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Police Officer Receptivity to Research and Evidence-Based Policing: Examining Variability Within and Across Agencies

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Abstract

Recent calls for police to focus more on integrating research into practice require paying closer attention to how receptive frontline practitioners are to using research. Officers in four U.S. municipal agencies (n = 992) were surveyed to assess their exposure to research, knowledge about the evidence base, view of science, and willingness to evaluate interventions. Multivariate results show that officer awareness of evidence-based policing and willingness to work with researchers are influenced by education and prior research exposure. These factors strongly predict more specific indicators of receptivity. Results also suggest substantial variation in attitudes across agencies, emphasizing the importance of organizational context. The most receptive officers in our sample vary significantly from all others on multiple experience variables.

Keywords

evidence based, policing, receptivity to research, survey

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Introduction

Recent events in U.S. policing have generated a renewed interest in efforts to reform agencies and officers (Weitzer, 2015). Although the substantive focus of much of this discussion has been use of force and citizen distrust of police, a primary emphasis has been placed on using research evidence to guide police policy and practice. In May 2015, President Obama's Task Force on 21st Century Policing released a report with 64 recommendations and 92 action items to improve policing. Among these was a call for federal support for closer and expanded relationships between academics and practitioners: "The Federal Government should encourage and support partnerships between law enforcement and academic institutions to support a culture that values ongoing education and the integration of current research into the development of training, policies, and practices" (President's Task Force on 21st Century Policing, 2015, p. 55). Although recent research has reviewed the impacts of police partnerships (see Rojek, Smith, & Alpert, 2012), there has been less focus on how individual officers view and understand research and the extent to which agencies have a culture that values empirical research and evidence-based policing (EBP).

The evidence-based framework has played a major role in criminal justice in recent decades, with prominent calls for policing (Sherman, 1998) and corrections (MacKenzie, 2000) to use empirical research and rigorous evidence to guide decision making and practice. And, there is some indication police have responded to these calls. Hot spots policing, for example, a strategy with evidence of effectiveness in a number of randomized trials (e.g., Braga & Bond, 2008; Braga et al., 1999; Ratcliffe, Taniguchi, Groff, & Wood, 2011; Sherman & Weisburd, 1995; see Braga, Papachristos, & Hureau, 2014, for a review), has diffused widely across larger agencies in the United States (Reaves, 2010). In a convenience sample of 198 large agencies, Koper (2014) found close to 90% reported using hot spots policing to reduce violent crime, although he notes some issues in how departments defined the geographic scope of hot spots, and little is known about the extent to which street-level officers focus resources and attention on hot spots in day-to-day work.

While recognizing these advances in policing, Weisburd and Neyroud (2011) also identified shortcomings in efforts to make policing more evidence based: "having noted the advances in the relationship between research and practice in policing, we think it reasonable to say that despite progress, there is still a fundamental disconnect between science and policing" (p. 2). Lum (2009) similarly argued that "evidence-based policing has not rapidly diffused into American policing. There is little indication that most American police leaders and their agencies systematically or regularly use tactics that

are evidence-based" (p. 3). Indeed, recent case studies of another evidence-based approach, problem-oriented policing (POP; see Telep & Weisburd, 2012; Weisburd, Telep, Hinkle, & Eck, 2010), suggest that even agency support for the approach does not necessarily lead to full adoption by officers (see Cordner & Biebel, 2005). Maguire, Uchida, and Hassell (2015), in their analysis of cases from Colorado Springs, found inconsistent implementation of POP, particularly from generalist patrol officers, and a lack of attention to assessment of POP project effectiveness.

