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## Refinement and Preliminary Testing of an Imagery-Based Program to Improve Coping and Performance and Prevent Trauma among Urban Police Officers

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### Abstract

Police officers are regularly exposed to traumatic critical incidents. The substantial mental, behavioral, and social costs of police trauma indicate a substantial need for prevention. We have refined and enhanced a previously tested Swedish program to the harsh conditions of U.S. inner cities. The program was designed to strengthen resilience during stressful encounters and teach methods of coping after exposure, thereby preventing the emergence of maladaptive symptoms and behaviors with adverse effects on professionalism. In an uncontrolled demonstration project, junior officers were trained by senior officers to engage in imaginal rehearsal of specific dangerous situations while incorporating optimal police tactics and healthy emotional reactions. A class of 32 officers in the police academy engaged in the program, and they and the trainers reported high satisfaction with it. After their first year of field work, 22 officers were reassessed. Compared to pre-training, these officers showed significant increases in the use of positive reframing and humor and significant reductions in anxiety and alcohol use over the year. Trauma symptoms did not increase. These results offer preliminary evidence for the feasibility and effectiveness of this trauma prevention program for new police officers.

### Keywords

primary prevention; imagery; police; trauma; stress

### 1. Introduction

Police work is one of the world's most dangerous occupations, and police officers are exposed to many potentially traumatic incidents (Andersen, Papazoglou, Koskelainen, & Nyman, 2015). Common police critical incident exposures include motor vehicle chases and

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accidents, domestic violence, crowd control, physical assaults, handling dead bodies, and dealing with unpredictable, dangerous, and armed criminals (Carrier, Lamberts, & Gersons, 2000; Van Hasselt *et al*, 2008; Toch, 2002). Furthermore, police are unique among first responders because they are empowered to use deadly force, which can itself be traumatic to the officer (Violanti & Paton, 1999).

The consequences of police officer critical incident exposure can be serious. For example, the incidence of duty-related post-traumatic stress disorder (PTSD) among police officers ranges from 7% to 19% (Marmar *et al.*, 2006). Police also experience other post-trauma adjustment difficulties including anxiety, sleep disruptions, somatic symptoms (McMillen *et al.*, 2000), depression (Buchanan *et al.*, 2001), impaired job performance, and maladaptive health behaviors (Anshel, 2000; Reynolds & Wagner, 2007), though other research suggests more modest levels of affective distress and psychopathology among officers (Deville & Varker, 2013; Johnson *et al.*, 2005; van der Velden *et al*, 2013). Additionally, 33% to 48% of male officers and 24% to 40% of female officers consume harmful levels of alcohol, which may be related to job stressors (Davey *et al.*, 2000).

The high mental, behavioral, and social costs of police trauma indicate a substantial need for intervention (Amaranto *et al.*, 2003; Violanti *et al.*, 2006), yet the optimal timing for such interventions remains unclear. The most common approach in other populations has been tertiary prevention, that is, treating established trauma reactions or symptoms with evidence-based interventions such as prolonged exposure or cognitive processing therapy (Foa, 2000; Resick & Schnicke, 1993). Such treatments, however, are often viewed as stigmatizing by police and, therefore, are notoriously underutilized (Amaranto *et al.*, 2003; Barren, 2005). Moreover, the tertiary approach leaves officers with months or years of distress and social and professional dysfunction before they can find relief.

Another approach, secondary prevention, intervenes with the trauma survivor soon after exposure but before the emergence of post-trauma symptoms (Feldner *et al.*, 2007). For example, psychological debriefing techniques involve group discussion of the traumatic event and associated thoughts, feelings, and coping responses in an effort to prevent initial symptoms from developing into full blown PTSD. Despite its intuitive appeal and widespread implementation, a systematic review of both single-session (Rose, Bisson, Churchill, & Wessely, 2002) and multiple session (Roberts, Kitchiner, Kenardy, & Bisson, 2009) psychological debriefing techniques concluded that they are generally ineffective in reducing distress and preventing PTSD, and may increase symptoms in some participants.

