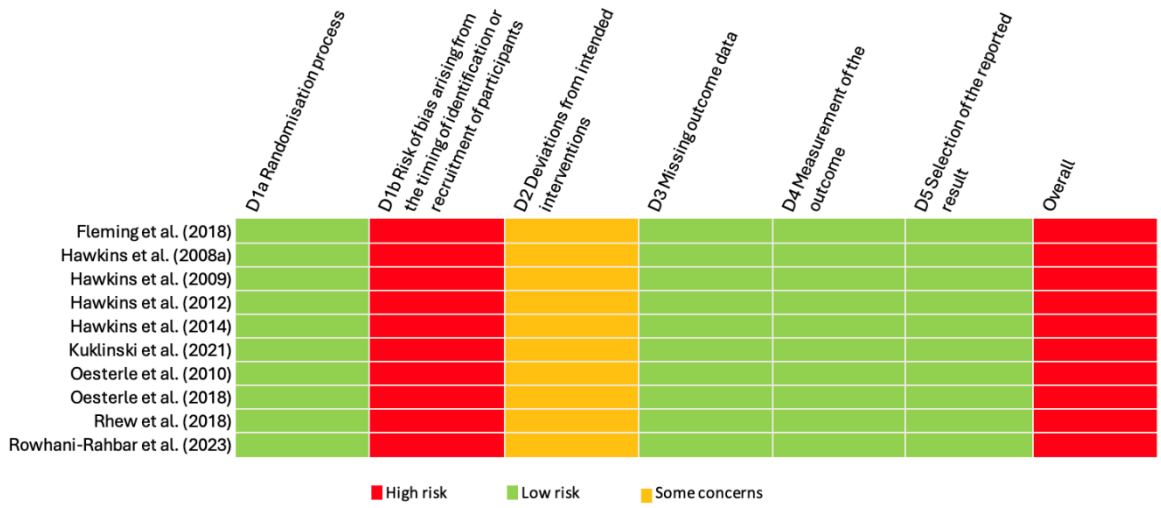
Risk of Bias (ROB)

Detailed risk of bias tables can be found in Appendix 1. Studies were assessed for quality using the Cochrane Risk of Bias2 – Cluster RCT extension (Sterne et al., 2019) for included randomised controlled trials and the revised JBI Risk of Bias for QEDs (Barker et al., 2024) for included quasi-experimental designs. An individual rater (JJ) initially rated each included impact study for risk of bias and then came to consensus with a supervising rater (AS).

Randomised Controlled Trials

One of the included RCT studies (CYDS - Hawkins et al. 2008a) and its six follow-up reports (Hawkins et al., 2009; Hawkins et al., 2012; Hawkins et al., 2014; Kuklinski et al., 2019; Oesterle et al., 2010; Oesterle et al., 2018) had uniform ratings of 'High Risk of Bias' – the tool focuses on elements that occur at the beginning of the study (see Table 3 for the summary ratings across the RCT studies and Table 5 in Appendix 1 for the detailed ratings). While four of the six domains were rated low risk of bias, each study / report had a high risk of bias for the timing of identification or recruitment of participants. Specifically, recruitment of individual young people occurred after randomisation and there did not appear to be blinding of participants, schools or evaluators. That said, most applied evaluations of social programmes do not have post-randomisation blinding as it is near impossible to achieve. In addition, there were 'some concerns' for deviations from the intended intervention (e.g., interventions were not always 'evidence-based'). Overall, the major risk of bias in these studies is that individual-level data describing which young people received a specific service and their outcomes was unavailable. That is, we do not know which young people received a service or whether the ones who received a service were the ones that improved, stayed the same, or declined with respect to observed outcomes.

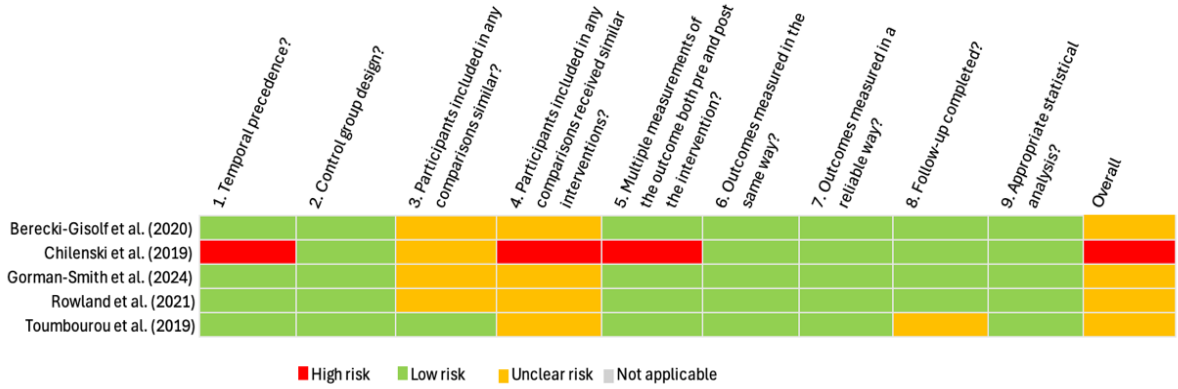
Table 3. Summary Ratings Risk of Bias for RCTs (Cochrane ROB2)



Quasi-Experimental Designs

QEDs had wider variability in their ratings as some of the elements focused on the ways in which the interventions were rolled out and/or how outcomes were measured (see Table 4 for the summary ratings across the QED studies and Table 6 in Appendix 1 for the detailed ratings). Four of the five studies had an 'unclear' risk of bias (Berecki-Gisolf et al., 2020; Gorman-Smith et al., 2024; Rowland et al., 2021; Toumbourou et al., 2019) while the remaining study (Chilenski et al., 2019) had a 'high' risk of bias due to having no baseline with which to assess equivalence and potential contamination (receiving similarly effective programs) in the comparison condition. As with the RCT, none of the quasi-experimental studies had specific individuals linked with specific services and corresponding outcomes.

Table 4. Summary Ratings Risk of Bias for QEDs (JBI Checklist of Quasi-Experimental Studies)



Moderator analysis

Three subgroup meta-regression models were conducted to explore whether the effectiveness of the Communities That Care (CTC) system varied according to study location, the type of behaviour targeted and the risk of quality bias. Models were estimated using restricted maximum likelihood (REML) with three-level random effects, accounting for clustering of effect sizes within studies and within samples. Unfortunately, due to lack of data describing additional moderators, no other analyses were possible.

Country as a moderator

The first model examined whether intervention effects differed by study location. The reference category was studies conducted in Chicago, USA. For these studies, the pooled log risk ratio (log RR) was -0.14 (95% CI: -0.46 to 0.20), corresponding to a risk ratio (RR) of 0.87 (95% CI: 0.64 to 1.22, p = 0.41), suggesting a non-significant 13% relative reduction in risk associated with Communities That Care (CTC) interventions.

For CYDS studies conducted in multisite settings across the USA, the pooled log RR was -0.08 (95% CI: -0.61 to 0.43), equivalent to a RR of 0.92 (95% CI: 0.54 to 1.49, p = 0.75), indicating a non-significant 8% reduction in risk. In Pennsylvania, the pooled log RR was -0.06 (95% CI: -0.87 to 1.02), corresponding to a RR of 0.94 (95% CI: 0.42 to 2.78, p = 0.89), reflecting a non-significant 6% risk reduction. For Victoria, Australia, the pooled log RR was -0.02 (95% CI: -0.33 to 0.54), yielding a RR of 0.98 (95% CI: 0.72 to 1.72, p = 0.91), suggesting a negligible and non-significant effect.

The test for subgroup differences was not statistically significant (p = 0.97), indicating no evidence that study location moderated the effects of CTC interventions. These findings suggest that the effectiveness of the intervention was consistent across geographical contexts, though wide confidence intervals—particularly in subgroup estimates—indicate considerable uncertainty, and p-values may be substantially affected by limited statistical power.

Type of behavioural outcome as a moderator

The second model tested whether intervention effects differed by the type of behaviour targeted, comparing studies addressing delinquency (reference category) to those targeting violence. For studies targeting delinquency, the pooled log risk ratio (log RR) was -0.03 (95% CI: -0.15 to 0.12), corresponding to a risk ratio (RR) of 0.97 (95% CI: 0.86 to 1.13, p = 0.72), or 3% reduction, indicating no substantial or statistically significant effect. For studies targeting violence, the pooled log RR was -0.14 (95% CI: -0.29 to 0.01), equivalent to an RR of 0.87 (95% CI: 0.75 to 1.01, p = 0.07), suggesting a a 13% reduction in risk with low certainty.

A test for subgroup differences (F-test) indicated that the differences in effect sizes between behaviour types were statistically significant (p < 0.05), suggesting that the type of outcome targeted may moderate intervention effectiveness. However, p-values for individual comparisons were not significant and are likely affected by low statistical power. They should, therefore, be interpreted with caution.

Risk of quality bias as a moderator

The third model explored whether intervention effects differed according to the level of risk of bias assessed in the included studies. Risk of bias was evaluated using the Cochrane Risk of Bias 2 tool for cluster-randomised trials and the revised JBI Risk of Bias tool for quasi-experimental designs. Studies were categorised as having either moderate (n = 9) or high (n = 32) risk of bias.

For studies assessed as having a high risk of bias, the pooled log risk ratio (log RR) was -0.09 (95% CI: -0.20 to 0.02), corresponding to a risk ratio (RR) of 0.91 (95% CI: 0.82 to 1.02, p = 0.10), suggesting a non-significant 9% relative reduction in risk.

For studies assessed as having a moderate risk of bias, the pooled log RR was -0.04 (95% CI: -0.18 to 0.26), equivalent to a RR of 0.96 (95% CI: 0.83 to 1.30, p = 0.69), indicating a non-significant 4% risk reduction.

The test for subgroup differences was not statistically significant ($p > 0.05$), suggesting that the overall intervention effect did not differ meaningfully by assessed risk of bias. However, given the wide confidence intervals and low statistical power, these results should be interpreted cautiously.

