The Deafening Demand for De-escalation Training: A Systematic Review and Call for Evidence in Police Use of Force Reform

Robin S. Engel, Ph.D.
University of Cincinnati

Hannah D. McManus, M.S.
University of Cincinnati

Tamara D. Herold, Ph.D.
University of Nevada, Las Vegas

This research was funded by Arnold Ventures, in partnership with the International Association of Chiefs of Police (IACP). The information and commentary in this manuscript are from the authors, and do not necessarily represent the official positions or policies of Arnold Ventures or the IACP.

Please direct all correspondence regarding this manuscript to: Dr. Robin Engel, Director IACP / UC Center for Police Research and Policy, PO Box 210389, University of Cincinnati, Cincinnati, Ohio 45221, robin.engel@uc.edu

About the Authors:

Robin S. Engel, Ph.D.

Robin S. Engel is Director of the IACP / UC Center for Police Research Policy, and Professor of Criminal Justice at the University of Cincinnati. She recently served at the Vice President for Safety and Reform at the University of Cincinnati. Her work includes establishing academic-practitioner partnerships and promoting best practices in policing, with expertise in empirical assessments of police behavior and evaluations of crime reduction strategies.

Hannah D. McManus, M.S.

Hannah D. McManus is a Research Associate for the IACP / UC Center for Police Research and Policy, and is currently pursuing her doctorate in Criminal Justice at the University of Cincinnati. Her research interests include police effectiveness and legitimacy, public perceptions of police, and the establishment of academic-practitioner partnerships to promote best practices in policing.

Tamara D. Herold, Ph.D.

Tamara D. Herold (formerly Madensen) is Associate Professor of Criminal Justice and Graduate Director at the University of Nevada, Las Vegas. She is also an affiliate of the IACP / UC Center for Police Research and Policy. Her research focuses on the impact of the design and management of places, investigations of criminogenic place-networks, as well as dynamics associated with crowd violence. Her previous publications propose, extend, or test crime science models and translate research findings into practice and policy.

Abstract

Research Summary

De-escalation training has been widely implemented by U.S. police agencies in the wake of adverse public reaction to recent controversial police use of force incidents. Despite vast promotion from politicians, academics, expert panels, and the public, we know little about the effects of de-escalation training on officers and police-citizen interactions. This paper offers findings from a multi-disciplinary systematic literature review that demonstrates limited knowledge concerning the impact of de-escalation training across all professions. Our review identified 64 de-escalation training evaluations conducted over a 40-year period, largely in the fields of nursing and psychiatry.

Policy Implications

While assessment outcomes reveal few adverse consequences and provide some confidence that de-escalation trainings lead to slight to moderate individual and organizational improvements, conclusions concerning the effectiveness of de-escalation training is limited by the questionable quality of almost all evaluation research designs. As such, important questions regarding the impact of de-escalation training for police remain. Given the critical impact that de-escalation training could have on officers and the public they serve, we conclude with a direct call to academics, practitioners, and funders across the field of policing to immediately prioritize the testing of de-escalation and other police use of force policies, tactics, and training.

Keywords

policing, use of force, de-escalation, training, police reform

Introduction

A series of high-profile incidents involving the killing of unarmed citizens by American police in the last several years has sparked public protests, civil unrest, widespread media attention, and heightened public scrutiny of police. Members of the public, particularly racial and ethnic minorities, are voicing concerns about what they perceive as overly aggressive tactics and abuses of force disproportionately directed toward minorities. While anxieties about police bias and use of force continue to grow, apprehension regarding police officers' safety is also entering the national conversation. Recent increases in the number of officers injured or killed through ambush-style attacks adds to the trepidation (National Law Enforcement Officers Memorial Fund, 2018). Practitioners, policy makers, academics, and citizens concerned with these emerging crises continue searching for solutions that will reduce the frequency and severity of violent encounters between police and the public they serve.

Legal scholar Frank Zimring (2017) suggests the 2014 death of Michael Brown, killed during an encounter with a police officer in Ferguson, Missouri, and the subsequent aftermath represented a turning point in our collective national conscience regarding police killings. Widely referred to as a "Ferguson effect" – a term used to describe a variety of perceived changes in both police and citizen behaviors after this high-profile incident – Zimring suggests killings by police are no longer treated as singular events, but rather as a pattern of problematic behavior by police nationally. He further notes a change from considering fatal uses of force by police as an issue of crime policy or police conduct, to a national question of civil rights. The importance of this incident and its subsequent national impact is echoed by other scholars. Walker (2018) argues that after that the 2014 police shootings of unarmed citizens in Ferguson, MO and Staten Island, NY, the country entered a "National Police Crisis" and that this crisis is

developing a "new conversation" about policing and police reform. Likewise, Sherman (2018) highlights the entrance of the United States into the "Second Great Awakening" concerning fatal police shootings where, fed by a stream of online videos made possible by widespread ownership of smartphones, the nation witnessed police-involved shootings first-hand.

Similar reflection and discussions occurred after a rash of officers were injured or killed in ambush attacks, including the murder of five police officers, and wounding of nine others in Dallas, Texas in July 2016, followed by ambush attacks killing three officers and wounding three more in Baton Rouge, Louisiana (Fernandez, Perez-Pena, and Bromwich, 2016; Visser, 2016). It was during this time that the "Black Lives Matters" civil rights movement was pitted against a trending retort that "Blue Lives Matters," ultimately resulting in the widespread adoption of the axiom that "All Lives Matter" (Craven, 2017; Garza, 2014; Victor, 2016).

During this tumultuous time, a general sentiment is emerging across the country that meaningful reforms in policing are desperately needed to protect both officers and the citizens they serve. One of the most prominent recommendations for police organizational reform is the incorporation of use of force de-escalation policies and training. With the possible exception of implicit bias training, no other training is more often demanded by policy makers, politicians, police executives, academics, civil rights activists, and citizens than de-escalation training for police. De-escalation training also received a hefty endorsement from *The President's Task Force on 21st Century Policing* (2015) when it was identified as the only action item related specifically to police use of force. Even informal conversations regarding current events and social media commentary inevitably turn to the perceived need for police to better de-escalate potentially violent situations. As a result of these coalescing influences, de-escalation training is

quickly becoming widely accepted by experts and the public as a common-sense approach to reduce unnecessary police use of force.

De-escalation policies and training is not without critics, however, with many voicing serious concerns about perceived risks to officer safety (Blake, 2017; Landers, 2017; Jackman, 2016a; Williams, 2015). Several tactics common in de-escalation training run counter to more traditional policing operational responses. For example, many de-escalation trainings emphasize the need for officers to slow down during potentially volatile situations, and consider a range of options before rushing into action. However, traditional training typically instructs quick and decisive action as the safest approach for officers faced with dangerous or unpredictable circumstances. Critics argue that changes in traditional approach could increase the risk of officer injury. Unfortunately, research cannot adequately address these concerns because, similar to most other police training curricula, de-escalation training has not been subjected to rigorous scientific testing. As a result, little is known about the development, delivery, and impact of police de-escalation training. As Zimring aptly articulates, "the protection of police from life-threatening assault is a peculiar mix of high operational priority and low scientific knowledge" (2017: 97).

While the larger discourse on police reform has failed to demand evidence regarding the effectiveness of police de-escalation policies and training, the development, training, and implementation of de-escalation techniques have been assessed across other professions and academic disciplines for decades. In an effort to better inform police executives and policy makers, we have undertaken a systematic, multi-disciplinary review of de-escalation training across professions. We seek to present what is known about the effectiveness of de-escalation training. Our review identifies promising practices and highlights remaining gaps in knowledge.

Importantly, we articulate the *urgent need* for researchers to work collaboratively with police executives to generate and disseminate knowledge regarding the use of de-escalation policies and training. We call on our academic and practitioner colleagues, along with federal, state, and local agencies and organizations, and the philanthropic community, to prioritize and fund studies designed to advance rigorous scientific inquiry regarding the efficacy and effectiveness of de-escalation policies and training. Police executives urgently need this information to guide organizational reform. We further argue these officials have an ethical obligation to pair the implementation of innovative strategies and trainings with on-going testing within their agencies to ensure there are no unintended negative consequences. It is not hyperbole to suggest that the safety of police officers and the individuals they encounter literally hinge on this collective work.

Police Use of Force and De-escalation Policies and Training

Over four decades ago, policing scholar Egon Bittner (1974) argued in the now classic description of police as Florence Nightingale (a nurse) in pursuit of Willie Sutton (a notorious criminal), that police are *defined* by their ability to use force. It is their ability to use force – and the public's expectation that they do so if necessary to handle situations – that separates policing from all other occupations (Bittner, 1980). Bittner concludes by suggesting the police have missed their true vocational calling because they often define themselves as crime fighters rather than service providers. The proper role of police is still questioned nearly half a century later, although now scholars and practitioners use terms like "warrior" and "guardian" to describe these competing perspectives (Rahr and Rice, 2015). Likewise, the use of force continues to be a central – and increasingly controversial – defining role of the police.

Notwithstanding its importance, we still know relatively little about how, when and under what circumstances police officers use of force. Unfortunately, one of the most consistently

documented findings regarding police use of force is our lack of knowledge about it, and the considerable problems associated with data collection and analysis to learn more (Engel and Serpas, 2017). Despite this lack of information on the scope of the problem and the potential impact of changes to policies and training, police executives are being encouraged to make significant changes by implementing more restrictive use of force policies and adopt de-escalation training. For example, the *President's Task Force on 21st Century Policing* – a high-profile expert panel charged with identifying best practices to simultaneously reduce crime while building public trust – recommended in Action Item 2.2.1 of their *Final Report* that "law enforcement agency policies for training on use of force should emphasize de-escalation and alternatives to arrest or summons in situations where appropriate" (2015: 20).[1] Given that the *President's Task Force* was borne in the aftermath of a series of controversial high-profile police use of force incidents that led to protests and civil unrest across the country, it is particularly noteworthy that the *only* recommendation specifically regarding police use of force endorses the use of de-escalation.

Walker (2018) further credits reports on the use of force prepared by the *Police Executive Research Forum* (PERF) as significantly contributing to the new conversation in policing (e.g., see PERF, 2012; 2015; 2016a; 2016b). Specifically, Walker characterizes these reports as moving beyond vague instructions of what police can *legally* do in possible use of force situations (see *Graham v. Connor*, 1989), instead providing real-world accounts and more refined guidance for current practices. As a prime example, PERF's report *Guiding Principles on Use of Force* highlights 30 principles for "policies, training and tactics, equipment, and information issues" that propose substantial changes to police agencies' understanding and application of the use of force and de-escalation alternatives (2016a: 33).

Yet despite this support, and increasing calls for the adoption of de-escalation training, there is no uniformly accepted definition of de-escalation within the policing field. Most recommendations for de-escalation policies or training – including the *President's Task Force* – neglect to provide a specific definition, or even more general description of de-escalation. As such, de-escalation has become a catch-all of sorts, symbolizing a different, more progressive policing approach for handling potential use of force encounters. However, the exact approach and the tactics associated with it can vary dramatically. After a thorough search, only one specific definition of police de-escalation was identified, appearing within the 2017 *National Consensus Policy and Discussion Paper on Use of Force* (a collaborative effort among 11 law enforcement leadership and labor organizations in the United States). The *National Consensus Policy* specifically defines police de-escalation as "taking action or communicating verbally or non-verbally during a potential force encounter in an attempt to stabilize the situation and reduce the immediacy of the threat so that more time, options, and resources can be called upon to resolve the situation without the use of force or with a reduction in the force necessary" (2017: 2). Based on a larger review of literature across disciplines, de-escalation is found to typically refer to a process or tactics used to prevent, reduce, or manage behaviors associated with conflict – including verbal or physical agitation, aggression, violence or similar behaviors – during an interaction between two or more individuals.

Most de-escalation training conducted across professional fields (including public health and education) emphasizes strategies for the prevention and management of violence and aggression. This includes training in early intervention, verbal and non-verbal interaction or communication styles, the selection of appropriate responses in potentially violent encounters, and the use of physical intervention techniques (e.g., breakaway skills training, control and

restraint techniques, protection), all designed to reduce conflict, aggression, injuries, and violence during encounters between clients and practitioners. Additionally, many trainings incorporate information regarding work-related policies and legal guidelines for the prevention and management of violence and aggression. This information often includes specific guidance on employees' general rights and responsibilities, related state and local laws, agencies' policies and procedures, health and safety techniques, and ethical considerations. Some trainings include de-escalation evaluation and crisis response techniques, including critical reviews of violent incidents and post-incident support for staff and clients. For some agencies, de-escalation training is a stand-alone curriculum, while others incorporate de-escalation tactics and skills within trainings on other substantive topics. This wide variation across trainings makes a general evaluation of de-escalation effectiveness particularly challenging.

The Case For (and Against) De-escalation Training for Police

Many law enforcement leaders supporting the adoption of de-escalation training espouse that slowing down situations, using time, distance and cover, along with other de-escalation techniques, can help resolve police-citizen encounters with less frequent and severe uses of force, and that the tactics increase officer safety. De-escalation techniques are now widely embraced by many police executives leading the nation's largest policing agencies (Domanick, 2017; Jackman, 2017a; 2017b). Politicians, policy makers, academics, and concerned citizens often join the choir of support, demanding the adoption of de-escalation training within local police agencies, particularly after controversial police uses of force (Hentoff and Hentoff, 2016; Johnson and Tucker, 2014; Nather, 2015; Stoughton, 2014). Due to the large estimated percentage of fatal encounters with police where the suspect does not have a firearm (44 percent), Zimring (2017) boldly predicts that such encounters (i.e., police killings) could be cut

in half *without compromising officer safety*. He provides multiple recommendations to accomplish this reduction, including revisions to use of force policies, which likely would include the adoption of de-escalation practices. Similarly, Sherman's assessment of fatal police shootings as system failures calls for additional research on police training designed "to reduce the risk of avoidable shootings" (2018: 442).

Despite widespread support, the adoption of de-escalation policies and training remains highly controversial in the vacuum of evidence concerning officer safety. A review by Cynthia Lum and her colleagues (2016) reveals that many of the recommendations of the *President's Task Force* – including de-escalation training – are not based on a strong body of empirical evidence. As both external and internal calls for police de-escalation practices grow, so too do concerns posed by some law enforcement officers and union representatives that de-escalation techniques may *increase* officers' risk of injuries and deaths. Writing in a popular law enforcement officer forum, former Police Lieutenant Brian Landers reminds readers, "there is no evidence to support a claim that de-escalation policies increase officer safety" and further argues that officer safety could actually be reduced (2017). In the absence of rigorous scientific research, he provides a crude comparison of the number of officer injuries and deaths pre/post de-escalation related policy changes in a handful of agencies, and concludes a correlation exists between increases in officer deaths and injuries and the implementation of de-escalation policies.

