


Do Crisis Intervention Teams Reduce Arrests and Improve Officer Safety? A Systematic Review and Meta-Analysis

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Abstract

Until the 1950s, state mental health hospitals accommodated the majority of individuals suffering from mental illness. Today, however, following the closing of state mental hospitals, persons with serious mental illness without adequate private care are 3 times more likely to be housed in a jail or prison than in a hospital. The consequences associated with increased contact between the criminal justice system and the mentally ill necessitates a comprehensive strategy that targets improvement in interaction between the criminal justice system and the mentally ill. This article reports on findings of a systematic review and meta-analysis of the Crisis Intervention Team (CIT), a widely adopted program implemented in police departments, in an effort to reduce reliance on incarceration as mental health institutions, and to train officers about mental illness. The findings of this review and meta-analysis reveal null effects of CITs on arrests of persons with mental illness ($d = 0.180$, $p = .495$) and on police officer safety ($d = -0.301$, $p = .191$). These results do not suggest that CIT programs should be discontinued. However, potential improvements to program implementation and evaluation are discussed.

Keywords

Crisis Intervention Team, CIT, policing, mental illness, diversion

The use of jail diversion mechanisms are on the rise in the United States, with substantial local agency and law enforcement funding and resources being invested in these long-term programs (Reuland, Draper, & Norton, 2012). These programs are meant to

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link specific groups of individuals, such as those with mental illness, with programs in the community, and provide an alternative to criminal justice processing and institutions that are often unable to provide adequate care and treatment (Lurigio, Smith, & Harris, 2008). Interest in diversion programs like police-run Crisis Intervention Teams (CITs) stems from the promise that they might reduce stigmatization, direct persons with mental illness to needed treatment programs and away from arrest, and reduce officer injury (National Alliance of Mental Illness [NAMI], 2012). With the exception of the latter, these goals are in line with the resurgence of the rehabilitative ideal (Cullen, 2013)—that the focus of criminal justice actors need not only be crime control but can also include an emphasis on treatment. It is within this ideal that CITs ground their core goals of reducing arrest of the mentally ill, reducing officer use of force, and minimizing injury to civilians and officers (Dupont, Cochran, & Pillsbury, 2007).

The main aim of this article is to report on the findings of a systematic review and meta-analysis of the effects of CITs on its stated goals. The background and expansion of CITs as a diversion mechanism is briefly outlined, with particular focus on the Memphis model and its development. A synthesis of the empirical literature follows, and moderator analyses are examined as a means of investigating differences across studies in the outcomes observed. Implications of the findings for public policy and future research are then discussed.

Background

Five decades ago, psychiatric hospitals or asylums (Cullen, 2013; Lurigio, 2013) accommodated the majority of individuals with serious mental illness that came to the attention of the mental health or criminal justice systems. When the practices of these psychiatric treatment facilities were found to be detrimental to individuals facing long-term stays, the United States experienced large-scale de-institutionalization. Unfortunately, jails and prisons replaced hospitals in caring for the displaced individuals as they were released into the community (Wood, Swanson, Burris, & Gilbert, 2011). However, people suffering from a mental illness require specialized treatment or care that the system cannot necessarily provide (Lurigio et al., 2008), and overrepresentation of these individuals in the criminal justice system only serves to increase deficits in care and drain limited resources available to all offenders.

The process that moves a person with mental illness from the community to institutions of formal control begins with arrest. Often these arrests are for minor offenses and non-serious misdemeanors (Franz & Borum, 2011; Vickers, 2000). Police are commonly the first to be called when an individual suffering with mental illness engages in illegal behavior, or in some way threatens the community (Cordner, 2006; Green, 1997). Frequently, officers are called to the same location or about the same individual on multiple occasions. During crises, individuals experiencing psychosis, or emotional distress made worse by a mental illness, may become violent or exhibit erratic behavior (Reuland, Schwarzfeld, & Draper, 2009). The nature of mental illness can produce ambiguity in these encounters, and the uncertainty that the situations

could become violent can lead to tense and often mishandled responses (Compton, Bahora, Watson, & Oliva, 2008; Lipson, Turner, & Kasper, 2010; Parent, 2007). In a large number of these cases, police respond with force, resulting in injury to the person with mental illness or to the officer (Parent, 2007).

The consequences associated with the criminal justice system acting as the default response to mental illness necessitates a comprehensive strategy that allows officers to assess individuals quickly, and provide them with the appropriate resources to effectively and safely dispose of the situation (Gur, 2010; Lurigio et al., 2008; Wood et al., 2011). Rather than arrest people with mental illness, the police are in a unique position to direct them to therapeutic alternatives in the community (Van den Brink et al., 2012). Training police officers to negotiate situations that could escalate to violence, or identifying opportunities to resolve situations with a referral to treatment or managed care rather than jail, can reduce arrests and further processing of the mentally ill in the criminal justice system (Van den Brink et al., 2012). These alternative outcomes can also direct individuals to care when they do not or cannot seek it themselves (Strauss et al., 2005). Research also suggests that when an officer is trained in skills of de-escalation of a situation, the likelihood of success in a crisis increases, and the probability of using force decreases (Oliva, Morgan, & Compton, 2010).

Treatment for mental illness in the community by organizations and networks specifically trained for the task diverts the mentally ill offender, and can increase the length of time that individual spends outside of the formal system. Contact with law enforcement might also be the only opportunity that many people with mental illness have to connect with treatments. If this opportunity is missed and the individual is not diverted, this could have significant implications for his or her future, as well as “downstream” effects (Lurigio et al., 2008, p. 300) that burden the rest of the criminal justice system with the care of the individual.