Type of effect size as a moderator

Given that the included studies reported intervention effects using different effect size metrics—including incidence rate ratios (IRRs), odds ratios (ORs) or adjusted odds ratios (AORs), and risk ratios (RRs)—we transformed all estimates into a common metric (RR) to enable comparability in the meta-analysis. This harmonisation required certain assumptions, particularly for IRRs, which are derived from count-based data (e.g., number of incidents per person-time) and are not directly comparable to risk-based metrics. The conversion of IRRs into RRs may be less precise, especially in studies evaluating place-based interventions or those using binary outcome variables, where assumptions about constant time-at-risk and baseline event rates may not hold.

We conducted a subgroup analysis to examine whether the type of effect size metric reported in the original studies moderated the overall intervention effect. For studies originally reporting IRRs, the pooled log RR was -0.06 (95% CI: -1.00 to 0.89), corresponding to a RR of 0.94 (95% CI: 0.37 to 2.44, $p = 0.89$), suggesting no statistically significant effect and considerable uncertainty around the estimate.

For studies reporting ORs or AORs, the pooled log RR was -0.13 (95% CI: -0.60 to 0.45), corresponding to an RR of 0.88 (95% CI: 0.55 to 1.57, $p = 0.64$), indicating a non-significant 12% relative reduction in risk.

In contrast, studies that originally reported RRs yielded a pooled log RR of 0.05 (95% CI: -0.23 to 0.38), equivalent to a RR of 1.05 (95% CI: 0.79 to 1.46, $p = 0.72$), indicating no effect.

The test for subgroup differences was not statistically significant ($p > 0.05$), suggesting that the overall intervention effect did not vary significantly by the type of effect size metric used in the primary studies. However, these findings should be interpreted with caution due to potential limitations in the transformation process and the reduced precision of estimates derived from heterogeneous effect metrics. This highlights the importance of transparent reporting and methodological sensitivity testing when synthesising results across diverse study designs.

Key Factors for Successful Implementation

The implementation and process component of the review was based on a narrative synthesis of qualitative thematic findings (completed by the second author) from 24 publications that outline key enablers and barriers to effective implementation of CTC, as well as strategies and approaches to support implementation (see Appendix 1, p. 65 for further details). The included implementation studies were all associated with one of the impact studies included in the MLMA.

Key enablers of Implementation

- *Environment supportive of prevention science approach*:
- *Availability of funding*
- *Diverse and high-functioning CTC coalition*
- *Training participation by key CTC leaders and community board members*
- *Availability of EBPs*
- *Allowing some adaptations to CTC or EBPs*
- *Availability of sufficient technical assistance*

A total of seven key enablers that supported the implementation of CTC were identified. To summarise, key themes from this section highlight that for CTC to be most effective and accepted within the community, the following should be available in the local context and during implementation:

- **Environment supportive of prevention science approach:** CTC implementation is enabled by contexts where government and local services and government have an awareness of, and an alignment with, a prevention science approach. This us demonstrated through availability of government funding for EBPs or a long-term commitment to enhancing youth development.
- **Availability of funding** to support the implementation, delivery and evaluation of CTC is critical to its successful implementation.
- **Diverse and high-functioning CTC coalitions** facilitate more effective implementation through engaging a greater variety of sectors in the model, and members with higher levels of motivation, leading to lower turnover.
- **Training participation by key CTC leaders and community board members** is associated with higher levels of knowledge about, understanding of, and dedication to the CTC process. Training participation has been linked to

greater uptake of the science-based approach to prevention which is the key mediator of CTC on youth problem behaviours.

- **Availability of EBPs** that have been evaluated in the local context, in relation to the target cohort and outcomes, is critical for the CTC model to be properly implemented.
- **Allowing some adaptations to CTC or EBPs** is also shown to facilitate implementation, as long as adaptations are intended to enhance relevance in the local context, and do not disrupt program fidelity.
- **Availability of sufficient technical assistance** to provide CTC coalitions and implementers with the required training, programme monitoring and oversight – and for a sufficient duration – is also critical for effective CTC implementation,

First, six papers outlined **1) an environment supportive of a prevention science approach** as a necessary precondition for successful implementation of CTC (e.g. Chilenski et al. 2019). This might be reflected in factors such as an awareness of and support for prevention science among government and service providers, and availability of government funding for evidence-based programs (EBPs). For example, Australian papers described the long-term commitment and patience (Toumbourou et al. 2019) required for the CTC process, as well as *"resource commitments of government, community, local businesses, or a combination of all three"* (Kellock, 2007, p.4), as critical starting points.

The existence of such enabling environments in some CTC implementation contexts that were reviewed reflect that the CTC approach had a relatively **high level of acceptability** in these particular contexts. This higher acceptability was reflected in these contexts' strong support for CTC beyond the CTC coalition (e.g. from the broader community, multiple schools being involved etc.). For example, Fagan and colleagues (2009b) noted that early adopting sites of CTC had more school representatives (including administrators or others with decision-making power) attending community planning training, implying some level of interest or acceptability in the approach from early on. While providing information, training and technical support for the approach is a core component of CTC, the existence of aspects of this enabling environment would mean less energy, resources and time would need to be spent on these aspects of implementation. Two strategies for enhancing the level of acceptability of, or support for CTC were sharing information about CTC with the larger community and selecting CTC project

managers who are very persistent and patient, and able to maintain high levels of motivation and enthusiasm (Fagan et al. 2008a, Kellock 2007). These are further noted in the *Strategies* section below.

Related to the enabling environment above is **(2) the availability of funding** to support the implementation, delivery and evaluation of CTC, which six papers highlighted as a necessary precondition for effective implementation. Broadly, it was identified that CTC implementation can only be successful in contexts where government funding is available for prevention initiatives (Chilenski, 2019), with specific funding for CTC identified as a strong enabler both in the US and other contexts (Fagan et al. 2008a; 2009a; Gloppen et al. 2012; Jonkman et al. 2015; Kellock 2007). For example, Fagan and colleagues (2009a, p. 825) noted that *"all intervention communities had fulltime, paid coordinators, participated in all required CTC training workshops, received up to $275,000 over 4 years to enact prevention programs"*. Unsurprisingly, the lack of funding availability, including for critical elements such as the CTC coordinator/project manager role, and other collaboration elements, is a key barrier to successful implementation.

Seven studies noted that **(3) diverse and high-functioning CTC coalitions** also enabled successful implementation of CTC. More successful coalitions included engagement of a more diverse range sectors (both in the coalition and its work) and coalition members who were learning new skills (Shapiro 2012; Shapiro et al. 2015a; 2015b), lower coalition member turnover (Jonkman 2009; Kellock 2007), and higher coalition motivation and acceptance of the CTC approach (Fagan et al. 2009b). Additionally, some studies noted specific sector representation and coalition member characteristics as enabling stronger functioning of coalitions, particularly representation from schools, the human services sector, the community (e.g. students, business leaders, volunteers), female leadership, and more senior representation (to facilitate resource access) (Brown et al. 2011; Fagan et al. 2009b; Jonkman et al. 2009; Kellock 2007).

A fourth enabler described in four papers was **(4) training participation by key CTC leaders and community board members** in the implementation context. For example, in the CYDS, multiple papers have linked attendance at CTC training with higher stages of adoption and sustainment of the CTC approach, including level of knowledge and understanding of the CTC process, greater attendance at

board/coalition meetings, and more hours dedicated to the CTC process (Brown et al. 2014; Gloppen et al. 2016; Quinby et al. 2008; Rhew et al. 2013). While training participation is a core component of the CTC process (e.g. in Phases 2 and 3), in practice the extent to which different stakeholders are willing or able to participate in training varies. Importantly, the available research indicates that factors that support the uptake of a science-based approach to prevention (e.g. training participation, technical support and assistance) fully mediated the effects of the CTC intervention on youth problem behaviours (Brown et al. 2014). While collaboration within CTC coalitions and with the community are important, collaboration is not a significant mediator of the outcomes. Additionally, the need for training availability for new members joining CTC coalitions is highlighted in the below *Barriers and Strategies* sections.

The fifth enabler was **(5) the availability of suitable EBPs** that had been evaluated in the local context, including presentation of these in some form of clearinghouse or menu accessible to the CTC coalition (Jonkman et al. 2015; Toumbourou et al. 2019). This includes the lack of sufficient funded EBPs available in the CTC area (i.e. those that target the correct cohort and outcomes needed) and/or the lack of suitability of any available EBPs to the target population (i.e. those proven effective with the local population, and acceptable to the community). Unsurprisingly, the lack of available EBPs proved to be one of the biggest barriers to implementation (see *Barriers* below), particularly outside of the US.

The next enabler, described in four papers, is a flexible approach or **(6) allowing some adaptations** to CTC or EBPs to suit the local context (Fagan et al. 2008a; 2008b; Gorman-Smith et al. 2024; Kellock 2007). The kinds of adaptations implementers made included acceptable enhancements to EBPs that increased relevance to the local context (e.g. using local drug use statistics), or supported programme delivery (e.g. EBP delivery to large instead of small groups) (Fagan et al 2008a), and utilising additional data (e.g. focus groups, archival data) to supplement the baseline surveys conducted with communities (Kellock 2007). Importantly, these types of adaptations or 'enhancements' were considered acceptable by the CTC trainers and the researchers evaluating CTC implementation, and were not seen to disrupt fidelity to the core elements of CTC.

The final enabler, noted in seven papers, was **(7) the availability of sufficient technical assistance** to provide the coalitions and implementers with the required training, programme monitoring and oversight – and for a sufficient duration –to facilitate CTC implementation (Brown et al. 2014; Fagan et al. 2008a; 2008b; 2009a; Feinberg et al. 2010; Rhew et al. 2013; Toumbourou et al. 2019). As outlined in the description of the CTC intervention, as a licenced programme, this technical assistance must at least in part be provided by accredited CTC trainers, for example through phone calls (Fagan et al. 2008a; Toumbourou et al 2019). Fagan and colleagues (2008a) noted that such support was critical to implementation fidelity and included elements such as training and proactive technical support and ongoing feedback. While only reported in one paper, Brown and colleagues (2014) found that the community's adoption of a science-based approach to prevention was the key factor mediating the impact of CTC on youth outcomes; they further suggested that technical assistance (together with training) is critical for embedding this approach.