Concerns regarding officer safety are echoed by others in the profession, including, for example, retired Los Angeles Police Captain Greg Meyer, who tells the *Washington Post* (Jackman, 2016a) that "you're seeing case after case, because of all the criticisms in the post-Ferguson era, where you see an officer back up [using a de-escalation technique] and get killed or hurt that they would not have before." In the absence of evidence to the contrary, Landers

(2017) argues "by sending officers to de-escalation training courses, chiefs and sheriffs have risked these men and women becoming hesitant about using force" and further "while [de-escalation] concepts are practical and effective in some situations, they are useless and even dangerous in others."

While the inclusion of de-escalation within the *National Consensus Policy and Discussion Paper on Use of Force* (2017) signaled the leaning of the larger policing field toward acceptance of de-escalation policies and training, debates regarding complete adoption and the impact of these practices continue across the policing profession. Unfortunately, these critical conversations – which have real world impact on the safety and wellbeing of police officers and the individuals they encounter – inevitably rely on theoretical propositions, anecdotal evidence, testimonials, and untested presumptions about what is "best practice" for police use of force. The only agreement among de-escalation training supporters and critics appears to be that more information is needed to determine its effectiveness (Engel and Serpas, 2017).

Yet despite these unanswered concerns regarding officer safety, many academics and others continue to advocate for the pervasive and unquestioning adoption of de-escalation training. For example, Walker (2018) suggests the approach PERF advocates – significant changes in police use of force policies and training based on the adoption of the critical decision-making model, de-escalation tactics, and the sanctity of life standard – represents a progressive solution to the national policing crisis. Despite Walker's (2018) assessment of the innovation and success of the PERF's recommendations, scores of International Association of Chiefs of Police (IACP) members raised safety concerns to their organization leadership when these use of force policy and training were proposed, prompting several controversial media interviews and retorts, along with a series of closed-door meetings among multiple national police membership

organizations to discuss these issues (Dziejma and De Sousa, 2017; Engel and Serpas, 2017; Jackman, 2016b). Walker dismisses these efforts by the IACP and other law enforcement executive and labor organizations to debate the issues and provide alternative perspectives on police use of force, characterizing such efforts as a direct rebuke of PERF's progressive work to advance the policing field. It is important to note, however, that the development and implementation of PERF's de-escalation training (*Integrating Communications, Assessment, and Tactics*, or ICAT) – though grounded in theory and practiced in other countries – has not yet been empirically tested.[2] As a result, Walker's assessment (and others), absent evidence of the effectiveness of these changes in policing, may be premature. The criminal justice field is plagued with well-intended, yet untested practices – endorsed by eager policy makers, politicians, practitioners or scholars –that were later demonstrated to be ineffective or making even situations worse (National Academies of Sciences, 2018; Worden and McLean, 2017).

The purpose of the following literature review is to introduce evidence about the effectiveness of de-escalation training to inform current conversations. Our approach offers a systematic, multi-disciplinary review to better understand similarities and variations across de-escalation trainings. Ultimately, we summarize what is known about de-escalation training effectiveness, and document the wide gaps in our knowledge. We follow with an appeal for additional research that should be widely supported by police executives.

Methods

This multi-disciplinary review synthesizes the findings from a systematic search of existing published and unpublished empirical assessments of de-escalation training impact on trainees' attitudes and/or their behaviors during work-related interactions with their clients. As noted previously, there is no single, widely accepted definition of de-escalation. For the

purposes of this review, our team defined de-escalation as agents' prevention or management of clients' violence, aggression, agitation, or similar behaviors, based on a process designed to defuse situations and reduce the likelihood of physical or verbal confrontation between parties.[3] The current review includes only evaluations of trainings that taught tactics or interventions aligned with this definition of de-escalation, as specified by their objectives, descriptions, or lesson plans.[4] Further, for inclusion in this review, de-escalation tactics had to be the *primary* focus of the evaluated training. Most relevant for policing, was the elimination of Crisis Intervention Team (CIT) trainings from this review. While the vast majority of CIT training curricula include components of de-escalation, the larger purpose of CIT training is to develop a team approach to crisis response involving encounters with individuals experiencing mental health symptoms, and this training is heavily focused on officer education of mental disorders and the availability / processes of mental health services in their communities. Given both the broader goals of CIT training, along with the more specialized targets for implementation of the training (i.e., individuals experiencing a mental health crisis), evaluations of CIT training are not included in this review. For reviews of the CIT literature, see Engel et al., in press; Marotta, Barnum, and Watson, 2014. The remaining criteria used to identify eligible studies and the coding process used are further described below.

Identification of Eligible Studies

Due to the exploratory nature of this multi-disciplinary systematic review, we employed broad inclusion criteria for eligible studies. Any study involving an evaluation of training specifically designed to de-escalate encounters with others (e.g., aggression management, violence prevention) was eligible for review, regardless of the study's design method or degree of scientific rigor. Therefore, both quantitative and qualitative studies are included.

Additionally, there were no inclusion/exclusion criteria regarding the units of analysis or outcomes measured within eligible studies. De-escalation training typically attempts to influence participants' perceptions and behaviors to reduce the use of force, violence, aggression, and potential for injury during encounters with others. Training impacts can be measured at the individual level (e.g., perceptions/behaviors of trained participants, experiences of consumers) or at the aggregate level (e.g., unit/department/agency-wide incidents of aggression/violence). Furthermore, training impacts can be measured as attitudinal or behavioral changes, both of which are included in this review.

Several strategies were used to conduct a systematic search for studies meeting the eligibility criteria. First, a keyword search was completed on a selection of online databases to identify literature pertaining to de-escalation tactics and training across multiple disciplines. The development of keywords and database identification began with the construction of a list of search terms created from a cursory review of general literature pertaining to police use of force, procedural justice, de-escalation, crisis intervention, and related topics (e.g., emotional escalation, conflict management, aggression management) across academic disciplines, including Public Health, Psychology, Sociology, Education, and Criminal Justice. Identified keywords were reviewed by an information specialist with expertise in library science and used in a pilot search within a single database to validate format and verify capacity to return relevant documents (see Appendix A for list of keywords and search terms).[5] This collaboration resulted in a total of 99 databases searched (see Appendix B). 'Grey' literature, or material that has not been formally published, such as reports (e.g., government, nongovernment, and technical reports), unpublished dissertations, and working papers were also included. Finally, the research team reviewed each eligible study's references to identify other studies of interest that were not

retrieved in the original search, and were screened for eligibility. This systematic search was completed between September and November 2016.

It is common for systematic search processes to return a large number of potentially relevant studies that must be further screened to determine eligibility for inclusion (Farrington and Petrosino, 2001). Figure 1 illustrates our review's specific screening process. The initial systematic search resulted in a list of 39,314 documents; however, further examination identified only 1,493 *unique* records containing enough relevant information for retrieval. The abstracts of these references were reviewed to further assess relevance for inclusion. Trained coders were instructed to determine whether a reference aligned with the research team's definition of de-escalation *and* included an evaluation of training. Abstracts were double-coded and reviewed by the research team. This process reduced the list of eligible documents to 78. A preliminary read-through of the remaining documents was conducted to further eliminate studies that did not meet inclusion criteria. For interrater reliability, two trained coders read and coded each document. In instances of disagreement, a third trained coder made the final judgement for eligibility. After this phase, 35 documents from the original search list remained; however, based on a search of their bibliographies, an additional 55 possibly relevant evaluations were reviewed. A final round of review by multiple coders yielded a total of 64 eligible evaluations.

--- FIGURE 1 ABOUT HERE ---

A variety of information was recorded from each eligible study. Trained coders captured basic reference information, and specific information regarding the training evaluated, including the name, a basic description of the training (e.g., origins of training, length of training), training topic areas, and the tools used to train participants. Details of the study design, sample,

measurement, and the outcomes reported were also recorded. Finally, the studies' conclusions concerning the effectiveness of the training and limitations of the studies were noted.

Study Characteristics

Table 1 summarizes the characteristics of evaluations included within this review. Appendix C reports additional details regarding these evaluations. The 64 eligible evaluations were published across a 40-year period (from 1976 through 2016). The majority of studies (89 percent) were published as peer-reviewed articles appearing across 37 unique research journals. De-escalation training evaluations were most commonly produced within the field of nursing, with 56 percent (36 of the 64 studies) appearing in research journals related to nursing education, mental health nursing, psychiatric nursing, gerontological nursing, and/or geriatric nursing. The remaining studies were largely produced in the psychiatry field, particularly appearing in journals focusing on clients' intellectual and developmental disabilities. The evaluations typically examined the impact of training for nurses and other care providers within hospitals, emergency departments, and other specialized care units and facilities, such as psychiatric intensive care units, mental health care centers, and residential behavioral units. There were only two exceptions: 1) an evaluation assessing the impact of de-escalation-related training for employees from a public transportation company (Bosse, Gerrotsen, and de Man, 2015), and 2) an evaluation examining the impact of de-escalation-related training for teachers in elementary, junior high, and high schools (Sela-Shayovitz, 2009). Of note, no studies evaluating de-escalation training in the field of criminal justice were identified during this review.

Our findings show the majority of evaluations use pre/post-test designs to examine differences across individuals before and after receiving training. Importantly, the timeframe between the implementation of the pre-test and post-test is found to vary across studies. For

example, some evaluations use post-tests delivered immediately following training, while others deliver post-tests several weeks (in some cases months) after individuals' participation in training. These pre/post-test designs are most often implemented without the use of untrained comparisons groups. The prevalence of pre/post-test designs appears to be a product of the difficulties associated with studying training within real-world settings. The difficulties associated with conducting randomized controlled designs in the field are well-documented (e.g., see Blumstein, 2016), and researchers are often bound to the previously-determined training schedules of the institutions implementing the de-escalation training, and therefore are unable to implement more rigorous research designs.

--- TABLE 1 ABOUT HERE ---

Findings

Beyond reporting the frequency of different research designs employed by previous de-escalation studies, it is critical to consider the quality of the designs to assess our confidence in making inferences from their findings. Specifically, findings regarding the effects of training produced from research designs with fewer threats to internal validity (e.g., causal direction, history, chance factors, selection bias) can be interpreted with greater confidence than findings from designs that provide fewer protections (Shadish, Cook, and Campbell, 2002).

To assess the quality of the eligible studies' research designs, we used the 5-point Maryland Scientific Methods Scale (SMS) (Sherman et al., 1998). The various levels of research designs, as outlined by the SMS, are detailed in Table 2. Studies categorized within Level 5 are considered to have the strongest internal validity, whereas Level 1 classifications identify research designs with extremely weak internal validity. Importantly, Level 3 research designs —

involving the measurement of an outcome before and after treatment with a comparable control group — are considered the minimum interpretable design from which conclusions can be drawn about "what works" (Cook and Campbell, 1979; Farrington, Gottfredson, Sherman, and Welsh, 2002).

Within this systematic review, the majority of studies (95 percent; n = 61) fall within SMS Levels 1 and 2. Among those studies, 93 percent (n = 57) are classified as Level 2 — where only the temporal order between the training and outcomes is clearly observed or the design involves the use of a comparison group without demonstrated comparability to the treatment group. The categorization of these studies mirrors researchers' reliance on the use of pre/post and interrupted time series designs with no comparison group, as well as the tendency across studies to exclude covariates or controls within the statistical analyses.

Additionally, the pre/post and interrupted time series studies that included a comparison group are best described as implementing a non-equivalent comparison group design. Specifically, within these studies, researchers either report significant differences between the treatment and comparison group at baseline, or no efforts to test the equivalence of the treatment and comparison group are reported at all. It is uncertain whether outcome differences detected within the treatment group, and between the treatment and comparison groups, are solely products of the training curriculum. Although these studies make efforts to establish causal order, they fail to account for factors external to the training programs that could impact the measured outcomes (Shadish et al., 2002).

Only three of the eligible studies meet the criteria for Level 3 — establishing causal order and have comparable control groups (i.e., researchers test for group equivalence at baseline and find no significant differences) (Hahn, Needham, Abderhalden, Duxbury, and Halfens, 2006;

Middleby-Clements, 2007; Smoot and Gonzales, 1995). While more rigorous than studies classified as Levels 1 and 2, these three studies still suffer from significant threats to internal validity, including the potential for selection bias and the influence of chance factors (i.e., lack of controls in statistical analyses) on study outcomes.

--- TABLE 2 ABOUT HERE ---

In summary, although 64 studies are eligible for inclusion in this systematic review, only three could plausibly be considered adequate for drawing conclusions regarding the influence of training on measured outcomes. In light of the overall low quality of research designs, as well as the broad range of research objectives and methods (both quantitative and qualitative) employed across studies in this review, a meta-analysis cannot be performed. Specifically, meta-analyses involve the statistical pooling of *similar* quantitative studies. The exploratory nature of the review and the wide variation found across the eligible evaluations, makes the statistical summarization of study findings unfeasible (Petticrew and Roberts, 2006). As such, our approach to interpreting study findings is descriptive in nature, illustrating this variation across de-escalation trainings and their outcome measures. Our purpose is to demonstrate the limited nature of current knowledge about the effects of de-escalation training across disciplines, and to highlight the immediate need for more rigorous research to test de-escalation training effectiveness, particularly in the field of policing.

Description of De-escalation Trainings

The specific training, dosage, topics covered, and tools for delivery, vary considerably across individual evaluations. Only three trainings appear more than once across the 64 evaluations. However, a content analysis of the training descriptions demonstrates five major

thematic areas (see Table 3).[6] Most common is the inclusion of materials informing training participants of the definitions, explanations, and/or origins of aggression and violence. This content often includes descriptions of the prevalence of aggression/violence within the specific workplace or setting, general theories of aggression and violence, models of aggression (i.e., different forms presented), and prediction or recognition of risk factors associated with aggression/violence. The inclusion of content pertaining to prevention and management (i.e., reactive strategies) of aggression and/or violence is also common. However, the trainings appear to focus more often on the physical management of aggressive individuals (e.g., self-defense, breakaway skills, and physical restraint techniques) than on the prevention or early intervention of aggressive incidents. Workplace and legal considerations also often appear within training curriculums, including consideration of the general rights and responsibilities of staff members in the prevention and management of aggression/violence, medical consideration in the use of physical intervention, and laws or legislation around the use of reasonable force within specific work settings. Finally, several training curricula include instruction on appropriate processes for monitoring and evaluating aggression/violence in the workplace. Specifically, these trainings include discussions regarding post-incident support for clients and staff, as well as critical reviews of incidents following occurrence.