Much less is known about primary prevention of trauma-related problems; that is, preparing for traumatic events that have not yet occurred. Yet primary prevention might bolster resilience among police by building professional and psychological strategies to cope with critical incidents. Moreover, primary prevention seems culturally appropriate for police, whose training emphasizes preparation over remediation. In addition, primary prevention has less risk of social stigma because it targets the maintenance of good mental and behavioral health rather than treatment of mental illness.

Although primary prevention techniques for police trauma exposure are rare, existing empirical research can guide the development of such interventions. For example, research documents the efficacy of imaginal rehearsal for stressful medical procedures, which usually involves informing patients about the procedure, exposing them to the procedure via imagination or video, and teaching them self-regulation skills (e.g., relaxation, distraction, body positioning) to use during the actual procedure (Elkins & Roberts, 1983; O'Byrne *et al.*, 1997). Stress inoculation training, which includes education, skill acquisition/rehearsal, and application and follow-through is effective for various populations encountering stressful events (Meichenbaum & Deffenbacher, 1988; Novaco, 1977). In addition, visualization of adaptive behavior is a technique that helps prepare athletes to reduce anxiety and improve behavioral performance (Feltz & Landers, 1983; Suinn, 1997). More generally, preparation reduces a stressor's unpredictability and uncontrollability, two factors that contribute to excessive stress reactions (Ozer *et al.*, 2003).

In addition to imaginal rehearsal to prepare for stressful experiences, prevention may be enhanced by obtaining skills related to emotional awareness, mindfulness, proper police tactics, and coping. There is some evidence that police officers have difficulty identifying and describing their emotions (Evans *et al.*, 1993; Gasch, 2006), and this deficit can lead to adjustment difficulties (Salovey *et al.*, 2002), mental health problems (Ciarrochi *et al.*, 2001), psychosomatic complaints, and other psychiatric disorders (Taylor, 2000) in the wake of stressful encounters. In contrast, the ability to recognize and label one's emotion is adaptive, helping people to feel less distress and cope better with stressors (Kerr *et al.*, 2004; Williams *et al.*, 2010).

Mindfulness, an active state of awareness of one's immediate experiences, may counter the maladaptive tendency to avoid one's emotions and cognitions, while allowing one to disengage from maladaptive patterns (Brown & Ryan, 2003; Ryan & Deci, 2000). Among police officers, greater mindfulness predicts less depression over the first year of service (Williams *et al.*, 2010). Various evidence-based mindfulness interventions have been found to improve symptoms of depression and anxiety, while also enhancing general psychological functioning (Ciarrochi & Godsell, 2005; Gardner & Moore, 2012; Kabat-Zinn, 1990).

Police also need to use optimal behavioral tactics during potentially traumatic encounters. Stressful arousal can interfere with adaptive behavior, resulting in aggression, escape, or freezing, all of which can have negative ramifications (Paton, 2006). Teaching officers to engage in optimal police tactics while they prepare for potential threats leads to better police performance in the field (Arnetz *et al.*, 2009).

Finally, adaptive strategies for coping with trauma are important, (Kring & Werner, 2004), but police officers often lack adaptive coping strategies (Evans *et al.*, 1993; Gasch, 2006). Instead, officers may rely on avoidant strategies such as drinking alcohol or not discussing their negative experiences and emotions (Amaranto *et al.*, 2003), which can lead to both relationship and health problems (Berking *et al.*, 2010).

Together, these literatures suggest that engaging in imagery-based emotional exposure to future traumatic events and practicing adaptive behavioral and cognitive responses during

and after exposure might reduce stress reactions in police officers and, consequently, enhance professionalism. A study conducted by members of our research team (Arnetz *et al.*, 2009) found that imagery rehearsal resulted in improved performance for Swedish police officers. However, it is unknown whether such a program, adapted to the harsh conditions of law enforcement in a major U.S. inner-city, would be similarly effective. Furthermore, the Swedish intervention focused solely on the core component of visualization but lacked recent empirically-supported self-regulation techniques.