Generalizations about policing are an important step in efforts to assess the current state of EBP, but they provide little insight into the specific views of officers. Case studies, such as the Maguire et al. (2015) study, provide more detailed knowledge about particular contexts, but not about variability across agencies. It is important to understand how frontline practitioners view research evidence and as Sherman (2015) recently pointed out, this process of moving forward with EBP is not an easy one:

> The idea of being totally evidenced—that best evidence would be used to guide all or increasing proportions of decision making—remains an unrealized vision in every profession, including medicine. The obstacle all professions have faced is a lack of systematic evidence about how professions or organizations become evidence based. (p. 12)

Here, we explore key issues in understanding how police employees view and engage with research and the extent to which these views differ across agencies. This study examines officer receptivity to research and EBP using a survey of officers in municipal police agencies in Sacramento, California; Richmond, Virginia; Reno, Nevada; and Roanoke County, Virginia. We did not specifically define research or EBP in our survey (indeed, we were interested in examining how officers defined EBP), but referred to research throughout the survey as scientific or empirical studies conducted by universities or outside organizations, often examining questions related to the effectiveness of police tactics.

Building on findings from Telep and Lum (2014), this is the first study to use multivariate models to assess what factors explain officer receptivity. What predicts whether officers have heard of EBP and are willing to work with researchers? How do these and other demographic, experience, and background characteristics affect officer views on conducting research and identifying effective strategies? To what extent do views vary across agencies? These questions are important in understanding efforts to enhance receptivity to research within and across agencies. We first discuss prior literature focused on receptivity to research in policing, before turning to a

description of our survey and methodology. We then present results and conclude by discussing the relevance of receptivity to current reform efforts.

Prior Research

There is a long tradition of examining how public agencies and their staff understand and use research (see Lum, Telep, Koper, & Grieco, 2012, for a review). The number of studies focused specifically on police receptivity to research and EBP remains small, but has grown in recent years with increased attention to police–researcher partnerships and how officers and agencies use (or fail to use) research evidence. Research to date has been largely descriptive and has focused on multiple levels of the police organization.

At the department level, Rojek, Alpert, and Smith (2012) conducted a national study surveying 849 largely chief executives or senior leaders. More than 90% of agencies reported using research to inform policy; respondents most commonly said research was used "sometimes." Larger and state agencies were somewhat more likely to report using research "sometimes or very often" compared with medium and small agencies. Research was most commonly used for policies on non-crime prevention activities, such as use of force policies (73.5%), compared with patrol deployment (38.7%) or responses to gang activity (29.8%). Nearly, 85% of agencies reported consulting professional or practitioner-oriented magazines to learn about research findings, with a smaller percentage (34.1%) reporting the use of academic journals. Ritter (2009) interviewed nine leaders in drug policy units about research use and similarly found a focus on non-academic sources. None mentioned consulting academic studies; respondents more commonly used in-house data or spoke with other jurisdictions to learn about research.

Telep and Winegar (2016) also focused on chief executives, examining receptivity to research among 45 police chiefs and sheriffs in Oregon. They found overall receptivity to the ideas of EBP, but some gaps in understanding of the research evidence. Respondents were almost all familiar with the term *evidence-based policing*, and most believed understanding research was important at all levels of the department. Although respondents were most likely to say that experience should play a greater role in day-to-day decision making than scientific research, more than a third of respondents thought they should play an equal role. While chiefs and sheriffs' views on hot spots policing and POP were generally in line with the research evidence, they also tended to believe that more traditional strategies, such as random preventive patrol and rapid response to 911 calls were useful in reducing crime, despite a lack of supportive empirical evidence (see Telep & Weisburd, 2012). The use of traditional tactics was also prominent when executives described their agency's approach to reducing crime.

At the supervisor level, Palmer (2011) surveyed 153 inspectors and chief inspectors in the Greater Manchester Police Department in the United Kingdom on the research resources they used and their views toward conducting various kinds of research. Among this sample of supervisors, reading government publications was fairly common, with chief inspectors being more likely to read documents from the Home Office. In terms of conducting research, respondents who read research publications were more likely to be willing to conduct a small randomized trial. Supervisors overall showed a general willingness to examine crime data before and after an intervention. In terms of how officers made decisions day-to-day, Palmer (2011) found that officers focused more on their own experiences than results from evaluations.

Hunter, Wigzell, May, and McSweeney (2015) also surveyed U.K. officers. Their sample of 655 primarily mid- and upper level police leaders was part of a baseline assessment of officer engagement with research. The majority said that research played an important role in decision making, and more than 60% said they had used research to help understand a crime problem in the past year. Similar to Palmer's (2011) findings, however, officers more commonly mentioned other sources when asked what they routinely used to inform day-to-day decision making and what sources were most important. Although 80.5% of respondents reported using personal experience to guide decision making and 76.5% cited input from colleagues, only 31.9% mentioned academic journals with a higher percentage (46.9%) mentioning professional journals.

