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Law enforcement suicide: a review

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To cite this document:

John M. Violanti, Sherry L. Owens, Erin McCanlies, Desta Fekedulegn, Michael E. Andrew, (2019) "Law enforcement suicide: a review", Policing: An International Journal, Vol. 42 Issue: 2, pp.141-164, <https://doi.org/10.1108/PIJPSM-05-2017-0061>

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# Law enforcement suicide: a review

Law  
enforcement  
suicide

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Received 22 May 2017  
Revised 5 December 2017  
Accepted 28 December 2017

## Abstract

**Purpose** – The purpose of this paper is to provide a review of law enforcement suicide research from 1997 to 2016. **Design/methodology/approach** – The PRISMA systematic review methodology was implemented. A SCOPUS search identified a total of 97 documents. After applying all exclusion criteria, the results included a list of 44 articles in the review.

**Findings** – Overall, studies investigating law enforcement suicide rates show conflicting results, with some studies showing lower suicide rates among law enforcement, some showing higher rates, and some showing no difference to comparison populations. Recurring research themes were lack of an appropriate comparison group, and small statistical power, particularly for minority and female officers. Stressors related to suicide among police included lack of organizational support, traumatic events, shift work, stigma associated with asking for help, or problems associated with fitting in with the police culture. Problems associated with domestic relationships and alcohol use were commonly mentioned as precursors to suicide or as correlates of suicidal ideation and were hypothesized to arise from stressful working conditions.

**Research limitations/implications** – Some limitations in law enforcement suicide research include the lack of theory, under-reporting of suicides, and guarded survey responses from police officers. Future directions in police suicide research include investigating etiological factors such as past adverse life and family experiences, social-ecological variation in suicide, or differences in suicide rates within the law enforcement occupation.

**Practical implications** – Police work, given chronic and traumatic stress, lack of support, danger, and close public scrutiny is a fertile occupation for increased suicide risk. Awareness of the scope of the problem and associated risk factors can help to initiate prevention programs.

**Originality/value** – This paper provides a long-term review of literature regarding police suicidality, with suggestions for research and prevention.

**Keywords** Prevention, Suicide, Law enforcement, Etiology, Ideation

**Paper type** General review

## Introduction

Law enforcement occupations confer a variety of stressful and/or traumatic exposures. Exposures ranging from night shift work to experiencing life-threatening situations may elicit negative psychosocial outcomes (Stuart, 2008; Chae and Boyle, 2013). Namely, some evidence indicates that policing and other law enforcement activities are associated with

Disclaimer: the authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

This work was supported by the National Institute for Occupational Safety and Health (NIOSH), Contract No. 200-2003-01580 and Grant No. 1R01OH 009640-01A1. The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the National Institute for Occupational Safety and Health.



suicidal behaviors. Furthermore, access to lethal weapons provides an immediate means of acting upon suicidal behaviors (Violanti, 1997). Given that these risk factors are inherent in this occupation, there is reason to believe that individuals in these positions may be at increased risk of suicide. However, few studies have thoroughly examined law enforcement suicide, and those that have generate conflicting results (Hem *et al.*, 2001; Chae and Boyle, 2013; Chopko *et al.*, 2014). Until we can establish credible and comprehensive databases on law enforcement suicide, more evidence is needed using a variety of methodological designs. A review will help to provide evidence about the etiology, rates, and correlates of law enforcement suicidality. The present study has two aims: first, to provide a PRISMA-based review of the literature; and second, to provide a description of suicide prevention strategies.

### Methods

The review was conducted using PRISMA 2015 guidelines, which emphasize standardization of review articles in order to provide quality information to researchers and practitioners.

#### *Inclusion and exclusion criteria*

Only peer-reviewed scientific literature was assessed in this review. Books, theses, and dissertations were excluded from our literature search. Additionally, peer-reviewed editorials or commentaries that did not provide data tables on suicide-related outcomes were excluded.

#### *Search terms*

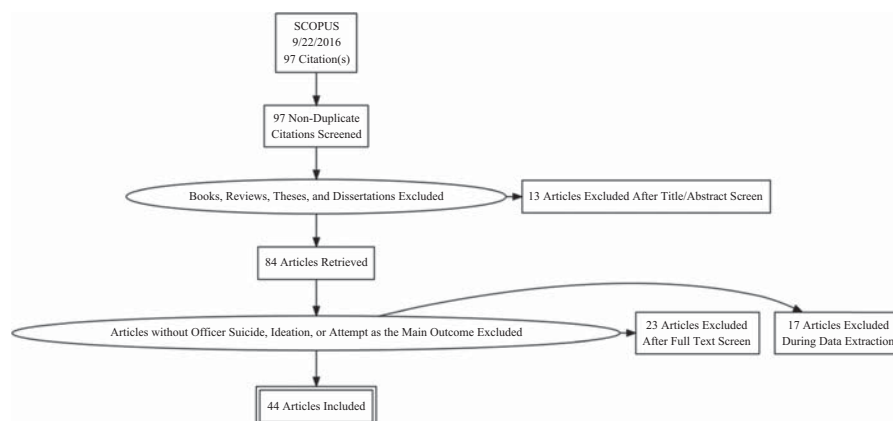
The search terms were reviewed by the research team to ensure relevance and replicability. The team included the terms “law enforcement” in addition to “police” to ensure that all classifications of law enforcement were included in the study. Additionally, the terms “suicide” and “mortality” were paired with each of the law enforcement classifications so that all aspects of suicidality, including suicide ideation and attempt, were also captured by the search. Only English language articles were included.

#### *Database*

SCOPUS was deemed to be the most appropriate database for this study due to its breadth of coverage of both occupational and psychological research.