In this study, we refined the Swedish version of the imagery-based primary prevention program to make it applicable to the challenges found in American urban centers. We included not only mindfulness and emotional awareness components, but also optimal police tactics during imagined scenarios. We also incorporated an evidence-based set of techniques for how to cope adaptively after trauma exposure. We then conducted a preliminary test of the imagery-based trauma prevention program to improve coping and prevent mental health problems among new police officers during their first year working in a high-threat urban environment.

Below, we first describe the background, development, and refinement of this trauma prevention program, including how we worked with the police department to develop the program and to improve its acceptability and implementation in the police academy. We describe this process and our rationale in detail, because we think that issues of feasibility, including our collaborative efforts, are unique and informative. We then describe and present the results of a preliminary trial of this program including its effects on coping strategies and mental health over the first year of police service.

## 2. Method

### 2.1 Phase 1: Development and Refinement of the Trauma Prevention Training Program

Police culture may make police wary of mental health professionals, and failure to gain an initial acceptance or engagement from both police leaders and new officers can impede implementation. To address these concerns, we worked closely with senior training officers at the Detroit Police Academy. These officers participated in the development of the program structure and content, including the training scenarios. They helped tailor the program to the needs and constraints of the department, and offered an important endorsement to other officers of its potential utility. We also worked with police department administration to ensure that participants were able to participate in the study during duty hours, and police union leadership to gain strong support from the broader law enforcement community. In short, much of the present research's success was dependent upon the support and approval we received from senior police leadership, including the chief of police.

**2.1.1 Training Scenario Selection and Refinement**—We first selected and refined potentially traumatic scenarios relevant to urban police force. Training scenarios that were perceived as potentially traumatic but realistic for police work were targeted for inclusion. We reviewed the literature to identify scenarios that were traumatic for officers (e.g., Violanti & Aron, 1994), selected some scenarios from our earlier work in Sweden (Arnetz *et al.*, 2013), and generated others from discussions with Detroit training officers; 15 scenarios

were generated through these processes. Next, 65 Detroit police officers were surveyed to rate the how stressful each scenario would be if the officer encountered it. Scenarios rated as the most stressful, as well as those identified by senior department leadership as requiring additional training, were retained. These scenarios were then refined by conducting several focus groups with senior police officers and police academy trainers. Table I briefly describes the final set of nine potentially traumatic training scenarios: searching for a murderer; finding a dead child; witnessing excessive use of force by a police partner; engaging in a vehicle pursuit; and encountering a potentially violent suspect; a threatening crowd; a mentally ill suspect; a house fire; and domestic abuse.

The nine scenarios were written and elaborated in narrative imagery scripts using highly evocative descriptions and language. The scripts were reviewed and edited by a team of experienced police officers to ensure that the scenarios maintained realism from an officer's perspective. Scenes and images were described in vivid detail and included threatening components as well as specific emotions that officers were likely to feel, such as fear, disgust, anger, or sadness. For example, in the scenario involving a crowd of drunken, potentially violent men, the following description was provided: "You can feel a sense of heat pressing against your face, a mixture of embarrassment and anger, as you realize that these men are either too drunk or too arrogant to respond to your authority."

Language was also included that elicited mindfulness or immediate awareness of self as well as calming or arousal regulation; for example, "This is a natural response, but you cannot dwell on what you fear might happen in the future. Keep yourself focused on the present and be mindful of the information you are seeing and hearing right now." In addition, training officers added to each scenario several optimal police tactics, such as when to call for help, one's position relative to one's partner, and where to hold or aim one's weapon; for example, "If you lose sight of the suspect, you have to prepare for the fact that he might be setting up an ambush. Use sweeping movements so that he cannot surprise you by hiding around a corner."