Potential Implementation Barriers and Challenges

Key Barriers to Implementation

- *Poor acceptability of CTC*
- *Insufficient resources to support implementation*
- *Difficulties securing buy-in from key personnel or agencies*
- *Competition with other programmes and interests*
- *Insufficient training & technical assistance*
- *Lack of relevant EBPs tested in the local context*
- *Poor fidelity in EBP implementation*
- *Low recruitment of EBP participants*
- *Mismatch between community size and optimal CTC conditions*

Eight key barriers and challenges that impeded the implementation of CTC were identified, as summarised here:

- **Poor acceptability of CTC** in the local context hampered effective implementation, often due to low community buy-in to the long-term process.
- **Insufficient resources to support implementation** was also a critical barrier, often leading to dissolution of CTC coalitions when the CTC coordinator role could no longer be funded.
- **Difficulties securing buy-in from key personnel or agencies** delayed or prevented effective implementation, but could be overcome through securing

a suitable "champion" of CTC or persistence from coalitions and CTC coordinators.

- **Competition with other programmes and interests** was another critical challenge, with organisations sometimes wishing to persist with familiar programming, approaches, or agreed directions.
- **Insufficient training & technical assistance** formed a further barrier to implementation. Importantly, this barrier was most strongly noted in contexts outside of the US where CTC is based, and sometimes related to the high cost of training and support, relative to what communities could afford.
- **Challenges to EBP selection, adaptation and delivery** were the most common implementation barrier, particularly outside of the US. This included a lack of relevant EBPs that were tested in the local context, community rejection of EBPs as being not culturally attuned or otherwise suitable, poor EBP fidelity (due to organisational time and resource constraints), and low recruitment to EBPs (particularly parenting and afterschool programs)
- **Finally, a mismatch between community size and optimal CTC conditions** was at times identified due to either difficulties identifying community boundaries, or a mismatch between the implementation area and existing structures for administration of local funding and service delivery.

In many instances these were the reverse of enablers described in the previous section. The first key barrier, identified in six, papers was **(1) poor acceptability of CTC** in the proposed implementation context. This was more commonly identified outside of the US (e.g. in Australia (Kellock 2007; Rowland et al. 2021) and the Netherlands (Jonkman 2009)), which some authors attributed to difficulties in *"cultural translation"* (Kellock 2007, p. 8) of CTC and the prevention science approach. Some of the proposed reasons behind the poor acceptability included:

- the long-term nature of the CTC process, and desire of coalition members and funding bodies to see "quick results" (Kellock 2007, p. 42)
- low 'community readiness' for a prevention approach, and low buy-in of relevant stakeholders to the CTC process (Brown et al., 2014; Kellock 2007; Rowland et al. 2021)
- the narrowness of the CTC remit, which was experienced as *"not leaving room for alternative views"* (Kellock, 2007, p. 33) and not recognising nor addressing the root causes of youth health and behaviour challenges, particularly racism and inequality (Gorman-Smith et al. 2024)

As illustrated throughout this section on *Barriers* to implementation, sometimes low buy-in related to a specific sector or agency's low level of buy-in, but did not relate to that of the community overall. For example, following CTC training Brown and colleagues (2011) found less uptake of the prevention orientation among community leaders from the business sector, and lower levels of desired funding for prevention programmes (as opposed to treatment programmes) by leaders from the juvenile justice and law enforcement sectors.

Unresolved issues related to acceptability and buy-in were noted to contribute to implementation delays and deviations from the CTC process. For example, one CTC coalition in Australia had determined to not *"rigidly follow the [CTC] process"* (Kellock 2007, p. 9). This resulted in changes that included their adaptation of the training, amending language to increase understanding, and placing a stronger emphasis on and resourcing of the CTC coalition. While evaluators did not see these deviations as overly problematic, they described a tendency in several communities of introducing "new campaigns and initiatives prior to the completion of the community plan" (Kellock 2007, p 9). Such actions were understood to occur due to internal or external pressures to see "quick results" and were perceived as diluting the CTC focus on coordinating evidence-based prevention strategies.

The second key barrier, described in four papers, was **(2) insufficient resources to support implementation**, including resources related to individual organisational capacity, funding for the CTC coordinator/programme manager role, and to support EBP access and delivery and CTC evaluation. For example, in the US, Quinby and colleagues (2008, p. 325) highlighted that during CTC planning processes, *"communities often identified needs exceeding the resources available",* while in Australia Kellock (2007, p.11) affirmed that *"the Community Plans will only be effective to the extent to which funding can be sourced to implement the initiatives identified in the plan"*. Contexts that require CTC coalitions to seek funding for each component or initiative carry high risk of these failing to be implemented (Kellock 2007). Additionally, it was identified that it was sometimes easier to secure resources for individual programmes, than funding to support the collaborative and evaluation elements of CTC, particularly funding to support the CTC coordinator/ project manager role (Gloppen 2012; Kellock 2007). This was highlighted in the Australian context where *"Commonwealth and State governments prefer to fund service delivery rather than coordination, and it has*

fallen back on local government to support this infrastructure" (Kellock 2007, p. 7). Where funding for required staff could not be secured, CTC coalitions eventually disbanded, as highlighted in the following examples:

> *"This coalition was in a small town, unable to secure funding for the coalition coordinator after the CYDS funding ended"* (Gloppen 2012, p. 5)
>
> *"…no further funding could be found to meet coordination infrastructure, and the Board wound up the formal coordinator position"* (Kellock 2007, p. 4)
>
> *"…the collaboration that had been achieved was already starting to disintegrate in the six months that the project had been without an executive officer"* (Kellock 2007, p. 7)

While most resourcing issues related to direct funding, in one instance the identified barrier concerned within and between organisational capacity, specifically of non-government organisations operating in "high burden" contexts (Gorman-Smith et al. 2024). In such instances, significant resources may be needed to support organisational capacity-building for CTC implementation to be successful as highlighted in the following example:

> *"… significant time and resources are focused on providing training and technical assistance to build capacity within and between organizations. This included workshops and ongoing support in program implementation and evaluation, as well as assisting with grant writing, and understanding public administrative data (e.g., violent incidents, crime) to be used to develop strategic agendas and evaluate community-level impact. Academic partners leveraged university support to bring capacity-building resources to our community stakeholders through existing programs such as leadership development and non-profit management certificate programs. Thus, the primary role of the academic partner was to build and support the skills of community leaders, as well as the collective capabilities of the coalition to facilitate change and support an infrastructure that could be sustained over time."* (Gorman-Smith et al., 2024, pp. 870, 872).

The third barrier to CTC implementation, identified in five papers, were **(3) difficulties securing buy-in or commitment from necessary individuals and organisations**, either as part of the CTC coalition, or in terms of those delivering

EBPs. In the US, this barrier was often highlighted in relation to school settings, where much of CTC programming tended to be delivered (Fagan et al. 2009a; 2009b), for example:

> *"...many coalitions struggled to convince schools to adopt new programs, and it took 4 years before all communities had done so"* (Fagan et al., 2009a, p. 825)

Authors highlighted the importance of a persistent and long-term orientation to implementing CTC, as well as school leadership involvement in the CTC coalition and training to facilitate better outcomes (Fagan et al. 2009a; 2009b). The value of identifying a suitable and highly visible 'champion' to *"guide, publicize, and legitimize the CTC process"* (Quinby et al. 2008, pp. 327-328) was also noted in the US experience. For example, Fagan and colleagues (2009b) found that school sites who were early adopters of CTC had such a champion, while late adopters lacked such individuals within the setting.

In relation to CTC coalitions, it was found that *"recruitment, retention, and activation of key leaders was challenging"* both in the US and Netherlands experience of implementing CTC (Jonkman et al. 2009, p. 7). Likewise, Australian CTC implementers noted a difficulty in engaging more senior government personnel, resulting in plans developed at local level being "not well recognised, utilized or resourced by major agencies such as Education or Human Services" (Kellock 2007, p. 7).

Also in Australia, challenges engaging various community sector agencies (e.g. alcohol and drug, mental health, and police) were noted in various CTC implementation settings. Reservations of community sector agencies in becoming involved with CTC coalitions were at times attributed to existing dynamics between government and community sectors, as Kellock (2007) states:

> *"...some community groups and services maintained a distance from the process because of suspicions arising from the key role of government agencies in the management and planning processes."* (p. 6)
>
> *"Community organizations and service agencies have developed ambivalent relationships with CTC in the local communities, with potential participants*

> *often disconcerted by the active role of senior government representatives on Key leaders Group and Boards."* (p. 8)

At other times, difficulties engaging agencies such as mental health and police were attributed to the more acute, crisis service orientation of these services.

A fourth barrier to CTC implementation, somewhat related to the above barriers of poor acceptability and low buy-in, was **(4) competition with other programmes and interests** of key community stakeholders. This barrier was noted in five papers, for example in relation to competing with existing prevention programming in schools (Fagan et al. 2009b; 2012), and existing commitments to addressing the identified issues such as youth suicide or alcohol and drug challenges via other orientations (e.g. a community development approach, or treatment provision rather than a prevention orientation) (Kellock, 2007; Quinby et al. 2008).

> *"Youth issues other than the five problem behaviors directly addressed by CTC already had been identified as community priorities, and community stakeholders were committed to addressing these issues* (Quinby et al. 2008, p. 326)

There were multiple examples of communities wishing to utilise familiar programmes, despite an absence of evidence for their effectiveness:

> *"… schools already had (non-effective) programs in place to address prevention issues"* (Fagan et al. 2009b, p.397)

> *"… community members were concerned about adopting new programs and wanted to use familiar programs, even if they did not have data supporting the effectiveness of those programs"* (Jonkman et al. 2009, p. 7)

While most challenges related to competing interests concerned programmes and initiatives intended to address similar outcomes as CTC, in schools a further competing interest was the delivery of existing curricula (Fagan et al. 2009b). Here the importance of the school champions was helpful in devising creative solutions, including teaching some of the prevention curricula in academic classes (e.g. science, social studies) (Fagan et al. 2009b).