--- TABLE 3 ABOUT HERE ---

In addition to variation in topics covered during de-escalation trainings, our review reveals considerable differences in training dosage. Some trainings span only a few hours, while others last several (up to 10) days. Training is also administered at different intervals, including within a single day, over the course of several consecutive days, or at specific intervals over a

several month period (e.g., a three-day training delivered over a 10-month period). Further, several trainings provide follow-up or "refresher" sessions on the training over time, while others provide only a single dose of training. The methods of instruction (i.e., tools used for delivery of training) also vary. Most of the training interventions provide some type of classroom-based instruction (e.g., presentations and lectures), emphasize group discussion, and use practical exercises (i.e., role-play) for the application of verbal and physical de-escalation techniques.

Content Analysis of Study Outcomes

The exploratory, highly inclusive nature of this systematic review prevents a rigorous comparison of the findings across the 64 eligible studies. However, we provide a summary of the quantitative outcomes reported in these evaluations. 'Vote-counting,' or drawing conclusions regarding the effectiveness of an intervention based on the number of studies reporting *statistically significant* positive effects, is typically discouraged in systematic reviews (Petticrew and Roberts, 2006; Bushman and Wang, 2009). However, in line with previous research, we examine the number and percentage of outcomes that either favor or do not favor the intervention, in this case de-escalation training, regardless of their statistical significance (see, e.g., Bowers, Johnson, Guerrette, Summers, and Poynton, 2011; Gill, Weisburd, Telep, Vitter, and Bennett, 2014; Telep, Weisburd, Gill, Vitter, and Teichman, 2014). Although not without its limitations, this method facilitates a description of the full range of outcomes examined across heterogeneous evaluations. Further, this method is particularly appropriate given that many eligible studies did not incorporate tests of statistical significance in their analyses.

Our sample of 64 studies report 197 different outcome measures. Within and across these training evaluations, the type of outcome and its operationalization and measurement vary

considerably. To further explore, outcomes are classified as belonging to one of two categories: 1) Survey-based outcomes – which include trainees' self-reported changes in knowledge, attitudes, behaviors, and experiences, obtained through surveys, and 2) Behavioral outcomes – which include changes in behaviors measured through official documents and third-party (i.e., impartial) observation. The specific outcomes reported are further classified within each category before providing a general assessment of the direction of the findings.

Survey-based outcomes. Table 4 provides a classification of survey-based outcomes. Trainees' survey outcomes that appear in de-escalation training evaluations are grouped into seven major categories: (1) knowledge, (2) confidence, (3) general attitudes, (4) experience with aggression/violence, (5) perceptions of safety, (6) self-reported behavior, and (7) perceptions of training. *Knowledge* refers to trainees' understanding of topics related to de-escalation, such as the prevention and management of aggression/violence, awareness of causal or risk factors associated with violence and aggression, and ability to recognize effective intervention methods. *Confidence* indicates trainees' perceptions of self-efficacy in prevention and management of aggression/violence, as well as general perceptions of staff capabilities. *General attitudes* refer to individuals' perceptions concerning the prevalence of aggression/violence in their work setting, assessments of the predictability and preventability of such behavior, and perceptions regarding staff protection and support in aggressive or violent incidents.[7] *Experience with aggression/violence* measures trainees' self-reported exposure to aggressive behaviors in the workplace. Additionally, this refers to their experiences following exposure to aggression and violence at work (e.g., self-reported psychological distress, general mental wellness). *Perceptions of safety* indicate trainees' beliefs and concerns regarding vulnerability to aggression and violence, including their perceptions of risk, anxiety, or fear of assault. *Self-reported*

behavior refers to trainees' accounts of their emotions and actions during and following interactions with clients, their participation in workplace interactions, and their application of de-escalation related techniques. Finally, several evaluations incorporated measures of participants' *perceptions of training*. This includes general appraisals of the training course, perceptions of the need for such training, and perceived value of de-escalation skills.

--- TABLE 4 ABOUT HERE ---

The findings presented in Table 4 suggest that de-escalation training produces largely favorable outcomes pertaining to the attitudes, perceptions, and self-reported behaviors/experiences of participants. In particular, de-escalation training appears to be most successful in producing greater self-reported knowledge and confidence among training participants. Following participation in training, individuals generally report greater knowledge of the causes of aggression and violence, as well as enhanced awareness of effective strategies for the prevention and management of these behaviors. Additionally, individuals who participated in de-escalation training are more confident in their abilities, and the abilities of coworkers, to manage aggressive/violent behavior. Although three studies report no change in these outcomes (Bosse, Gerritsen, and de Man, 2015; Feldt and Ryden, 1992; Sela-Shayovitz 2009), there are no findings that suggest de-escalation training has unfavorable effects on participant knowledge or confidence.

De-escalation training also generates favorable outcomes in trainees' general attitudes regarding aggression and violence within workplace settings and the prevention/management of these behaviors. For example, trained individuals are less likely to report negative views of aggression/violence in the workplace and more likely to indicate aggressive or violent behaviors

are both predictable and preventable. Findings unfavorable to de-escalation training regarding general attitudes are found in only one of 20 attitudinal evaluations.[8]

Though measured less frequently, the remaining survey-based outcomes demonstrate largely favorable results of de-escalation training. Specifically, trainees are less likely to perceive exposure to aggression or violence in the workplace or report negative experiences (e.g., emotional or psychological distress, burnout) following involvement in aggressive/violent events. Findings pertaining to individuals' perceptions of safety vary slightly more than other survey-based outcomes. While in most evaluations (60 percent of the time measured) training participants indicate greater feelings of safety, several studies report no changes in perceptions of vulnerability to, or risk of violence in the workplace (e.g., McIntosh, 2003; Parkes, 1996; Phillips and Rudestam, 1995).

The impact of training on participants' self-reported behavior has the greatest amount of variation across studies. When measured, positive changes in self-reported behaviors among training participants are reported less than half (43 percent) of the time. Among the studies reporting positive changes in self-reported behavior, training participants indicate greater ability to use verbal and physical de-escalation skills, enhanced capacity for coping with or managing violence and aggression during incidents, and lower levels of personal aggression in these encounters (Middleby-Clements and Grenyer, 2007; Oostrom and van Mierlo, 2008; Wondrak and Dolan, 1992). Finally, de-escalation training is generally well-received by participants. Individuals identified the importance of training in the prevention and management of aggression and violence, highlighting the perceived utility of de-escalation skills in their work-setting.

Notably, findings concerning survey-based outcomes are supported by conclusions drawn from qualitative analyses of interviews and focus groups with training participants. In addition

to noting increases in knowledge of the precipitating factors of aggression/violence and effective interventions, participants also express greater confidence in their ability to manage incidents of both verbal and physical aggression and communicate greater empathy for individuals behaving in an aggressive or violent manner (Collins, 2014; Gerdtz et al., 2013; Heckemann, Breimaier, Halfens, Schols, and Hahn., 2016; Mentes and Ferrario, 1989). Interview and focus group participants also note the benefits of de-escalation training and the applicability of de-escalation techniques in real-world situations. Additionally, qualitative evaluations provide insight into important factors that may affect the influence of training. For example, staff attitudes regarding training and applicability of de-escalation techniques are suggested to affect participants' willingness to participate in training and use de-escalation skills in their daily work. Notably, qualitative research identifies support from upper management within organizations as an important facilitator for staff participation in learning and using de-escalation techniques (Collins, 2014).

Behavioral outcomes. In addition to survey-based outcomes, 48 percent of all training evaluations also include at least one behavioral outcome measure. Table 5 summarizes the findings of de-escalation training evaluations when behavioral outcomes are considered. Although fewer studies measure behavioral outcomes than survey-based outcomes in their analyses, among those that did measure behavior, the outcomes largely fell within six categories: (1) number of incidents, (2) severity of incidents, (3) number of injuries, (4) application of de-escalation (5) use of force, and (6) organizational impact. *Number of incidents* refers to the prevalence of situations of aggression/violence, including "behavioral incidents" and incidents of assault, within the specific work setting. *Severity of incidents* indicates the nature and seriousness of incidents measured (e.g., level of aggression; seriousness of violence) during the

study period. *Number of injuries* includes both staff and patient/client injuries that occur during incidents of aggression and violence. *Application of de-escalation* refers to the use of intervention techniques introduced in specific trainings, as well as officially documented changes in staff behavior and the quality of their intervention during aggressive incidents. *Response to resistance* refers to the frequency of the use of reactive strategies to reduce violence, such as physical restraint, emergency medication, or seclusion, on individuals that exhibit aggressive or violent behaviors. Finally, *organizational impact* measures the effect of training on agency outcomes such as the number of patient complaints, work hours or days missed due to incidents of aggression or violence, and staff resignations and transfers.

As shown in Table 5, findings regarding the impact of de-escalation training on behavioral outcomes are less consistent than those reported for survey-based outcomes. For example, while the number of aggressive/violent incidents decreases following training in approximately half (52 percent) of the studies measuring this outcome, other evaluations show no change or increases in violent incidents. In particular, two studies report assaults are higher among trained individuals compared to their untrained counterparts (Ore, 2002; Whittington and Wykes, 1996). Research also finds unfavorable changes in the prevalence of incidents detected over time. Specifically, some studies show initial decreases in incidents following training, but increases in incidents when longer time periods are examined (e.g., one-year, two-years, and two and a half years post-training respectively; see Gillam, 2014; Martin, 1995; Rice, Helzel, Varney, and Quinsey, 1985). Unfortunately, due to the general lack of covariates across analyses, we are uncertain whether increase in the number of incidents is a product of de-escalation training (e.g., trained staff more likely to formally report incidents of violence an aggression) or of other pertinent factors (e.g., patient population; staffing).

Although examined less often, the severity of incidents appears to decline after training. This finding remains even in studies where the total number of incidents increases (e.g., Martin, 1995; Wilkinson, 1999), suggesting that while de-escalation training may have variable effects on the prevalence of aggressive/violent encounters, it might help to reduce the level of aggression/violence in those encounters. The number of staff and client injuries during incidents of aggression and/or violence typically decrease as well, with 76.9 percent of studies measuring injuries reporting reductions after de-escalation training. The only neutral or unfavorable findings related to injuries are attributed to one study using a panel design with no comparison group (Parkes, 1966).[9]

In general, individuals trained in de-escalation apply learned techniques following training. Note however, the findings regarding application of training techniques are largely produced from recorded observations of training participants' behaviors in controlled scenarios, simulations, or role-play tests (McDonnell, 1997; Nau, Dassen, Needham, and Halfens, 2011; Nau, Halfens, Needham, and Dassen, 2010; Paterson, Turnbull, and Aitken, 1992; Phillips and Rudestam, 1995; Rice et al., 1985; Wondrak and Dolan, 1992). Only one evaluation examines trainees' application of de-escalation skills in real-world settings (Jambunathan and Bellaire, 1996). In this cross-sectional evaluation, registered nurses observed and documented staff use of verbal and physical de-escalation skills during patient incidents in a state-run psychiatric facility. Recorded observations of 146 incidents suggest that staff effectively resolved the majority of these encounters (84.2 percent) using de-escalation techniques learned in training (Jambunathan and Bellaire, 1996). The lack of a comparison group or pre-test observations, however, limits conclusions regarding the impact of training on the application of de-escalation techniques.

--- TABLE 5 ABOUT HERE ---

An examination of the eligible evaluations reporting the effects of de-escalation training on response to resistance during aggressive/violent incidents presents more varied findings. A majority (63.6 percent) of studies examining response to resistance show favorable effects of training. These studies show staff use coercive interventions (e.g., physical restraint, medication, and seclusion) less often following participation in de-escalation training (Allen, McDonald, Dunn, and Doyle, 1997; Forster, Cavness, and Phelps, 1999; Jonikas, Cook, Rosen, Laris, and Kim, 2004; Moore, 2010; Smoot and Gonzales, 1995). In contrast, two evaluations show increases in trainees' use of coercive interventions (Baker and Bissmire, 2000; Colenda and Hamer, 1991). However, authors warn that an increase in the use of physical interventions may not be altogether undesirable if those interventions are better planned, safer, and executed with greater competence (Baker and Bissmire, 2000). Finally, de-escalation training has been reported to provide important organizational benefits. Findings suggest that de-escalation training is associated with reductions in the number of patient complaints and staff hours/days missed due to aggressive/violent incidents, as well as declines in staff resignations or transfers.

Discussion

Our multi-disciplinary review of de-escalation training evaluations resulted in the identification of 64 studies that provide some supporting evidence, though this assessment is limited by the questionable quality of individual research designs. Overall, the limited quantity and quality of research studies assessing de-escalation training across disciplines and professions is disappointing, especially given the critical impact that these trainings could have over the health, safety, and wellbeing of all involved in the potentially volatile encounters between

professionals and the persons they serve. It appears that policing is not the only profession where innovations in de-escalation training are rarely tracked and tested. Yet, recall that understanding what we do not know is still an important finding because it facilitates the discernment between real and assumed knowledge (Petticrew and Roberts, 2006). For police executives seeking direction on the adoption of de-escalation policies and training to guide officer use of force, our review highlights similarities in curriculum content across disciplines that appear promising, however police executives need to enhance this body of research by testing de-escalation practices within their own organizations.

The vast majority of de-escalation training evaluations appear in the nursing and psychiatric fields. This is unsurprising given that the nursing field is a female-dominated profession that requires the management of behaviors resulting from individuals who may be experiencing pain, under the influence of drugs/alcohol, and in crisis or experiencing other emergencies. Likewise, the field of psychiatry involves the management of the behaviors of individuals with intellectual/developmental disabilities that may manifest into verbal or physical altercations. In both disciplines, there has been a continuous emphasis on the health, safety, and legal rights of patients, along with an increasing awareness of mental illness and its treatment that is motivating changes in the delivery of health services. These experiences are clearly applicable to the field of policing. As first responders, and the only professional group available 24 hours a day that can be counted on to make house calls, police officers are regularly involved in situations of human conflict and or crisis (emotional, physical, etc.) where action is needed (Bittner, 1980). During these incidents, officers are often deprived of information and time, lending an atmosphere of crudeness and immediacy to the situations at hand. Without question, providing these first responders the tools to create the space, time, and facts needed to resolve

these situations in a peaceful manner is the ideal. Unfortunately, the available research across disciplines – though trending in support of de-escalation training – still remains relatively weak.