Thus, the scenarios provided a realistic account of what officers might see and feel along with tactical and psychological guidance as to how to act successfully in the scenario. Repetition of imagery is important, and we reasoned that it would be most effective if we started with more basic imagery of a scene and then subsequently added the mindfulness and tactical components. Thus, we created two versions of each scenario. The first version, the "standard scenario," provided only descriptive information about the scene and emotional reactions. The "enhanced scenario" contained the same narrative information but was supplemented by having a second narrator provide the mindfulness prompts and tactical instructions. Scenarios were audio-recorded, and each scenario lasted from 5 to 10 minutes.

**2.1.2 Structure and Content of the Program's Sessions**—A manual (available from the authors) was created which contains step-by-step instructions for running the training sessions, and these manuals were used by the senior officers to conduct the program. We constructed and delivered the program over five, 90-minute sessions, and in this training academy, it was deemed optimal by the training staff to present the program over five consecutive days.

The core of the intervention is the imaginal rehearsal of the scenarios, which are presented to participants via an audio recording. These rehearsals involve several steps. First, participants listen to a pre-recorded relaxation script, which should help them focus and better facilitate the subsequent visualization. Next, participants listen to and visualize one of the standard scenarios and then discuss as a group their initial thoughts and emotional reactions to that scenario. Subsequently, participants listen to a shorter relaxation script to reestablish their focus, and then listen to and visualize the enhanced version of the same scenario. Visualization of the enhanced scenario is again followed by a group discussion of thoughts and reactions. Each of the imaginal sequences (relaxation, standard scenario, discussion, brief relaxation, and enhanced scenario) requires approximately 25 to 30 minutes of group time.

The nine imaginal scenarios are distributed across five sessions, and although homework is not required in the program, the officers are given electronic devices that they can take home with them and which contain the scenarios (standard and enhanced) and relaxation scripts (lengthy and abbreviated). Participants are encouraged to engage in the relaxation and imaginal exposure exercises when they were able to do so. Such home exercises would probably be more feasible when training happens over consecutive weeks rather than days.

Following the imaginal portion of each session, coping with trauma exposure and related topics are presented and discussed. In session 1, officers are educated about the nature of trauma in police work, including symptoms, warning signs, and the logic underlying the present prevention program. The concept of mindfulness is introduced and discussed, including its application both during and following stressful incidents. In session 2, officers are presented with information regarding common reactions following trauma exposure, and the distinction between “avoidance coping” and “approach coping” is introduced and discussed, emphasizing the value of approach coping and methods to engage in it. In session 3, the technique and value of expressive writing about stress as a coping strategy is presented, and as practice, participants write during the session about a stressful incident and their feelings about it. In session 4, the value of talking about and sharing stressful events and feelings with others is discussed as a coping strategy, and common but often maladaptive beliefs about disclosure (e.g., “I don’t want to burden my spouse or partner”) are discussed and challenged. Before the next session, the officers are encouraged to practice having such a conversation with a friend or loved one. Finally, in session 5, officers are asked to describe their experiences talking to others, and strategies to facilitate improved communication are discussed. The officers also review warning signs (e.g., increased alcohol consumption) that they may need additional help, including counseling.

**2.1.3 Training the Trainers and Final Refinement**—A challenge sometimes faced by mental health professionals working in police departments is a culture that is wary of psychological interventions. To address this potential barrier, we ensured that the group leaders selected were senior officers rather than mental health clinicians. Senior officers can speak with authority about the emotional experience of officers during the training scenarios, and can normalize the expression and discussion of unpleasant emotions. Commanding officers identified three training officers for this project based upon their excellent performance record and knowledge of police tactics. The officers served as the trainers of

the prevention program and also collaborated in the development of the scenarios and training manual.

The research team met regularly with the training officers to rehearse the use of the manual and provide instruction in the techniques. Two additional training sessions were conducted at which the research team conducted practice versions of the individual sessions for the group leaders to observe. Subsequently, the group leaders rehearsed the sessions while being observed by a researcher. During these training sessions, final adjustments to the manual were implemented. Although group leaders were deemed competent to conduct the intervention following the training, the researchers provided ongoing consultation throughout the implementation.