The Memphis Model of CITs

To address the complex needs of both the mentally ill population and the criminal justice system, and in response to a 1988 shooting of a person with mental illness, the NAMI, in collaboration with the Memphis Police department and community stakeholders, established the Memphis model of crisis intervention. The partnership among local institutions continues to train select officers in handling crises and further educating law enforcement about mental illness to divert individuals and keep officers safe (Compton et al., 2008; Wood et al., 2011). This training, now replicated in more than 2,700 agencies across the country and abroad, includes de-escalation techniques, and provides police departments with resources to which the mentally ill can be directed within the community. Through extensive training, the officers learn to make appropriate decisions in tense encounters, and utilize methods to negotiate the situation in the calmest way possible (Dupont et al., 2007; Watson et al., 2010).

The training includes basic information about mental illness, local mental health systems and laws, and lessons from community organizations and family members of those suffering from a mental illness. As one of several models of collaboration

between law enforcement and mental health (Compton et al., 2008; Martinez, 2010), Memphis model officer training is accompanied by the establishment of suitable referral options within each community to mental health and case management resources. The emphasis on community collaboration between providers, law enforcement, and consumer advocates leads to the development of a coalition to determine the best way to transfer individuals from police custody to appropriate care (NAMI, 2012). The Memphis model trains officers to take on the role of both law enforcer and community supporter. As training is provided to police departments through local chapters of NAMI, CIT officers have an opportunity to encourage the rehabilitative ideal, while also upholding safe and effective mechanisms of social control (Lipson et al., 2010).

Do CITs Work?

Despite enthusiastic and widespread adoption of CIT models (NAMI, 2012; Wood et al., 2011), little is known to date about the effects of these programs on the core components of the Memphis model. Some descriptive and evaluative research suggests that the effects of CIT models may extend beyond just arrest reduction (Franz & Borum, 2011; Steadman, Deane, Borum, & Morrissey, 2000) and officer safety (Kerr, Morabito, & Watson, 2010). Outcomes examined have included less time spent disposing of each case (Dupont & Cochran, 2000) and reducing stigma of mental illness (Compton, Esterberg, McGee, Kotwicki, & Oliva, 2006). Generally, these studies have produced positive effects of CIT models on perceived interactions between law enforcement and the mentally ill. However, these studies vary in methodology, ranging from focus groups and qualitative designs to quasi-experimental evaluations, and often do not address the core goals outlined for CIT.

A review by Compton et al. (2008) indicated that in the 20 years after the Memphis shooting, rather little could be said with confidence about CITs. The comprehensive summary reviewed 12 research studies about the model, including some of those discussed above. Their summary suggests that CIT training positively affected officers' ability to accurately identify and respond appropriately to the mentally ill. The authors concluded that although results were promising, the functions served by CITs varied across local contexts, and the methodological rigor of the studies identified was limited (Compton et al., 2008). The studies included in the review relied on officer narratives on their abilities, or focus groups of officers. Findings focused on the disposition of individuals brought to the emergency room, and the effect of CIT training on officer attitudes and beliefs about mental illness. Yet, few studies included in the review examined the effect of CITs on arrests or characteristics of interactions between officers and the mentally ill. Fear that CIT evidence was not strong enough to warrant the popularity the model gained, the review by Compton et al. (2008) led one critic to remark that "being in favor of educating officers of police departments about mental illness and mental health services is like being in favor of motherhood and apple pie" (Geller, 2008, p. 56). That is, although no one could be against encouraging this education for officers, without more evidence of its effectiveness, it remains simply a blindly adopted novelty.

The purpose of this article is to bring together and assess the best available research evidence on the effects of CIT, with a specific focus on its effects on the core elements set forth by the Memphis model. Although some studies have found positive effects of the intervention, a systematic investigation of the evaluation research is warranted to analyze these effects using outcomes directly related to arrest reduction, officer use of force, and officer injury. Where possible, this article also considers possible moderators to the effects of this intervention. This review synthesizes the evidence to appropriately and objectively inform policy and practice of law enforcement.

Method

Criteria for Inclusion of Evaluation Studies

In selecting evaluations for inclusion in this review, the following criteria were used:

1. The use of a CIT was the focus of the intervention. The operational definition of CITs for this review includes any specialized police-based jail diversion response to persons with mental illness following the Memphis model approach. Typical CITs are comprised of a group of law enforcement officers who have undergone training in identifying and addressing serious mental illness (Compton et al., 2008; NAMI, 2012). For evaluations involving one or more other interventions, only those evaluations in which the police-based CIT was the main focus were included. The determination of what was the main intervention was based on the study author identifying it as such or, if the author did not do this, the importance the report gave to the CIT team relative to the other interventions.
2. Individuals with mental illness (serious or otherwise) were the target of the intervention. Limits were not placed on the definition of mentally ill persons, to avoid excluding potentially relevant studies that may not have provided an exact definition. The specific definition used by each local agency may also differ.
3. There was an outcome measure of official or officer-reported arrests of a person with mental illness, police officer use of force, or of police officer injury.
4. The evaluation design was quasi-experimental or experimental, with the minimum design involving a post-intervention measure of outcomes, and a comparable control group.