The fifth key barrier noted in two papers was **(5) insufficient training and technical assistance** to implement CTC. This was most strongly identified in the Australian context, where the training and support was considered "less than optimal" due to

challenges related to registration and licensing of the programme from the US, and insufficient funding of CTC Australia to provide the necessary level of support to the implementing communities (Kellock 2007). In particular, while support was provided to administer and analyse the initial survey, other elements including *"the initial training, management of communications between pioneer communities and resolution of problems and uncertainty were considered less than satisfactory"* (Kellock 2007, p. 17). In part, this lack of support reflected the "excessive" high cost of CTC training and support, relative to what communities were able to afford in the Australian contexts (Kellock 2007). Another aspect related training and support was the need for both the availability of, and stipulation of time periods for repeat CTC training (Fagan et al. 2009a; Kellock 2007). For example, the availability of repeat training is necessary where some CTC coalition members may have missed initial training, or where there is turnover of board members (Kellock 2007). Failure to access training was seen to result in variable understanding of the CTC approach at the coalition level (Kellock, 2007).

The next barrier to CTC implementation related to a range of **(6) challenges to EBP selection, adaptation and delivery**. This was the most common implementation barrier, noted by 12 papers. In the early stages of CTC development, this challenge concerned a lack of clarity around the definition of EBPs. As Chilenski and colleagues note (2019), in its early days CTC had endorsed a range of programmes, policies and practices, some of which were no longer endorsed as EBPs a decade later. These issues have since been resolved, with definitions strengthened over time, and in many contexts EBP lists or menus are now available (e.g. Blueprints for Healthy Youth Development). However, in several contexts the **(6a) lack of relevant EBPs tested in the local context** presented the most significant barrier to CTC implementation. This was particularly the case outside of the US. For example, at the time of CTC implementation in the Netherlands, only two EBPs were available that targeted 12–18-year-olds and had been tested and found effective in the local context (Jonkman et al., 2015). Similar issues have been encountered in the Australian context (Kellock, 2007), and across other European countries seeking to implement CTC, including Germany, Croatia, and Sweden (Steketee et al. 2013). This suggests that a comprehensive menu of relevant, tested and effective EBPs in the target context is a necessary enabling condition for the implementation of CTC (Jonkman et al. 2009; Steketee et al. 2013).

Even when EBPs are technically available, communities may reject these as not suitable or culturally attuned to their context (Gorman-Smith, 2024). Where organisations were already implementing culturally informed programming, training and technical support could be provided to support high-quality implementation and evaluation of these programmes (see *Strategies* section below for a detailed example).

Where EBPs are available and selected **(6b) poor EBP fidelity** constitutes an additional barrier to CTC implementation. Poor EBP fidelity was primarily noted in school environments in the US (Fagan et al. 2012), with time constraints to delivering all the required material resulting in dosage challenges (Fagan et al. 2008b). Circumstances contributing to this included academic testing, teacher illness, school holidays and special events (e.g. field trips, assemblies) (Fagan et al 2008a; 2008b; 2009a) all of which took time away from or conflicted with EBP implementation and delivery. Another barrier to EBP delivery resulted from **(6c) low recruitment of participants** to EBPs**,** which was most prominently noted for parenting programmes, afterschool programmes, and programmes targeting young people who were not in school (Fagan et al. 2008a; 2008b; 2009a; 2012; Jonkman e al. 2009; Kellock 2007). Importantly, such recruitment challenges were noted across all countries where CTC was implemented in the papers comprising the review (i.e., Australia, US, and Netherlands). Communities responded to such challenges by increasing and diversifying recruitment strategies or programme delivery times or modalities. For example, some communities struggling with recruitment to group-based parent training programmes opted to offer a home-based parent-training option to overcome participation barriers such as those related to transportation and childcare (Fagan et al. 2009a). In other cases, these recruitment challenges, where persistent, led to programmes being discontinued (e.g. Fagan et al. 2008a; 2008b; 2009a). Finally, other challenges associated with EBP delivery noted in only two papers related to participant misbehaviour, lack of responsiveness, and issues with the quality of facilitation (Fagan et al. 2008a; 2009a). While there was limited information regarding what these challenges looked like in practice, issues of responsiveness and facilitation quality were noted as less apparent to observing evaluators than those delivering EBPs and were shown to improve as implementers gained experience and confidence in delivering EBPs (Fagan et al. 2008b).

The final barrier to CTC implementation noted in 5 studies related to **(7) a mismatch between community size and optimal conditions for CTC** implementation and delivery. For example, in the Netherlands difficulties emerged when attempting to implement CTC in a neighbourhood of a larger city (Jonkman et al. 2009). This resulted in difficulties related to defining what constituted the 'community boundaries' (i.e. the area in which CTC would be delivered) and conducting the resource assessment of the relevant area. Conversely, the Australian experience suggested that implementation of CTC within a single local government area (LGA) was easier than implementation within a context spanning several LGAs, reflecting the centrality of LGAs in the implementation and delivery of CTC in that context (Kellock, 2007). This is because many of the relevant structures for local funding, government administration and service delivery are already organised at the LGA level, making delivery within one of these areas simpler than delivery across several of these. Finally, several papers highlighted challenges implementing CTC where the community was too small. These challenges included inability to find suitably qualified staff (e.g. CTC coordinators, and staff for programme delivery or evaluation), and difficulties developing high levels of collaboration with the necessary agencies (Brown et al., 2011; Fagan et al. 2008b; 2009a; Kellock 2007). For example, in the US, Brown and colleagues (2011, p. 197) reported that:

> *"A few of the communities in the CYDS were very small towns of less than 5,000, and it may be difficult in such small towns to develop high levels of collaboration across organizations with very limited human resources."*

In Australia, Kellock (2007, p. 24) likewise found:

> *"The result of focusing on very small communities had an impact on the capacity to engage with key big [government] agencies like [the Department of Education and Training] and [The Department of Human Services]."*

Strategies to Support Implementation

Some strategies to support implementation of CTC have been noted in the above sections. These can largely be distilled into three key themes, namely: consideration to the choice of implementation site, adopting a patient, persistent

and flexible approach to implementation, and strategies related to the provision of training and support.

Choice of site

Based on the above qualitative findings, the choice of site to implement CTC seems significant. In particular, the research suggests benefits to implementing CTC where community readiness and other facilitating attributes are present (Brown et al., 2011; Fagan et all 2008b; 2009a; Jonkman et al. 2009; 2015; Kellock, 2007; Steketee et al., 2013), including:

- Where there is awareness of, and funding available for preventative approaches
- Where there is a moderate to high level of existing collaboration to support this type of initiative (e.g. existing relationships between agencies)
- Where there are not significant competing initiatives (e.g. a recently implemented community development or therapeutic strategy)
- Where a menu of tested and effective EBP preventive interventions are available
- Where community size is not so small that it impedes the recruitment of appropriate staff (due to small pool size) or linkages with necessary stakeholders (e.g. sufficient community agencies, large enough government departments), and
- Where the site boundaries best align with funding, service delivery and community governance structures.

A patient, persistent & flexible approach

While many barriers to implementation have been outlined, experience particularly from the CYDS study demonstrated that these could be dealt with by adoption of patient, persistent and/or flexible approaches from both the coalition and the CTC coordinator. However, the capacity to adopt such approaches are clearly contingent on available funding and support. Nonetheless, CTC coalitions and coordinators are encouraged to:

- Slowly build on the programmes and initiatives implemented as the coalition develops more confidence in their implementation and delivery (Fagan et al. 2008b; 2011)

- Be patient persistent regarding buy-in from partner organisations (Fagan et al. 2009b; 2012; Kellock 2007; Quinby et al. 2008)
- Flexibly consider strategies to increase community buy-in (Chilenski et al. 2019; Gorman-Smith et al. 2024; Kellock 2007; Quinby et al. 2008)

The examples below illustrate strategies used to increase community buy-in for CTC.

Example 1. Sharing information about CTC with the community (US and Australia)

"The CTC coordinator and board members were encouraged to share information regarding program implementation with the larger community to enhance local ownership of prevention efforts. The extent and type of promotional activities varied by community, but included Letters to the Editor or articles in local newspapers describing the program and its effects on participants; program banners, posters, or fliers placed in high-visibility areas of the community; and celebration events that publicly highlighted program graduates. Additional promotional activities included collaborations with local businesses to provide incentives for program participants, and formal presentations at meetings of school boards, school staff, city councils, county commissioners, service clubs (e.g., Kiwanis and Rotary groups), and churches. Individual meetings with key leaders (e.g., school superintendents, police chiefs, social service agency directors, etc.) were also held to increase awareness of and garner support for programs. (Fagan et al. 2008a, p. 242)

"...the capacity of project managers to maintain levels of motivation and enthusiasm is crucial. This has been necessary in all projects as the length of time required to establish the project, collect data and develop the community plan has the potential to sap the commitment and support of many community members. Strategies have included the development of one-off activities and events parallel to the CTC process, presentations to the Boards and local action groups, and maintaining communication through newsletters and newspaper articles" (Kellock 2007, p.17)

Example 2. Adapting the CTC approach to address community concerns (US)

Community members of one coalition in the US found the CTC focus on risk and protective factors and matching EBPs to be too narrow and believed it important

to lay out a more ambitious vision for the community and a set of guiding principles to support the work (Gorman-Smith et al., 2024). This resulted in:

- The development of set of guiding principles, including focusing on topics of equity and social justice.
- Raising awareness of the historical factors that contribute to the marginalization of African American communities via a range of events as follows:

  "the coalition convened more than 1000 community leaders and residents, including youth, to learn about the history of the community and discuss and participate in racial justice and equity initiatives. These events were designed to increase awareness of the historical events and policies leading to segregation and disinvestment, the nexus of racism and trauma, and strategies to heal, disrupt, and liberate from oppressive mechanisms, including initiatives to increase youth civic engagement" (Gorman-Smith et al. 2024)

- Support to foster high-quality implementation and evaluation of the community's preferred current programmes, which were seen to be more culturally-attuned and suitable to the community's context:

  "...rather than implementing a set of new programs from the list of evidence-based programs, the effort focused on **providing training and technical assistance to support high-quality implementation of existing programs** *and to* **build internal structures within and across organizations to evaluate and move toward rigorous evaluation of these community-based programs.** *These included programs supporting academic achievement, arts, and youth civic engagement activities offered during out-of schooltime."* (Gorman-Smith et al. 2024, pp. 865-866)

Example 3. A flexible and persistent approach to engaging schools (US)

The persistent and flexible approach required to implement CTC was reflected in the earlier observation that in the CYDS study it took 4 years before all communities had convinced schools to adopt new EBPs, with some not implementing these until the 5th year of the study (Fagan et al. 2009a). The range of strategies the CTC

coalition and coordinator utilised to effect this outcome (Fagan et al., 2009b) included:

- **Building relationships:** All coordinators stressed the importance of building relationships with school personnel. In some cases, coordinators utilised pre-existing relationships, while others relied in multiple conversations during meetings and informal visits to schools. Cooardinators drew on coalition members' existing relationships and knowledge of school personnel in strategically determining who might be the most receptive to, and best be able to influence the adoption of CTC.
- **Top-down and bottom-up approaches:** In 12/18 cases these relationships relied on a top-down approach of engaging district administrators by drawing on existing connections. In three communities a bottom-up approach was utilised by engaging teachers; this approach was utilised where school administrators were seen to be less inclined to adopt a new approach from someone outside the school district.
- **Creating a 'win-win' situation:** Coalition members aimed to provide solutions to problems identified as important to each school, utilising conversations as a moment to educate on the prevention science approach, and how this could address identified school and student needs. For example, coalition members and coordinators presented findings of the CYC youth survey to highlight the risk factors and problem behaviours in the local population and provided evidence of the existence of EBPs and the potential positive benefits in terms of financial savings, and improved student outcomes that would likely flow from these. In some instances, CTC provided funding to get school-based programs started, or personnel to deliver these.
- **Need for persistence:** For late-adopting sites, these strategies and arguments had to be repeated many times, during both formal and informal interactions.

Example 4. Selecting target age group for timely impacts

While in theory CTC can encompass preventative programs and actions targeting individuals and families from the prenatal period up to young adulthood, in the US CYDC study intervention communities were asked to focus their plans on youths in Grades 5-9 (i.e. aged 10-15 years) and their families (Hawkins et al. 2008b). This approach was intended to maximise the potential for measurable effects on

outcomes during the study's 5-year period. Conversely, while members of the Dutch research team wished to focus CTC preventative interventions on 12–18-year-olds, they lacked "the resources, influence or authority" to effect this outcome (Jonkman et al. 2015, p. 49). In part, this was shaped by the lack of proven and available EBPs targeting this age group in the Dutch context. The result was that 47% of programs implemented in the Netherlands CTC trial focused on preschool and primary school-aged children. While presenting problems for evaluation in terms of a "developmental mismatch" between implemented programs and measures being used to evaluate CTC impact, targeting such a significant proportion of EBPs to younger cohorts also lengthens the time to impact of CTC on adolescent outcomes. While this should not be taken to suggest that CTC actions and programming should not target children at these younger ages, expected time to impact should be considered when planning CTC programming.

Ensuring sufficient training & support

Sufficient training and support are seen as critical for successful CTC implementation. Suggested strategies that related to ensuring this support is sufficient included:

- Ensuring training is available beyond the first year of implementation (Gloppen et al. 2016; Kellock 2007; Jonkman et al. 2009)
- Specifying re-training timeframes (Fagan et al. 2009a)
- Providing intensive support to organisations where needed, including provision of coordinator feedback and support (Fagan et al. 2008a; 2008b; Gorman-Smith et al. 2024)

Conclusion and Takeaway Messages

The results of this meta-analysis indicate that the *Communities That Care* (CTC) prevention system has not been sufficiently tested. We found that the use of CTC in certain geographic areas, compared to areas where it was not used, had an estimated reduction in youth violence of 7%, but this estimate was not significant. While a 7% reduction is potentially meaningful at a population level, it is not significant and represents a small effect size. Given the relatively small number of studies that the meta-analysis is based upon and the fact that the effect is small,

testing for significance may be underpowered. Therefore, the estimate of effectiveness has a low level of certainty and should be treated as such.

While the overall effect size of CTC may be low and uncertain in comparison to some other place-based approaches (e.g. hotspot policing: Gaffney et al., 2022), it is clearly socially meaningful for a community to see 7 in 100 of its young people not involved in violent or delinquent behaviours who otherwise would be. If this uncertain estimate is accurate, it points to large numbers of young people (including victims of crime) leading happier lives, with the implication of better relationships with, and benefits for, the people and the community around them.

The results show no statistically significant moderation by study location. CTC appears to perform similarly across urban and rural contexts, and across international settings, including Australia and multiple U.S. states including urban and rural areas. Again, however, this interpretation should be made cautiously given the number of included studies and our inability to test for differences within each study.

It is also important to note that aside from impact on youth outcomes, there were other reported benefits of CTC implementation, including closer relationships and collaborations between government, non-government organisations and communities in the CTC implementation sites (e.g. Kellock, 2007).

Subgroup analysis by behaviour type suggests a possible trend toward greater effectiveness in reducing violence compared to delinquency (13.0% vs 3.0% reduction), although this difference did not reach statistical significance. Again, this may be a result of low statistical power, so there is a low level of certainty about this difference. If there is a difference, it may reflect CTC's strengths in mobilising structural and peer-level interventions, which are particularly salient for violence-related behaviours. More precise targeting of behavioural outcomes may increase intervention potency.

In addition, our analysis suggests a reduction in effectiveness could potentially be increased by addressing implementation challenges and factors identified in the current review. We would recommend (in line with our previous PBA review: Baidawi, Valdebenito, et al., 2023) that coalitions be encouraged to select both universal EBPs (e.g. school-based EBPs targeted on healthy relationships), as well as EBPs that target young people or families with higher needs/greater risk (e.g.

multisystemic therapy) as part of the CTC suite of programmes. Findings of the current review suggested that the latter EBPs - including parenting programmes, afterschool programmes, and programmes targeting young people not in school - faced the greatest recruitment challenges. Given that participation in these EBPs would be expected to contribute substantially to any overall impact of CTC, addressing these recruitment challenges seems important.

The small effect sizes and low power (and low certainty of effect) lead to another speculative conclusion. If we know ways in which the intervention can be improved, the effect size may increase through their successful implementation. The review provides clear indications of what is required in a local area for CTC to be effectively implemented. The key mediating factor is the community's adoption of a science-based approach to prevention (Brown et al., 2014). The selection of area is an important aspect of implementation, and the review suggests that an area needs to have a culture and history of EBP use and evaluation, as well as the foundations for an active coalition in the form of community capacity and partnerships. Effective implementation also means having access to intensive and long-term technical assistance and support (particularly to build and sustain the coalition and to recruit for and deliver selected programmes, and that this support needs to be tenacious and perseverant. Where this is in place, CTC's emphasis on local data, community mobilisation, and evidence-based programme selection means it offers a replicable framework for strategic investment in prevention infrastructure.

The extent and quality of data identified suggests that further evaluation of CTC with more consistent approaches is needed. The evidence base remains limited to four distinct studies, and many effect sizes are derived from overlapping samples. Although multilevel modelling was used to account for this dependency, the generalisability of results would benefit from additional independent trials of CTC in new settings, particularly outside the United States. More consistency in outcomes and measures is needed. The high total I^2 value (73.16%) indicates substantial variation in effects across studies, suggesting that local factors—such as coalition functioning, programme fidelity, or implementation support—may influence outcomes.

There is a need for more systematic approaches to evaluating implementation to identify which components of CTC delivery are most strongly associated with

positive effects, and to shed light on mechanisms of change and conditions for sustained impact. More systematic approaches might also involve leveraging the established delivery benchmarks and using frameworks and concepts from implementation science to strengthen and support consistency.

Additional research should also explore behavioural subtypes and examine whether intervention effects vary by participant characteristics such as age, gender, or ethnicity—moderators not well tested in the current literature.

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Appendix 1. Methods of the systematic review

See here for the published protocol:
https://www.crd.york.ac.uk/PROSPERO/view/CRD42025644386

Eligibility criteria

Study design. To be eligible for inclusion, studies needed to report findings of the CTC intervention. For efficiency reasons, we used a combined approach to the search which meant looking for both experimental and quasi-experimental studies for the meta-analysis, and also qualitative and mixed methods studies for the implementation review at the same time.

Types of participants. Included reports sampled young people (defined as under 19 years of age) and/or described the implementation of CTC programmes targeting this cohort.

Intervention. Included studies assessed the effectiveness or implementation of CTC. We included studies testing and/or implementing adaptations to CTC but excluded those where the programme is not named as CTC (e.g. PBAs described as being 'based on' or 'informed/influenced by' CTC).

Geographical context. We did not place any restrictions on location.

Types of outcome measures. Included studies needed to include a measure of youth violence (perpetration or victimisation). This included reports of arrests or convictions for violent offences and self-reported violent behaviour. We also included studies reporting implementation outcomes, including measures of effective implementation such as fidelity to the CTC model, completion of CTC stages, acceptability, feasibility, and sustainment; and studies reporting on implementation strategies used to overcome barriers and capitalise on facilitators.

Timeframe. Databases and journals were searched from 2000 onwards as we are only focused on more recent uses of CTC within contemporary service systems.