## 2.2 Phase 2: Preliminary Testing the Trauma Prevention Program with New Officers

A sample of 32 new police officers of the Detroit Police Department Academy participated in the preliminary test of the program. Participating officers ranged from 22 to 48 years old (Mean = 29.1, SD = 6.85 years), 78% were male, and participants were primarily African American (50%) or European American (47%). At the 1-year follow-up, 22 of these officers (69%) were re-assessed; five were no longer employed by the department, and five could not be scheduled or declined to participate. The 10 officers who left the study did not differ from the 22 who remained in the study on age ( $p = .80$ ) or gender ( $p = .39$ ), but those who left the study were more likely to be African American than those who were retained,  $\chi^2 = 8.71$ ,  $p = 0.01$ .

## 2.3 Procedure

The study was approved by the Institutional Review Board, and all officers provided informed consent. Participating officers were separated into two classes of 16 officers each, and each class was led by a single training officer. The prevention program training was conducted during the second to last week of police academy training, during five, 90-minute sessions scheduled Monday through Friday. Before the first session and 12 months following academy graduation (during which time participating officers were dispersed to precincts throughout the city) participants completed the measures described below. Following completion of the intervention, the trainers themselves were informally interviewed about their reflections on the program.

## 2.4 Measures

All of the following measures (except Participant Feedback) were administered on the first day of the intervention (before the program started) and again at the 1-year-follow-up.

Participant feedback was assessed with an anonymous survey (to increase the likelihood of honest feedback), which was administered immediately following the program. The items, which are presented verbatim in the Results section, were rated on 1- to 5-point scale of agreement. It was completed by 29 of the 32 officers.

Coping strategies were assessed with the 28-item Brief COPE (Carver, 1997), which contains 14, 2-item coping scales. Items are rated from 1 to 4 and totaled. For this study, we



selected five scales based on the literature on police officer coping (Evans et al., 1993), their relevance to this prevention training program, and independence from outcome measures: positive reframing, humor, active coping, planning, and self-blame. Research supports the reliability and validity of the Brief COPE scales (Yusoff, 2010).

Social support was assessed with the 10-item Sources of Support scale from the National Vietnam Veterans Readjustment Study (Kulka et al., 1990). Items are rated from 0 to 4 and totaled. This measure has been used to study PTSD in police (e.g., Marmar et al., 2005) and has shown excellent internal consistency ( $\alpha = .92$ ) and expected correlations with PTSD symptom severity ( $r = -.35$ ). In this sample, Cronbach's alpha was .81 at baseline and .94 at follow-up.

PTSD symptoms were assessed with the 17-item PTSD Checklist (Blanchard et al., 1996; Ruggiero et al., 2003), which asks respondents to indicate the extent to which they have been bothered by various the DSM-IV PTSD symptoms of re-experiencing, avoidance, and hyperarousal in the past month. Items are rated from 1 to 5 and totaled. The scale has excellent internal consistency and convergent validity. In this sample, alpha was .84 at baseline and .83 at follow-up.

Anxiety and depression symptoms were assessed with the two 7-item scales of the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983). Respondents rate their symptoms over the past week on a 0 to 3 scale, and two totals are generated. The scale has good psychometric properties (Bjelland et al., 2002), and in this sample, alpha for the depression subscale was .76 at baseline and .56 at follow-up, and for anxiety, it was .70 at baseline and .68 at follow-up.

Sleep disruption was assessed with a 3-item version of the Karolinska Institute Sleep Questionnaire (Kecklund & Akerstedt, 1992). One item from each of the scale's three domains (quality of sleep, night-time awakening, and daytime sleepiness) was presented. Items were rated from 1 to 5 and summed; higher scores reflected poorer sleep quality. This scale has been validated against polysomnography, shift work behavior, and endocrine responses (Kaida et al., 2006). In this sample, alpha was .77 at baseline and .81 at follow-up.

Alcohol use was assessed with the 10-item Alcohol Use Disorders Identification Test (Saunders et al., 1993), which assesses alcohol consumption, drinking behavior, and alcohol-related problems. Items are rated from 0 to 4 and totaled. This scale has acceptable psychometric and properties and predictive utility (Allen et al., 1997). In this sample, alpha was .64 at baseline and .53 at follow-up.