As such, it is important to recognize the limitations of the available research and identify the remaining gaps in our knowledge regarding the impact of de-escalation trainings. First, there was extreme variation across training programs in terms of the topics covered, training delivery method, dosage, and tools used, making it difficult to generalize findings across trainings programs. In addition, general reliance on pre/post-test research designs with no comparisons limits our understanding of the differences between trained and untrained groups. Nevertheless, viewed as a whole, the generally positive changes reported across a variety of outcome measures and topics provides some confidence that de-escalation trainings lead to slight to moderate individual and organizational improvements, and rarely are correlated with adverse outcomes. However, the majority of de-escalation training evaluations identified by this systematic review appear in peer-reviewed journals. Therefore, publication bias may be an important consideration in assessing findings. Specifically, authors and journal editors may be more inclined to submit / accept studies reporting statistically significant findings, compared to those that show minimal or no effects that may never be formally published due to perceptions that such findings are uninteresting or will be rejected (Petticrew and Roberts, 2006; Rothstein, 2008).

We continue to have no strong evidence regarding the long-term effects of de-escalation training. It is possible that the training's effectiveness increases over time as individuals encounter more opportunities to use de-escalation tactics in the field. Alternatively, knowledge and skills gained through de-escalation training could be highly susceptible to decay due to the effects of time on memory and infrequent opportunities for use in the field; research for other

trainings typically shows variation in knowledge over time (Blume, Ford, Baldwin, and Huang, 2010; Compton and Chien, 2008; Davidson, 2016; Krammedine and Silverstone, 2015).

The majority of evaluations also rely on surveys, typically focusing more directly on changes to trainees' attitudes, knowledge, and self-reported behaviors. This larger knowledge base is focused on the training effects for perceptions of aggression/violence and self-reported ability to de-escalate situations, rather than effects on actual behavior. Given the reliance on these self-reported measures across the evaluations of de-escalation training, the impact of response bias among study participants must be considered. Specifically, participants may answer surveys in the direction of social desirability, causing overestimates in the positive effects of training on domains assessed through trainees' self-reports (Singleton and Straits, 2010).

The purpose of de-escalation training is to change behavioral outcomes; this is particularly true in the field of policing where the expectation is that de-escalation training will reduce the frequency and severity of police use of force. Studies emphasizing self-reported measures related to attitudes, beliefs, and behaviors of training participants fail to fully consider the behavioral effects of de-escalation training. The broader literature examining the link between attitudes and behaviors is complex, but generally shows less correlation than one might expect (Ajzen and Fishbein, 1977; Armitage and Christian, 2004). As such, more studies are needed that directly assess behavioral outcomes with stronger research designs.

Considering Recent Work

One of the limitations of our systematic review is that it only extends through November 2016, while the interest and adoption of de-escalation training in police departments across the country is increasing exponentially. Therefore, we provide a more recent search limited to only criminal justice studies produced from November 2016 through January 2019. This search

reveals limited recent empirical work examining the impact of de-escalation training. This finding is relatively unsurprising. Indeed, it has been well-recognized that examinations of training of any kind has been a neglected area of study in policing research (National Research Council, 2004; Skogan, Van Craen, and Hennessy, 2015). Although the number of evaluations related to police training has increased in recent years – likely due to the renewed call for research in this area (see e.g., Lum et al., 2016) – their focus and findings are varied.

Only one study evaluating a training explicitly designed to reduce officer use of force in their interactions with citizens was identified (Andersen and Gustafsberg, 2016). Specifically, Andersen and Gustafsberg (2016) designed and tested a training method to enhance officers' stress responses and use of force decision making during critical incidents. This "novel resilience program," which highlights officer education on the physiology of stress, energy management, and factors affecting performance capabilities, was created to be integrated into existing police use of force training programs. Using a randomized control trial design, Andersen and Gustafsberg (2016) found trained officers to display better situational awareness and overall performance in critical incident scenarios. Additionally, trained officers made significantly more correct shoot / no shoot decisions in crisis incident scenarios compared to the control group. Though suffering from potential biases due to a small sample size (n = 12), this evaluation demonstrates the importance of physiological factors in police decision-making and behavior within crisis incidents.

In addition to this research, we are aware of several on-going research studies that specifically test the effectiveness of de-escalation training. For example, using a randomized control trial design, Geoffrey Alpert and his colleagues are evaluating the impact of a de-escalation and procedural justice training, *Tact, Tactics, and Trust (T3),* implemented in police

departments in Tucson, Arizona, and Fayetteville, North Carolina based on a grant from the National Institute of Justice (Alpert, Rojek, Wolfe, and Smith, 2016). Outcome measures will include changes in officer-level use of force, related injuries, and citizen complaints, along with survey-based changes in officers' attitudes and knowledge.

Additionally, based on a grant from the Bureau of Justice Assistance (BJA), Michael D. White and colleagues are working on the development and evaluation of a de-escalation training program, the *Smart Policing Initiative* (SPI), in partnership with the Tempe, Arizona Police Department. Using a randomized control trial, this research team will measure variation in behavioral measures such as officers' use of force, officers' use of de-escalation, and number of citizen complaints, as well as changes in citizen and officer perceptions of police encounters (White and Pooley, 2018).

Finally, through a partnership with PERF and IACP, and funding provided by Arnold Ventures, Robin Engel and her colleagues are using a stepped-wedge randomized control design to test the impact of PERF's *ICAT* (*Integrating Communications, Assessment, and Tactics*) training, scheduled for implementation February through December 2019 in the Louisville Metro Police Department (Engel, Corsaro, Isaza, and McManus, 2019). This research design will examine various individual and aggregate behavioral changes, along with survey-based attitudinal and knowledge changes over time. A pilot test with preliminary findings from analyses of surveys administered to officers from the University of Cincinnati Police Division (UCPD) pre/post ICAT training is also in progress by this research team.

An additional limitation of this systematic review is the exclusion of evaluations examining other police trainings that incorporate elements related to de-escalation training, the most notable of which is Crisis Intervention Team (CIT) training. As previously noted, our

examination focused exclusively on trainings designed primarily to teach de-escalation tactics. Nevertheless, it is instructive to provide a brief overview of the findings from this larger body of research. As a police-based specialized response designed to facilitate the diversion of individuals with mental disorders from the criminal justice system, Crisis Intervention Teams shift the role and priorities of police agencies from traditional law enforcement to a service-oriented model with a focus on mental health. Within the larger CIT program, CIT training aims to increase officer knowledge of mental health issues and services, increase officer confidence in managing incidents involving persons with mental disorders, and reduce the likelihood of use of force, potential for injury, and application of formal criminal justice actions (i.e., arrest) within encounters (Engel et al., in press).

Most evaluations of CIT training focus on measuring changes in officers' knowledge, perceptions, and self-reported behaviors following their participation in training. Typically, these studies find that training improves officers' scores across these dimensions (Compton, Bahora, Watson, and Oliva, 2008). Findings related to changes in officer behavior following CIT training are less frequent; however, those that exist suggest CIT training may be effective in teaching officers how to de-escalate encounters involving persons with mental disorders. For example, there is some evidence that CIT training may help minimize the *level* of force used by officers in their encounters, reducing the potential for both police and civilian injury (Acker, 2010; Bower and Pettit, 2001; Canada, Angell, and Watson, 2010; Canada, Angell, and Watson, 2012; Compton et al., 2014; Hanafi, Bahora, Demir, and Compton, 2008; Morabito et al., 2012). Yet, similar to evaluations of de-escalation training, the quality of research designs used within these CIT training evaluations is typically limited, as most studies are descriptive, do not include control groups, and rely primarily on self-reported data.

Our secondary search for recent de-escalation training research also identified evaluations of other types of training, including empirical evaluations of procedural justice training (e.g., Antrobus, Thompson, and Ariel, 2019; Owens, Weisburd, Amendola, and Alpert, 2018; Rosenbaum and Lawrence, 2017), "Policing the Teen Brain" (PTB) (Schwartz, Pate, Tu, and Aalsma, 2017), and Verbal Judo training (Giacomantonio, Goodwin, and Carmichael, 2017). While these trainings are not de-escalation-specific, like CIT training, they often target change within similar de-escalation-related outcomes (e.g., incidents of arrest and/or use of force, citizen complaints, officer perceptions of use of force and/or de-escalation). As such, consideration of these evaluations may assist with developing a comprehensive understanding of effective methods of police training, identifying skills that facilitate de-escalation of critical incidents, and developing stronger research designs and outcome measures.

Conclusion

Overall findings from this review suggest it is not appropriate to frame the effectiveness of de-escalation as known when we remain uncertain of the evidence. As it stands, de-escalation training is a promising practice; that is, a well-intended police reform whose consequences are largely unknown. While there are value-based and theoretical reasons to support de-escalation training, these are not solid empirical reasons. Based on accumulating anecdotes, professional expertise, and the limited, though generally positive trends identified in this systematic review across disciplines, we are confident that de-escalation training offers another valuable tool for individuals responding to incidents of crisis, aggression, or violence. However, recommendations that de-escalation must be used as a primary tool should await additional evidence regarding its effectiveness and any unintended consequences that may impact officer and public safety.

Movement across the field of policing toward de-escalation is happening now, and police executives cannot – nor should they be expected to – wait for the research field to keep pace. Academics often fail to adequately test innovations in policing practices, and rarely examine the impact of police training. Although the evidence-based policing (EBP) movement is providing important guidance to field (Sherman, 2013), often policing practices and training simply cannot be evidence-based; rather these practices are recommended based on the best expert knowledge available, without the benefits of systematic scientific inquiry. As noted previously, the field of criminal justice is littered with many well-intended practices – initially identified as best practices – that later demonstrate unintended consequences that negatively impact police, the public, or both. Perhaps this is inevitable, based on the pace and nature of our collective work.

Yet, what is critical about de-escalation training, is the wave and intensity of support it has received in response to the national crisis in police-community relations. Similar to the introduction of body-worn cameras, de-escalation training is quickly receiving vast support and promotion from politicians, academics, expert panels, and the public – eager to move "beyond what is legal and start focusing on what is preventable" – that results in intensifying pressure for police executives to implement and change use of force policies accordingly (Kindy, 2015). This may not be a bad thing; indeed, this may represent a turning point in policing that leads to significant reductions in use of force and improvements in police-community relations. And, as highlighted within, there is the added support of the limited empirical evidence and anecdotal reports available, which is nearly exclusively positive. However, on the other side are practitioners that remain skeptical regarding the lack of evidence supporting de-escalation tactics and concerned that police executives who advance changes to policy and training are placing their officers at risk. If there are no real safety risks, research needs to demonstrate this, and

remove the officer safety argument as a reason for agencies not to move forward with advances in their profession.

Most concerning, however, is the lack of scholarly interest (or perhaps ability) to test the effects of a police training that so directly impacts what many have identified as *the crucial issue* underlying the current policing crisis – officer use of force. Engel and Serpas urged that research on officers' responses to resistance be prioritized by law enforcement agencies, noting that "as new policies are implemented or changes to training are advanced, law enforcement executives should consider how they can incorporate an evaluation component that would directly benefit their own agencies while also providing guidance for the field" (2017: 35). With the notable exception of a handful of progressive police agencies, this call has largely gone unanswered. Yet, much as we have recently flooded the field with quality research on body cameras (see Lum, Stoltz, Koper, and Scherer, in press), so too could we quickly and exponentially increase our knowledge about the impact of de-escalation.

Therefore, we now make an even stronger appeal, as we believe police leaders have an ethical obligation to test the impact of use of force policies and training that clearly have a direct and significant impact on both officers and citizens. Police agencies should be expected to gather and analyze data on the outcomes of changes in use of force polices and training. To do otherwise could unnecessarily place officers and citizens at increased risk for injury or death. And so, we end our discussion with a direct call to academics, practitioners, and funders across the field of policing: Use your voice, position, and expertise to facilitate the testing of de-escalation and other use of force policies, tactics, and training as an *immediate priority*. Not only will research provide answers regarding overall effectiveness, it will also provide information for process improvement, where continued enhancements to the training curricula (including

identifying the appropriate content, dosage, and delivery methods) could ultimately reduce injuries, save lives, and better direct national conversations about policing and police reform.

References

Acker, Joshua Adam Thomas. 2010. *The Effect of Crisis Intervention Team Training on the Outcomes of Mental Health Crises Calls for Law Enforcement*. Doctoral dissertation, Walden University, Minneapolis, MN.

Ajzen, Icek, and Martin Fishbein. 1977. Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin,* 48: 888-918. http://dx.doi.org/10.1037/0033-2909.84.5.888.

Al-Ali, Nahla Mansour, Ibrahim Al Faouri, and Tahany Fareed Al-Niarat. 2016. The impact of training program on nurses' attitudes toward workplace violence in Jordan. *Applied Nursing Research,* 30: 83-89. https://doi.org/10.1016/j.apnr.2015.11.001.

Allen, David, Lindsay McDonald, Colin Dunn, and Tony Doyle. 1997. Changing care staff approaches to the prevention and management of aggressive behavior in a residential treatment unit for persons with mental retardation and challenging behavior. *Research in Developmental Disabilities,* 18: 101–112. https://doi.org/10.1016/S0891-4222(96)00043-1.

Allen, David, and Hannah Tynan. 2000. Responding to aggressive behavior: Impact of training on staff members' knowledge and confidence. *Mental Retardation,* 38: 97-104. https://doi.org/10.1352/0047-6765(2000)038<0097:RTABIO>2.0.CO;2.

Alpert, Geoffrey, Jeff Rojek, Scott E. Wolfe, and Michael R. Smith. 2016. *An Evaluation of a Social Interaction Training Program to Reduce the Use of Force and Build Legitimacy*. Proposal submitted to the National Institute of Justice.

Andersen, Judith P., and Harri Gustafsberg. 2016. A training method to improve police use of force decision making: A randomized controlled trial. *Sage OPEN,* 1-13. https://doi.org/10.1177/2158244016638708.

Antrobus, Emma, Ian Thompson, and Barak Ariel. 2019. Procedural justice training for police recruits: Results from a randomized controlled trial. *Journal of Experimental Criminology,* 15: 29-53. https://doi.org/10.1007/s11292-018-9331-9.

Armitage, Christopher J., and Julie Christian. 2004. From attitudes to behavior: Basic and applied research on the theory of planned behavior. In (Christian J. Armitage and Julie Christian, eds.), *Planned Behavior: The Relationship between Human Thought and Action*. New York, NY: Transaction Publishers.

Baker, Peter A., and Dianne Bissmire. 2000. A pilot study of the use of physical intervention in the crisis management of people with intellectual disabilities who present challenging behaviour. *Journal of Applied Research in Intellectual Disabilities,* 13: 38-45. https://doi.org/10.1046/j.1468-3148.2000.00004.x.

Beech, Bernard. 1999. Sign of the times or the shape of things to come? A 3-day unit of instruction on aggression and violence in health settings for all students during pre-registration nurse training. *Nurse Education Today,* 19: 610–616. https://doi.org/10.1054/nedt.1999.0356.

Beech, Bernard F. 2005. *An Evaluation of a Three Day Prevention and Management of Aggression Training Programme for Student Nurses.* Doctoral thesis, University of Nottingham, United Kingdom.

