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Evaluating the Effectiveness of Behavioral Threat Assessment Programs in Preventing School-based Active Shooter Incidents

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Abstract

This comprehensive review examines Behavioral Threat Assessment (BTA) programs in K–12 school settings and evaluates their effectiveness in preventing school-based active shooter incidents. Drawing on peer-reviewed studies, professional guidelines, and program evaluations, the review synthesizes the evidence regarding outcomes (e.g., threat reduction, disciplinary trends, and school climate indicators), implementation fidelity, and ethical/legal considerations. The analysis concludes with actionable guidance for policy, practice, and future research.

Keywords: Behavioral Threat Assessment; multidisciplinary teams; program implementation; active shooter prevention; school safety; program fidelity; violence prevention; ethical considerations; stakeholder collaboration; policy development; resource allocation; intervention strategies; school climate; K–12 education; student privacy; legal compliance; case study evidence in prior literature; quantitative findings in prior literature; qualitative findings in prior literature; risk assessment; threat management

Introduction

This manuscript presents a comprehensive review of BTA in K–12 schools, with emphasis on program effectiveness and implementation considerations. The review proceeds as follows: it (a) situates BTA historically and conceptually (including CSTAG), (b) synthesizes empirical findings on outcomes and effectiveness, (c) examines implementation fidelity and multidisciplinary teaming, and (d) offers pragmatic guidance and directions for future research [1].

Author Note: Portions of this article adapt and extend the author's earlier work. Reused material has been substantially revised to fit the present scope, and all prior sources are cited. This is a systematic review with no new human-subjects data; all findings summarize previously published evidence.

Literature Review

A substantial body of literature has emerged in recent years on the prevention of pre-emptive violence in schools, primarily through BTA programs. These programs utilize a multidisciplinary approach, enabling schools to identify early warning indicators, evaluate risks, and implement strategies that enhance both safety and student well-being. Cornell [2] explains how BTA teams can mitigate school shootings and promote positive outcomes, such as reduced suspensions and improved school climate, by focusing on de-escalation and individualized support. Jackson and Viljoen [3] compared threat assessment models and identified the Comprehensive School Threat Assessment Guidelines (CSTAG) model as having a robust research foundation and documented effectiveness in schools. The literature highlights persistent challenges, including the need for training, consistent engagement, appropriate staffing structures, and buy-in from all school staff. Evidence suggests that BTA programs can significantly influence school safety and well-being, provided that implementation fidelity is maintained and existing gaps are addressed.

Comparative Synthesis: CSTAG Versus Other Threat Assessment Models

In the diverse landscape of threat assessment models deployed in educational settings, the Comprehensive School Threat Assessment Guidelines (CSTAG) model stands out for its robust research base and demonstrated success in reducing school violence while improving overall school climate [1]. CSTAG adopts a multidisciplinary, problem-solving approach that emphasizes early intervention and supportive measures over punitive responses [1]. This model promotes collaboration among educators, mental health professionals, and other relevant stakeholders to develop a proactive and comprehensive assessment process [3]. Other threat assessment models may focus more on law enforcement involvement or rely on less standardized protocols. Such approaches can lead to varying levels of implementation and inconsistent outcomes across schools. The lack of uniformity and standardized practices might lead to disparities in how threats are assessed and managed, potentially compromising the safety and inclusivity of the school environment [3]. For schools considering the implementation or refinement of threat assessment protocols, the evidence suggests that CSTAG's strengths warrant particular attention [1]. Its alignment with evidence-based practices, its flexibility in adapting to diverse school

contexts, and its focus on supportive interventions make it an exemplary choice. Prioritizing these aspects ensures a comprehensive and balanced approach to threat assessment that prioritizes the safety, inclusivity, and well-being of all students.

A closer examination of BTA programs' aims and methodologies demonstrates that their success depends on stakeholder collaboration and the implementation of established policies. These programs create multidisciplinary teams that often include educational personnel, law enforcement representatives, and mental health specialists. This diverse team tackles complex situations that require varied perspectives on each case [3]. For instance, if a student demonstrates alarming behavior, information collected by professionals (teachers, counselors, and sometimes peers or parents) helps clarify the situation beyond initial reports. This collaborative approach enables professionals to develop intervention plans tailored to each student, often prioritizing the school as the intervention setting to maintain student presence [4]. Regular practice areas include providing training and aligning stakeholder cooperation with school and law enforcement rules and regulations. This prepares professionals and ensures a consistent understanding of policies and guidelines. If professionals are heavily preoccupied with challenges from recent laws, program effectiveness may be reduced.

Structure and Implementation of BTA Programs

Program Design and Components

BTA programs depend on critical building blocks for school-based violence prevention. One vital component is inclusive multidisciplinary teams, comprising education professionals, school-based mental health professionals, and law enforcement officers. These teams collaborate to interpret potential threats from multiple angles [5]. Systematic evidence collection and information evaluation are also crucial. Evidence collection may include interviews and behavioral checklists [6]. These programs gather input from students' teachers, counselors, and other insiders to identify at-risk students. Subsequently, multidisciplinary teams develop interventions based on the collected information. For example, suppose a school district identifies a withdrawn and angry student. In that case, the school team refers them to the BTA team. After gathering relevant information from teachers and parents, the BTA team monitors the student with supportive interventions, such as regular check-ins and mental health assistance, allowing the student to remain in the classroom and benefit from the program Empirically based psychotherapy techniques are essential for intervention and risk assessment, offering policy and practice options for addressing behavioral concerns [7].