Search Strategies

To locate studies meeting the above criteria, six search strategies were used:

1. Searches of electronic bibliographic databases. The following eight databases were searched: Criminal Justice Abstracts, National Criminal Justice Reference Service (NCJRS) Abstracts, the NAMI project database, Psychology

Information (PsychInfo), Google Scholar, Dissertation Abstracts, Medline, and Academic Search Premier.

These databases were selected because they had the most comprehensive coverage of criminological and social science literatures. The databases are also among the top databases recommended by the Campbell Collaboration systematic review protocol.

The following terms were used to search these databases: “crisis intervention team,” “police + mental illness,” and “CIT.” When applicable, “arrests,” “crime,” and “evaluation” were then added to these terms to narrow the search parameters.

2. Searches of literature reviews on the effectiveness of CITs. The key reviews included, but were not limited to, Compton et al. (2008), Gur (2010), and Reuland et al. (2009).
3. Searches of the bibliographies of eligible evaluation reports of CITs identified through the electronic bibliographic databases.
4. Searches of research databases maintained by national organizations from the United States (e.g., NAMI; CIT International).
5. A forward citation search using Google Scholar. This was done to identify any additional studies that cite those that met the inclusion criteria.
6. Contacts with leading researchers. This was done to solicit recently published or in-press articles, and to appropriately distinguish between unique samples for which multiple reports were found.

Relevance decisions were made by the author, through a preliminary review of titles and abstracts of all potential evaluations. Published and unpublished reports completed between 1988 and 2013 were considered in the searches. The Memphis CIT model was established following the 1988 shooting, so this review focused on evaluations after this point. Furthermore, given the widespread adoption of the Memphis CIT model within and outside of the United States, as well as the establishment of the *CIT International* organization, the searches were not limited to the United States.

Findings

The search strategies yielded 820 total records, 815 from bibliographic databases and 5 from additional strategies. Figure 1 outlines the results of the search for evaluation studies. Of the 820 titles, a large number of references were not evaluations or were duplicate references across bibliographic databases. Therefore, only 32 abstracts were selected for further review. Nine studies were excluded by review of the abstracts, 1 study was requested but not obtained, and the full-text articles were acquired for the remaining 22 evaluations. No records were excluded due to language barriers, though a few German language studies identified in the database searches were excluded on preliminary eligibility review.

The 22 articles, reports, and dissertations were assessed to determine whether the studies evaluated a CIT and provided outcome measures of arrests, officer injury, or

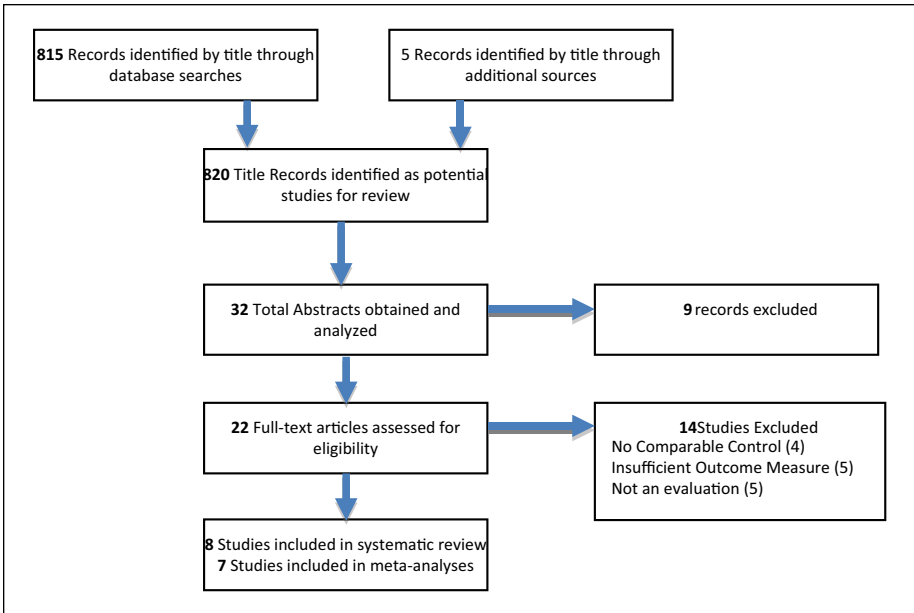


Figure 1. Studies identified, retrieved, and included.

officer use of force. Eight studies met the inclusion criteria. Fourteen studies were excluded because they did not include a comparable control group ($n = 4$), did not measure one of the three outcomes of interest ($n = 5$), or were not evaluations ($n = 5$). A few studies utilized data from an evaluation to answer alternative research questions. Where this was the case, an effort was made to identify and select only the original evaluation for inclusion to avoid duplicate use of samples. All included studies evaluated a CIT program implemented by law enforcement.

Characteristics of Selected Studies

The eight studies in this review included three unpublished reports and five published journal articles. The journals in which the five studies were published spanned the disciplines of social work, psychology, criminal justice, and medicine. This highlights the interdisciplinary and inter-agency approach of CITs. The geographic locations of the CIT models being evaluated, however, were not as far-reaching (see Table 1). The study published in the criminal justice-based journal was an evaluation of the CIT program in New South Wales, Australia (Herrington & Pope, 2013). However, the rest of the studies were of CITs in the United States: three in the Midwest (Stewart, 2009; Teller, Munetz, Gill, & Ritter, 2006; Watson, 2010) and four in the Southeast (Acker, 2010; Compton et al., 2014; Ell-Mallakh, Spratt, Butler, & Strauss, 2008; Papastratides, 2008).

Table 1. Characteristics of Included Studies.