#### *Electronic search*

An electronic search was conducted on September 22, 2016. The search identified 97 documents that featured a combination of “law enforcement AND suicide or mortality”, or “police AND suicide or mortality” in the title between the years 1997-2016. These search terms included the terms suicidal ideation, suicide attempt, and suicide completion. Of these, 84 were peer-reviewed articles or reviews. Articles were deemed irrelevant if the search terms were not paired in this manner, or if the article used police records to identify suicides for a study of another population, leaving 60 relevant articles. Articles with a focus on “suicide by cop” or “law enforcement assisted suicide” were also excluded, unless it resulted in the death of the officer. A single qualitative study was also excluded given the guidelines of the PRISMA review. Another 16 articles were excluded during data extraction because one was qualitative in nature, while the others did not measure police suicide as the main outcome. One article was not found after multiple attempts to locate it, resulting in its exclusion. A final total of 44 articles were included in the review (Figure 1 and Table I).



**Figure 1.**  
PRISMA method of  
study selection and  
inclusion

## Results

Table I provides a review of law enforcement suicide articles published from 1997 to 2016. Of the 44 articles reviewed, 10 included original research studies from non-US samples. A total of 18 original research articles investigated suicide as an outcome and 14 articles investigated suicidal ideation, with some of these articles investigating a combination of both. A majority of studies included case studies, case series, or random samples with fewer cohort or surveillance studies. An additional nine articles were classified as literature reviews or meta-analyses. Several themes emerged across studies, and these are addressed in the following sections.

### *Theoretical considerations*

There have been various proposed theoretical explanations for police suicide. Bonafacio (1991) suggested a psychodynamic approach based on an officer's exposure to trauma, crime, human misery, and death, which exacerbate feelings of inadequacy present in the officers' personality, causing overwhelming feelings of self-loathing. Violanti (1997) proposed that acquisition and maintenance of the police role restricts cognitive flexibility and the use of other life roles impairing officers ability to deal with psychological distress. As a result, the potential for suicide or ideation may increase. Bartone (2013) developed a theoretical taxonomy for suicide in military personnel that may be applicable to police officers. He suggested that there are four sets of factors associated with suicide including, formative factors, background factors, precipitating factors, and enabling factors may contribute to alienation and powerlessness, which may be key in precipitating suicide. Rouse *et al.* (2015) employed a psychological autopsy approach and found that pre-hire factors were the primary risk factors for suicide among police, thus possibly negating the impact of police work socialization as a suicide factor.

*Strain theory.* Strain theory suggests that persons react negatively to situations that produce stressors and push them in different directions (Agnew, 2001). General strain theory focuses on opposing forces in the integration of the individual and their environment that can lead to aversive behavior and strain. Zhang (2005) proposed that strain theory may explain suicide as a solution to psychological suffering brought about by situations that increase strain in individuals who feel alienated from society/isolated from the environment. In contrast, persons who are integrated into society may be at lower risk of suicide even when confronting strain (Zhang, 2005). Furthermore, Arter (2013) found that the negative and stressful environment that police officers experience leaves them feeling cynical and

**Table I.**  
Description of law enforcement and suicidality studies

Author	Research type	Population	Predictor variable(s)	Predictor measure(s)	Outcome measure	Method of suicide	Summary of findings
<i>Suicide</i> Arias <i>et al.</i> (2008)	Case study	1 active duty and 1 retired officer in the USA			Suicide	Suicide by Cop	Officers had similar profiles to civilians who engaged in suicide by cop. Both instances involved substance use and both threatened officers with unloaded firearms
Barron (2010)	Retrospective investigation of death records	125 New South Wales non-retired officers who died unexpectedly	Demographic variables		Suicide	Firearms (43%)	Of the 41 officers who committed suicide (out of 125 deaths), 77% had a mental illness, 71% were Catholic, 66% smoked, 53.5% used alcohol/drugs at time of death, and 51.5% were referred for psychological care
O'Hara and Violanti (2009)	Convenience sample	News reporting of 206 police suicides			Suicide	Firearm (96.1% in 2008, 91.7% in 2009) 4.8% overdoses in 2009	Over 90% of officers committing suicide were male in both years. In both years, 40% of officers were between ages 35-44. In 2009, 27.1% of officers were over age 50, while only 15% were in 2008, which corresponds to a greater number of years in service in 2009 (17 years) compared to 2008 (12.2 years)
Hartwig and Violanti (1999)	Retrospective study	52 suicides in the North Rhine-Westphalia Germany Police (NWR) Department	Demographic variables		Suicide (rate per 100,000)	Firearm (87%), compared to 9% of German suicides	Overall, officers had a rate of 19.6/100,000 suicides. Unpromoted veteran officers were more likely to commit suicide at the worksite. Suicides peaked bimodally at ages 21-30 and 51-60. Personal/relationship problems occurred in 64% of cases. Women were overrepresented as suicide victims in the 26-30 age group
Hem <i>et al.</i> (2001)	Systematic review				Suicide		Nationwide studies do not show higher suicide rates among police officers than other occupations, but varying results are shown at more local levels. Hem <i>et al.</i> cites methodological issues, such as small sample sizes, as preventing a clearer understanding of police suicide rates

(continued)