## 2.5 Data Analyses

Distributions were examined, and variables were Winsorized to reduce skew and eliminate outliers. Analyses compared pre-training to follow-up on changes in coping strategies and mental health variables on the sample of 22 officers who were assessed at both times. Given the small sample size and preliminary nature of this study, we present and describe both traditional significance tests and effect sizes. We conducted paired sample t tests with a 2-tailed alpha of .05. To correct for multiple statistical comparisons, we used a false discovery

rate (FDR) adjustment, which is a conservative approach for multiple comparison correction without the bias that the Bonferroni method introduces when making many comparisons (Benjamini & Hochberg, 1995). Effect sizes were also calculated as  $(M_{\text{follow-up}} - M_{\text{pre-training}}) / SD_{\text{pre-training}}$ . Effect sizes of 0.20, 0.50, and 0.80  $SD$  are traditionally considered small, medium, and large, respectively (Cohen, 1988). Secondary analyses also explored the effects of statistically controlling for officer age and gender; the results were essentially unchanged, so these variables were not covaried in the primary analyses.

### 3. Results

#### 3.1 Observations on the Prevention Program

The mean ratings of participant feedback suggested very positive endorsements of the program: “Overall, how beneficial do you think this training course has been for you?” ( $M = 4.14$ ;  $SD = 0.52$ ); “Do you think that if you found yourself in a very stressful or emotional situation, you could use the training from this program to stay focused and mindful of your surroundings?” ( $M = 4.43$ ;  $SD = 0.63$ ); and “Do you think this program will help you communicate or interact better with your significant other and/or loved ones?” ( $M = 4.11$ ;  $SD = 0.99$ ).

When interviewed after the program’s completion, all three of the trainers offered a positive assessment of the intervention. One noted, “I always tell [officers in training] that you don’t want this job to wear you down. I think that they need something so that they can download all of the stress that they have to face, and I think this program can do that. Giving them those tools is the best thing that we can do for them.” Another noted, “I’ve dealt with things like this, and I still do. Within my first couple years on the job, I went through an incident... I had to stay away from work for several days. It’s still hard to talk about. I wish we would have a program like this back then. This is very important. You [interviewer] have the perspective of a scientist, but I can tell you as an officer, this really fits what we need.”

#### 3.2 One-Year Follow-up: Change in Coping Strategies and Mental Health

Table II presents the means, standard deviations, pre-training to follow-up comparisons, and within-condition effect sizes for all measures, for the 22 participants who were followed over time. There were significant changes in several coping strategies from pre-training to 1-year follow-up. As hypothesized, the use of both positive reframing and humor increased significantly over time, with moderate to large effect sizes. Two other coping strategies typically considered adaptive (active coping, positive planning) increased with small to medium effects, but did not reach statistical significance. The coping strategy of self-blame, typically considered maladaptive, demonstrated a medium effect size decrease over time, but did not reach statistical significance. Social support had a very small, non-significant, increase over time.

Regarding mental health, as hypothesized, both anxiety and use of alcohol decreased significantly during the first year in the field, with medium effect sizes. Sleep quality showed a non-significant, small effect size decrease over the year. PTSD symptoms were

essentially unchanged from pre-training. Finally, depression symptoms showed a non-significant trend to increase over time, at a medium effect size.

#### 4. Discussion

The goals of this study were to modify, refine, and conduct a preliminary test of a program to improve coping and prevent stress and adjustment problems in junior urban police officers during their first year on active police duty. Both the implementation and outcome data offer preliminary support for this program to build resilience against stress and trauma reactions in urban police. This intervention's conceptual framework derived from theory, research, and the experiences of police officers. As such, the intervention's development benefitted from the input of key stakeholders, including the target audience, as we worked closely with police in the selection and description of the stressful scenarios, inclusion of optimal police tactics, and use of techniques from which officers might benefit after a stressful encounter, such as speaking with loved ones and expressive writing. Indeed, the notably positive participant feedback the intervention received is likely a reflection of our efforts to create a program specifically tailored to the needs of urban police officers. Finally, close work with the police academy and senior officers informed how and when the program could be conducted and also provided the ideal trainers—senior officers themselves.