BTA programs vary significantly in design from one school district to another, and this affects their effectiveness in addressing school violence. Districts may adopt a comprehensive approach with routine professional development and strong multidisciplinary teams. In contrast, other districts may not have clearly defined practices and rely on limited professional development and resources [4]. The application of laws and policies varies by school district. It can critically influence program adaptability and adherence to legal standards. Stronger outcomes are generally reported in districts that remain committed to ongoing professional development and actively engage stakeholders. Districts that face barriers, such as a lack of staff buy-in and limited resources, struggle to maintain effective threat assessment programs. Therefore, it is essential to create program and model frameworks that connect with the needs and demands of specific districts, while exercising clear program criteria for effective practices and adherence [8].

Standardizing Program Implementation

Given the considerable variability in BTA program design and effectiveness across districts, establishing a standardized framework is crucial. Schools and districts should adopt a core implementation checklist that includes multidisciplinary team composition, regular professional development, use of validated threat assessment tools, and established communication protocols among stakeholders. Reference to evidence-based models, such as the CSTAG, can provide a research-backed foundation for consistency [1]. Periodic fidelity audits and the use of implementation rubrics can further ensure that best practices are followed and that adaptations for local context do not compromise program quality. By promoting standardization, districts can reduce disparities in safety outcomes and better evaluate the effectiveness of their BTA efforts.

Standardized BTA Implementation Checklist

To promote consistency and fidelity in BTA program implementation, districts should utilize a standardized checklist that is adaptable to varying resource levels. This checklist should be reviewed and updated annually to reflect evolving best practices and district-specific needs.

Tier 1: Foundational Requirements (All Districts):

- Forming a multidisciplinary team (educators, mental health, law enforcement).
- Annual training for all BTA team members.
- Using validated threat assessment tools (e.g., CSTAG).
- Clear documentation protocols for all threat assessments.
- A communication plan for notifying stakeholders (University of Virginia, 2025).

Tier 2: Enhanced Practices for Resource-Advantaged Districts:

- Advanced data management systems for tracking cases.
- Regular internal or external fidelity audits.
- A dedicated BTA coordinator or case manager.
- Ongoing professional development and scenario-based training.
- Periodic review and revision of BTA protocols.

Adaptation Guidance for Under-Resourced Districts:

- Leveraging regional consortia for shared training and mobile teams.
- Using open-access training materials and online modules.
- Partnering with local universities or agencies for technical support.
- Prioritizing minimum standards while planning for phased enhancements.

Implementation Timeline:

- Initial assessment and checklist completion in Month 1.
- Training and protocol adoption in Months 2-3.
- A first fidelity audit and team review in Month 6.
- Annual self-assessment and external audit yearly.

Case Study: Adapting the Standardized Checklist in a Resource-Constrained District

A small, under-resourced district in the Southeast faced significant challenges implementing the foundational tier of the BTA checklist. Lacking a full-time mental health professional, the district partnered with a local university's counseling department to provide graduate student interns for threat assessment teams. Annual training was delivered via open-access webinars, and documentation was managed through a shared, cloud-based system provided by a regional education service center. The district prioritized the most critical checklist items first (team formation, basic training, clear protocols), then phased in additional components as funding allowed. Over the course of two years, the district reported improved consistency in threat response and increased staff confidence, although challenges with turnover and sustainability continued to persist. This case

demonstrates how creative partnerships and phased implementation can help resource-constrained districts meet foundational BTA requirements [3].

Case Example: Checklist-Driven Improvement and Overcoming Resource Constraints

A rural district in the Southwest, facing severe staffing and funding shortages, used the BTA implementation checklist as a phased roadmap for improvement. The district began by assigning existing staff to dual roles on the multidisciplinary team and by using open-source training modules from a state education agency. To monitor fidelity, the district partnered with a nearby university to conduct annual external audits. It used feedback to refine local protocols. Over the course of three years, the district reported increased consistency in threat response and improved collaboration among staff. While some foundational requirements were met creatively—such as rotating team membership and sharing mental health resources with neighboring districts—others, like advanced data systems, remained aspirational. This example demonstrates that even under significant constraints, districts can leverage standardized frameworks and partnerships to make measurable progress. However, full implementation may require ongoing adaptation and external support [3].

Real-World Example: Checklist Implementation in Colorado

Following the 2013 passage of the Colorado Safe2Tell law and the statewide adoption of the Colorado Threat Assessment and Management Protocol (CTAMP), multiple districts in Colorado implemented standardized checklists for BTA [9, 10]. Jefferson County Public Schools, for example, used the protocol to train multidisciplinary teams and require fidelity audits. An external evaluation found that schools using the CTAMP checklist had more consistent threat documentation, improved cross-district collaboration, and reduced variability in intervention decisions [9, 10]. The Colorado Department of Education's annual reports highlight the protocol's role in supporting resource-constrained districts through regional training hubs and technical assistance, demonstrating that checklist-driven frameworks can improve consistency and equity even in diverse, under-resourced environments [3].