Author	Research type	Population	Predictor variable(s)	Predictor measure(s)	Outcome measure	Method of suicide	Summary of findings
O'Hara <i>et al.</i> (2013)	Convenience sample	News reporting of 92 police suicides			Suicide	Firearm (86.9%) Hanging (4.3%)	Of the 92 suicides reported, 83% were personal problems or unknown, 13% experienced legal problems, 8% disciplinary, and 11% were veterans
Kapusta <i>et al.</i> (2010)	Retrospective cohort	Federal Austrian Police Force members who committed suicide between 1996 and 2006			Suicide	Firearm (77.8% total: 45.5% with service gun, 32.2% with private gun) Hanging (4.4%) Suicide notes left: (30.8%)	Male officers had a comparable suicide rate to the male Austrian working population by age (30.5/100,000). Female officers had a much lower rate of 1.8/100,000 compared to 12.5/100,000 in Austrian women
Lindsay (2008)	Case series	23 officers committing suicide in a northeastern US police department between 1960 and 1993	Descriptive information about the incidents		Suicide		Data collection prior to 1980 may have been poor. A cluster of 9 officer suicides occurred between 1987 and 1993. All 9 officers were experiencing legal or relationship problems
Mishara and Martin (2012)	Quasi-experimental design	4,178 Montreal police officers	"Together for Life" suicide prevention program	Suicide training for all officers, supervisors, and union representatives	Suicide (rate per 100,000)		Suicide decreased by 79% in the intervention group Montreal PD (30.5 to 6.4 per 100,000) over 12 years, while other Quebec police departments experienced a nonsignificant increase (26.0 to 29.0 per 100,000)
Schmidtke <i>et al.</i> (1999)	Survey of Police Districts	135,068 officers in 16 German police districts (Landers)			Suicide	Firearm (66.71%)	Landers' past 5-year suicide rates varied from 12.7 (Saarland) to 43.0 (Hamburg) per 100,000. Rates are similar to the general white male German population

*(continued)*

Table I.

Law  
enforcement  
suicide

Table I.

Author	Research type	Population	Predictor variable(s)	Predictor measure(s)	Outcome measure	Method of suicide	Summary of findings
Loo	Meta-analysis	Officers worldwide			Suicide (rate per 100,000) Suicidal ideation		Regional variation in suicide rates, with the Americas and Europe reporting higher rates than Caribbean or Africa. Rates varied from 0 to 58.3 (Kansas City) per 100,000, but many rates were taken from non-scientific sources. Officers with PTSD were more likely to report an attempt
Marzuk <i>et al.</i> (2002)	Retrospective cohort	668 NYC Police Officer Suicides from 1977 to 1996			Suicide (rate per 100,000)	Firearm (93.8%)	A peak in officer suicides occurred in 1986-1987 and a smaller peak occurred in 1994. Male officer suicide rate (14.9/100,000) was similar to city's male population. Female officer rate was four times higher than general female population (13.1 vs 3.4 per 100,000)
Tiesman <i>et al.</i> (2010)	Retrospective cohort	2,280 NYC law enforcement deaths			Worksite Suicides (rate per 100,000)		Workplace suicides accounted for 5% of all officer workplace mortality between 1992 and 2002. The rate (0.6 per 100,000) was much lower than other reports that used non-workplace reports as well
Violanti <i>et al.</i> (1998)	Retrospective cohort	2,953 Police officers from 1950 to 1990			Suicide (standardized mortality ratio) Suicide-Homicide		Mortality from suicide was 53% higher than expected and comparable to the general white male population
Violanti (2007)	Case series	29 Officers committing suicide-homicide (2003-2007)			Suicide-Homicide	Service Firearm (90%)	News reports were gathered to gain this information. Among homicide-suicide perpetrators, 70% were 40 or younger, 52% patrol officers, 76% in local departments. Victims were overwhelmingly female romantic partners, yet 5 victims were males killed by female officers. Author suggests that disciplinary action against intimate partner violence should be more stringent and officers referred for psychological help

(continued)

Author	Research type	Population	Predictor variable(s)	Predictor measure(s)	Outcome measure	Method of suicide	Summary of findings
Violanti (2010a)	Surveillance Data	National Occupational Mortality Surveillance (NOMS), 1984-1998	Comparison of 1,148 police suicides to firefighters and military personnel		Suicide (PMR)		PMRs for all officers were greater than firefighters. Minority officers had 4.5 times and minority women had 12 times the number of suicides compared to firefighters. By state, GA, NJ, OH, and PA had the highest percentages of police suicides
Violanti <i>et al.</i> (2011)	Retrospective cohort	3,228 Officers from the Buffalo Police Department			Suicide rates per 100,000		Officers with $\leq 19$ years of service or who worked in the 1950s were more likely to commit suicide. Retired officers were less likely to commit suicide than active duty. Suicide rates were lower than the general population
Violanti <i>et al.</i> (2012)	Retrospective cohort	298 Police Depts. with 119,634 officers From the US Public Safety Officers Database			Annual suicide rates per 100,000 (using past 10 year data)	Firearm (91.4%)	Of 298 departments, 86 reported a suicide. There were 15.3/100,000 suicides reported annually. The highest rates were reported to occur in departments with 50 or fewer employees (43.8/100,000)
Violanti <i>et al.</i> (2013)	Retrospective cohort	National Mortality Surveillance Data	Law enforcement occupation, race/ethnicity, gender	Comparison of law enforcement officers to other working populations of the same race/ethnicity and gender	PMRs		Caucasian law enforcement and corrections officers, as well as Caucasian, African American, and Hispanic detectives were more likely to die by suicide compared to working populations of the same race/ethnicity. No relationships were observed for female officers, which may be due to small sample sizes. Detectives, criminal investigators, and officers had the highest suicide risk of those examined

(continued)

Law enforcement suicide

Table I.

Table I.

Author	Research type	Population	Predictor variable(s)	Predictor measure(s)	Outcome measure	Method of suicide	Summary of findings
Violanti (2010b)	Surveillance data	National Occupational Mortality Surveillance (NOMS), 1984-1998	Comparison of 2,184 police deaths to firefighters and military personnel		Unspecified deaths that may have been misclassified suicides		Caucasian male officers had a 17% increased risk of having a misclassified death than expected. Female officers and African American female officers had 198% and 344% increased risks, respectively. These ratios were greater for police officers than firefighters, but not military officers. Male officers comprised 98% of the sample, while 82% of murder victims were female. A total of 68% were the wives of officers, and 70% of cases had a history of intimate partner violence. Cases occurred most frequently in 2009 and 2010 and among local depts (93%)
Klimoff <i>et al.</i> (2015)	Case series	43 officers committing murder-suicides	Descriptive information about the incidents		Murder-suicide	Service Firearm (98%)	
<i>Suicidal ideation</i>							
Bishopp and Boots (2014)	Convenience sample	1,140 officers in Austin, Dallas, and El Paso Texas	Strain (main predictor), mediators: depression, anger, burnout, social interactions, alcohol consumption	Original 10-item strain scale, Self-rating Depression Scale, Modified Aggression Scale, original PWES	Suicidal ideation (Violanti 2004 single yes/no question)		Depression and anger were greater predictors of suicidal ideation in female vs male officers, although it was significant in both. Anger and burnout fully mediated the relationship between strain and ideation in male officers. Strain was associated with ideation in female officers. A limitation of this study was the low response rate (25%)