Bittner, Egon. 1974. Florence Nightingale in pursuit of Willie Sutton: A theory of the police. In (Herbert Jacob, ed.), *The Potential for Reform of Criminal Justice,* Vol. 3. Beverly Hills, CA: Sage.

Bittner, Egon. 1980. *The Functions of the Police in Modern Society*. Chevy Chase, MD: National Institute of Mental Health, Center for Studies of Crime and Delinquency.

Björkdahl, Anna, Görel Hansebo, and Tom Palmstierna. 2013. The influence of staff training on the violence prevention and management climate in psychiatric inpatient units. *Journal of Psychiatric and Mental Health Nursing,* 20: 396–404. https://doi.org/10.1111/j.1365-2850.2012.01930.x.

Blake, David. 2017. Does de-escalation endanger police officers or save lives? *PoliceOne.* November 3. Retrieved from https://www.policeone.com/Officer-Safety/articles/455355006-Does-de-escalation-endanger-police-officers-or-save-lives/.

Blume, Brian D., J. Kevin Ford, Timothy T. Baldwin, and Jason L. Huang. 2009. Transfer of training: A meta-analytic review. *Journal of Management,* 36: 1065-1105. https://doi.org/10.1177/0149206309352880.

Blumstein, Alfred. 2016. Bringing evidence into criminal justice policy. In (Thomas G. Blomberg, Julie Mestre Brancale, Kevin M. Beaver, and William D. Bales, eds.), *Advancing Criminology and Criminal Justice Policy*. New York, NY: Routledge.

Bosse, Tibor, Charlotte Gerritsen, and Jeroen de Man. 2015. Evaluation of a virtual training environment for aggression de-escalation. In *Proceedings of Game-On 2015*: 48-54. Eurosis-ETI.

Bower, Deborah L., and W. Gene Pettit. 2001. The Albuquerque police department's crisis intervention team: A report card. *FBI Law Enforcement Bulletin,* 70(1): 1-6.

Bowers, Kate J., Shane D. Johnson, Rob T. Guerrette, Lucia Summers, and Suzanne Poynton. 2011. Spatial displacement and diffusion of benefits among geographically focused policing initiatives: A meta-analytic review. *Journal of Experimental Criminology,* 7: 347-374. https://doi.org/10.1007/s11292-011-9134-8.

Bushman, Brad J., and Morgan C. Wang. 2009. Vote-counting procedures in meta-analysis. In (Harris Cooper, Larry V. Hedges, & Jeffrey C. Valentine, eds.), *Handbook of Research Synthesis and Meta-analysis*. New York, NY: Russell Sage.

Canada, Kelli E., Beth Angell, and Amy C. Watson. 2010. Crisis intervention teams in Chicago: Successes on the ground. *Journal of Police Crisis Negotiations,* 10: 86-100. https://doi.org/10.1080/15332581003792070.

Canada, Kelli E., Beth Angell, and Amy C. Watson. 2012. Intervening at the entry point: Differences in how CIT trained and non-CIT trained officers describe responding to mental health-related calls. *Community Mental Health Journal,* 48: 746-755. https://doi.org/ 10.1007/s10597-011-9430-9.

Carmel, Herold, and Mel Hunter. 1990. Compliance with training in managing assaultive behavior and injuries from inpatient violence. *Hospital and Community Psychiatry,* 41: 558-560. https://doi.org/10.1176/ps.41.5.558.

Çoban Arguvanli, Sibel., Nimet Karataş, Mürüvvet Başer, and Gökmen Zararsiz. 2015. Effect of aggression management training program on knowledge and attitudes of nurses working at psychiatric clinics. *Anatolian Journal of Psychiatry,* 16: 323–328. https://doi.org/10.5455/apd.174343.

Colenda, Christopher C., and Robert M Hamer. 1991. Antecedents and interventions for aggressive behavior of patients at a geropsychiatric state hospital. *Hospital and Community Psychiatry,* 42: 287–292. https://doi.org/10.1176/ps.42.3.287.

Collins, John. 1994. Nurses' attitudes towards aggressive behaviour, following attendance at 'The Prevention and Management of Aggressive Behaviour Programme.' *Journal of Advanced Nursing,* 20: 117–131. https://doi.org/10.1046/j.1365-2648.1994.20010117.x.

Collins, Mark. 2014. *Attitudes Concerning a Program for Managing Violence at the Colorado Mental Health Institute*. Doctoral dissertation, University of the Rockies, Colorado Springs, CO.

Compton, Michael T., Masuma Bahora, Amy C. Watson, and Janet R. Oliva. 2008. A comprehensive review of extant research on crisis intervention team (CIT) programs. *Journal of American Academy of Psychiatry Law,* 36: 47-55.

Compton, Michael T., Roger Bakeman, Beth Broussard, Dana Hankerson-Dyson, Letheshia Husbands, Shaily Krishan,…Amy C. Watson. 2014. The police-based crisis intervention team (CIT) model: II. Effects on level of force and resolution, referral, and arrest. *Psychiatric Services,* 65: 523-529. https://doi.org/10.1176/appi.ps.201300108.

Compton, Michael T., and Victoria H. Chien. 2008. Factors related to knowledge retention after crisis intervention team training for police officers. *Psychiatric Services,* 59: 1049-1051. https://doi.org/10.1176/ps.2008.59.9.1049.

Cook, Thomas D., and Donald T. Campbell. 1979. *Quasi-experimentation: Design and Analysis Issues for Field Settings.* Chicago, IL: Rand McNally.

Cowin, Leanne, Rhian Davies, Graham Estall, Theresa Berlin, Maria Fitzgerald, and Sandra Hoot. 2003. De-escalating aggression and violence in the mental health setting. *International Journal of Mental Health Nursing,* 12: 64–73. https://doi.org/10.1046/j.1440-0979.2003.00270.x.

Craven, Julia. 2017. 32 blue lives matter bills have been introduced across 14 states. *Huffington Post.* December 11. Retrieved from https://www.huffingtonpost.com/entry/blue-black-lives-matter-police-bills-states_us_58b61488e4b0780bac2e31b8.

Davidson, Megan L. 2016. A criminal justice system-wide response to mental illness: Evaluating the effectiveness of the Memphis crisis intervention team training curriculum among law enforcement and correctional officer. *Criminal Justice Policy Review*, 27: 46-75. https://doi.org/10.1177/0887403414554997.

Deans, Cecil. 2004. The effectiveness of a training program for emergency department nurses in managing violent situations. *Australian Journal of Advanced Nursing,* 21(4): 17–22.

Domanick, Joe. 2017. How the police commission got the LAPD to buy into de-escalation. *Los Angeles Magazine.* July 13. Retrieved from https://www.lamag.com/mag-features/lapd-de-escalation/.

Doyle, Laree Muth, and Mary Crixell Klein. 2001. Comparison of two methods of instruction for the prevention of workplace violence. *Journal for Nurses in Staff Development,* 17: 281-291.

Dziehjma, Sara, and Darryl De Sousa. 2017. National consensus policy on use of force: How 11 leading law enforcement leadership and labor organizations arrived at one policy. *Police Chief,* April 2017: 22-26.

Engel, Robin S., Nicholas Corsaro, Gabrielle T. Isaza, and Hannah D. McManus. 2019. *Proposal for the Evaluation of ICAT Training for the Louisville Metro Police Department.* Submitted to the Louisville Metro Police Department, Louisville, KY.

Engel, Robin S., and Ronal Serpas. 2017. Evidence-based use-of-force policy: How research could improve development and training. *Police Chief,* April 2017: 28-36.

Engel, Robin S., Robert E. Worden, Nicholas Corsaro, Hannah D. McManus, Danielle Reynolds, Hannah Cochran, Gabrielle T. Isaza, and Jennifer Calnon-Cherkauskas. In press. *The power to arrest: Lessons from research*. AG Switzerland: SpringerBriefs in Translational Criminology.

Farrington, David P., Denise C. Gottfredson, Lawrence W. Sherman, and Brandon C. Welsh. 2002. The Maryland scientific methods scale. In (Lawrence W. Sherman, David P. Farrington, Brandon C. Welsh, and Doris Layton MacKenzie, eds.), *Evidence-based Crime Prevention*. New York, NY: Routledge.

Farrington, David, and Anthony Petrosino. 2001. The Campbell collaboration crime and justice group. *Annals of the American Academy of Political and Social Science,* 578: 35-49. https://doi.org/10.1177/000271620157800103.

Feldt, Karen S., and Muriel B. Ryden. 1992. Aggressive behavior: Educating nursing assistants. *Journal of Gerontological Nursing,* 18(5): 3–12. https://doi.org/10.3928/0098-9134-19920501-03.

Fernandes, Christopher. M. B., Janet M. Raboud, James M. Christenson, France Bouthillette, Linda Bullock, Leisa Ouellet, and Catherine F. Moore. 2002. The effect of an education program on violence in the emergency department. *Annals of Emergency Medicine,* 39: 47-55. https://doi.org/10.1067/mem.2002.121202.

Fernandez, Manny, Richard Perez-Pena, and John Engel Bromwich. 2016. Five Dallas officers were killed as payback, police chief says. *New York Times.* July 8. Retrieved from https://www.nytimes.com/2016/07/09/us/dallas-police-shooting.html.

Fitzwater, Evelyn L., and Donna M. Gates. 2002. Testing an intervention to reduce assaults on nursing assistants in nursing homes: A pilot study. *Geriatric Nursing,* 23: 18–23. https://doi.org/10.1067/mgn.2002.122800.

Forster, Peter L., Cleve Cavness, and Molly A. Phelps. 1999. Staff training decreases use of seclusion and restraint in an acute psychiatric hospital. *Archives of Psychiatric Nursing,* 13: 269-271. https://doi.org/10.1016/S0883-9417(99)80037-5.

Garza, Alicia. 2014. A herstory of the #BlackLivesMatter movement. *Feminist Wire.* October 7. Retrieved from https://thefeministwire.com/2014/10/blacklivesmatter-2/.

Gerdtz, Marie F., Catherine Daniel, Vikki Dearie, Roshani Prematunga, Merrin Bamert, and Joy Duxbury. 2013. The outcome of a rapid training program on nurses' attitudes regarding the prevention of aggression in emergency departments: A multi-site evaluation. *International Journal of Nursing Studies,* 50: 1434–1445. https://doi.org/10.1016/j.ijnurstu.2013.01.007.

Giacomantonio, Chris, Stephanie Goodwin, and Garland Carmichael. 2017. *Verbal Judo Evaluation: Immediate Behavioural Impact Assessment*. Unpublished report submitted to the Halifax Regional Police, Halifax, Nova Scotia, Canada.

Gill, Charlotte, David Weisburd, Cody W. Telep, Zoe Vitter, and Trevor Bennett. 2014. Community-oriented policing to reduce crime, disorder and fear and increase satisfaction

and legitimacy among citizens: A systematic review. *Journal of Experimental Criminology,* 10: 399-428. https://doi.org/10.1007/s11292-014-9210-y.

Gillam, Sally W. 2014. Nonviolent crisis intervention training and the incidence of violent events in a large hospital emergency department: An observational quality improvement study. *Advanced Emergency Nursing Journal,* 36: 177-188. https://doi.org/ 10.1097/TME.0000000000000019.

Goodykoontz, Lynne, and Charlotte A. Herrick. 1990. Evaluation of an inservice education program regarding aggressive behavior on a psychiatric unit. *Journal of Continuing Education in Nursing,* 21: 129–133. https://doi.org/10.3928/0022-0124-19900501-11.

Grenyer, Brin F., Olga Ilkiw-Lavalle, Phillip Biro, Jane Middleby-Clements, Andreas Comninos, and Mark Coleman. 2004. Safer at work: Development and evaluation of an aggression and violence minimization program. *Australian and New Zealand Journal of Psychiatry,* 38: 804-810. https://doi.org/10.1080/j.1440-1614.2004.01465.x.

Guay, Stéphane, Jane Goncalves, and Richard Boyer. 2016. Evaluation of an education and training program to prevent and manage patients' violence in a mental health setting: A pretest-posttest intervention study. *Healthcare,* 4(3): 1–10. https://doi.org/10.3390/healthcare4030049.

Hahn, Sabine, Ian Needham, Christoph Abderhalden, J. A. D. Duxbury, and R. J. G. Halfens. 2006. The effect of a training course on mental health nurses' attitudes on the reasons of patient aggression and its management. *Journal of Psychiatric and Mental Health Nursing,* 13: 197-204. https://doi.org/10.1111/j.1365-2850.2006.00941.x.

Hanafi, Sonya, Masuma Bahora, Berivan N. Demir, and Michael T. Compton. 2008. Incorporating crisis intervention team (CIT) knowledge and skills into the daily work of police officers: A focus group study. *Community Mental Health Journal,* 44: 427-432. https://doi.org/10.1007/s10597-008-9145-8.

Heckemann, Birgit, Helga Elisabeth Breimaier, Ruud J. G. Halfens, Jos M. G. A. Schols, and Sabine Hahn. 2016. The participant's perspective: Learning from an aggression management training course for nurses. Insights from a qualitative interview study. *Scandinavian Journal of Caring Sciences,* 30: 574–585. https://doi.org/10.1111/scs.12281.

Hentoff, Nat, and Nick Hentoff. 2016. Real police reform requires national policing standards. *CATO Institute.* August 12. Retrieved from https://www.cato.org/publications/commentary/real-police-reform-requires-national-policing-standards.

Hurlebaus, Anna E., and Sharon Link. 1997. The effects of an aggressive behavior management program on nurses' levels of knowledge, confidence, and safety. *Journal for Nurses in Staff Development,* 13: 260-265.

Ilkiw-Lavalle, Olga, Brin F. S. Grenyer, and Linda Graham. 2002. Does prior training and staff occupation influence knowledge acquisition from an aggression management training program? *International Journal of Mental Health Nursing*, 11: 233–239. https://doi.org/10.1046/j.1440-0979.2002.00254.x.

Infantino, Joseph A., and Sen-Yoni Musingo. 1985. Assaults and injuries among staff with and without training in aggression control techniques. *Hospital and Community Psychiatry*, 36: 1312-1314.

Jackman, Tom. 2016a. De-escalation training to reduce police shootings facing mixed reviews at launch. *Washington Post.* October 15. Retrieved from https://www.washingtonpost.com/local/public-safety/de-escalation-training-to-reduce-police-shootings-facing-mixed-reviews-at-launch/2016/10/14/d6d96c74-9159-11e6-9c85-ac42097b8cc0_story.html?noredirect=on&utm_term=.1ebe3361620d.