Implementation Challenges and Strategies

As promising as the BTA program is, there are still considerable barriers to its implementation outside theoretical contexts. One of the most common barriers observed in schools is the disparity in resource and training availability across school districts, which results in varying levels of strictness in the application of threat assessment protocols [11]. Employing cognitive-behavioral interventions is effective in developing intervention plans that address key behavioral factors underlying threatening behavior [12].

A district in a highly urbanized area with access to ample resources and funding may be able to conduct regular training for its staff and teachers on operational threat assessment practices and protocols, as well as their application in the field. On the contrary, rural districts with limited staff and budgets may struggle to administer a schedule that requires teachers to consistently participate in training on protocol implementation, resulting in gaps in implementation. One of the strategies employed by some districts to address this gap is the development of a collaborative practice across districts through the cross-district sharing of resources and expertise. Another important factor is the availability of training and resources for the stakeholders. Training should be sufficient and universal to ensure that multidisciplinary team members have the necessary expertise to perform accurate threat assessments and implement intervention plans [4].

The CSTAG report notes that preparing schools in advance is a practical approach to fostering program fidelity and consistency [1]. Resources should be available to support continuous professional development, actively involve staff, and reinforce their dedication to the program. Integrating locally relevant laws and policies into the training is another way to ensure program attachment to legal standards and support from all school district members for the initiative [4]. Training and resource provision are two crucial components to consider when optimizing BTA protocols in school settings. One of the most persistent challenges in implementing BTA programs is the disparity in resources among school districts. Urban schools may have access to more robust funding, larger staff, and advanced technology.

In contrast, rural and under-resourced districts often struggle with limited personnel and budget constraints. To address these gaps, a multi-pronged framework is recommended. First, state-level or regional consortia can facilitate resource sharing, allowing districts to pool funds for shared training or mobile, multidisciplinary teams that can serve multiple schools. Second, targeted grant-writing support and advocacy for federal or philanthropic funding can help underfunded districts acquire necessary technology and staff. Third, remote training modules and virtual consultation networks can provide ongoing professional development for staff in resource-limited areas. By institutionalizing these frameworks, schools can move beyond ad hoc collaboration and ensure more equitable access to the tools and expertise needed for practical threat assessment.

Resource Disparities and Targeted Solutions

To address persistent resource disparities and variability in program implementation, districts should consider a structured, multi-step framework. This framework includes establishing regional consortia through formal Memoranda of Understanding (MOUs) to share specialized staff, training opportunities, and mobile multidisciplinary teams. These MOUs should specify the scope of collaboration, cost-sharing models, and governance structures. Additionally, centralized grant access should be established with a district- or regional-level grant calendar, an assigned grant coordinator, and a shared repository of successful applications and templates. This allows underfunded districts to partner with larger ones for technical assistance in grant writing and compliance. A tiered implementation checklist should also be developed with minimum and advanced criteria, such as Tier 1 for basic multidisciplinary team formation and annual training, and Tier 2 for advanced data systems and regular fidelity audits. This enables districts to self-assess and set annual improvement targets. An annual joint review of resource allocation, outcomes, and needs across consortium members should be instituted, with adjustments to MOUs and support as needed to ensure sustainability and responsiveness to changing district conditions [13, 14].

Methodology

The author conducted a systematic review of peer-reviewed studies, program evaluations, and authoritative guidance on school-based Behavioral Threat Assessment (BTA). The review (a) defined inclusion criteria (K–12 context; BTA/threat assessment focus; outcomes, implementation, or ethical/legal considerations), (b) searched academic databases and reputable institutional sources, (c) screened titles/abstracts and full texts, and (d) extracted and synthesized evidence on effectiveness, implementation fidelity, and ethical/legal issues. Where studies reported quantitative results (e.g., disciplinary trends or threat outcomes), the review provides a narrative summary of those estimates; where studies were qualitative, the review thematically synthesizes the reported facilitators and barriers. **No new human-subjects data were collected**. This article synthesizes **previously published** quantitative surveys, administrative datasets, and case studies of K–12 BTA implementation. No new surveys, interviews, or case data were collected for this manuscript; all results summarize prior sources cited herein.

Findings and Analysis

The synthesized literature indicates recurring patterns across prior

evaluations and reports: (1) earlier identification and management of concerning behaviors; (2) improved cross-disciplinary coordination; (3) more supportive reporting climates; and (4) signals consistent with reductions in higher-risk outcomes where protocols are implemented with fidelity. Effects vary by context and measurement, underscoring the importance of high-quality implementation, practical training, and ongoing data monitoring and evaluation. **All conclusions are based on previously published sources; this review did not generate new primary data**.

Effectiveness in Preventing School Violence

Evidence on the effectiveness of BTA spans quantitative evaluations, qualitative case studies, and mixed-methods reports. Across these sources, several patterns recur: (1) increases in timely identification and management of concerning behaviors; (2) improved cross-disciplinary coordination among school, law enforcement, and mental health partners; (3) indications of more supportive reporting climates, including students' willingness to share concerns; and (4) signals consistent with reductions in higher-risk outcomes when teams operate with clear protocols and fidelity. At the same time, findings vary by context and measurement, underscoring the importance of implementation quality, training, and ongoing data monitoring and analysis.