Study author (date) ^a	Published	Location	Sample	Officer age, gender, race	Officer tenure	Evaluation design ^b	Arrest outcome	Use of force outcome	Officer injury outcome
Teller, Munez, Gill, and Ritter (2006)	Yes	Akron, OH	243 officers in 1 department	n/a	n/a	Quasi-experimental	Official report	n/a	n/a
Eli-Mallakh, Spratt, Butler, and Strauss (2008)	Yes	Louisville, KY	3 years of calls in 1 department	n/a	n/a	Quasi-experimental	Arrest rate	Use of force—specified	Police injuries—not specified
Papastratides (2008)	No	Escambia County, FL	37 officers in 1 department	20-59 years, male, White	M = 11.03 years	Quasi-experimental; matched control	n/a	Official report	n/a
Stewart (2009)	No	Bloomington, IN	92 officers in 1 department	Male, White	M = 12.40 years	Quasi-experimental	Official incident report	Official incident Report	Official incident report
Acker (2010)	No	Pinella County, FL	450 officers in 1 district	23-62 years	1.5-33 years	Quasi-experimental	Arrest rate/officer report	Use of force rate/officer report	n/a
Watson (2010) ^b	Yes	Chicago, IL	216 officers in 4 districts	40.9 years, male, White	M = 11.46 years	Quasi-experimental; matched control	Officer self-report	Officer self-report	n/a
Herrington and Pope (2013)	Yes	New South Wales, AU	185 officers in 3 districts	n/a	n/a	Quasi-experimental	n/a	Official report	n/a
Compton et al. (2014)	Yes	Multiple Cities, GA	180 officers in 6 districts	36.6 years, male, White	M = 9.7 years	Quasi-experimental	Officer self-report	Officer self-report	n/a

Note. n/a = not available; CIT = Crisis Intervention Team.

^aThe control group in each study was comprised of non-CIT-trained officers.

^bIncludes results from additional studies making use of the same samples.

With the exception of one study (Ell-Mallakh et al., 2008), analysis of outcomes in each evaluation were at the individual officer level. Ell-Mallakh et al. (2008) were concerned with the number of CIT calls for service in Louisville received over time, and the resulting rates of arrests, use of force, and officer injury. The remaining studies evaluated officers' rates of arrest or call dispositions across officer groups. Across studies, the sampled officers ranged from 20 to just over 60 years of age, were overwhelmingly male (60%-86%), and tended to be majority White. On average, the officers had 11 to 12 years of policing experience. However, the wide range of 1.5 to 33 years of tenure in the study of Pinella County, Florida, deputies suggests that average officer tenure may not be as accurate a measure to compare across samples (Acker, 2010).

Each study made use of a quasi-experimental design, which is not surprising given the voluntary nature of CIT training. Two studies included matched control groups, one matching police districts before selecting officers (Watson, 2010) and the other matching individual officers (Papastratides, 2008). The remaining six studies compared CIT-trained officers with non-matched samples of non-CIT officers on the outcomes.

As expected, identification of what was considered a call for service including a person with mental illness was not consistent across studies. For example, Papastratides (2008) succinctly defined "mentally ill people" as those with a "diagnosis of major mental illness," yet the definition of "people in crisis/mental crisis" was more ambiguous—"people suffering from an acute mental breakdown" (p. 8). In the evaluation of the Chicago CIT program, Watson (2010) was unable to fully determine what calls for service were identified as mental health calls. Complications also arose as dispatch personnel were trained, and their coding techniques changed during the evaluation. Concerns over these limitations led the author to sample officers and gather self-reported information about mental health calls rather than rely solely on official records. Other studies, such as Ell-Mallakh et al. (2008), simply do not define mental illness and take the label of CIT calls at face value. Ambiguity in this measure is particularly troubling when calls for service are not randomly assigned, and CIT officers are always the only team dispatched to the call. However, vague definitions of mental illness in the Memphis model often allow law enforcement to determine the targets most appropriate to the local contexts and are part of the CIT development process.

Study Outcomes

The included studies examined the real-world situational outcomes of arrests of the mentally ill, officer use of force, and officer injury during an incident. These choices were made because these three outcomes are set forth explicitly by NAMI as goals of the program. This is in direct comparison with the Compton et al. (2008) review, as studies that measured officer perceptions or officer responses to vignette surveys were not included. The only study to overlap between the two reviews is Teller et al. (2006), which found a decrease in transports to jail by CIT-trained officers. Three of the studies in the 2008 review did not meet this study's inclusion criteria because of an

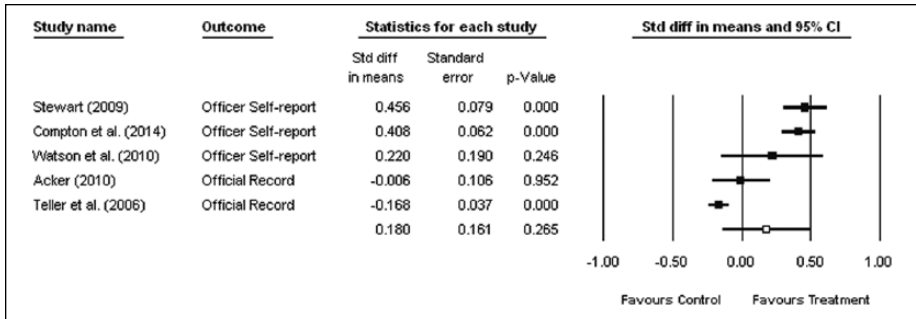


Figure 2. Distribution of effects of CIT on arrests of the mentally ill. Note. Random effects model used. CIT = Crisis Intervention Team.

insufficient outcome measure (Strauss et al., 2005), because the CIT was not the main intervention focus of the study (Steadman et al., 2000), and because descriptive information provided only a comparison of psychiatric dispositions of clients rather than arrests (Lattimore, Broner, Sherman, Frisman, & Shafer, 2003).