Jackman, Tom. 2016b. Protocol for reducing police shootings draws backlash from unions. *Washington Post.* March 31. Retrieved from https://www.washingtonpost.com/local/public-safety/move-to-reduce-police-shootings-draws-sharp-backlash-from-unions-chiefs-group/2016/03/30/03c81e6a-ec55-11e5-bc08-3e03a5b41910_story.html?utm_term=.45900bc2ad1b.

Jackman, Tom. 2017a. Chicago police adopt de-escalation in sweeping change to use of force police. *Washington Post.* May 17. Retrieved from https://www.washingtonpost.com/news/true-crime/wp/2017/05/17/chicago-police-adopt-de-escalation-in-sweeping-change-to-use-of-force-policy/?utm_term=.4e2badd81361.

Jackman, Tom. 2017b. National police groups add ‘de-escalation’ to new model policy on use of force. *Washington Post.* January 17. Retrieved from https://www.washingtonpost.com/news/true-crime/wp/2017/01/17/national-police-groups-add-de-escalation-to-new-model-policy-on-use-of-force/?noredirect=on&utm_term=.1737457485c8.

Jambunathan, Jaya, and Kathleen Bellaire. 1996. Evaluating staff use of crisis prevention intervention techniques: A pilot study. *Issues in Mental Health Nursing,* 17: 541–558. https://doi.org/10.3109/01612849609006532.

Johnson, Gene, and Eric Tucker. 2014. After Ferguson, a push for more ‘de-escalation’ training. *Boston Globe.* November 28. Retrieved from https://www.bostonglobe.com/news/nation/2014/11/29/after-ferguson-some-push-for-more-escalation-police-training/HtXM7gUmKYT9Fx1Qwd8PxL/story.html.

Jonikas, Jessica A., Judith A. Cook, Cherise Rosen, Alexandra Laris, and Jjong-Bae Kim. 2004. A program to reduce use of physical restraint in psychiatric inpatient facilities. *Psychiatric Services,* 55: 818- 820. https://doi.org/10.1176/appi.ps.55.7.818.

Kindy, Kimberly. 2015. Fatal police shootings in 2015 approaching 400 nationwide. *Washington Post.* May 30. Retrieved from https://www.washingtonpost.com/national/fatal-police-shootings-in-2015-approaching-400-nationwide/2015/05/30/d322256a-058e-11e5-a428-c984eb077d4e_story.html?utm_term=.504f53f783ff.

Krameddine, Yasmeen I., and Peter H. Silverstone. 2015. How to improve interactions between police and the mentally ill. *Frontiers in Psychology,* 5: 1-5. https://doi.org/10.3389/fpsyt.2014.00186.

Laker, C., Ron Gray, and C. Flach. 2010. Case study evaluating the impact of de-escalation and physical intervention training. *Journal of Psychiatric and Mental Health Nursing,* 17: 222–228. https://doi.org/10.1111/j.1365-2850.2009.01496.x.

Landers, Brian. 2017. Are de-escalation policies dangerous? *Police Magazine.* October 14. Retrieved from https://www.policemag.com/342333/are-de-escalation-policies-dangerous.

Lehmann, Laurent S., Maria Padilla, Shawn Clark, and Sandra Loucks. 1983. Training personnel in the prevention and management of violent behavior. *Hospital and Community Psychiatry,* 34: 40–43.

Lum, Cynthia, Christopher S. Koper, Charlotte Gill, Julie Hibdon, Cody Telep, and Laurie Robinson. 2016. *An Evidence-assessment of the Recommendations of the President's Task Force on 21st Century Policing —Implementation and Research Priorities*. Fairfax, VA: Center for Evidence-Based Crime Policy, George Mason University. Alexandria, VA: International Association of Chiefs of Police.

Lum, Cynthia, Megan Stoltz, Christopher S. Koper, and J. Amber Scherer. In press. The research on body-worn cameras: What we know, what we need to know. *Criminology & Public Policy.*

Marotta, Phillip, Jeremy Barnum, Amy Watson, and Joel Caplan. 2014. Crisis intervention team training programs for law enforcement officers: A systematic review. Campbell Systematic Reviews protocol.

Martin, Kimberly H. 1995. Improving staff safety through an aggression management program. *Archives of Psychiatric Nursing,* 9: 211-215. https://doi.org/10.1016/S0883-9417(95)80026-3.

McDonnell, Andrew. 1997. Training care staff to manage challenging behavior: An evaluation of a three day training course. *British Journal of Developmental Disabilities,* 43: 156–162. https://doi.org/10.1179/bjdd.1997.015.

McDonnell, Andrew, Peter Sturmey, Chris Oliver, Joanna Cunningham, Samira Hayes, Martin Galvin,…Cathy Cunningham. 2008. The effects of staff training on staff confidence and

challenging behavior in services for people with autism spectrum disorders. *Research in Autism Spectrum Disorders,* 2: 311–319. https://doi.org/10.1016/j.rasd.2007.08.001.

McGowan, Sunita, Dianne Wynaden, Neil Harding, Assaad Yassine, and John Parker. 1999. Staff confidence in dealing with aggressive patients: A benchmarking exercise. *The Australian and New Zealand Journal of Mental Health Nursing,* 8: 104–108. https://doi.org/10.1046/j.1440-0979.1999.00140.x.

McIntosh, Diana. 2003. *Testing an Intervention to Increase Self-efficacy of Staff in Managing Clients Perceived as Violent*. Doctoral dissertation, University of Cincinnati, Cincinnati, OH.

McLaughlin, Sue, Gwen Bonner, Catherine Mboche, and Trish Fairlie. 2010. A pilot study to test an intervention for dealing with verbal aggression. *British Journal of Nursing,* 19: 489-494. https://doi.org/10.12968/bjon.2010.19.8.47638.

Mentes, Janet, and Joyce Ferrario. 1989. Calming aggressive reactions: A preventive program. *Journal of Gerontological Nursing,* 15(2): 22-27.

Middleby-Clements, Jane L., and Brin F. S. Grenyer. 2007. Zero tolerance approach to aggression and its impact upon mental health staff attitudes. *Australian and New Zealand Journal of Psychiatry,* 41: 187–191. https://doi.org/10.1080/00048670601109972.

Moore, David. 2010. Analyzing the least restrictive continuum in mental health practice. *The Institute for Nursing,* July 2010: 5-6.

Morabito, Melissa S., Amy N. Kerr, Amy Watson, Jeffrey Draine, Victor Ottati, and Beth Angell. 2012. Crisis intervention teams and people with mental illness: Exploring the factors that influence use of force. *Crime & Delinquency,* 58: 57-77. https://doi.org/10.1177/0011128710372456.

Nather, David. 2015. Policing task force calls for ‘de-escalation’ training. *Politico.* March 2. Retrieved from https://www.politico.com/story/2015/03/policing-task-force-calls-for-de-escalation-training-115658.

National Academies of Sciences, Engineering, and Medicine. 2018. *Proactive Policing: Effects on Crime and Communities.* Washington, DC: The National Academies Press.

National Consensus Policy and Discussion Paper on Use of Force. 2017. Retrieved from https://www.theiacp.org/resources/document/national-consensus-discussion-paper-on-use-of-force-and-consensus-policy.

National Law Enforcement Officers Memorial Fund. 2018. *Facts & Figures.* Retrieved from http://nleomf.org/facts-figures.

National Research Council. 2004. *Fairness and Effectiveness in Policing: The Evidence.* Washington, DC: The National Academies Press.

Nau, Johannes, Theo Dassen, Ian Needham, and Ruud Halfens. 2009. The development and testing of a training course in aggression for nursing students: A pre-and post-test study. *Nurse Education Today,* 29: 196–207. https://doi.org/10.1016/j.nedt.2008.08.011.

Nau, Johannes, Theo Dassen, Ian Needham, and Ruud Halfens. 2011. Sensitivity, specificity and predictive value of Confidence in Managing Patient Aggression Scale on de-escalating behaviour. *Journal of Clinical Nursing,* 20: 2584-2586. https://doi.org/10.1111/j.1365-2702.2010.03597.x.

Nau, Johannes, Ruud Halfens, Ian Needham, and Theo Dassen. 2010. Student nurses' de-escalation of patient aggression: A pretest - posttest intervention study. *International Journal of Nursing Studies,* 47: 699–708. https://doi.org/10.1016/j.ijnurstu.2009.11.011.

Oliva, Janet R., Rhiannon Morgan, and Michael T. Compton. 2010. A practical overview of de-escalation skills in law enforcement: Helping individuals in crisis while reducing police liability and injury. *Journal of Police Crisis Negotiations, 10*: 15-29. https://doi.org/10.1080/15332581003785421.

Oostrom, Janneke K., and Heleen van Mierlo. 2008. An evaluation of an aggression management training program to cope with workplace violence in the healthcare sector. *Research in Nursing & Health,* 31: 320-328. https://doi.org/10.1002/nur.20260.

Ore, Timothy. 2002. Workplace assault management training: An outcome evaluation. *Journal of Healthcare Protection Management,* 18(2): 61-89.

Owens, Emily, David Weisburd, Karen L. Amendola, and Geoffrey P. Alpert. 2018. Can you build a better cop? Experimental evidence on supervision, training, and policing in the community. *Criminology & Public Policy*, 17: 41-87. https://doi.org/10.1111/1745-9133.12337.

Parkes, Jon. 1996. Control and restraint training: A study of its effectiveness in a medium secure psychiatric unit. *Journal of Forensic Psychiatry and Psychology,* 7: 525-534. https://doi.org/10.1080/09585189608415035.

Paterson, Brodie, John Turnbull, and Ian Aitken. 1992. An evaluation of a training course in the short-term management of violence. *Nurse Education Today*, 12: 368-375. https://doi.org/10.1016/0260-6917(92)90113-3.

Petticrew, Mark, and Helen Roberts. 2006. *Systematic Reviews in the Social Sciences: A Practical Guide.* Malden, MA: Blackwell Publishing.

Phillips, Douglas, and Kjell Erik Rudestam. 1995. Effect of Non-violent self-defense training on male psychiatric staff members aggression and fear. *Psychiatric Services,* 46: 164-168. https://doi.org/10.1176/ps.46.2.164.

Police Executive Research Forum. 2012. *An Integrated Approach to De-escalation and Minimizing Use of Force.* Washington, DC: Police Executive Research Forum. Available from https://www.policeforum.org/free-online-documents.

Police Executive Research Forum. 2015. *Re-engineering Training on Police Use of Force.* Washington, DC: Police Executive Research Forum. Available from https://www.policeforum.org/free-online-documents.

Police Executive Research Forum. 2016a. *Guiding Principles on Use of Force*. Washington, DC: Police Executive Research Forum. Available from https://www.policeforum.org/free-online-documents.

Police Executive Research Forum. 2016b. *ICAT Integrating Communications, Assessment, and Tactics: A Training Guide for Defusing Critical Incidents*. Washington, DC: Police Executive Research Forum. Available from https://www.policeforum.org/free-online-documents.

President's Task Force on 21st Century Policing. 2015. *Final Report of the President's Task Force on 21st Century Policing*. Washington, DC: Office of Community Oriented Policing Services.

Rahr, Sue, and Stephen K. Rice. 2015. *From Warriors to Guardians: Recommitting American Police Culture to Democratic Ideals.* Washington, DC: US Department of Justice, National Institute of Justice.

Ramirez, Luis F., J. Bruce, and M. Whaley. 1981. An educational program for the prevention and management of disturbed behavior in psychiatric settings. *Journal of Continuing Education in Nursing,* 12(5): 19-21.

Rice, Marnie E., Manuel F. Helzel, George W. Varney, and Vernon L. Quinsey. 1985. Crisis prevention and intervention training for psychiatric hospital staff. *American Journal of Community Psychology,* 13: 289-304. https://doi.org/10.1007/BF00914934.

Rosenbaum, Dennis P., and Daniel S. Lawrence. 2017. Teaching procedural justice and communication skills during police-community encounters. *Journal of Experimental Criminology,* 13: 293-319. https://doi.org/10.1007/s11292-017-9293-3.

Rothstein, Hannah R. 2008. Publication bias as a threat to the validity of meta-analytic results. *Journal of Experimental Criminology,* 4: 61-81. https://doi.org/10.1007/s11292-007-9046-9.

Schwartz, Katherine, Marilyn R. Pate, Wanzhu Tu, and Matthew C. Aalsma. 2017. Improving police officer knowledge of de-escalation skills: A pilot study of policing the teen brain. *Journal of Adolescent Health,* 60(2): S15-S16. https://doi.org/10.1016/j.jadohealth.2016.10.051.

Sela-Shayovitz, Revital. 2009. Dealing with school violence: The effect of school violence prevention training on teachers' perceived self-efficacy in dealing with violent events. *Teaching and Teacher Education,* 25: 1061-1066. https://doi.org/10.1016/j.tate.2009.04.010.

Shadish, William R., Thomas D. Cook, and Donald T. Campbell. 2002. *Experimental and Quasi-experimental Designs for Generalized Causal Inference.* Belmont, CA: Wadsworth.

Sherman, Lawrence W. 2013. The rise of evidence-based policing: Targeting, testing, and tracking. *Crime and Justice,* 42: 377-451. https://doi.org/10.1086/670819.

Sherman, Lawrence W. 2018. Reducing fatal police shootings as system crashes: Research, theory, and practice. *Annual Review of Criminology,* 1: 421-449. https://doi.org/10.1146/annurev-criminol-032317-092409.

Sherman, Lawrence W., Denise C. Gottfredson, Doris L. MacKenize, John Eck, Peter Reuter, and Shawn D. Bushway, 1998. *Preventing crime: What works, What Doesn't, What's Promising.* Washington, DC: U.S. Department of Justice, National Institute of Justice.

Singleton, Royce A., and Bruce C. Straits. 2010. *Approaches to Social Science Research*. New York, NY: Oxford University Press.

Sjostrom, N., D. N. Eder, U. Malm, and J Beskow. 2001. Violence and its prediction at a psychiatric hospital. *European Psychiatry,* 16: 459-465. https://doi.org/10.1016/S0924-9338(01)00607-1.

Skogan, Wesley G., Maarten Van Craen, and Cari Hennessy. 2015. Training police for procedural justice. *Journal of Experimental Criminology,* 11: 319-334. https://doi.org/10.1007/s11292-014-9223-6.

Smoot, Sharene L., and James L. Gonzales. 1995. Cost-effective communication skills training for state hospital employees. *Psychiatric Services,* 46: 819-822. https://doi.org/10.1176/ps.46.8.819.

St. Thomas Psychiatric Hospital. 1976. A program for the prevention and management of disturbed behavior. *Hospital and Community Psychiatry,* 27: 724-727. https://doi.org/10.1176/ps.27.10.724.