(continued)

Author	Research type	Population	Predictor variable(s)	Predictor measure(s)	Outcome measure	Method of suicide	Summary of findings
Burke and Milkelsen (2007)	Convenience sample survey	766 Norwegian police officers	Demographics, work and emotional demands, burnout, work outcomes, coping resources	Copenhagen Psychosocial Questionnaire (COPSOC), MBI	Paykel's Suicidal Feelings in the General Population (Suicidal Ideation); Suicide attempt question General Health Questionnaire-Suicidal Ideation (GHQ-SI)		Single officers were more likely to experience suicidal ideation ( $p < 0.05$ ). Burnout and work and emotional demands were associated with suicidal ideation ( $p < 0.05$ ). Utilizing coping resources was negatively associated with ideation ( $p < 0.05$ )
Chopko <i>et al.</i> (2014)	Convenience Sample survey	193 active-duty officers from a Midwestern US state	Subjective Stress, depressive symptoms, PTSD symptoms, harmful or excessive alcohol use	Critical Incident History Questionnaire; Posttraumatic Stress Disorder Checklist (PCL-S); PHQ-9 (DSM-IV); Posttraumatic Growth Inventory; Alcohol Use Disorders Identification Test (AUDIT)	General Health Questionnaire-Suicidal Ideation (GHQ-SI)		A total of 8.8% of officers experienced ideation. Only depressive symptoms as measured by the Patient Health Questionnaire (PHQ-9) significantly predicted suicidal ideation in this sample
Öncü <i>et al.</i> (2008)	Pilot study (convenience sample)	205 physicians, teachers, and police officers in Ankara, Turkey			Attitudes toward suicide scale (ATTS)		Police officers rated suicide more "incomprehensible" than medical students did ( $p < 0.05$ ), and rated suicide as a "taboo" most frequently compared to all occupations
Pienaar and	Stratified random	1,781 South African	Demographic variables		Suicidal Ideation (ASIQ*)		A total of 8.3% of officers exhibited suicidal ideation. Factors associated with high ideation (ASIQ > 31 $n = 47$ ) were: Black and Indian race,

(continued)

Table I.

Table I.

Author	Research type	Population	Predictor variable(s)	Predictor measure(s)	Outcome measure	Method of suicide	Summary of findings
Rothmann (2005)	sample survey	Police Service officers					alcohol consumption (> 8 drinks per week), lower rank, Grade 12 education or lower, a medical condition that may impair policing, and a previous suicide attempt. Officers working in the Gauteng, Limpopo, and Free State provinces also exhibited higher than expected suicidal ideation
Pienaar and Rothmann (2005)	Stratified random sample survey	1,794 South African Police Service officers		Police Stress Inventory (PSI), Personality Characteristics Inventory (PCI), Coping Orientation to Problems Experienced (COPE)	Suicidal Ideation (ASIQ*)		Officers with high ideation scores were less likely to turn to religion (Cohen's $d = 0.57$ ), use approach coping (Cohen's $d = 0.74$ ), be emotionally stable (Cohen's $d = 0.74$ ), and express conscientiousness (Cohen's $d = 0.89$ ). They were more likely to use avoidance coping (Cohen's $d = -0.46$ )
Ramos and Lester (2009)	Convenience sample survey	150 US officers (75 east coast, 75 west coast)	National Police Suicide Foundation training	Physical location (East or West Coast)	Suicide Attitude Questionnaire (Short-form)		West coast officers were more likely to have received prior suicide prevention training ( $p = 0.001$ ) and significantly less likely to report positive views toward suicide than east coast officers ( $p = 0.003$ )
Smith <i>et al.</i> (2016)	Convenience sample survey	273 Military Police from 2 US Air Force Bases	Five factors of Mental Toughness: Negative Mindset, Positive Mindset, Confidence, Achievement, and Health Behaviors	Mental Toughness Psychological Skills Profile (MTSPSP)	Suicidal Ideation		Low self-confidence was significantly associated with suicide ideation in the adjusted model ( $\beta = -0.18, p = 0.016$ ), but was fully mediated by social support ( $\beta = -0.17, p = 0.033$ )

(continued)

Author	Research type	Population	Predictor variable(s)	Predictor measure(s)	Outcome measure	Method of suicide	Summary of findings
Steyn (2012)	Random sample	217 South African Police Service officers, Limpopo Province	PTSD	Posttraumatic Diagnostic Scale	ASIQ		Female officers had higher PTSD symptoms for intrusive memories, avoidance & numbing, and impairment but the same levels of hyperarousal as male officers. Hyperarousal ( $p < 0.001$ ) and avoidance & numbing ( $p = 0.024$ ) were significant predictors of ideation in males. Intrusive memories ( $p < 0.001$ ) and impairment ( $p = 0.006$ ) were predictors of ideation in female officers, explaining nearly 46% of the variance in ideation
Steyn <i>et al.</i> (2013)	Random sample	217 South African Police Service officers, Limpopo Province	PTSD	Posttraumatic Diagnostic Scale	ASIQ		The hyperarousal component of the posttraumatic diagnostic scale was the only component significantly associated with ideation ( $p < 0.05$ )
Violanti (2004)	Random sample	115 Officers from a mid-sized urban department	PTSD, alcohol use	IIES, AUDIT	19-item scale for suicide ideation (SSI)		Increased alcohol use was associated with 4.45 times greater odds of suicidal ideation. Increased trauma were associated with 5.72 times greater odds of suicidal ideation as well
Violanti <i>et al.</i> (2006)	Convenience Sample	62 suicide ideation phone calls received by the Cop 2 Cop program, of officers working near or at the 9/11 terrorist attack			Suicidal ideation		The relative risk of suicide ideation calls was 1.65 times greater after 9/11 than before (95% CI: 0.5-5.04), and 10% of calls were from retired officers. Changes in job status, presence of affective disorder, and firearm access were frequently reported

*(continued)*

Table I.