Meta-Analytic Findings

The standardized mean difference effect size (*d*) was used to compare effects across studies. Effect sizes were calculated from available data and, when necessary, transformed according to methods outlined in Lipsey and Wilson (2001).

CITs and arrests. Six of the eight studies measured the effect of CITs on arrests of individuals with mental illness. Arrest outcome measures included officer self-reported number of arrests (*n* = 2), official arrest records (*n* = 2), and arrest rates (*n* = 2). Five of these studies provided the necessary data to analyze the effects of CIT on arrest. Figure 2 presents the distribution of random effects mean effect sizes, standard errors, and 95% confidence intervals for each study. On average, the CIT-trained officers were less likely to arrest individuals with mental illness compared with the control group of non-CIT officers (*d* = 0.180, 95% CI = [-0.136, 0.496], n.s.).

The two studies measuring official arrest outcomes resulted in significant differences between CIT-trained and non-CIT officers, one significantly favoring CIT training (Stewart, 2009) and the other resulting in a significantly negative effect of CIT training on arrests (Teller et al., 2006). CIT officers made significantly fewer arrests of mentally ill persons in the Georgia study (Compton et al., 2014). However, non-significant effects emerged in the Florida study (Acker, 2010) and Chicago (Watson, 2010). The pooled set of five studies was significantly heterogeneous ($Q[4] = 94.66, p < .05$).

CIT and officer use of force. All but one of the included studies (Teller et al., 2006) measured the effects of CIT training on the use of force by police officers. As with the arrest measures, the studies relied on officer self-reported use of force (*n* = 2), official

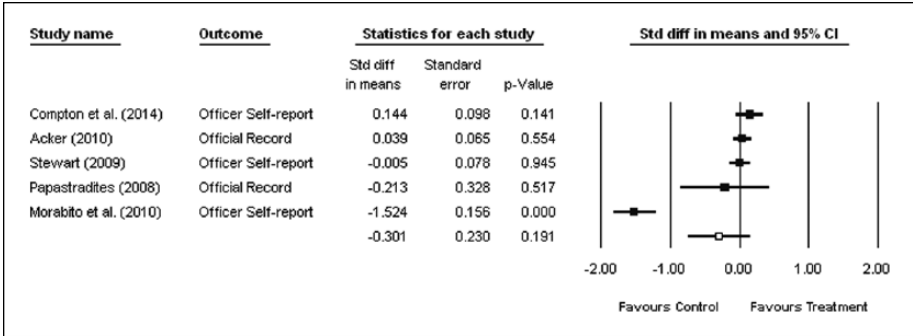


Figure 3. Distribution of effects of CIT on officer use of force.
 Note. Random effects model used. CIT = Crisis Intervention Team.

records of incidents ($n = 3$), and the rate at which officers used force ($n = 1$). Five studies provided the requisite information to be included in the meta-analysis. Figure 3 presents the distribution of effects of CIT training on use-of-force outcomes. The set of five studies was heterogeneous ($Q[4] = 95.12, p < .05$) and produced a combined null effect of CITs on officer use-of-force in situations with the mentally ill ($d = -0.301, 95\% \text{ CI } [-0.759, 0.149], p = .191$). As seen in the Figure 3, none of the studies resulted in significantly positive effects of CIT on use-of-force outcomes.

Only one study (Morabito et al., 2010) resulted in significant effects favoring the control group over CIT-trained officers. The effect size of this study was negative, showing significant detrimental effects of CIT training on officers’ use of force. Although removing this study from analysis results in a positive grand mean effect size ($d = 0.042, 95\% \text{ CI } [-0.042, 0.128], p = .347$), the magnitude is very small, and overall effect remains non-significant. However, with the study removed from analysis, the remaining four studies were no longer significantly heterogeneous ($Q[3] = 2.061, p = .560$).

CIT and officer injury. Only two of the seven included studies measured the effect of CIT on officer injury. The limited information provided about the measure in the Kentucky study (Ell-Mallakh et al., 2008), and the rarity with which injury was reported in Bloomington, Indiana (Stewart, 2009), highlights a significant gap in knowledge about CIT program effects on officer preparedness. Given the dearth of research, meta-analyses were not completed for this outcome.

Moderators of CIT effects. The set of studies examining arrests and the full set of studies examining use of force were both significantly heterogeneous, and therefore warrant further moderator analyses. Moderators, including outcome type, evaluation design, geographical region, and whether the report was published, were examined. As shown in Table 2, not one of these moderators resulted in any significant findings for the use-of-force outcomes. The heterogeneity of the studies examining use of force is therefore only accounted for by the inclusion of the Morabito et al. (2010) study.

Table 2. Effect Sizes by Study Features, for Use of Force Outcomes.

Study feature	<i>d</i>	SE	<i>p</i>	<i>n</i>
Region				
South	0.063	0.054	ns	3
Midwest	-0.758	0.759	ns	2
Outcome				
Official	0.029	0.064	ns	2
Self-report	-0.450	0.407	ns	3
Design				
Comparable control group	0.015	0.758	ns	3
Matched control group	-0.685	0.411	ns	2
Outlet				
Published	-0.685	0.834	ns	2
Unpublished	0.015	0.050	ns	3

Note. Random effects model used.