Publications. We included published or unpublished reports, including book chapters, journal articles, reports, MSc and PhD theses, and protocols.

Language. Included studies could be written in any language, if the title, abstract and keywords are written in English, and contingent on resources being available for translation. At a minimum, we would include non-English studies published in Spanish, German, Portuguese, Danish, Swedish or Norwegian.

Details of the search strategy

After piloting several approaches, which included combining search terms relating to relevant study designs, population, plus the CTC intervention – we found enough hits by using the intervention term only. Our final search used the term "communities that care" or "CTC" within title, abstract or key words to look for eligible papers across six electronic databases. The search included the following databases - the Cochrane Library, Criminal Justice Abstracts, Medline, PsycINFO, PubMed, and ProQuest Dissertations & Theses Global.

The initial searches were completed on 18th December 2024. Two relevant papers were subsequently published and manually added to Covidence on 3rd March 2025. Furthermore, we also contacted known experts in the field to check whether we had missed any key papers and screened reference lists of included studies.

Details of screening and Interrater reliability

For efficient review management, all citations were transferred to web-based electronic systematic review software (*Covidence*) for the removal of duplicates, for title/abstract and full text screening, and to identify, track and resolve discrepancies across reviewers (Babineau, 2014).

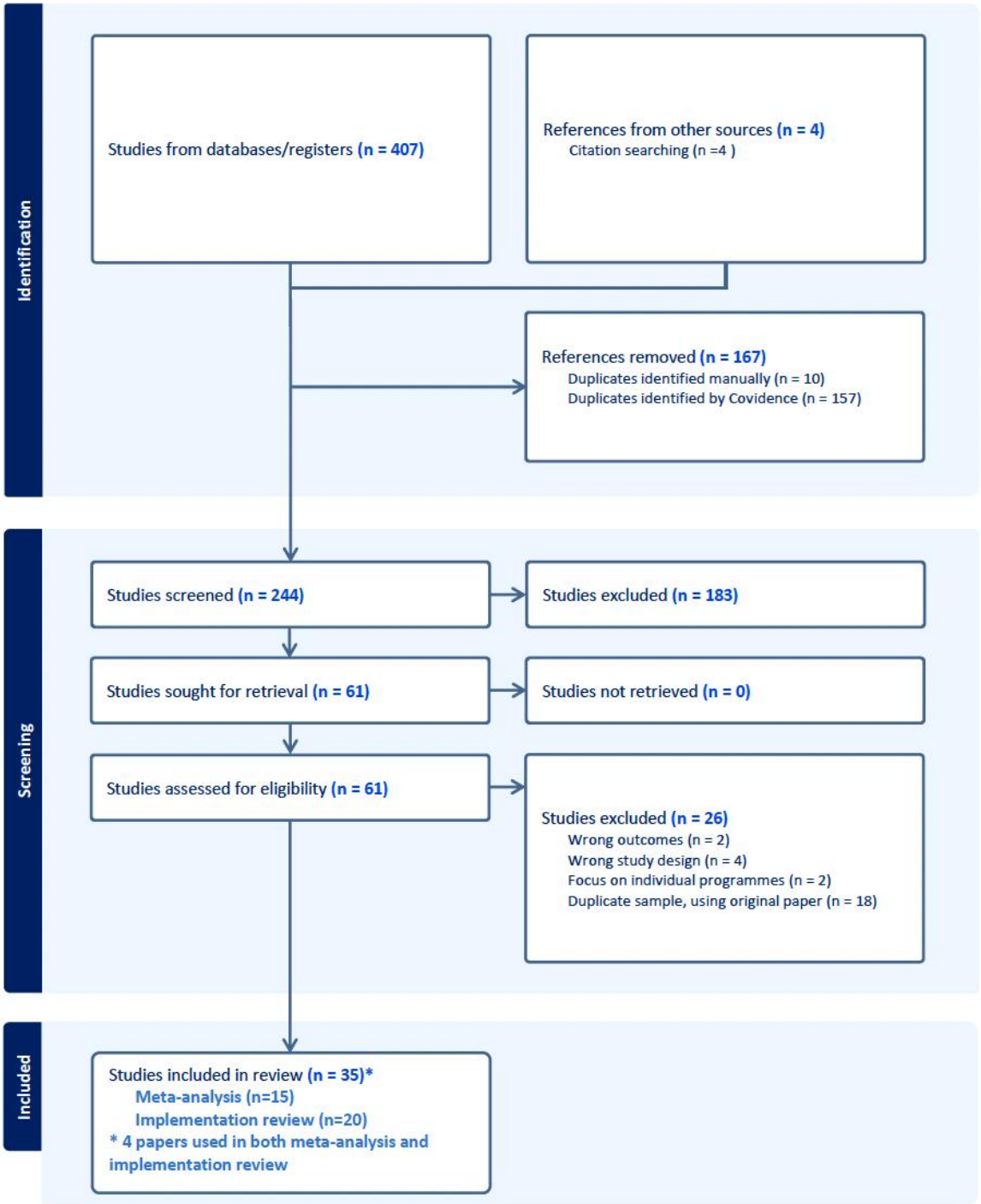
Prior to study selection, all review authors underwent training to ensure a comparable understanding of the purpose of the reviews and the selection criteria.

After removal of duplicates, 244 texts were reviewed for inclusion. Titles and abstracts were screened by two authors (SS, SH), and dual screening was also used for full-text review. Conflicts were resolved through team discussion. The percentage agreement across the two reviewers was 84%.

Initial title and abstract screening of the 244 publications excluded papers that did not meet the inclusion criteria and left 61 studies eligible for full-text screening for both the impact review and the implementation review. Of these, 35 studies met

the inclusion criteria – 13 studies were included in the review of impact, 20 studies were included in the implementation review, and 4 studies were included in both the meta-analysis and implementation review. Only papers and publications that related to the studies included in the impact review were eligible for inclusion in the impact review. This ensured that both arms of the study were examining the same implemented versions of CTC. The PRISMA flow diagram is shown below.

PRISMA flowchart of study selection process



Description of data extraction process

A data extraction form was created in an Excel spreadsheet and studies were separated into impact studies (n=16) and implementation studies (n=24). Four reviewers extracted the data (SS, SH, JJ, SB), covering the following data items:

- Publication features: e.g., author, year published, country, and publication type, any details on competing interests)
- Methodology: e.g., design, sampling, attrition, summary of analysis approach
- Geographic context: e.g., location of the intervention, number of sites involved, size of geography, scale and prevalence of youth violence in the place
- Participants: e.g., total numbers and any details of demographic factors such as age, ethnicity, gender, any details on follow-up sample sizes
- Key outcomes measured and reported: e.g., youth violence rates, crime, victimisation, other secondary outcomes, time for measuring impacts
- Effect size data including odds and risk ratios; regression coefficients, means and standard deviations, significance of effects; plus any outcomes reported that differentiated by gender, age groups or evaluation periods
- Intervention and implementation features: e.g., target population, goals/intended outcomes, process of initial scoping, governance features, types of activities, use of evidence-based programmes, any details on fidelity to the CTC model plus any variation from the model, key implementation barriers and enablers, degree of family involvement, level of community participation)

We undertook a holistic data extraction approach for the implementation barriers, facilitators and core components that included searching for relevant information across all sections of each included report (i.e., background, methods, results, discussion). This means that a substantial proportion of information included about implementation and components of the model are anecdotal (i.e., data were not gathered systematically but were reported in the text by the authors). While informative, its level of certainty is constrained.

Quality appraisal process

Impact studies were assessed for quality using the Cochrane Risk of Bias2 – Cluster RCT extension (Sterne et al., 2019) for included randomised controlled trials and the revised JBI Risk of Bias for QEDs (Barker et al., 2024) for included quasi-experimental designs. An individual rater (JJ) initially rated each included impact study for risk of bias and then came to consensus with a supervising rater (AS).

Randomised Controlled Trials

One of the included RCT studies (CYDS - Hawkins et al. 2008a) and its six follow-up reports (Hawkins et al., 2009; Hawkins et al., 2012; Hawkins et al., 2014; Kuklinski et al., 2019; Oesterle et al., 2010; Oesterle et al., 2018) had uniform ratings of 'High Risk of Bias' – the tool focuses on elements that occur at the beginning of the study (see Table 3 for the summary ratings across the RCT studies and Table 5 below for the detailed ratings). While four of the six domains were rated low risk of bias, each study / report had a high risk of bias for the timing of identification or recruitment of participants. Specifically, recruitment of individual young people occurred after randomisation and there did not appear to be blinding of participants, schools or evaluators. That said, most applied evaluations of social programmes do not have post-randomisation blinding as it is near impossible to achieve. In addition, there were 'some concerns' for deviations from the intended intervention (e.g., interventions were not always 'evidence-based'). Overall, the major risk of bias in these studies is that individual-level data describing which young people received a specific service and their outcomes was unavailable. That is, we do not know which young people received a service or whether the ones who received a service were the ones that improved, stayed the same, or declined with respect to observed outcomes.

Quasi-Experimental Designs

QEDs had wider variability in their ratings as some of the elements focused on the ways in which the interventions were rolled out and/or how outcomes were measured (see Table 4 for the summary ratings across the QED studies and Table 6 below for the detailed ratings). Four of the five studies had an 'unclear' risk of bias (Berecki-Gisolf et al., 2020; Gorman-Smith et al., 2024; Rowland et al., 2021; Toumbourou et al., 2019) while the remaining study (Chilenski et al., 2019) had a

'high' risk of bias due to having no baseline with which to assess equivalence and potential contamination (receiving similarly effective programs) in the comparison condition. As with the RCT, none of the quasi-experimental studies had specific individuals linked with specific services and corresponding outcomes.