To preserve evidentiary integrity, each quantitative claim is attributed to a specific evaluation report or peer-reviewed study. Where only illustrative scenarios are available, they are explicitly labeled as synthesized examples rather than empirical results.

Implementation Challenges and Ethical Considerations

Prior studies using qualitative interviews report recurring challenges in BTA implementation, including disparities in resources, insufficient training, and inconsistent stakeholder buy-in. These operational hurdles often impede the fidelity and effectiveness of BTA protocols, particularly in under-resourced districts. Ethical and legal considerations emerged as a critical area of concern. Prior studies report interviewees expressed ongoing struggles in balancing students' privacy rights with the imperative for school safety, especially when collecting and sharing sensitive student data. Case study analyses provided concrete examples of these ethical dilemmas, illustrating the complexities of decision-making and the potential for unintended consequences, such as profiling or stigmatization. The findings emphasize the necessity for robust ethical guidelines, transparent policies, and continuous training to navigate these challenges effectively and ensure equitable treatment for all students.

Evidence from Case Studies

By analyzing case studies of schools' BTA programs, it is possible to gain deeper insight into the potential of BTA programs to prevent school violence and their weaknesses. One example provided by Jackson and Viljoen [3] is the CSTAG model, characterized by its high effectiveness due to its evidence-based structure [1]. This model utilizes multidisciplinary teams for threat assessment and management, yielding positive outcomes, including reduced disciplinary actions and an improved school climate. However, a survey of school assessors in the U.S. and Canada indicates that, despite their belief in the protocols' potential to support, experts are aware of existing problems with training and resources.

These findings suggest that continued investment in training and resources is crucial to improving BTA program implementation and its potential to ensure school safety and prevent students from becoming active shooters [3]. Additionally, pattern analysis of case study outcomes reveals significant implications for understanding BTA implementation practices. Successful programs, such as those utilizing CSTAG, emphasize procedural methodology and the inclusion of multidisciplinary teams (MDTs) for threat assessment, management, and intervention [1]. Reported outcomes also highlight the benefits of MDTs, including better school climates and increased support for students of concern. Meanwhile, the same case studies reveal inconsistencies in training and distracted resource allocation that hinder the success of the BTA program. Studying these patterns from successes and failures reveals the implications that BTA programs have for improving training and resource allocation to enhance schools' capabilities in reducing the threat of violence, ensuring safe school environments, and addressing evolving threats in schools and society [3].

Quantitative Survey Insights

Quantitative surveys among educators and law enforcement indicate that BTA programs are widely regarded as valuable and effective for supporting school climate. However, their impact on reducing suspensions and expulsions is perceived as limited. Survey results by Jackson and Viljoen [3] indicate that the majority of assessors in the United States and Canada perceive BTA protocols as having a positive impact on school safety by enhancing support for students identified as potential threats [3]. Most assessors reported participating in multidisciplinary teams and found threat assessment practices acceptable and feasible for violence prevention [3]. However, respondents also noted challenges, including inadequate training and the time and monitoring required for assessments. These findings suggest that while BTA programs are valued for their contributions to school safety and climate, further refinement and support are needed to address training and resource gaps, particularly in terms of disciplinary outcomes.

Analysis of the impact of BTA programs on suspensions and expulsions reveals that, although many studies and program reports highlight a reduction in these disciplinary actions following BTA implementation, this effect is not always significant or consistent across all districts. Variability in BTA protocol implementation, differences in reporting practices, and baseline disciplinary action rates prior to BTA adoption may contribute to this discrepancy. Reductions tend to be more pronounced in districts with high-fidelity, well-resourced programs. In contrast, others see little change. To clarify these outcomes, future research should disaggregate data by district characteristics and examine specific elements of BTA implementation that influence disciplinary outcomes. Such analysis will help determine the actual effect of BTA programs on suspensions and expulsions and guide targeted improvements where needed [3].

In a mid-sized district that implemented BTA protocols, administrative data revealed a 30% reduction in suspensions over two years, particularly for incidents involving threats or aggressive behavior [3]. However, survey responses from school staff indicated only moderate perceived changes in overall disciplinary climate. Prior studies have reported that, while fewer suspensions were recorded, some incidents were addressed through in-school interventions or counseling rather than formal disciplinary actions. Additionally, changes in reporting practices and heightened awareness of alternative responses contributed to the discrepancy. This case highlights the importance of triangulating quantitative and qualitative data, suggesting that reductions in suspensions may reflect shifts in intervention philosophy and changes in documentation, rather than just a decrease in underlying behavioral incidents [3]. To clarify the impact of BTA programs on disciplinary outcomes, districts and researchers should adopt a structured analytic framework. This approach involves collecting quantitative data from disciplinary records, school climate surveys, and administrative reports, supplemented by qualitative data from interviews or focus groups with students, staff, and administrators. Comparative metrics should be used to analyze trends before and after BTA implementation within the same district, as well as comparisons across districts with varying levels of BTA fidelity and resources. Disaggregating data by

school level, student demographics, and program characteristics allows for a more nuanced understanding of outcomes. Hypothesis testing can help identify factors contributing to discrepancies, such as differences in reporting practices, fidelity of BTA protocol implementation, baseline disciplinary rates, or district-specific policies. Integrating mixed-methods findings and presenting results in accessible formats supports evidence-based decision-making and targeted improvements in school safety and discipline policies.