Table 3. Effect Sizes by Study Features, for Arrest Outcomes.

Study feature	<i>d</i>	SE	<i>p</i>	<i>n</i>
Region				
South	0.210	0.207	ns	2
Midwest	0.163	0.244	ns	3
Outcome				
Official	-0.118	0.075	ns	2
Self-report	0.413	0.047	.0001	3
Design				
Comparable control group	0.092	0.207	ns	3
Matched control group	0.390	0.059	.0001	2
Outlet				
Published	0.147	0.231	ns	3
Unpublished	0.230	0.231	ns	2

Note. Random effects model used.

When investigating the heterogeneity of studies examining the effect of CIT on arrests, two moderators stand out. First, the type of quasi-experimental design carried out varied across each program. Unfortunately, there have been no randomized experiments of CIT, and therefore the studies included differed by type of control group used in their quasi-experimental designs. As shown in Table 3, moderator analysis reports that studies using a matched control group result in significant positive findings of the

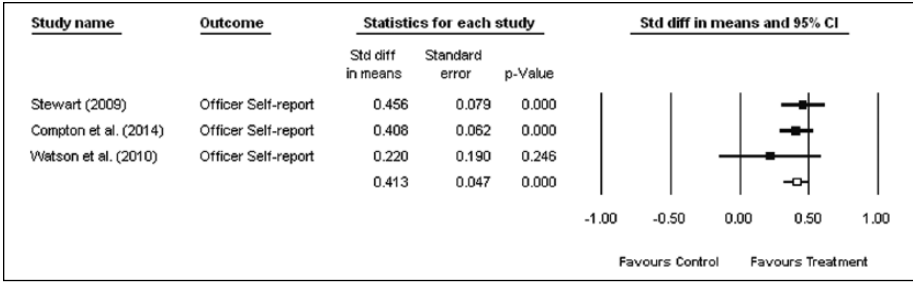


Figure 4. Distribution of effects of CIT on officer’s self-reported arrests of the mentally ill. Note. Fixed effects model used. CIT = Crisis Intervention Team.

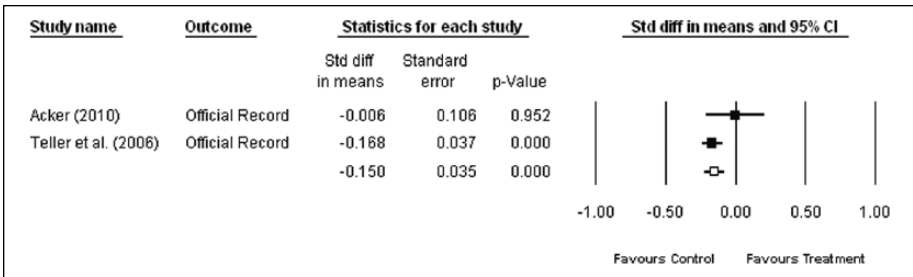


Figure 5. Distribution of effects of CIT on officially recorded arrests of the mentally ill. Note. Fixed effects model used. CIT = Crisis Intervention Team.

effect of CIT on arrests, and a much larger within-group effect size ($d = 0.390, p < .001$) relative to non-matched control group designs ($d = 0.092, p > .05$). This finding is somewhat inconsistent with prior research suggesting that weaker designs are more likely to report stronger effects in studies of crime (Weisburd, Lum, & Petrosino, 2001). However, the between-group comparison is not significant ($Q[1] = 1.911, p = .167$), suggesting that the mean effect sizes delineated by design-type do not differ by more than sampling error alone, nor do they account for the variability in effects.

Perhaps more interestingly, outcome type (official vs. self-report) was statistically significant in explaining the variation of effects of CIT on arrests, and may warrant further examination when more evaluation research becomes available. Studies that relied on officer self-reported arrests resulted, on average, in a beneficial effect of CIT on arrests. That is, CIT-trained officers were less likely to arrest an individual with mental illness than their non-trained counterparts, as reported by the officers themselves. The difference between the types of outcome measures of arrest is significant ($Q[1] = 35.78, p = .000$).

Due to this finding, effect sizes were summarized separately, and grand mean effect sizes were calculated for each. Figures 4 and 5 present the distribution of effects on officer self-reported arrests and official reports of arrest, respectively. In both analyses,