Law  
enforcement  
suicide

Table I.

Author	Research type	Population	Predictor variable(s)	Predictor measure(s)	Outcome measure	Method of suicide	Summary of findings
Violanti <i>et al.</i> (2008)	Random sample	115 Officers from a mid-sized urban department	Shiftwork, Depression, PTSD	Dominant shift worked (Afternoon, Day Night) for the past 5 years CES-D* Scores, Impact of Events Scale (IES) CES-D* score $\geq 16$	Suicidal Ideation (single question adopted from Beck Suicide Ideation Scale)		Women with CES-D scores $\geq 7$ were more likely to experience ideation if working day shift (PR: 2.16) and less likely if working afternoon shift (PR: 0.58). Among those with high IES scores, women on night shift were less likely to experience ideation (PR: 0.39)
Violanti <i>et al.</i> (2009)	Random Sample	115 Officers from a mid-sized urban department	Depression		Suicidal Ideation (single question adopted from Beck Suicide Ideation Scale)		CES-D scores were associated with ideation. This relationship was strongest in female officers. When the interaction between depression and marital status was evaluated, ideation was strongest for unmarried female officers. Education was inversely associated with ideation in male officers, but increasing age and service were in women
Chae and Boyle (2013)	Narrative literature review				Suicidality		Fitting into the police culture can generate stress, as can organizational stressors. This stress is often alleviated through alcohol consumption, and this and other stressors can increase chances of suicidal ideation, attempt, and completion. Among male officers, stressful partnerships often increased the likelihood of measured suicide outcomes. However, female officers appear to benefit from marriage
Stanley <i>et al.</i> (2016)	Systematic review	Police and first responders			Suicidal ideation, attempt, and suicide		Suicidal ideation rates vary widely by sample. A large variation in measurement techniques and study designs may yield disparate suicide rate outcomes. However, officers in small departments and officers who also serve as EMTs may be at an elevated suicide risk

(continued)

Author	Research type	Population	Predictor variable(s)	Predictor measure(s)	Outcome measure	Method of suicide	Summary of findings
Stuart (2008)	Narrative literature review				Suicidality		Large variation in suicide rates can occur when including different years, especially in small samples. Comparison groups also vary by study. Organizational stressors and traumatic events can stress police, but mandatory debriefings have not been shown to decrease PTSD outcomes. Stuart suggests the Law Enforcement Officer Stress Survey as a psychometric screening tool for officers
<i>Expert opinions</i>							
Miller (2005)	Expert opinion						Miller believes that suicidal ideation is very common among officers. Officers exhibiting verbal and behavioral cues to suicide risk should be treated by prevention and utilization of psychological health organizations. An intervention should define the problem, ensure officer safety, provide support, examine alternatives, make a plan, and obtain commitment from the suicidal officer
Mohandie and Hatcher (1999)	Expert opinion		Employee Risk Investigation Model: 5-category assessment of violence risk		Suicide risk and other workplace violence risks		Police culture can increase suicide risk in 5 ways: violence exposure/violence as problem-solving measure, reliance on inner strength, reactivity, alcohol abuse/dependency, and need for social approval. Suicide research should integrate violence in the workplace research, particularly the Employee Risk Investigation Model

(continued)

Table I.

Table I.

Author	Research type	Population	Predictor variable(s)	Predictor measure(s)	Outcome measure	Method of suicide	Summary of findings
Violanti (1997)	Expert opinion				Suicidality		Officers exhibit constrictive cognitive processing which hinders thinking about alternatives to suicide, and may not be differentiated from the external sources of aggression. Maintaining police identity can generate relationship stress. Organizational factors and personality factors should also be assessed for the way they contribute to suicide and suicide risk
Violanti <i>et al.</i> (2008)	Expert opinion		Demographic variables		Suicide and suicidal ideation		Defining an appropriate comparison group for police suicides is paramount, but not always achieved. Police suicides are often misclassified. As such, stressful job exposure may lead to substance use and related accidental deaths. Choosing standardized mortality ratios or proportionate mortality ratios (PMRs) can improve understanding beyond or instead of ratios and rates
Violanti <i>et al.</i>	Expert opinion		A proposed screening tool for suicide risk	Implicit Association Test (IAT)			The IAT assesses the respondent's identification with death. Violanti <i>et al.</i> proposes that the IAT can be a useful predictor of suicide risk in police, who are reluctant to admit and/or address suicidal thoughts

**Notes:** \*ASIQ, Adult Suicide Ideation Questionnaire; CES-D, Centers for Epidemiological Studies Depression Scale; IES, Impact of Events Scale; PMR, Proportional Mortality Ratio; PTSD: Posttraumatic Stress Disorder

isolated from society, which may exacerbate strain. In addition, a lower level of societal integration associated with police cultural values may tend to isolate officers from the support they need in psychological crisis situations, increasing the risk of suicide. Violanti *et al.* (in press) found that social avoidance by officers lowered social support and increased the risk of subclinical cardiovascular disease. Social avoidance may affect the level of support for police because it interferes with their establishing a helping network. Bishopp and Boots (2014) applied strain theory to determine gender differences associated with suicidal ideation among police officers. Findings indicated that strain has a positive and direct effect on male but not female officer's suicidal ideation.