Stoughton, Seth. 2014. How police training contributes to avoidable deaths: To save lives, cops must be taught to think beyond the gun belt. *Atlantic.* December 12. Retrieved from

https://www.theatlantic.com/national/archive/2014/12/police-gun-shooting-training-ferguson/383681/.

Swain, Nicola, and Christopher Gale. 2014. A communication skills intervention for community healthcare workers reduces perceived patient aggression: A pretest-postest study. *International Journal of Nursing Studies*, 51: 1241-1245. https://doi.org/10.1016/j.ijnurstu.2014.01.016.

Telep, Cody W., David L. Weisburd, Charlotte Gill, Zoe Vitter, and Doron Teichman. 2014. Displacement of crime and diffusion of crime control benefits in large-scale geographic areas: A systematic review. *Journal of Experimental Criminology*, 10: 515-548. https://doi.org/10.1007/s11292-014-9208-5.

Thackrey, Michael. 1987. Clinician confidence in coping with patient aggression: Assessment and enhancement. *Professional Psychology: Research and Practice,* 18: 57-60. http://doi.org/10.1037/0735-7028.18.1.57.

Victor, Daniel. 2016. Why 'all lives matter' is such a perilous phrase. *New York Times.* July 15. Retrieved from https://www.nytimes.com/2016/07/16/us/all-lives-matter-black-lives-matter.html.

Visser, Steve. 2016. Baton Rouge shooting: 3 officers dead; shooter was Missouri man, sources say. *CNN*. July 18. Retrieved from https://www.cnn.com/2016/07/17/us/baton-route-police-shooting/index.html.

Walker, Samuel. 2018. "Not dead yet": The national police crisis, a new conversation about policing, and the prospects for accountability-related police reform. *University of Illinois Law Review*, 2018: 1777-1841.

Walters, Helen, and Richard Kay. 2004. Developing a compassionate control strategy. *Australian Nursing Journal*, 12(4): 21-23.

White, Michael D., and Michael Pooley. 2018. Testing the impact of de-escalation training of officer behavior: The Tempe, Arizona SPI. Department. October 22, 2018. Presentation to Tempe, AZ Police

Whittington, Richard, and Til Wykes. 1996. An evaluation of staff training in psychological techniques for the management of patient aggression. *Journal of Clinical Nursing,* 5: 257-261. https://doi.org/10.1111/j.1365-2702.1996.tb00260.x.

Wilkinson, Cindy L. 1999. An evaluation of an educational program on the management of assaultive behaviors. *Journal of Gerontological Nursing*, 25(4): 6-9. https://doi.org/10.3928/0098-9134-19990401-04.

Williams, Timothy. 2015. Long taught to use force, police warily learn to de-escalate. *New York Times.* June 27. Retrieved from https://www.nytimes.com/2015/06/28/us/long-taught-to-use-force-police-warily-learn-to-de-escalate.html.

Wondrak, Rob F., and Bridget M. Dolan. 1992. Dealing with verbal abuse: Evaluation of the efficacy of a workshop for student nurses. *Nurse Education Today,* 12: 108-115. https://doi.org/10.1016/0260-6917(92)90036-N.

Wong, Ambrose H., Lisa Wing, Brenda Weiss, and Maureen Gang. 2015. Coordinating a team response to behavioral emergencies in the emergency department: a simulation-enhanced interprofessional curriculum. *Western Journal of Emergency Medicine,* 16: 859-865. https://doi.org/10.5811/westjem.2015.8.26220.

Worden, Robert E., and Sarah J. McLean. 2017. *Mirage of Police Reform: Procedural Justice and Police Legitimacy.* Oakland, CA: University of California Press.

Zimring, Franklin E. 2017. *When Police Kill.* Cambridge, MA: Harvard University Press.

Case Cited

Graham v. Connor, 490 U.S. 386 (1989).

Figure 1. Search Screening Process

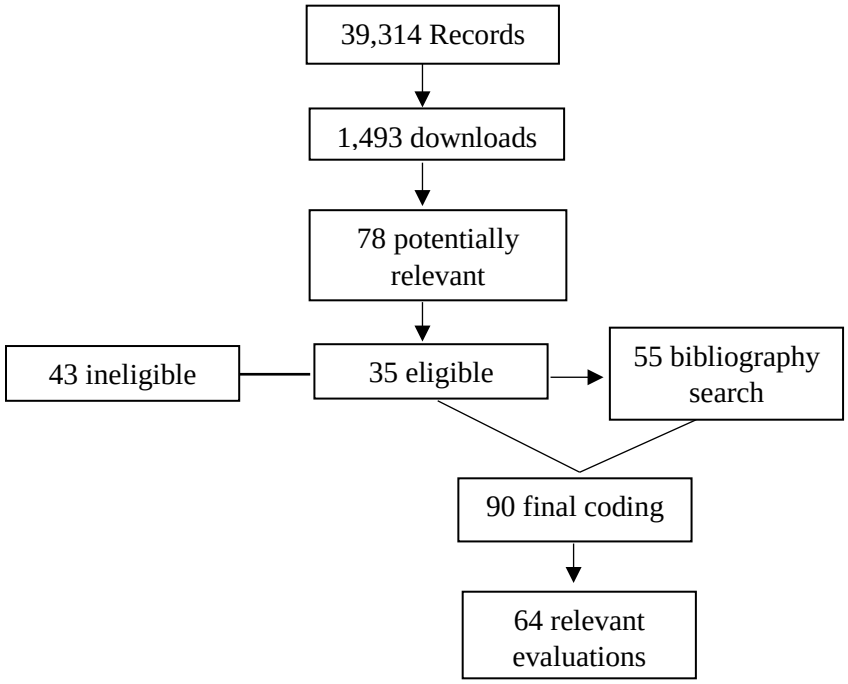

Table 1. Characteristics of Eligible Studies

Characteristic	Category	*n*
Publication Type	Journal Article (peer reviewed)	57
	Thesis/Dissertation	3
	Conference Proceedings	1
	Research in Brief	3
Discipline	Criminal Justice	
	Nursing	0
	Psychiatry	36
	Medicine	19
	Psychology	4
	Education	3
	Technology	1
		1
Research Design	Randomized control trial	0
	Pre/post-test; no comparison	25
	Pre/post-test; quasi-experimental	15
	Interrupted time series; no comparison	13
	Interrupted times series; quasi-experimental	4
	Panel design; no comparison	2
	Cross-sectional; no comparison	2
	Cross-sectional; quasi-experimental	4
	Qualitative	6

Table 2. Maryland Systematic Methods Scale

Level	Definition	Number of Studies
5	Random assignment of treatment and control condition to units	0
4	Measures of outcome before and after treatment in multiple experimental and control groups; controlling for other variables that might influence the outcome	0
3	Measures of outcome before and after treatment in experimental and comparable control group	3
2	Temporal sequence between treatment and outcome clearly observed or presence of comparison group without demonstrated comparability to treatment group	57
1	Correlation between treatment and outcome at a single point in time	4

Table 3. Training Content Analysis

Training Themes	Number of Studies (n=64)
Definitions / Explanations / Origins of Aggression	40
Prevention Strategies	26
Management (Reactive) Strategies	36
Work / Legal Considerations	20
Methods for Monitoring / Evaluating Aggression / Violence	13

Table 4. Self-Reported Outcomes of Trainings

Outcome	# of Studies (n = 64)	# of Times Measured	Favorable n (%)	Neutral n (%)	Unfavorable n (%)
Knowledge	21	32	29 (90.6)	3 (9.4)	0 (0)
Confidence	22	26	24 (92.3)	2 (7.7)	0 (0)
General attitudes	20	24	18 (75.0)	5 (20.8)	1 (4.2)
Experience aggression/violence	6	14	11 (78.6)	3 (21.4)	0 (0)
Perceptions of safety	9	10	6 (60.0)	4 (40.0)	0 (0)
Self-reported behavior	6	7	3 (42.9)	4 (57.1)	0 (0)
Perceptions of training	8	8	7 (87.5)	1 (12.5)	0 (0)

Table 5. Behavioral Outcomes of Trainings

Outcome	# of Studies (n = 64)	# of Times Measured	Favorable n (%)	Neutral n (%)	Unfavorable n (%)
Number of incidents	19	21	11 (52.4)	4 (19.0)	6 (28.6)
Severity of incidents	4	4	4 (100.0)	0 (0)	0 (0)
Number of injuries	9	13	10 (76.9)	1 (7.7)	2 (15.4)
Application of de-escalation	10	14	13 (92.9)	1 (7.1)	0 (0)
Response to resistance	8	11	7 (63.6)	2 (18.2)	2 (18.2)
Organizational impact	7	12	10 (83.3)	2 (16.7)	0 (0)

Appendix A. List of keywords and search terms.

Keywords and Key-phrases

- "De-escalation training"
- "De-escalation techniques"
- "Verbal de-escalation"
- "De-escalation of force"
- "Aggression de-escalation training"
- "Aggression management training"
- "Reducing incidents of aggression and violence"
- "Aggression prevention training"
- "Violence prevention training"
- "Aggression prevention and management training"
- "Verbal judo"
- "CIT training"
- "Crisis intervention team"
- "Memphis crisis intervention team training"

Search Terms

- De-escalation AND training
- De-escalation AND aggression
- Aggression AND management AND training
- Aggression AND prevention AND training
- "Violence prevention" AND training
- Police AND "mental health" AND training
- "Law enforcement" AND "mental health" AND training
- Policing AND "mental health" AND training
- Police AND "crisis intervention"
- "Law enforcement" AND "crisis intervention"
- Policing AND "crisis intervention"
- Police AND CIT
- "Law enforcement" AND CIT
- Policing AND CIT
- "Crisis intervention" AND training
- "Crisis intervention" AND evaluat*

Appendix B. Databases searched.

Database	Affiliated Meta-database
1. Annual Reviews	Annual Reviews
2. Best Practices Database	Best Practices Database
3. ComAbstracts	Communication Institute for Online Scholarship
4. CRCnetBASE (Ebooks)	CRCnetBASE (Ebooks)
5. Ebrary (ebooks)	Ebrary (ebooks)
6. Academic Search Complete	EBSCOhost
7. Academic Search Premier	EBSCOhost
8. AgeLine	EBSCOhost
9. Alt Health Watch	EBSCOhost
10. America: History and Life with full text	EBSCOhost
11. Anthropology Plus	EBSCOhost
12. Book Review Digest Plus	EBSCOhost
13. Business Source Complete	EBSCOhost
14. Business source elite	EBSCOhost
15. Business Source Premier	EBSCOhost
16. Child development and adolescent studies	EBSCOhost
17. CINAHL	EBSCOhost
18. Communication and Mass Media Complete	EbscoHost
19. Criminal Justice Abstracts	EBSCOhost
20. EBSCO Databases	EBSCOhost
21. EBSCOhostEbook Collection	EBSCOhost
22. EconLit	EBSCOhost
23. Education Full Text	EBSCOhost
24. Education Research Complete	EBSCOhost
25. Educational Administration Abstracts	EBSCOhost
26. ERIC	EBSCOhost
27. Family and Society Studies Worldwide	EBSCOhost
28. Famly Studies Abstracts	EBSCOhost
29. GenderWatch	EBSCOhost
30. HealthSource: Nursing/Academic Edition	EBSCOhost
31. Historical Abstracts	EBSCOhost
32. Hospitality and Tourism Complete	EBSCOhost
33. Military and Government Collection	EBSCOhost
34. Professional Development (education)	EBSCOhost

35. Professional Development Collection	EBSCOhost
36. PsycARTICLES	EBSCOhost
37. Psychology and Behavioral Sciences Collection	EBSCOhost
38. PsycINFO	EBSCOhost
39. Social work abstracts	EBSCOhost
40. SocINDEX	EBSCOhost
41. Sociological Collection	EBSCOhost
42. SPORTDiscus	EBSCOhost
43. Women's Studies International	EBSCOhost
44. Science Direct	Elsevier
45. Scopus	Elsevier
46. Emerald library	Emerald Insight
47. Ehraf World cultures	Human relations Area Files
48. INFORMS PubsOnLine	INFORMS PubsOnLine
49. LexisNexis Academic	LexisNexis
50. National Criminal Justice Reference Service	National Criminal Justice Reference Service (NCJRS)
51. Access Science	No overarching database
52. BioMed Central	No overarching database
53. Columbia International Affairs Online	No overarching database
54. DOAJ	No overarching database
55. Google Scholar	No overarching database
56. Hathi Trust	No overarching database
57. HeinOnline	No overarching database
58. JSTOR	No overarching database
59. Project Muse	No overarching database
60. Psychiatry online	No overarching database
61. Springer link	No overarching database
62. UpToDate	No overarching database
63. Wiley Online	No overarching database
64. Article First	OCLC - FirstSearch
65. Papers First (unpublished articles)	OCLC - FirstSearch
66. Proceedings first (unpublished articles)	OCLC - FirstSearch
67. Worldcat	OCLC - FirstSearch
68. Operations Research/Management Science	Operations Research/Management Science
69. Journals@Ovid	OVID
70. Social work abstracts	OVID

71. ABI/Inform Complete	Proquest
72. Black Studies Center	Proquest
73. Criminal Justice Database (ProQuest)	Proquest
74. Dissertation and Theses	Proquest
75. Ebrary	Proquest
76. Ethnic News Watch	Proquest
77. GenderWatch	Proquest
78. Linguistics and Language Behavior Abstracts	Proquest
79. PAIS International	Proquest
80. Periodicals Archive Online	Proquest
81. PILOTS	ProQuest
82. ProQuest Databases	Proquest
83. Risk Abstracts	Proquest
84. Social Services Abstracts	Proquest
85. Sociological abstracts	Proquest
86. PubMed	Pubmed/Medline
87. Communication Studies	Sage Journals
88. Criminology: a sage collection	Sage Journals
89. Education: A Sage collection	Sage Journals
90. Political Science: A Sage collection	Sage Journals
91. Sage eReference Collection	Sage Journals
92. Sage Journals Online	Sage Journals
93. Sociology: A Sage collection	Sage Journals
94. Arts and Humanities Citation Index	Web of Science (aka web of knowledge)
95. Social Science Citation Index	Web of Science (aka web of knowledge)
96. Web of Science)	Web of Science (aka web of knowledge)
97. AnthroSource	Wiley Online Library
98. Cochrane library	Wiley Online Library
99. World Bank e-Library	World Bank e-Library

Appendix C. Description of eligible studies.