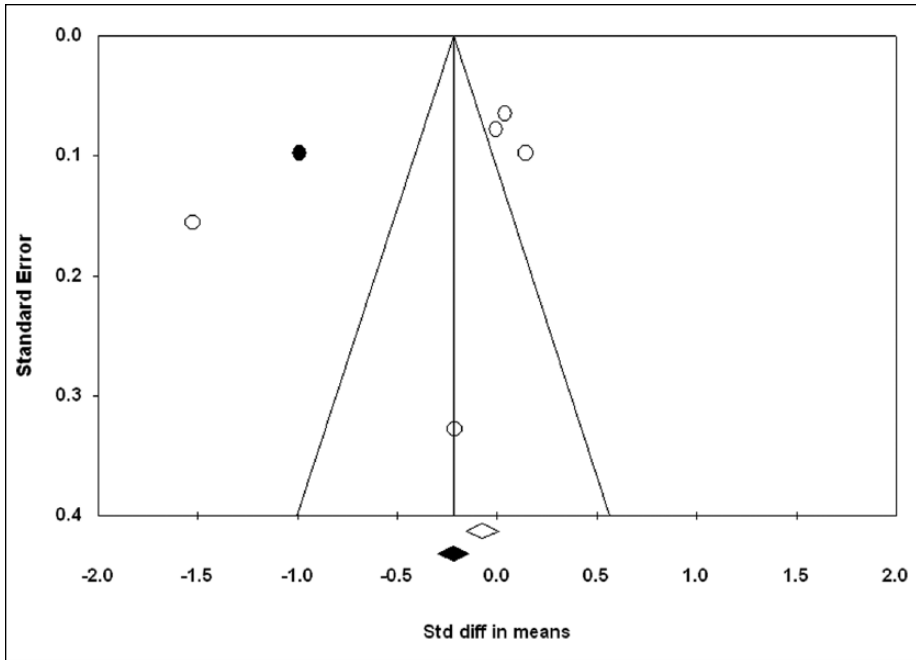


Figure 6. Funnel plot of 5 included studies of officer use of force with imputed studies from trim-and-fill analysis.

Note. Empty circles are the 5 included studies. Filled-in circles indicate imputed studies from trim-and-fill analysis. A random effects model was used.

final fixed effect models were reported because the tests of homogeneity of each group were not significant. As shown in the figures, the significant grand mean effect sizes are in opposite directions, suggesting that officers report more favorable outcomes than what may actually be occurring based on official documentation.

Yet, these findings must be interpreted cautiously. While moderator analyses are important to the better understanding of the variability in effects of CIT, with only five effect sizes in each analysis (and only two or three when further disaggregated), the extent to which additional analysis can yield clearly interpretable results is limited.

Publication Bias

Although a test of group comparisons suggested that there is no significant cause for concern, further analysis was undertaken to examine the potential for publication bias. The trim-and-fill procedure (Duval & Tweedie, 2000) estimates the effect of publication on the overall effect sizes. The funnel plot uses the studies included in the meta-analysis to impute effect sizes of missing studies and adds them to the analysis. The funnel plot for studies examining use of force (Figure 6) includes the five included

studies as well as one imputed effect size determined by the trim-and-fill procedure. Using a random effects model, the mean effect size decreases from -0.301 (95% CI $[-0.752, 0.149]$) to -0.423 (95% CI $[-0.898, 0.0525]$) with the imputed studies. However, the mean effect size remains negative, and not statistically significant. With the Morabito et al. (2010) study removed as an outlier, no imputations are necessary, and the grand mean effect size is not altered.

The random effects model funnel plot of studies examining arrests was also in line with the group mean comparisons carried out in the meta-analysis. The trim-and-fill procedure determined that no studies were needed to create symmetry in the plot. Publication bias is not a significant concern among the studies included in this systematic review and meta-analysis.

Discussion

The goal of this systematic review was to collect and examine the highest-quality studies available of the effectiveness of CIT models. Unfortunately, there is insufficient evidence to conclude if these models reduce officer injury during encounters between police officers and persons with mental illness. At this time, however, there appears to be some evidence that CIT have no effect on outcomes of arrest, nor on officer use of force, with the overall findings being mixed. Paired with findings from the Compton et al. (2008) review, these results raise some concern about the widespread implementation of CITs.

The directions of the relationship presented were generally promising. That is, CIT-trained officers transported the mentally ill to more community-based services rather than arrest them compared with their non-CIT counterparts. Yet, the total effects of CIT on arrests were null. Null findings also made up the majority of the results regarding officer use of force across individual-level studies. The call-based study found an increased use of force by CIT officers, though this finding is inadequately discussed in the primary study and not included in the meta-analysis (Ell-Mallakh et al., 2008). The weight of the current research evidence shows neither significant benefits, nor harms, of the CIT model.

The lack of statistically significant cumulative effects may be due to the limitations of the individual studies included. The systematic review attempts to be as transparent as possible and include the most internally valid studies available, but the practice of developing a CIT model can make evaluation very difficult in the production of primary studies. As officers must volunteer to be trained in CIT methods, self-selection threats remain a concern in evaluation of these models. Officers volunteering for CIT training may be systematically different from those that do not and therefore skew the direction of the effects simply because CIT officers are already diverting individuals with mental illness or are skilled in de-escalation. Matched control groups and further statistical controls during analysis can help bolster quasi-experimental designs, but as CIT models are adopted in new locations, police departments and training officers must consider random assignment during the beginning stages of implementation to determine the effects of the program. Another option may be to compare outcomes

between CIT and non-CIT officers, as well as between CIT-trained officers and those officers that volunteer to be trained but are not. At the very least, evaluation studies should at least attempt to match control and treatment groups, and utilize both pre- and post-intervention measures.

Limitations

Though to a lesser extent than the Compton et al. (2008) review, the comparisons across studies in this analysis remains complicated by these methodological limitations. The significant difference in effects of CIT on arrests of the mentally ill based on officer self-report as compared with official records requires attention by primary investigators. Although it may be intuitively clear that CIT officers may be under-reporting arrests of individuals with mental illness to answer in a more desirable fashion, the dearth of research limits the extent to which these differences can be explored. Furthermore, the main component of many CIT models is the adaptation of the model to the community in which it is implemented (Compton et al., 2008; Martinez, 2010; Watson et al., 2010). The variability in officer training across sites, as well as in the ways in which CIT-related calls for service are dispatched to officers in different locations, requires some caution be in drawing conclusions about the ability of these programs to divert persons with serious mental illness based on these analyses alone.