*Interpersonal theory.* The interpersonal theory of suicide is applicable to police suicide as well (Van Orden *et al.*, 2010). According to this theory, suicidal behavior may emerge in response to repeated exposure to physically painful and/or fear-inducing experiences, opponent processes in life such as strain, and a feeling of thwarted belongingness. In essence, this theory may apply to police officers who are frequently exposed to traumatic and fearful experiences and who often experience a sense of isolation from society, which may result in their feeling that they do not belong. Consistent with interpersonal theory, fear of death plays an important part in suicidal behavior. Ribeiro *et al.* (2014) noted that the capability for suicide is characterized by a sense of fearlessness of death. Police officers frequently encounter death in their work and may become apathetic to death, making it easier for them to take their own life. According to Henry (2014), social processes within the police culture suppress emotions and protect officers from anxiety about death. Violanti, Mnatsakanova and Andrew (2013) examined implicit association testing (IAT) among police officers based on identification with death. Results suggested that officers had differing levels of identification: slight (18.5 percent), moderate (32.3 percent), and strong (29.2 percent).

#### *Mental and behavioral health*

*Alcohol and substance use.* Nearly every expert opinion or review discussed alcohol use as an associated risk factor in officer suicide (Mohandie and Hatcher, 1999; Hem *et al.*, 2001; Miller, 2005; Violanti *et al.*, 2008; Stanley *et al.*, 2016). Drinking in law enforcement is a culturally accepted bonding practice (Violanti, 1997). Alcohol is also accepted as a coping strategy, and is often consumed heavily and frequently in law enforcement occupations (Violanti, 2004a, b). It is thus not surprising that alcohol was cited in several suicide case series (Cavanagh *et al.*, 2003; Violanti, 2007; Barron, 2010). Studies of alcohol use and suicidal ideation have found problematic alcohol use to be a correlate of suicidal ideation (Bishopp and Boots, 2014; Chopko *et al.*, 2014). For example, in a study by Violanti (2004a, b), increased alcohol use was associated with 4.45 times greater odds of suicidal ideation (OR = 4.45, 95% CI: 1.42-18.5). Pienaar and Rothmann (2005) similarly found that consuming over eight alcoholic drinks per week was associated with a high suicidal ideation score on the Adult Suicide Ideation Questionnaire. Addressing the culture of drinking in police officers without imparting judgment may be an important suicide prevention goal.

*Domestic/personal problems.* In a topic related to alcohol use, domestic problems were often cited in case series and retrospective cohorts of law enforcement suicide (Lindsay, 2008; Violanti, 2007; Stanley *et al.*, 2016). Domestic or personal problems were observed in the Klinoff *et al.* (2015) reference for psychological help, as these may save the lives of both victims and perpetrators. Suicide-homicide was the most extreme form of domestic violence investigated. A case series of 29 officers committing suicide-homicide revealed that 83 percent of victims were women killed by male perpetrators, although five men were killed by two female perpetrators (Violanti, 2007). These situations overwhelmingly involved domestic or past domestic partners. Some evidence suggests that relationship strain varies

by the officer's gender. Chae and Boyle's (2013) narrative literature review indicated that marriage among female police officers was a correlate of positive mental health. Conversely, contentious domestic relationships were cited as a correlate of posttraumatic stress disorder (PTSD), suicidal ideation, and suicide completion for men (Chae and Boyle, 2013).

Interpersonal problems may be the consequence of existing emotional problems that increase the chance of suicide. This idea is supported by narrative literature reviews that suggest that suicide is a sign of poor self-image and an expression of aggression against self (Violanti, 1997; Miller, 2005). Similarly, a study of military police reported that suicidal ideation was associated with low self-confidence, which was fully mediated by social support (Smith *et al.*, 2016).

*PTSD.* Police officers are frequently exposed to traumatic events such as death, being shot at, and physical assault, and rates of PTSD among police officers have been reported to be as high as 15 percent (Marmar *et al.*, 2006). Furthermore, among officers, PTSD is associated with a number of negative psychological and biological effects such as depression, suicidal ideation (Maia *et al.*, 2007; Martin *et al.*, 2009; Sareen *et al.*, 2007; Gupta, 2013). Research on other populations has provided additional evidence of this association. A study by Gradus *et al.* (2010) found that persons with PTSD had 5.3 times the adjusted rate of death from suicide than persons without PTSD. US Army personnel who died by suicide between 2001 and 2009 were 13 times more likely to PTSD compared to all Army personnel in the same time period (Black *et al.*, 2011). Conner *et al.* (2013) Patients with PTSD and any psychiatric comorbidity had 2.6 times the rate of suicide than those with no psychiatric diagnoses. LeardMann *et al.* (2013) found an 80 percent increase in suicide among people with PTSD.

#### *Demographics*

*Women officers.* Policing is a male-dominated occupation, and research studies often reflect this gender disparity. The female officer suicide rate was elevated among New York City officers from 1977 to 1996 (Marzuk *et al.*, 2002). Similarly, a study of the National Occupational Mortality Surveillance (NOMS) data set from 1984 to 1998 reported that female officers had nearly double (198 percent) the risk and African American female officers had a 344 percent increased risk of suicides compared to general US population (Violanti, Mnatsakanova and Andrew, 2013; Violanti, Robinson and Shen, 2013). However, fewer than half ( $n = 23$ ) of the US states participate in these surveys, increasing the potential for selection bias. Higher rates have also been reported in Germany where suicides among female officers aged 26-30 were overrepresented in a German police department (Hartwig and Violanti, 1999). In contrast, a study of the Federal Austrian Police Force found a much lower rate of female officer suicides compared to Austrian women in the general population (Kapusta *et al.*, 2010).