Author/Year	Discipline	Sample	Research Design	Outcomes
Al-Ali, Al Faouri, & Al Niarat (2016)	Nursing	n = 100 nurses	Pre/post-test; no comparison	Beliefs about safety Attitudes toward staff performance Perceptions of legal issues
Allen, McDonald, Dunn, & Doyle (1997)	Psychiatry	unspecified	Panel design; no comparison	Behavioral incidents Staff injury Client Injury Use of reactive strategies
Allen & Tynan (2000)	Psychiatry	n = 109 staff	Cross-sectional; quasi-experimental & pre/post-test; no comparison	Staff confidence Staff knowledge
Baker & Bissmire (2000)	Psychiatry	n = 13 staff	Pre/post-test; no comparison	Staff confidence Staff feelings of support Number of behavioral incidents Interventions used in incidents
Beech (1999)	Nursing	n = 58 student nurses	Pre/post-test; no comparison	General attitudes Perceptions of training
Beech (2005)	Nursing	n = 243 student nurses	Interrupted time series; no comparison	Knowledge Attribution of blame Perceptions of safety Concerns regarding legal issues Perceptions of aggression Perceptions of the student nurse role Perceptions of proactive intervention
Björkdahl, Hansebo, & Palmstierna (2013)	Psychiatry	n = 854 nursing staff n = 453 patients	Pre/post-test; no comparison	Staff perceptions of violence Client perceptions of violence
Bosse, Derritsen, & de Man (2015)	Technology	n = 24 public transport employees	Pre/post-test; quasi-experimental	Perceptions of training Knowledge Change in employee behavior Impact on organization
Carmel & Hunter (1990)	Psychiatry	n = 27 hospital wards	Cross-sectional; no comparison	Employee injury Number of aggressive incidents
Çoban Arguvanli, Karataş, Başer, & Zararsiz (2015)	Psychiatry	n = 27 nurses	Interrupted time series; no comparison	Knowledge Perceptions of aggression
Colenda & Hamer (1991)	Psychiatry	n = 48 patients	Pre/post-test; no comparison	Number of aggressive events Number of triggering events

Author/Year	Discipline	Sample	Research Design	Outcomes
				Interventions used Prevalence of aggressive behavior
Collins (1994)	Nursing	n = 31 student nurses	Interrupted time series; no comparison	Prediction of aggressive incidents Perceptions of patient motivation and responsibility Staff anxiety and fear of assault Staff confidence in managing aggression
Collins (2014)	Psychology	n = 7 nurses/mental health clinicians	Qualitative	Perceptions of: Prevention/management of violence Precipitating factors to violence Types of intervention The use of a crisis response team Relationships between staff and management Use of training
Cowin, Davies, Estall, Berlin, Fitzgerald, & Hoot (2003)	Nursing	n = 54 nurses	Pre/post-test; no comparison	Knowledge and skill in de-escalation
Deans (2004)	Nursing	n = 30 nurses	Pre/post-test; no comparison	Knowledge of violence management Experience with violence in workplace Confidence in managing aggression Attitudes toward violence in workplace
Doyle & Klien (2001)	Nursing	n = 140 hospital employees	Pre/post-test; quasi-experimental	Knowledge of policy, causes of aggression, and de-escalation
Feldt & Ryden (1992)	Nursing	n = 17 Nursing Assistants	Pre/post-test; no comparison	Knowledge of dementia care Characterization of residents Perceptions of easiness in caring for residents
Fernandes, Raboud, Christenson, Bouthillette, Bullock, & Ouellet (2002)	Medicine	n = 266 emergency department employees	Interrupted time series; no comparison	Number of physically violent events Number of verbally violent events Proportion of employees reporting physical violence during their shift Proportion of employees reporting verbal violence during their shift Staff perception of safety
Fitzwater & Gates (2002)	Nursing	n = 20 nursing assistants	Pre/post-test; quasi-experimental	Number of assault incidents Confidence in assault prevention

Author/Year	Discipline	Sample	Research Design	Outcomes
Forster, Cavness, & Phelps (1999)	Nursing	n = 1 psychiatric hospital	Pre/post-test; no comparison	Use of restraints Duration of restraint/seclusion Number of staff injuries
Gerdtz, Daniel, Dearlie, Prematunga, Bamert & Duxbury (2013)	Nursing	n = 755 nurses and midwives	Pre/post-test; no comparison & Qualitative interviews	Attitudes regarding cause of aggression Perceptions of aggression management Perceptions of training
Gilliam (2014)	Nursing	n = 1 emergency department	Interrupted time series; no comparison	Number of "code purples" - initiation of emergency response to violence
Goodykoontz & Herrick (1990)	Nursing	n = 27 staff	Pre/post-test; no comparison	Burnout Number of incidence reports
Grenyer (2004)	Psychiatry	n = 63 health staff	Pre/post-test; no comparison	Satisfaction with training Knowledge Attitudes toward managing aggression Confidence in dealing with aggression
Guay, Gonclaves, & Boyer (2016)	Healthcare	n = 89 hospital staff	Interrupted time series; no comparison	Psychological distress Perceived exposure to violence Confidence in coping with aggression
Hahn, Needham, Aberhalden, Duxbury, & Halfens (2006)	Nursing	n = 63 nurses	Pre/post-test; quasi-experimental	Attitudes toward aggression management
Heckemann, Breimaier, Halfens, Schols, & Hahn (2016)	Nursing	n = 7 nurses	Qualitative	Learning effects Translation of learning Personal attitude Coping
Hurlebaus & Link (1997)	Nursing	n = 23 nurses	Pre/post-test; quasi-experimental	Knowledge Perceptions of safety
Ilkiw-Lavalle, Grenyer, & Graham (2002)	Nursing	n = 103 mental health staff	Pre/post-test; no comparison	Knowledge Program evaluation
Infantino & Musingo (1985)	Psychiatry	n = 96 staff	Cross-sectional; quasi-experimental	Incidence of assaults Assault-related injuries
Jambunathan & Bellaire (1996)	Nursing	n = 146 incidents	Cross-sectional; no comparison	Use of training techniques in incidents
Jonikas, Cook, Rosen, Laris, & Kim (2004)	Psychiatry	n = 2,137 patients	Interrupted time series; no comparison	Rates of restraint
Laker, Gray, & Glatch (2010)	Nursing	n = 226 incidents	Pre/post-test; no comparison	Number of incidents Severity of incidents

Author/Year	Discipline	Sample	Research Design	Outcomes
Lehmann, Padilla, Clark & Loucks (1983)	Psychiatry	n = 144 training participants	Pre/post-test; no comparison & Qualitative interviews	Knowledge Confidence in handling violent incidents Staff attitudes and coping ability during encounters with violent patients
Martin (1995)	Nursing	n = 283 incidents	Interrupted time series; no comparison	Number of aggressive incidents Level of aggression Type of injury Number of missed work days Cost to department
McDonnell (1997)	Psychiatry	n = 21 care staff	Pre/post-test; no comparison	Knowledge of training Application of training Confidence in managing aggression
McDonnell, Sturmey, Oliver, Cunningham, Hayes, Galvin, Walkshe, & Cunningham (2008)	Psychiatry	n = 90 staff	Pre/post-test; quasi-experimental	Job satisfaction Perceptions of staff support Ability to cope Perceptions of challenging behavior Confidence in managing challenging behavior
McGowan, Wynaden, Harding, Yassine, & Parker (1999)	Nursing	n = 15 staff	Pre/post-test; quasi-experimental	Confidence in managing patient aggression
McIntosh (2003)	Nursing	n = 90 mental health staff	Interrupted time series; quasi-experimental	Confidence in managing aggression Avoidant behavior Participant behavior Perceived risk Risk discernment Personal vulnerability Anxiety arousal
McLaughlin, Bonner, Mboche & Fairlie (2010)	Nursing	n = 18 nursing staff	Pre/post-test; no comparison & Qualitative focus groups	Perceptions of verbal aggression Confidence in managing aggression Identification of strategies to manage aggression
Mentes, Ferrarrio (1989)	Nursing	n = 20 incidents	Pre/post-test; no comparison; Panel design; no comparison & Qualitative interviews	Participant knowledge Incidence of staff abuse Changes in caregiving practices
Middlebury-Clements & Grenyer (2007)	Psychiatry	n = 117 health staff	Pre/post-test; quasi-experimental	Attitudes toward aggression Confidence in managing aggression Skills in managing aggression

Author/Year	Discipline	Sample	Research Design	Outcomes
Moore (2010)	Nursing	unspecified	Interrupted time series; no comparison	Restrictiveness of interventions
Nau, Dassen, Needham, & Halfens (2009)	Nursing	n = 63 student nurses	Interrupted time series; quasi-experimental	Confidence Changes in daily practice
Nau, Dassen, Needham, & Halfens (2011)	Nursing	n = 65 student nurses	Pre/post-test; quasi-experimental	Confidence Performance
Nau, Halfens, Needham, & Dassen (2010)	Nursing	n = 78 student nurses	Pre/post-test; quasi-experimental	Performance in de-escalating aggression
Oostrom & van Mierlo (2008)	Nursing	n = 42 care workers	Interrupted time series; no comparison	Knowledge Ability to cope Team functioning
Ore (2002)	Healthcare	n = 358 disability services workers	Cross-sectional; quasi-experimental	Number of reported assaults Perceptions of assault
Parkes (1996)	Psychiatry	n = 340 incidents	Interrupted time series; no comparison	Number of staff injuries Perceptions of managing aggression Perceptions of risk
Paterson, Turnbull, & Aitken (1992)	Nursing	n = 25 hospital staff	Pre/post-test; no comparison	Knowledge Levels of stress or burnout Current job satisfaction
Phillips & Rudestam (1995)	Psychiatry	n = 24 staff	Pre/post-test; quasi-experimental	Perceptions of nonaggressive responses Fear of aggression Self-reported incidence of assault
Ramirez, Bruce, & Whaley (1981)	Nursing	unspecified	Pre/post-test; no comparison	Quality of patient treatment plans, Practitioner awareness of emotional crisis factors, Quality of communication, Severity of assault incidents Number of hours patients spent locked in seclusion and restraints Number of patient suicides
Rice, Helzel, Varney, & Quinsey (1985)	Psychology	n = 125 staff	Pre/post-test (survey); quasi-experimental; & Interrupted time series (behavioral); quasi-experimental	Knowledge Confidence Number of assaults Number of work days lost Number of times medication ordered Patients' self-esteem/mood

Author/Year	Discipline	Sample	Research Design	Outcomes
Sela-Shayovitz (2009)	Education	n = 147 teachers and graduate students	Cross-sectional; quasi-experimental	Personal teaching efficacy Teachers' efficacy in the school as an organization Teachers' outcome efficacy
Sjostrom, Eder, Malm, & Beskow (2001)	Psychiatry	n = 185 staff	Pre/post-test; no comparison	Patient violence Number of staff members on sick leave due to injuries
Smoot & Gonzales (1995)	Psychiatry	n = 72 staff	Pre/post-test; quasi-experimental	Staff resignations and transfers Sick leave (hours) Annual leave (hours) Patients' rights and complaints Incidents of restraint and seclusion Assaults on staff
St. Thomas Psychiatric Hospital (1979)	Psychiatry	unspecified	Pre/post-test; no comparison	Number of incidents Number of patient injuries Number of staff injuries Man hours lost from work
Swain & Gale (2014)	Nursing	n = 56 Nurses	Interrupted time series; no comparison	Experience with aggression General mental wellness Emotional distress from an event
Thackrey (1987)	Psychology	n = 125 clinicians	Interrupted time series; quasi-experimental	Confidence in managing aggression
Whittington & Wykes (1996)	Nursing	n = 155 nurses	Pre/post-test; quasi-experimental	Frequency of violence
Walters & Kay (2004)	Nursing	n = 160 staff	Pre/post-test; no comparison	Confidence in managing aggression Satisfaction with training program Incidents of aggression Work-days lost due to assaults Number of vacancies in mental health services
Wilkinson (1999)	Nursing	n = 40 patients n = 32 nursing staff	Interrupted time series; no comparison	Frequency of violence Seriousness of violence against staff
Wondrak & Dolan (1992)	Nursing	n = 29 student nurses	Pre/post-test; quasi-experimental	Response to verbal aggression
Wong, Wing, Weiss, & Gang (2015)	Medicine	n = 162 emergency department staff	Pre/post-test; no comparison	Knowledge Staff attitudes toward aggression management

Endnotes

[1] The President's Task Force doubled-down on de-escalation when they further recommended in Action Item 2.7.1. that "law enforcement agency policies should address procedures for implementing a layered response to mass demonstrations that prioritize de-escalation and a guardian mindset" (2015, 25). Finally, under the discussion regarding Recommendation 5.7 on basic officer training, the Task Force indicated that "recruit training must also include tactical and operations training on lethal and nonlethal use of force with an emphasis on de-escalation and tactical retreat skills" (2015, 57).

[2] The first empirical testing of PERF's ICAT training is currently underway in two police agencies (University of Cincinnati, OH Police Division and the Louisville Metro Police Department) by researchers from the *International Association of Chiefs of Police / University of Cincinnati Center for Police Research and Policy*.

[3] Agent refers broadly to any trained professional (e.g., police officer, teacher, nurse, doctor, social worker, or other professional) working in their official capacity. Client refers to any individual who is the recipient of services (voluntary or involuntary) provided by an agent working in their official capacity (e.g., student, patient, criminal suspect, victim, etc.).

[4] As such, this review includes trainings that may not be specifically called "de-escalation" but instead reference training for violence management, assault prevention, restraint reduction, preventing aggressive behavior, etc.

[5] Electronic databases accessed through the University of Cincinnati (UC) and the University of Nevada Las Vegas (UNLV) library services were used, and information specialists from both universities were consulted regarding the identification of relevant databases across different disciplines.

[6] Notably, 16 of the 64 evaluations do not provide descriptions of the topics covered or tools used for training. Additionally, several descriptions are vague and do not provide the specific components of training.

[7] Though the majority of studies focused on training participants' general attitudes, there were two instances of the measurement of patient or "client" attitudes regarding the violence prevention and management "climate" of the hospital they were housed within.

[8] Specifically, in one quasi-experimental pre/post-test evaluation, researchers find the inclusion of zero-tolerance messages in de-escalation training for mental health staff promotes more rigid attitudes toward patients' acts of aggression. In contrast, when training is administered without these messages, staff members' rigid attitudes toward aggression are found to decrease (Middleby-Clements & Grenyer, 2007).

[9] This evaluation examines the impact of control and restraint techniques training on staff working in a 44-bed medium secure unit providing service to a wide array of patients (i.e., special care admissions from local hospitals, forensic admissions from prisons, and special hospital patients requiring rehabilitation). Examining data 18 months prior to training and 12 months after, Parkes (1996) finds a small increase in the number of staff injuries occurring in incidents of aggression, an overall increase in the number of staff injuries during aggressive encounters involving restraint, and stable rates concerning the number of patient injuries during restraint.