Table 5. Detailed Ratings Risk of Bias for RCTs (Cochrane ROB2)

Study	1a. Randomization process	1b: Risk of bias arising from the timing of identification or recruitment of participants	2. Deviations from intended interventions	3. Missing outcome data	4. Measurement of the outcome	5. Selection of the reported result	Overall	Comments
Fleming et al. (2018)	Low	High	Some concerns	Low	Low	Low	High	Based on the Cochrane RoB 2 for cluster-RCTs, high risk of bias was rated in Domain 1b, which led to the overall risk of bias is high. This risk of bias judgement applies to all CYDS studies due to the same randomisation process reported. Missing data were imputed when appropriate for the included CYDS studies.
Hawkins et al. (2008a)	Low	High	Some concerns	Low	Low	Low	High	High risk of bias in relation to recruiting students after randomisation. It is also unclear if the students who completed the surveys received or didn't receive the interventions, or which interventions they received.
Hawkins et al. (2009)	Low	High	Some concerns	Low	Low	Low	High	Same as above

Study	1a. Randomization process	1b: Risk of bias arising from the timing of identification or recruitment of participants	2. Deviations from intended interventions	3. Missing outcome data	4. Measurement of the outcome	5. Selection of the reported result	Overall	Comments
Hawkins et al. (2012)	Low	High	Some concerns	Low	Low	Low	High	Same as above
Hawkins et al. (2014)	Low	High	Some concerns	Low	Low	Low	High	Same as above
Kuklinski et al. (2021)	Low	High	Some concerns	Low	Low	Low	High	Same as above
Oesterle et al. (2010)	Low	High	Some concerns	Low	Low	Low	High	Same as above
Oesterle et al. (2018)	Low	High	Some concerns	Low	Low	Low	High	Same reasons why the study was assessed as high risk of bias as above. The study reported high retention rate (91% overall), there was statistically significant difference between male and female participants at age 21, by 2%, doesn't appear to be a concern. Missing data were imputed in analyses.
Rhew et al. (2018)	Low	High	Some concerns	Low	Low	Low	High	Similar reasons why the study was assessed as high risk of bias. IPW used in the analyses.

Study	1a. Randomization process	1b: Risk of bias arising from the timing of identification or recruitment of participants	2. Deviations from intended interventions	3. Missing outcome data	4. Measurement of the outcome	5. Selection of the reported result	Overall	Comments
Rowhani-Rahbar et al. (2023)	Low	High	Some concerns	Low	Low	Low	High	Assessed as high risk of bias due to student recruitment happened after randomisation. Missing data accounted for.

Table 6. Detailed Ratings Quality Appraisal for QEDs (JBI QED)

Study	1. Is it clear in the study what is the 'cause' and what is the 'effect'?	2. Was there a control group?	3. Were the participants included in any comparisons similar?	4. Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?	5. Were there multiple measurements of the outcome both pre and post the intervention/exposure?	6. Were the outcomes of participants included in any comparisons measured in the same way?	7. Were outcomes measured in a reliable way?	8. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	9. Was appropriate statistical analysis used?	OVERALL APPRAISAL	Comments
Berecki-Gisolf et al. (2020)	Yes	Yes	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes	Include/Moderate	Municipal-level data used, no individual-level data available.
Chilenski et al. (2019)	No	Yes	Unclear	Yes	No	Yes	Yes	Yes	Yes	Include/High	Overall, this study has high risk of bias because there are no baseline measurements, so we don't know where the participants started or whether they were different from the comparison groups. Moreover, they didn't match statistically, they simply measured for baseline equivalence and, finding poverty differences in the comparison groups, and dropped the areas with poverty differences from the analysis. (Q3) "25% of youth were missing the family risk covariate. This occurred more often in non-CTC districts. Additionally, youth in CTC school districts had significantly higher levels of family risk. Given the imbalance of

Study	1. Is it clear in the study what is the 'cause' and what is the 'effect'?	2. Was there a control group?	3. Were the participants included in any comparisons similar?	4. Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?	5. Were there multiple measurements of the outcome both pre and post the intervention/exposure?	6. Were the outcomes of participants included in any comparisons measured in the same way?	7. Were outcomes measured in a reliable way?	8. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	9. Was appropriate statistical analysis used?	OVERALL APPRAISAL	Comments
											family risk between our intervention and control samples, we imputed missing values for family risk in five datasets (p. 950)." There seems to be no difference between imputed family risk vs non-imputed family risk. (Q4) "Given Pennsylvania's additional investment in replicating EBPs outside of CTC (Pennington and Kolchin 2008), many youth in the comparison condition are likely to have been served by EBPs (p. 954)."
Gorman-Smith et al. (2024)	Yes	Yes	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes	Include/Moderate	Aggregated data were used, no individual participant data collected. It is unclear if the participants in the comparisons receiving any treatment or if any treatment received might be similar to the CTC interventions.
Rowland et al. (2021)	Yes	Yes	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes	Include/Moderate	Community-level data were reported, no individual participants' data available. Possible spillover effect from an adjacent community, no control condition related information provided.

Study	1. Is it clear in the study what is the 'cause' and what is the 'effect'?	2. Was there a control group?	3. Were the participants included in any comparisons similar?	4. Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?	5. Were there multiple measurements of the outcome both pre and post the intervention/exposure?	6. Were the outcomes of participants included in any comparisons measured in the same way?	7. Were outcomes measured in a reliable way?	8. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	9. Was appropriate statistical analysis used?	OVERALL APPRAISAL	Comments
Toumbourou et al. (2019)	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Unclear	Yes	Include/Moderate	See Table 1 on p. 541, Two items were significantly different at baseline, family antisocial attitudes and non-Australian birth. Family antisocial attitude didn't appear to be substantively different and birth status was. In both cases, they adjusted for these factors in their analyses, see Table 3. So, we don't think this is a concern. It is unclear the response rate.

Discussion on how the findings were analysed and combined.

We conducted a multilevel meta-analysis using a Correlated and Hierarchical Effects (CHE) model to account for dependency among effect sizes derived from the same study or dataset. The dataset included 55 effect sizes from 15 studies, with clustering across four main datasets (Victoria, Australia; Pennsylvania, USA; Chicago, USA; and a multi-state sample from the USA). Random effects were specified at both the study and effect-size levels. A constant within-study correlation (ρ = 0.8) was assumed. Sensitivity analysis displayed on Table xx, demonstrate that effect did not present large differences when (ρ = 0.6) was assumed.

Effect sizes and their corresponding variances were calculated using formulas described by Borenstein et al. (2009). Specifically, risk ratios (RRs) were extracted or computed along with 95% confidence intervals, and the standard errors and variances were derived accordingly.

Analyses were conducted using RStudio (version 4.2.2) with the *metafor*, *meta*, *tidyverse*, *ggplot2*, *metadata* and *clubSandwich* packages. Restricted Maximum Likelihood (REML) estimation was used to model variance components. Small-sample corrections were applied where appropriate.

Moderator analyses were performed using meta-regression to assess whether effect sizes varied according to country and behavioural outcome type (antisocial behaviour, delinquency, or violence). No significant differences were found across country subgroups. However, outcome type significantly moderated the effect of the intervention, with larger effects for antisocial behaviour and smaller effects for violence.

Publication bias was assessed using Egger's regression test**.** No evidence of significant small-study effects was detected.

For the narrative review of associated implementation papers, relevant data were extracted, analysed using line-by line coding undertaken by a single researcher (author 2) to develop descriptive themes, which were then synthesised narratively to respond to the research question.

Appendix 2. Location Details

This should include details of the locations of all studies included at each stage of the review. International studies should be broken down, with the country listed in brackets, for example: 3 (United States), 2 (Canada).

	Number of UK Studies	Number (and Location) of International Studies
Overall, for Strand	0	11 (United States) 2 (Australia)
Evidence Quality	N/A	High risk of bias
Estimated Impact on Violence	N/A	Overall, 7% reduction in risk
EDIE	N/A	N/A
Implementation	N/A	19 (United States) 3 (Australia) 3 (Netherlands)
Cost	N/A	N/A

Appendix 3. Characteristics of included studies for effectiveness

This should always be a landscape table with key details on all included research, used to examine the effectiveness of the intervention.

Authors (Year)	Country	Study Design	Intervention	Population/ Place	Comparison	Outcomes Measured	Quality Level	Findings	Evaluation team independent
Chilenski et al. (2019)	United States	QED	CTC-P	Pennsylvania (N= 470, 798)	Non-CTC communities	Lifetime and past year delinquency	High risk of bias	Students in intervention districts were less likely to have been arrested (past 12 months, or lifetime)	Yes
Gorman-Smith et al. (2024)	United States	QED - PSM	CTC-C	Bronzeville, Chicago	Non-CTC communities	Community-level rates of violence and crime	Moderate risk of bias	The findings suggest that CTC was associated with reductions in aggravated assaults and robberies, though no significant impact on shootings, homicides, or property crimes observed (p. 869).	Yes
Hawkins et al. (2008a)	United States	RCT	CTC-M	Colorado, Illinois, Kansas, Maine, Oregon, Utah and Washington (N=4,407)	Non-CTC communities	Delinquent behaviour	High risk of bias	Students from control communities were 27% more likely to initiate delinquent behaviour during grades 6 and 7 than were students from CTC communities (p. 7).	No
Hawkins et al. (2009)	United States	RCT	CTC-M	Colorado, Illinois, Kansas, Maine, Oregon, Utah	Non-CTC communities	Delinquency in last year Delinquency in grades 5th-8th	High risk of bias	The incidences of delinquent behaviour were significantly lower in the CTC communities between grades 5 and 8. The number of past-year delinquent behaviours in grade 8 were	No