Women as a subgroup suffer more frequently from depression, a mental health correlate of suicide and suicidal ideation (Pratt and Brody, 2014). Studies of female law enforcement officers reflect this general demographic trend (Steyn, 2012). In a medium-sized Northeast US police department, the prevalence of depression was higher among female than male personnel (12.5 percent vs 6.2 percent) (Violanti *et al.*, 2009). Moreover, for each standard deviation increase in depressive symptoms, the prevalence ratio (PR) of suicidal ideation increased by 73 percent in female personnel (PR = 1.73, 95% CI = 1.32-2.27), although this trend was also evident in male officers (PR = 1.67, 95% CI = 1.21-2.30) (Violanti *et al.*, 2009). In another sample, intrusive memories and impairment explained 46 percent of the variance in suicidal ideation among female officers (Pienaar and Rothmann, 2005).

A cross-sectional study by Violanti *et al.* (2008) assessed the association between shift work and suicidal ideation among police personnel. Among policewomen with Centers for

Epidemiologic Studies-Depression (CES-D) scores  $\geq 7$ , suicidal ideation was highest among women who worked more day shift hours. Dormann and Zapf (2002) argued that social stressors for policewomen such as shift work, social isolation, conflict with colleagues, social animosity, or negative group climate have strong effects on strains, and are relatively strong predictors of depression. Additionally, day shifts may increase concerns about childcare and other family obligations. No relationships were observed among policemen. Information about suicide and shift work among police is limited, and should be investigated across various settings.

*Minority officers.* Non-white officers are another group with limited information about suicide rates. White police officers comprise the majority of USA, German, and Nordic police officers, but this is not the case internationally (Loo, 2001; Burke and Mikkelsen, 2007). Additionally, few studies have been completed within majority non-white countries. Moreover, the implications of “minority status” within a region regardless of race/ethnicity may confer additional risks or benefits regarding suicidality. As such, one study of proportionate mortality rates (PMRs) among law enforcement officers in US states found a significantly high suicide PMR for Hispanic male law enforcement officers compared to the Hispanic male working populations (PMR = 244,  $p < 0.01$ ). For the particular subset of Hispanic male detectives/criminal investigators/police officers, the PMR was even greater (PMR = 388,  $p < 0.01$ ) (Violanti, 2010a, b).

A series of studies among South African police officers revealed notable findings. A stratified random sample of 1,781 officers in the South African Police Service reported that black officers had the higher rates of suicidal ideation compared to other racial groups (Pienaar and Rothmann, 2005). A sample from the same study ( $n = 1,794$ ) revealed that officers who experienced high suicidal ideation were less likely to use approach coaching, turn to religion, express conscientiousness, or experience emotional stability (Pienaar *et al.*, 2007).

Due to small numbers, the rates of suicide among “double minorities” such as female Hispanic or African American officers are inconsistent. As stated, African American female officers were found to have a 344 percent increased risk of suicide compared to the general US population (Violanti, 2010a, b). This could potentially underestimate suicide rates among female African American officers because the suicide rate for this demographic is lower than the US average. Additionally, information about a wide range of non-white officers is absent from the literature. No data were found on Asian police officers, despite the fact that this highly ethnically diverse group is the fastest-growing racial demographic in the US (Ortman and Guarneri, 2009). Furthermore, data about lesbian, gay, bisexual, and transgender and Native American/Alaskan/Pacific Islander officers warrants investigation, particularly since researchers have found high rates of depression and suicide among these groups (Pratt and Brody, 2014; National Institute of Mental Health, 2015).

### *Structural correlates*

*Geographic variation.* Geographic variation in officer suicide rates has also been noted and warrants further research (Marzuk *et al.*, 2002). For example, police officer suicide rates appear to be elevated compared to referent populations across many countries. In a sample of officers in Westphalia, Germany, suicide rates increased over a seven-year period, particularly among officers 21-30 and 51-60 years old (Hartwig and Violanti, 1999). However, no significant differences between officer suicide rates and the general German population were observed (Hartwig and Violanti, 1999). In contrast, in a cross-sectional survey of Norwegian officers, 24 percent reported that life was not worth living, 6.4 percent had seriously considered suicide, and 0.7 percent had attempted suicide (Berg *et al.*, 2003). An investigation of 125 unexpected deaths among New South Wales police officers found that 41 (38 percent) were suicides (Barron, 2010). Violanti *et al.* (2006) found that suicide

helpline calls increased significantly among law enforcement officers in the New York and New Jersey area in the months after the September 11, 2001 terrorist attack.

*Work demands.* Shiftwork. Little research was seen concerning the association between shift work and suicide. Mediation of brain processes due to sleep deprivation and fatigue brought about by shift work may impact suicidal thinking. Killgore *et al.* (2005) suggested that sleep deprivation impairs the ability to integrate emotion and cognition. These findings suggest that sleep deprivation has a debilitating effect on judgment and decision-making processes. In such circumstances, suicide may seem to be a reasonable option to problems.

*Organization.* The organization is one of the most frequently mentioned stressors in police work. Organizational stressors can lead to negative physiological and psychological responses in officers (Kivimäki *et al.*, 2007). A meta-analysis of workplace stressors and health outcomes showed that organizational stressors, such as work-family conflict, job insecurity, high job demand-low job control, and lack of social support, were associated with poor physical and mental health. These findings warrant more robust investigations of suicide correlates and organizational factors across police departments.

Organizational structure may also have an impact on police suicide. In a study of 298 US police departments, smaller departments had a significantly higher suicide rate than large departments (44/100,000 in small vs 12/100,000 in large,  $p < 0.001$ ) (Violanti *et al.*, 2012). Furthermore, the smallest departments had higher suicide rates compared to both other small departments ( $p < 0.028$ ) and to large departments ( $p < 0.001$ ) (Violanti *et al.*, 2012). Officers in these settings may have more job demands or fewer mental health resources, but the causes of this association are unknown (Pienaar *et al.*, 2007).