The successful navigation of critical incidents is a matter of emotion regulation combined with professional skills—both aspects are necessary. It is this combination of emotional management and the enhancement of professional skills and preparations that makes this program unique. The program prepared the junior officers to professionally handle situations of threat by having them imaginably experience, under expert coaching, some of the very challenges they might face.

The program was not only designed to attenuate the emergence of maladaptive symptoms, but to also establish knowledge of, and greater facility in making use of, strategies to address officers' feelings and stressors outside of work. Thus, coping strategies and role playing exercises (e.g., speaking to one's significant other about fears and concerns) formed an important component of the intervention. As hypothesized, evidence as to the effectiveness of the intervention was demonstrated through changes in certain strategies. Specifically, the use of positive reframing and humor, strategies often considered to be adaptive, increased after the training program. These effects were medium to large in size and suggest that the officers may have shifted in how they cope with stress to more adaptive cognitive strategies, which are linked with greater resilience.

A core aim of the present intervention was to prevent the development of trauma-related symptoms and maladaptive behaviors among police officers during their first year in the field. As hypothesized, PTSD symptoms did not increase, and this lack of change in PTSD symptoms is meaningful, given the fact that rookie officers have been found to develop notable symptoms of mental health problems when they begin field work (Wang *et al.*, 2010), and this would have been expected in the dangerous and threatening urban environment in which our participants worked. Similarly, sleep quality has been a noted area of concern for officers (Rajaratnam *et al.*, 2011), and the maintenance of pre-deployment

sleep quality following the program, rather than expected sleep disruption (Neylan et al., 2002), might reflect increased resilience. Furthermore, the officers' overall anxiety significantly decreased one year after the training. Thus, our results might be interpreted as consistent with preventing the onset of PTSD symptoms and sleep problems while also lowering more general anxiety symptoms.

In addition, the training program also was followed by reduced alcohol consumption. Alcohol consumption is a potentially dangerous police behavior because it can lead to increases in violence, suicide, poor job performance, and health problems (Chopko *et al.*, 2013; Kohan & O'Connor, 2002; Violanti *et al.*, 2011). Furthermore, alcohol consumption may be a means of avoidant coping, blunting negative emotions such as anxiety (Stappenbeck *et al.*, 2014).

Interestingly, the officers reported some increase in depressive symptoms over the first year of field work, which, although non-significant, was medium in effect size. Although the mean depression scores remained well below clinically significant cut-score of 8 on the HADS (Bjelland *et al.*, 2002), suggesting that there was not a clinically serious increase in depressive symptoms, the effect does seem inconsistent with the general improvements in mental health found after the training program. Yet increases in depressive symptoms may be normative for new police officers in urban settings, and the increase in this sample may also stem from the fact that the officers were faced with additional external pressures, including the bankruptcy of the city and the downward adjustment of police officer contracts. Indeed, the departure of five officers within a year of academy training in this sample speaks to the difficulties faced by rookie officers that could trigger depressive symptoms. Our training program was tailored to prevent the unpredictability and uncontrollability of stressful field encounters, thereby preventing PTSD symptoms and decreasing anxiety. But the training was not designed to address the learned helplessness that can stem from broader pressures in police work, sadness that might accompany various losses, or guilt over not performing optimally. Experiences of helplessness, sadness, and guilt can all contribute to depressive symptoms. Future iterations of the program might benefit by including emotion regulation tools to mitigate emotions other than fear and anxiety.