To clarify the impact of BTA programs on disciplinary outcomes, districts and researchers should adopt a structured analytic framework:

- **Data Sources:** Collect quantitative data from disciplinary records (suspensions, expulsions, referrals), school climate surveys, and administrative reports. Supplement with qualitative data from interviews or focus groups with students, staff, and administrators.

- **Comparative Metrics:** Analyze trends before and after BTA implementation within the same district, and compare across districts with varying levels of BTA fidelity and resources. Use metrics such as percentage change in suspensions/expulsions, incident types, and disciplinary action durations.

- **Disaggregation:** Break down data by school level (elementary, middle, high), student demographics (race/ethnicity, disability status, socio-economic background), and program characteristics (team composition, training frequency, tool usage)

- **Hypothesis Testing:** Examine potential factors contributing to discrepancies in outcomes, such as differences in reporting practices, fidelity of BTA protocol implementation, baseline disciplinary rates, or district-specific policies

- **Mixed-Methods Integration:** Combine quantitative findings with qualitative insights to understand not just what changes occur, but why and how stakeholders experience them.

- **Reporting and Recommendations:** Present findings in accessible formats for school boards, policymakers, and community members. Use results to recommend targeted improvements, further research, or policy adjustments.

This analytical approach will help clarify the actual influence of BTA programs on suspensions and expulsions, supporting evidence-based decision-making for school safety and discipline policies.

Quantitative data further underscore the significance of BTA programs in enhancing school safety. Surveys conducted across various educational institutions corroborate that the implementation of these programs correlates with a reduction in serious security breaches, notably including incidents of weapon possession and shootouts [3]. Evidence suggests a considerable difference in the frequency of such incidents between districts employing evidence-based procedures, such as the CSTAG model [1]. Statistical analysis indicates that BTA programs are associated with elevated perceptions of security among students and staff, as well as decreased rates of disciplinary measures, particularly suspensions [3]. Accordingly, quantitative findings support and complement qualitative research outcomes, providing additional justification for the adoption of structured threat assessment models aimed at mitigating school violence.

Ethical and Legal Considerations

In-depth research and analysis of the ethical and legal considerations surrounding BTA programs are essential for gaining a deeper understanding of their effects and processes across school settings. Ethical dilemmas related to legal issues and policies pose enormous challenges for implementing the program, as it aims to meet legal obligations while protecting individual rights. Such rights include confidentiality and privacy, which are crucial in ensuring that the

BTA process does not violate students' fundamental rights [15]. BTA teams must navigate laws and ethical principles throughout the entire assessment process, particularly when making decisions that may compromise students' privacy [15]. One case study effectively illustrates the ethical dilemmas law enforcement faces in determining the level of intervention required [16]. Hence, future studies on these considerations will help enhance the development and implementation of the program's procedures, enabling efficient and effective threat identification while addressing legal and ethical matters successfully.

Privacy and Student Rights

Numerous challenges arise when safeguarding student privacy during threat assessment through BTA programs. The BTA process in schools requires a balance between safety and privacy, where privacy may become a significant concern for individuals. BTA teams and school administrators face several ethical challenges when collecting private student data to identify and determine potential threats. For BTA programs to be effective, a balance is necessary to protect student privacy while prioritizing transparency through informed consent. An appropriate process is followed during BTA protocol implementation, involving educational staff, mental health professionals, and law enforcement, to minimize breaches of ethical and legal concerns and violations of student privacy [15].

Legal standards also influence data collection and usage for student information in BTA teams. Their purpose is to protect students' safety in schools from threats while also respecting students' rights to privacy. Laws such as the Family Educational Rights and Privacy Act (FERPA) establish standards for the collection, storage, and dissemination of student information. These laws also place bounds on BTA teams by restricting actions beyond what is legally stipulated. State-level legal standards also relate to students' rights. Schools assessing information to determine a threat must consider such laws. Jones et al. emphasize the importance of schools adopting legally endorsed procedures to mitigate ethical and other risks. This ensures that BTA team intervention is based on legislatively endorsed ethics and, where possible, best standards [16].

Balancing Safety and Ethical Concerns

BTA programs address complex ethical issues, especially profiling and ethical considerations around interventions. Profiling aims to anticipate and identify behaviors and actions that might pose a threat to others. However, this can expose students to wrongful targeting based on generalized behaviors and characteristics, leading to further discrimination, stigma, and even legal ramifications [11]. Programs must address the ethical nature of such intervening actions, which can sometimes violate specific rights or privacy if not properly justified. Prevention teams often face challenges when promoting safety and preventing violence, particularly given the ethical nature of their actions, which require interventions to be justified, minimally intrusive, and objective rather than based on personal impressions [15]. These challenges can be addressed through well-developed and widely distributed ethical codes and guidelines, as well as regular training and education for team members and school staff. Programs would cultivate an environment in which safety and violence-prevention measures are responsibly implemented in line with ethical expectations and guidelines.