#### *Lower rates of suicide among law enforcement*

Some research studies found lower rates of suicide among police officers compared to the general population (Tiesman *et al.*, 2010). A study of New York City police officers (from 1977 to 1996) revealed that they experienced a lower overall suicide rate than the residents of New York City during the same time period. The officer suicide rate during this period was 14.9/100,000 compared to 18.3/100,000 in the demographically-corrected comparison population (Marzuk *et al.*, 2002). Given that another study found smaller suicide rates in large departments, it is not surprising that the very large New York City police department did not have significantly higher suicide rates (Violanti *et al.*, 2012). However, these trends should be further investigated by precinct or city borough to identify potentially unseen trends. Moreover, comparison of employed, working age police officers to the entire city's population may not generate an accurate comparison, although this technique has been used in other studies (Aamodt and Stalnaker, 2006). Even though demographically adjusted for age, race, and sex, this comparison population might still include non-working and mentally ill individuals who suffer from higher suicide rates than working populations (Violanti, 1997). Future research may ensure that a proper comparison group is established, such as an employed population in the same area.

In a 2001 systematic critical review of 41 studies, suicide completion rates among police officers were investigated with high inconsistent results; such that both higher and lower rates of suicide among officers were observed (Hem *et al.*, 2001). These inconsistencies may have occurred because most studies were conducted in limited specific police populations, where deviations from the mean suicide rate or particular area-level traumatic events can affect the observed rates of police suicide (Violanti *et al.*, 2006).

#### **Suicide prevention strategies**

A successful prevention model should focus on training on suicide warning signs, co-workers and family affected by suicide, the motivation of a suicide, common myths

regarding suicide, and major predictors of suicidal behavior. In the realm of academia, it is crucial that a sound theoretical basis for suicide within the police profession be established. While general theories may help to explain police suicide, more specific ones are needed utilizing what we know about police work and its effect on individual officers.

Suicide prevention program evaluations are rare in police organizations. Unfortunately, conducting intervention and evaluation studies of police suicides face economic, geographic, and cultural barriers (Öncü *et al.*, 2008). One example of a successful evaluation program was the Montreal, Canada “Together for Life” program (Mishara and Martin, 2012). The intention of the program was to foster support and cohesion in the force in terms of mental health. The program included training on suicide at all levels of the department and education on seeking treatment. The suicide rate decreased significantly by 78.9 percent to a rate of 6.4 suicides per 100,000 populations per year compared to an 11 percent increase in the control city (29.0 per 100,000). Ramos and Lester (2009) investigated differences between officers who engaged in suicide prevention training vs a group who had not; those who engaged in training were significantly less likely to report positive views toward suicide ( $p = 0.003$ ). However, the prevention training occurred among a group of officers on the west coast while the non-trained officers worked on the east coast of the USA. Additional geographic factors or differences in occupational stressors may have confounded the results observed between these two groups.

A degree of responsibility for prevention rests with the police organization. Resilience is a concept that encapsulates the idea of overcoming and adapting to negative experiences (Southwick *et al.*, 2014). The police organization can help to foster resilience against the deleterious effects of stress and trauma among officers. Self-esteem, coping skills, hardiness, and social support are positively associated with resilience. The salutogenic effects of organizational-individual integration suggest that the organization through its support can reduce potential suicidal behavior. The police organization can change the pathway to maladaptive coping among officers such as suicide. Coping style and social cohesion fostered by the organization acts to reduce stressors that individuals alone cannot reduce (Sledge *et al.*, 1980).

Peer support is a primary intervention method that may be helpful in reducing the potential for suicidal behavior. An assumption underlying peer support is that police peers trained in basic listening techniques are more trusted by officers in distress than mental health professionals (Landers and Zhou, 2011). Peer supporters draw on their shared experiences in order to provide empathic understanding, information, and advice. Davidson *et al.* (1999) reported that peer support reduced symptoms for participants, and increased their social integration; an important factor in suicide prevention.

A recent intervention which may be useful in police work is mindfulness. Mindfulness can be used by officers to manage stress and increase cognitive flexibility in dealing with trauma and crises, and has been found to reduce mental stress (Kabat-Zinn, 2003). Chesin *et al.* (2016), in a review of mindfulness studies, reported that many studies show an improvement in suicidal persons in attentional control, problem solving, and altered stress responses. In a longitudinal study on police officers, Williams *et al.* (2010) found that mindfulness predicted increased emotion identification skill and general mental health among officers. Christopher *et al.* (2016) applied a mindfulness-based intervention among police officers and found improvement in several areas including reduced stress and increased resilience.

Postvention (subsequent to a suicide) is also an important part of prevention. The entire police agency is emotionally and negatively impacted when a suicide occurs within its ranks. Postvention might include psychological debriefings, information sessions by mental health professionals concerning the suicide, and plans for prevention of future suicides (Loo, 2001). Postvention helps survivors such as family, friends, and co-workers deal with the suicide and is necessary to help the department adjust to such tragedies (Loo, 2001).

**Conclusion**

The present review shows that a wide variety of methods have been used to categorize police suicidality. However, case series and other non-generalizable study designs comprise a large proportion of the current police and suicide literature. An extension of both method and design is needed to capture the correlates of police suicide and ideation. Obtaining information on suicide etiology and prevalence is somewhat more difficult in the guarded occupation of policing compared the general population. Officers are often hesitant to express a need for psychological services if experiencing ideation, and suicide may be underreported or misclassified as a cause of death among police (Violanti, 2010a, b; Violanti *et al.*, 2012).

Suicidal ideation, a precursor to completed suicide, has particular correlates that may be addressed in prevention efforts. Inter-partner problems and/or violence, mental health problems, and substance use problems were frequently cited risk factors for suicide and suicidal ideation across studies (Berg *et al.*, 2003; Klinoff *et al.*, 2015; Pienaar and Rothmann, 2005; Violanti, 2007; Violanti, 2004a, b). These risk factors may be important warning signs that could be considered to help identify officers at risk and potentially prevent suicide. Furthermore, factors such as depression and mental illness, or a history of trauma should be identified prior to the development of suicidal ideation (Enns *et al.*, 2006). More research, using longitudinal study designs is needed to inform interventions, and in particular, to determine how suicide prevention efforts can be modified to meet the unique needs of law enforcement officers.

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