Authors (Year)	Country	Study Design	Intervention	Population/ Place	Comparison	Outcomes Measured	Quality Level	Findings	Evaluation team independent
				and Washington (N=4,407)				significantly lower in the CTC communities (p. 8-9).	
Hawkins et al. (2012)	United States	RCT	CTC-M	Colorado, Illinois, Kansas, Maine, Oregon, Utah and Washington (N=4,407)	Non-CTC communities	Delinquency and violent behaviour by Grade 10 Any violence Number of delinquent behaviours Number of violent behaviours	High risk of bias	Students from the CTC communities were 21% less likely to initiate any delinquent act between grades 6 and 10. Students in CTC communities had significantly lower odds of reporting any past-year delinquent and violent behaviour by 10th grade, by 17% and 25%, respectively. The variety of delinquent and violent behaviour acts in which students engaged was not significantly lower in the CTC communities (p. 7).	No
Hawkins et al. (2014)	United States	RCT	CTC-M	Colorado, Illinois, Kansas, Maine, Oregon, Utah and Washington (N=4,407)	Non-CTC communities	Delinquency and violent behaviour: cumulative incidence, past year.	High risk of bias	Students in CTC communities were significantly less likely to ever have engaged in delinquency and have committed a violent act than students in control communities by grade 12. There were no significant differences in past-year prevalence of delinquency and violence or the number of different delinquent and violent acts (p. 6).	No
Kuklinski et al. (2021)	United States	RCT	CTC-M	Colorado, Illinois, Kansas, Maine, Oregon, Utah	Non-CTC communities	ASB at grade 12th, at age 23	High risk of bias	The findings suggest that sustained abstinence from antisocial behaviour was greater among participants in the CTC communities than those in the control communities by age 23 (p. 10)	No

Authors (Year)	Country	Study Design	Intervention	Population/ Place	Comparison	Outcomes Measured	Quality Level	Findings	Evaluation team independent
				and Washington (N=4,407)					
Oesterle et al. (2010)	United States	RCT	CTC-M	Colorado, Illinois, Kansas, Maine, Oregon, Utah and Washington (N=4,407)	Non-CTC communities	Delinquent acts past year at grade 8 (boys and girls) Delinquent acts Past year at grade 8, (High risk/Low risk) Delinquent acts Past year at grade 8, NO/YES	High risk of bias	Overall, CTC reduced students' delinquency equally across risk-related and gender subgroups, except for a stronger impact of CTC on reducing 8th-grade delinquency for students who were nondelinquent at baseline (p. 11).	No
Oesterle et al. (2018)	United States	RCT	CTC-M	Colorado, Illinois, Kansas, Maine, Oregon, Utah and Washington (N=4,407)	Non-CTC communities	Antisocial behaviour and violence (past-year participation in 7 behaviours (stealing, damaging property, shoplifting, attacking someone with intent to	High risk of bias	The CTC's overall long-term impact across all primary outcomes through age 21 was not significant. The CTC system reduced the likelihood of abstaining from antisocial behaviour by 18%, and the lifetime incidence of violence by 11%, among youth who had not yet engaged in these behaviours at baseline (p. 661).	No

Authors (Year)	Country	Study Design	Intervention	Population/ Place	Comparison	Outcomes Measured	Quality Level	Findings	Evaluation team independent
						harm, carrying a handgun [other than while hunting or as part of their job], being arrested, and beating up someone so badly that they probably needed medical attention).			
Rhew et al. (2018)	United States	RCT	CTC-M	Colorado, Illinois, Kansas, Maine, Oregon, Utah and Washington (N=4,407)	Non-CTC communities	Grade 6th: Frequency of engaging in four delinquent acts over the past year (stealing, property damage, shoplifting, and attacking someone). Grade 8th:	High risk of bias	A larger reduction in delinquency among youth who remained in their study communities for the first two years of CTC implementation compared to ITT estimates (p. 8).	No

Authors (Year)	Country	Study Design	Intervention	Population/ Place	Comparison	Outcomes Measured	Quality Level	Findings	Evaluation team independent
						Frequency carrying a gun to school, beating up someone, stealing a vehicle, selling drugs, and being arrested.			
Rowhani-Rahbar et al. (2023)	United States	RCT	CTC-M	Colorado, Illinois, Kansas, Maine, Oregon, Utah and Washington (N=4,407)	Non-CTC communities	Handgun carrying in rural areas. Grades 7th – 9th	High risk of bias	Overall, CTC reduced prevalence past-year handgun carrying by 24% (cumulative grades 6th to 12th)	No
Rowland et al. (2021)	Australia	QED	CTC-Australia	Victoria, Australia	Non-CTC communities	Property crime Crime against person Carrying a gun	Moderate risk of bias	These findings support CTC as an intervention for preventing youth crime at a population level. A 2% annual reduction in risk for crimes against persons for all age groups. A 5% annual reduction for crimes of property and deception for adolescents aged between 10 and 17 years (p. 7)	No

Authors (Year)	Country	Study Design	Intervention	Population/ Place	Comparison	Outcomes Measured	Quality Level	Findings	Evaluation team independent
Toumbourou et al. (2019)	Australia	QED	CTC-Australia	Victoria, Australia	Non-CTC communities	Antisocial behaviour (How many times in the past year [12 months] have you: carried a weapon? sold illegal drugs? stolen or tried to steal a motor vehicle such as a car or motorcycle? attacked someone with the idea of seriously hurting them? been drunk or high at school?)	Moderate risk of bias	The hypothesis that exposure to the CTC intervention would be associated with steeper declines in adolescent alcohol, tobacco, and cannabis use and antisocial behaviour was supported. The CTC intervention was also associated with steeper reductions in adolescent risk factors and larger increases in protective factors (p.541).	No

* Jonkman (2015) is not included on this table as the study was not used in meta-analysis and ROB was not completed for the study.

Appendix 4. Characteristics of included studies for implementation

Authors (Year)	Country	Intervention	Success Factors (Facilitators)	Challenges (Barriers)	Strategies
Brown et al. 2011	United States	CTC - CYDS	• Diverse and high-functioning CTC coalition	• Poor acceptability of CTC • Community size	• Choice of site
Brown et al. 2014	United States	CTC – CYDS	• Training participation • Availability of sufficient technical assistance	• Poor acceptability of CTC	
Chilenski et al. 2019	United States	CTC - Pennsylvania	• Clear EBP definitions • Supportive or enabling environment • Availability of funding	• Unclear EBP definitions	• Patient, persistent & flexible approach
Fagan et al. 2008a	United States	CTC – CYDS	• Supportive or enabling environment • Allowing some adaptations • Availability of sufficient technical assistance	• EBP fidelity • EBP recruitment	• Patient, persistent & flexible approach • Sufficient training & support
Fagan et al. 2008b	United States	CTC – CYDS	• Allowing some adaptations • Availability of sufficient technical assistance	• EBP fidelity • EBP recruitment • Community size	• Choice of site • Patient, persistent & flexible approach • Sufficient training & support
Fagan et al. 2009a	United States	CTC – CYDS	• Availability of funding • Availability of sufficient technical assistance	• Difficulties securing buy-in • Insufficient training & technical assistance • EBP fidelity • Community size	• Choice of site • Sufficient training & support
Fagan et al. 2009b	United States	CTC – CYDS	• Supportive or enabling environment • Availability of funding • Diverse and high-functioning CTC coalition	• Difficulties securing buy-in • Competition with other programs and interests • EBP fidelity • EBP recruitment	• Patient, persistent & flexible approach
Fagan et al. 2011	United States	CTC – CYDS			• Patient, persistent & flexible approach

Authors (Year)	Country	Intervention	Success Factors (Facilitators)	Challenges (Barriers)	Strategies
Fagan et al. 2012	United States	CTC – CYDS		• Competition with other programs and interests • EBP fidelity	• Patient, persistent & flexible approach
Feinberg et al. 2010	United States	CTC – Pennsylvania	• Availability of sufficient technical assistance		
Gloppen et al. 2012	United States	CTC – CYDS	• Availability of funding	• Insufficient resources to support implementation	• Sufficient training & support
Gloppen et al. 2016	United States	CTC – CYDS	• Training participation		• Sufficient training & support
Gorman-Smith et al. 2024	United States	CTC - Bronzeville	• Allowing some adaptations	• Poor acceptability of CTC • Insufficient resources to support implementation • Lack of relevant EBPs	• Patient, persistent & flexible approach • Sufficient training & support
Jonkman et al. 2009	Netherlands	CTC - CYDS & Netherlands	• Diverse and high-functioning CTC coalition	• Poor acceptability of CTC • Difficulties securing buy-in • Competition with other programs and interests • Lack of relevant EBPs • EBP recruitment • Community size	• Choice of site
Jonkman et al. 2015	Netherlands & United States	CTC –Netherlands	• Availability of funding • Availability of EBPs	• Lack of relevant EBPs	• Choice of site • Sufficient training & support
Kellock 2007	Australia	CTC – Australia	• Supportive or enabling environment • Availability of funding • Diverse and high-functioning CTC coalition • Allowing some adaptations	• Poor acceptability of CTC • Insufficient resources to support implementation • Difficulties securing buy-in • Competition with other programs and interests	• Choice of site • Patient, persistent & flexible approach • Sufficient training & support

Authors (Year)	Country	Intervention	Success Factors (Facilitators)	Challenges (Barriers)	Strategies
				• Insufficient training & technical assistance • Lack of relevant EBPs • EBP recruitment • Community size	
Quinby et al. 2008	United States	CTC – CYDS	• Training participation	• Insufficient resources to support implementation • Difficulties securing buy-in • Competition with other programs and interests	• Patient, persistent & flexible approach
Rhew et al. 2013	United States	CTC – CYDS	• Training participation • Availability of sufficient technical assistance		• Sufficient training & support
Rowland et al. 2021	Australia	CTC – Australia		• Poor acceptability of CTC • Lack of relevant EBPs	
Shapiro 2012	United States	CTC – CYDS	• Supportive or enabling environment • Diverse and high-functioning CTC coalition		
Shapiro et al 2015a	United States	CTC – CYDS	• Diverse and high-functioning CTC coalition		
Shapiro et al 2015b	United States	CTC – CYDS	• Diverse and high-functioning CTC coalition		
Sketekee et al. 2013	Netherlands	CTC – Netherlands		• Lack of relevant EBPs	• Choice of site
Toumbourou et al. 2019	Australia	CTC – Australia	• Supportive or enabling environment • Availability of EBPs • Availability of sufficient technical assistance		