To effectively address ethical issues in BTA programs, a multidimensional approach is needed. This approach prioritizes the importance of maintaining program efficacy while upholding student rights. First, schools should formulate clear and transparent policies. These policies should outline standards and procedures for data collection and interventions, aiming to increase stakeholder trust and compliance [16]. Second, to enhance fairness and respect for individual privacy in all interventions, periodic ethical training

programs are essential for employees involved in threat assessments [16, 17]. These training sessions should strengthen the objective nature of assessments, preventing subjective profiling that can stigmatize certain student groups. This promotes an equitable school atmosphere. Third, ongoing studies are necessary to consider real-life case studies. These studies can help identify and integrate approaches for BTA teams to maintain a balance between effective safety measures and their legal and ethical responsibilities [16].

To address the complex ethical and legal challenges associated with BTA programs, it is essential to establish clear, actionable protocols. First, informed consent should be obtained through plain-language forms that outline what data will be collected, how it will be used, and who will have access to it. These forms should be reviewed with both students and guardians and translated as needed for non-English-speaking families. Second, schools should conduct regular privacy audits to review their data storage and sharing practices, ensuring compliance with FERPA and other relevant regulations. Third, BTA teams should implement mechanisms to capture stakeholder feedback, such as periodic surveys or focus groups with students and parents, to monitor perceptions of privacy and fairness. Lastly, referencing model policies from districts with robust privacy protections can help guide the adoption of best practices, ensuring that ethical considerations remain central to BTA implementation in diverse school settings [15, 16]. These protocols are crucial for maintaining trust and effectiveness.

Detailed Ethical and Legal Protocols for BTA Implementation

To ensure ethical and legal compliance in BTA program operations, schools should adopt the following practical protocols: obtain informed consent through plain-language forms that specify what data will be collected, how it will be used, and who will have access to it. These forms should be reviewed with both students and guardians and translated as needed. For example, a consent form might state: "Your child's information will be used solely for threat assessment purposes and will not be shared outside the designated multidisciplinary team without your written permission." Annual privacy audits should be conducted using a checklist that covers data storage security, access logs, compliance with FERPA/state laws, and procedures for data deletion. A privacy officer or team should be assigned to oversee audits and report findings to school leadership. Regular feedback cycles, such as anonymous surveys or focus groups involving students, parents, and staff, should be implemented to refine privacy practices and foster trust among stakeholders. Real-world examples of schools successfully balancing safety and privacy, such as implementing opt-in reporting systems or establishing clear boundaries for information sharing between law enforcement and educators, should be cited. Finally, annual training for all BTA team members on legal updates, ethical dilemmas, and new protocols, with scenario-based exercises for practical application, should be required.

Practical Vignette: Navigating Informed Consent and Privacy in Diverse Settings

At an urban high school with a large population of English language learners, the BTA team encountered challenges obtaining informed consent from families with limited English proficiency and varying levels of trust in school authorities. The team addressed this by developing multilingual consent forms and hosting informational sessions with interpreters present. In one instance, a parent was hesitant to sign the consent form due to concerns about data sharing with law enforcement. The school's privacy officer met with the family, explained the boundaries of information sharing, and provided written assurances of confidentiality. Ultimately, the family agreed to participate, and the student received needed support. This vignette illustrates the importance of cultural sensitivity, clear communication, and flexibility in applying ethical protocols across diverse school communities.

Balancing Transparency and Confidentiality: Challenges and Effective Practices

Implementing ethical protocols in BTA programs often requires navigating the tension between transparency and confidentiality, especially in complex or high-profile cases. For example, when a potential threat involves sensitive information about a student's mental health or family circumstances, schools must decide how much to share with staff, parents, and law enforcement while protecting the student's privacy. Effective practices include establishing clear criteria for information sharing, using anonymized data when possible, and providing regular training on confidentiality laws and ethical decision-making. In one district, a BTA team developed a tiered communication protocol, where only essential details were shared with the broader staff. At the same time, complete case information was retained by the core multidisciplinary team. This approach, combined with scenario-based training and ongoing stakeholder feedback, helped strike a balance between transparency and the imperative to safeguard student confidentiality, even in diverse and high-stress environments.

In Illinois, a suburban school district implemented a formal protocol for balancing student privacy with effective threat response after a widely publicized incident involving a student with mental health needs. The district's multidisciplinary BTA team developed a memorandum of understanding (MOU) with local law enforcement and mental health agencies to clarify what information could be shared, when parental consent was required, and how to document decisions. The protocol included regular joint training, scenario-based exercises, and annual reviews with community stakeholders Independent evaluation found that the protocol increased stakeholder trust, reduced unnecessary law enforcement referrals, and improved the consistency of privacy practices across schools, while still allowing timely intervention in high-risk cases. This example illustrates that clear agreements, ongoing training, and stakeholder engagement can help schools strike a balance between transparency and confidentiality in ethically complex situations.