Although the summary of seven studies provides a glimpse of the overall effects of CITs on situational outcomes, moderator analyses are relatively limited due to the small number of studies in each disaggregated category. To explore further the particular mechanisms at work, additional research must be carried out. This review is limited in its ability to explore the role of departmental and officer characteristics in explaining the variation in effects of CITs—a limitation that places even greater emphasis on the need for more detailed, high-quality evaluation studies on this popular program.

Knowledge of geographic context of these programs was conveyed in the majority of the studies, but it is unclear whether CIT programs are not being implemented in the Western or Southern regions of the United States, or if there is something different about the Midwest and Southeast. This should also be explored further as research evidence becomes more available. As the development of the programs is set up in such a way that variability across locations is expected, understanding the nuances of the effects in different regions, and different departments, could make a unique contribution to the continued adoption of CIT models. The serious concern raised by the mixed results of CIT effectiveness highlights the need for better research and research in different contexts to expand the generalizability of the findings.

Conclusion and Policy Recommendations

As interest in alternatives to incarceration builds, and populations of the mentally ill continue to overextend the resources of the criminal justice system, it is important to clarify the role that the police can play in minimizing the effects of incarceration on those with serious mental illness. Evaluations of CIT models that address the serious

methodological limitations of current research remain a necessary next step in progress toward this goal. Qualitative and focus group studies have provided quite a bit of information about the *process* of CIT officer training, and with the development of CIT models (e.g., Canada, Angell, & Watson, 2012; Compton et al., 2011), but more experimental evidence that can address serious threats to internal validity is necessary before any further conclusions can be made about the *outcomes* of the strategies on their stated goals. Recommendations resulting from the findings of this review, therefore, echo those of prior research examining the interactions of the police and persons with mental illness. These recommendations center on improving evaluations of CIT and reconsidering the value of such models given the meta-analytic findings.

When evaluating any policy targeting a specific population, it is pertinent that a clear understanding of whom or what makes up that population should be agreed on. CIT models should be more explicit in outlining what calls for service constitute a “CIT-related” incident (Canada et al., 2012). This should be part of both the training for CIT as well as non-CIT officers and dispatchers so that fewer calls are misclassified and resources are allocated appropriately. In 1993, Ruiz suggested that police departments clearly differentiate call-for-service codes requesting services for mentally ill persons from codes for the breaking of a law. Doing this achieves three goals to aid in CIT development and evaluation. First, it signals to the citizens that the role of the police can legitimately be both to enforce order and to support the needs of the community, thus mobilizing more resources locally (Reuland et al., 2012). Second, it may help establish an immediate foundation to reduce criminalization and arrest of the outward displays of symptoms of mental illness (Lurigio, 2013), reinforcing the goals of CIT. Last, it allows evaluators to make appropriate comparisons of CIT models across the country based on similarity, or to explain in more detail for whom and for what communities CITs are most valuable.

Evaluation designs must also be of higher-quality methods, and measure both official and self-report outcomes. Where training is most effective, and incorporated into practice, the results will be similar across outcomes. However, given the significant differences identified in this review, examining both types of outcomes is important. Doing so will allow for additional analysis to determine whether officers self-reported behaviors are in line with their officially recorded behaviors. Yet, to this point, the differences between self-reported and official measures of arrest only point to mixed results.

Though it would be ideal to find that the models produce significant desired effects of arrest, use of force, and injury reduction, this review and meta-analysis find that, on average, CIT models have no significant effect on these outcomes. Although moderator analyses of CIT effects on arrest outcomes do suggest that methodological features account for variation in the effects, the characteristics of the CITs themselves do not. In addition, the small number of studies meeting criteria to be included in the meta-analysis limits the extent to which moderators can reliably be interpreted. Therefore, the null effects of CITs on arrest and use of force outcomes may or may not be explained by the types of evaluations currently available, and should be examined further when more research is available. However, they do suggest that these programs are promising in some studies and on average do not do any harm to the populations they set out to serve.

Despite the differences across evaluation design and localities, the studies included in the analysis each compared arrests or use of force between officers who were and who were not trained in the CIT model. The overall effect produced in summarizing the results of these studies suggests that there is no significant difference between these groups on the outcomes directly related to the core goals set out by CIT. There may be alternative value to the use of CIT models by law enforcement in responding to the mentally ill. To determine what these values may be, knowledge of the costs to train officers and implement the programs should be paired with the effectiveness and process evaluations of their implementation. Where CITs may reduce costs to the criminal justice system, it is possible that a corresponding increase in costs is experienced in the health care or emergency medical systems (Cowell, Broner, & Dupont, 2004), and that the overall benefits are minimal. Therefore, evaluations of CIT programs must continue to improve and results must be synthesized in a timely manner to reliably identify effects of models as they are implemented.

At this time, Memphis model CITs are implemented without sufficient evidence to their success. Yet, these results may not be the final chapter to be written with regard to police strategies to divert individuals with mental illness from the criminal justice system. Enough is not known about the program's effects on the outcomes outlined by the Memphis model, but prior literature discussing the beneficial effects of CIT on officer perceptions may lead down an important path. Given the popularity of the program in the United States and abroad, and prior summary reviews suggesting the benefits that CIT has on how officers judge their own abilities, it may be possible that the confidence of the CIT officer mediates the effect of CIT training on outcomes related to the disposition of cases. CIT programs should not be discontinued, but rather examined further with high-quality evaluation methodology and with officer characteristics and perceptions in mind.

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