A primary limitation of this preliminary feasibility study is that it lacked a control group, so we cannot rule out the possibility that changes over the year were due to factors other than our intervention. For example, responses to the intervention may depend on the initial resilience of the participating officers, which likely varies with the rigor of the officer recruitment and selection procedures. The initial tests of most new interventions are uncontrolled, however, and the next steps in testing this program's efficacy is a randomized study comparing it to training as usual, and then to an alternative condition that controls for various non-specific factors. Another limitation is that the sample was relatively small, although it consisted of all officers in the academy at the time, and half of the attrition reflects the reality that some officers left the police force in the first year. A third limitation is that this technique will presumably not help everyone. Some officers might lack the imaginal ability to make good use of it, and some could, in theory, become sensitized. Studies of individual differences in response to this intervention are needed. Finally, future

research should track officers' exposure to stressors and potentially traumatic events during the follow-up period because it is hypothesized that the prevention program will be most effective for those officers who actually experience stressful incidents in their work.

Despite these shortcomings, we believe that the development and preliminary test of this prevention program contributes valuable new information about the contemporary scientific understanding of trauma and resilience, practical methods to develop and test prevention programs with police, and tools to improve new officers' psychological, emotional, and tactical performance. Participating officers rated the program very positively, demonstrated an increase in adaptive coping behaviors, a decrease in both symptoms of anxiety and alcohol consumption, and appeared resilient against the development of PTSD symptoms and sleep problems. The finding of these effects one year after the program is valuable, particularly given the relatively brief nature of the intervention. In this time of increasing demand on the law enforcement community, but also increasing need to address trauma-related mental and behavioral health disorders among police, this streamlined and inexpensive intervention program offers a potentially valuable tool. Yet also of importance is that it is adaptable, portable, and fundamentally peer-driven. Thus, this prevention program appears to offer an exciting new platform for future inquiry into trauma, resilience, and police well-being.

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**Table I**

Nine Training Scenarios for the Trauma Prevention Training Program (in order of program presentation)

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1	Suspect in a vehicle that will not pull over, then the suspect abandons the vehicle and flees on foot.
2	An angry crowd of drunken men becomes aggressive.
3	A house fire starts and a crowd surrounds the building. A child might be inside the burning home.
4	A suspect wearing baggy clothing may have a weapon.
5	A child has been killed in a motor vehicle accident.
6	The officer investigates a home where several murders occurred. The location of the murderer(s) is unclear.
7	A psychotic man is in a local store and refuses to leave.
8	After arresting a suspect, the officer's partner physically abuses the suspect.
9	Officers respond to a domestic violence scene with both husband and wife become highly aggressive.

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Changes in coping strategies and mental health from pre-training to 1-year follow-up (n = 22).

**Table II**

Variables	Pre-Training M (SD)	Follow-up M (SD)	t	p	Effect Size
<i>Coping strategies</i>					
Positive reframing	3.38 (1.24)	4.14 (2.03)	2.51	.02	0.61
Humor	3.15 (0.91)	4.00 (1.90)	2.49	.02	0.93
Active coping	4.14 (1.96)	4.45 (1.87)	0.66	.52	0.16
Positive planning	3.64 (1.22)	4.14 (2.32)	1.16	.26	0.41
Self-blame	2.57 (0.75)	2.39 (0.51)	-1.65	.12	-0.24
Social support	28.27 (4.24)	28.86 (4.05)	0.67	.51	0.14
<i>Mental health measures</i>					
PTSD symptoms	21.59 (5.22)	21.82 (5.17)	0.18	.86	0.04
Anxiety	3.10 (1.92)	2.30 (1.78)	-2.49	.02	-0.42
Depression	0.82 (0.85)	1.41 (1.50)	1.93	.07	0.69
Sleep disruption	6.27 (2.68)	6.82 (2.79)	1.28	.21	0.21
Alcohol use	5.25 (2.96)	4.10 (1.49)	-2.20	.04	-0.39

Note: Reported p-values are from pair t-tests; all p-values < .05 remained significant after correction for multiple comparisons with false discovery rate (corrected p-values .04). Effect sizes for each variable were calculated as  $d = (M \text{ at follow-up} - M \text{ at pre-training}) / SD \text{ at pre-training}$ .