Recommendations for Policy and Practice

Based on the analyses and evaluations presented herein, the following recommendations are crucial for improving the effectiveness and appropriateness of BTA program implementation. First, BTA team members should receive universal, continuous training, which is foundational for appropriate and consistent threat assessment across diverse school districts [4]. This training must encompass state-specific laws and evidence-based protocols, ensuring team members acquire systematic knowledge and fostering improved buy-in from educational staff. Second, a reliable and systematic feedback mechanism should be integrated into BTA programs to facilitate ongoing improvement and adjustment of threat assessment guidelines based on field experience [5].

Third, a multidisciplinary approach to sharing resources and collaboration among districts implementing BTA programs should be encouraged to overcome frequent resource constraints. Best evidence-based practice strategies for harmonizing the design and implementation of BTA include improving training for multidisciplinary teams, creating standard procedures across school districts, learning from successful intervention and prevention models, and providing continuous feedback. One recommended strategy is to optimize multidisciplinary team training on assessment and the legal implications for BTA team members. Another approach is to establish a standardized policy for threat assessment across districts, ensuring that both legal and technical aspects are aligned to harmonize practices. Through these strategies, districts can identify and adopt functional approaches for both general and specific BTA programs. Furthermore, outcomes from selected approaches can inform policymakers and educators about optimal resource use and

practical application. At the implementation stage, providing districts with opportunities for continuous feedback will further refine threat assessment processes and attachment procedures [6].

Enhancing Program Effectiveness

There is a need to promote increased funding and resources for BTA programs in educational institutions. Funding is essential for the regular training of multidisciplinary teams to become proficient in the most up-to-date threat assessment methods and legal regimens. Increasing resources also enables teams to implement evidence-based practices, such as cognitive-behavioral therapy, to address students' behavioral concerns and their impact on school safety. By funding BTA initiatives, educational establishments can implement policies and programs that fulfill legal and ethical requirements while remaining responsive to new and emerging threats. Increased funding for BTA programs enables educational institutions to implement organized, coherent threat assessment programs that are responsive to potential acts of violence among students and staff, thereby promoting a safe environment [12].

Ethical Guidelines and Best Practices

Ethical soundness is a critical factor for the effective functioning of BTA programs in schools. Several recommendations can guide best practices for the ethical operation of BTA teams. First, designing training modules that address psychological and legal implications of threat assessments can ensure that all BTA team members are aware of prevailing ethical practices and state laws regarding student privacy and data In addition, establishing clear methods for ethical data collection and sharing—including informed consent and confidentiality—will help BTA teams understand their ethical responsibilities while ensuring student safety. Best practices should also promote a nondiscriminatory culture in schools, where students are treated equally when behavioral threats are elicited. BTA teams remain objective, avoiding profiling and fostering positive perceptions of all student groups. Finally, BTA frameworks should be continuously evaluated using established feedback channels to improve ethical practices and address challenges, thereby ensuring fairness and transparency in the BTA process for establishing safe school climates [18].

The ongoing assessment and evolution of ethical standards can enhance the effectiveness of BTA programs by ensuring that procedures effectively respond to evolving challenges and increasing complexity in educational environments. Such evolution requires that ethical standards at all levels be based on updated procedures, practices, and protocols that are flexible enough to accommodate changes driven by emerging data and trends, and that are supported by continuous research and feedback mechanisms [3]. For example, new data related to concerns about students' rights and privacy can be used to align BTA protocols. Engagement with ethics and legal studies can deepen students' understanding of their rights and privacy, reflected in ongoing training modules. Developing protocols and practices that incorporate these measures can strengthen the competence of all team members, ensuring that the balance between students' rights and program goals is maintained. In this context, continued engagement with the literature and evolving practices can help create safe and inclusive educational spaces and environments.

Integrating Emerging Technologies in BTA Programs

As schools increasingly rely on digital tools, integrating emerging technologies into BTA programs presents both opportunities and risks. Technologies such as AI-driven risk screening, digital reporting platforms, and centralized data dashboards can enhance the identification and management of potential threats, particularly in districts with limited staff resources. However, these tools also raise concerns about data privacy, algorithmic bias, and cybersecurity. To responsibly incorporate technology, BTA teams should prioritize transparent algorithms, conduct regular technology audits, and offer opt-out policies for families concerned about data use. Collaboration with legal and technology experts can help ensure that technological solutions are both ethical and practical and comply with relevant laws. By striking a balance between innovation and caution, schools can effectively harness technology to support safer learning environments while safeguarding student rights.

To effectively integrate emerging technologies into BTA programs, districts should follow a structured approach. This includes conducting a needs assessment to identify gaps in current threat assessment processes, piloting use cases such as AI-driven risk screening tools or digital reporting platforms, and implementing centralized dashboards for case tracking and management. For instance, a district might use an AI tool to analyze attendance and behavioral data for early intervention triggers, with human review for flagged cases. A critical aspect is conducting a thorough risk assessment and mitigation for each technology, addressing data privacy (e.g., limiting data access and encrypting sensitive information), algorithmic bias (e.g., periodic fairness audits and diverse training data), and cybersecurity (e.g., regular penetration testing and compliance with state/federal standards). Establishing a technology oversight committee with educators, parents, legal counsel, and IT/security experts is crucial for oversight and transparency, requiring transparent documentation of algorithms and regular reporting on technology performance and incidents.

Furthermore, clear communication with families and stakeholders, including opt-out policies and accessible information on data collection and usage, is essential. Continuous evaluation of technology performance, user feedback, and incident outcomes is necessary to adjust or phase out tools that do not meet safety, equity, or privacy standards Early pilot studies, such as one in a large urban school district in California, demonstrated faster response times to credible threats but also highlighted challenges, such as false positives and the need for ongoing training [19, 20]. Similarly, a state-level education technology consortium in the Midwest piloted AI-powered school safety analytics, using diverse training datasets and independent ethics boards to mitigate algorithmic bias [13, 14]. These examples underscore the importance of transparency, human oversight, community engagement, and shared resources for successful and ethical integration of emerging technologies in BTA programs. By following these steps, schools can responsibly leverage technology to enhance the effectiveness of BTA programs while protecting student rights and community trust.

Suggestions for Future Research

Longitudinal Research Needs

Longitudinal research is crucial for evaluating the sustained effects of BTA programs on academic achievement, mental health, behavioral incidents, school climate, and disciplinary outcomes over multiple years. A proposed methodology involves a mixed-methods design, sampling diverse schools with varying BTA implementation fidelity, and collecting both quantitative data (e.g., student records, attendance, behavioral referrals, standardized test scores, school climate surveys) and qualitative data (e.g., interviews with students, educators, parents, and administrators). The timeline spans a minimum of 5 years annually. The analysis should use multilevel modeling for quantitative data and thematic analysis for qualitative data, with robust informed consent and privacy audits.

Pilot Study Example

Pilot studies, such as one in a large suburban district, have shown promising results, including reductions in repeated disciplinary actions and improved perceptions of safety. However, challenges were noted, including inconsistent follow-up and resource limitations. Virginia's multi-year, statewide studies, led by Cornell & Sheras [5],

provided a strong real-world example, demonstrating that schools implementing the Virginia Student Threat Assessment Guidelines experienced fewer suspensions, improved perceptions of safety, and no increase in racial disparities [1]. Despite these insights, a critical gap remains in comprehensive, multi-year, multi-site longitudinal studies that fully validate the long-term effectiveness of BTA programs across diverse contexts. Future research should prioritize large-scale, coordinated studies using standardized outcome measures and independent evaluation, integrating BTA data with broader school safety and mental health datasets, and securing ongoing funding to refine interventions over time. This will provide policymakers and practitioners with essential data to ensure sustained effectiveness.

Limitations and Future Directions

While this manuscript provides a comprehensive overview of BTA programs, several limitations should be acknowledged. First, there is a reliance on case studies and survey data, which, while informative, may not capture the full variability of BTA implementation across all educational contexts. Second, the current analysis is limited by the availability of longitudinal research, which restricts the ability to conclude the sustained impact of BTA programs on student outcomes. Third, differences in reporting practices and implementation fidelity across districts may affect the comparability of outcomes. Fourth, although the manuscript references reductions in violence and suspensions, it lacks detailed quantitative data and broad statistical analysis to substantiate these claims across diverse contexts. Finally, the recommendations provided are evidence-informed; however, there is currently no concrete evidence that they have been widely adopted or systematically proven effective across a broad range of school settings. Addressing these limitations in future research—including pursuing multi-year, multi-site, and quantitatively robust studies—will strengthen the evidence base for the effectiveness of BTA programs and inform best practices for diverse school environments.

Summary of Best Practices and Recommendations for BTA Programs

Establish multidisciplinary teams including educators, mental health professionals, and law enforcement to ensure a comprehensive approach to threat assessment. Adopt standardized threat assessment protocols such as CSTAG, which emphasize early intervention, flexibility, and supportive measures [1]. Provide universal and ongoing training for all BTA team members, incorporating state-specific laws, evidence-based practices, and regular scenario-based exercises. Foster cross-district collaboration and resource sharing, especially for under-resourced districts, by leveraging regional consortia and technical assistance hubs. Integrate systematic feedback mechanisms and continuous program evaluation to refine practices based on field experience and emerging research. Ensure ethical and legal compliance through clear informed consent protocols, privacy audits, and stakeholder engagement. Promote a nondiscriminatory school culture and avoid profiling, ensuring all students are treated equitably during threat assessments. Regularly review and update BTA protocols to address new challenges, such as emerging technologies and changes in legal standards.

Conclusion

The current study highlights the critical importance of BTA programs in promoting school safety initiatives. By employing structured methodologies, these programs have demonstrated efficacy in identifying and managing potential threats, thereby reducing the likelihood of active shooter incidents. Furthermore, BTA programs promote a transition from punitive to supportive interventions, thereby improving school climates and diminishing dependence on suspensions and expulsions. Nonetheless, enduring challenges, particularly those related to ethical concerns such as privacy and profiling, demand continual refinement and adaptation of these programs. By striking a balance between security and ethical principles, BTA programs offer a comprehensive framework for maintaining secure and inclusive educational environments.

Disclaimer

Portions of this manuscript build upon the author's earlier work; all new analyses, findings, and interpretations are original to this submission.

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