At the officer level, Jenkins (2016) examined officer views on innovative and more traditional policing strategies. In a survey of 227 officers from two urban agencies, he found that officers tended to view more innovative strategies such as crime mapping and community problem solving as very important. Respondents, however, also showed strong support for traditional strategies such as rapid response to 911 calls for service.

Telep and Lum (2014) also examined receptivity in a sample of officers, focusing on 960 employees in three U.S. agencies. Like Palmer (2011), they found a greater emphasis on using experience rather than science to guide practice and a general openness to using pre–post designs to evaluate strategies. Their sample of largely lower ranking officers than Palmer's (2011), however, showed some greater hesitancy to using more rigorous designs such as randomized experiments, and were fairly unlikely to have read any publications related to crime control effectiveness. In addition, unlike Telep and Winegar's (2016) sample of chiefs, the majority of respondents were not familiar with the term *evidence-based policing*. But like the chief executives, officers seemed to have a general understanding of the strong evidence base

for some strategies (e.g., POP), while tending to believe more traditional strategies (e.g., random preventive patrol) without rigorous evidence of effectiveness were successful in reducing crime. Responses for many questions were quite similar across agencies, but departmental variation appeared for some questions, and in some instances the smallest agency among the sample (Roanoke County) appeared to be ahead of the two larger agencies in terms of receptivity.

Current Study

The current study builds on Telep and Lum's (2014) findings with an expanded data set to examine predictors of officer receptivity to research and EBP and variability across four agencies. As all receptivity research has been largely descriptive, we view our multivariate models as exploratory. Our first question focuses on two variables we view as key to general receptivity:

Research Question 1: What predicts whether officers have heard of the term *evidence-based policing*, and what explains whether respondents believe collaborating with researchers and using empirical evidence is beneficial?
Research Question 2: What explains why some officers' views are more in line with the research evidence than others?

We focus on officers who correctly identify the effectiveness of evidence-based approaches, and those who also recognize the lack of strong evidence for some traditional policing approaches.

Research Question 3: What factors are associated with an officer believing scientific research should play a significant role in day-to-day decision making?
Research Question 4: What are the characteristics of officers who show greater willingness to engage in research and work with others on evaluation projects?
Research Question 5: What factors distinguish our most receptive officers from all other respondents?

Method

To examine these questions, we used responses from a five-section survey (see Lum et al., 2012). In Sacramento, the survey was administered to officers in 2011 during a required in-service training course. A total of

523 officers of about 675 officers (77.5%) in the department completed the survey. In Richmond, officers were surveyed either online or at roll calls in 2012. The total sample in Richmond is 276 of about 730 sworn officers (37.8%) in the department. In Roanoke County, officers were emailed a link to the survey in 2012. A total of 71 respondents of about 140 officers (50.7%) in the department completed the survey. Finally, in Reno, the survey was distributed to officers on paper in 2014. A total of 122 officers of about 297 total officers (41.1%) completed the survey.[1]

In comparing characteristics of our sample with available departmental data, we find that our samples are fairly representative of all four departments. Patrol officers are somewhat overrepresented in our Sacramento Police Department sample because the class where the survey was administered was not required for top leaders. In Richmond and Roanoke, patrol officers are somewhat underrepresented, as supervisors were more likely to complete the survey, whereas our Reno sample more accurately reflects the distribution of officers in the agency.

Although we use a convenience sample of agencies, we do see variability in terms of jurisdiction population and agency size. Although Sacramento and Richmond are both state capitals, the cities vary fairly substantial in terms of population. The estimated 2013 population of Sacramento was 479,686, based on U.S. Census data, whereas the estimated population in Richmond was 214,704. The two departments also vary in officers per capita with Sacramento having 1.4 sworn officers per 1,000 population, based on 2013 Uniform Crime Report data, and Richmond employing 3.4 officers per 1,000 people. Reno is similar in population to Richmond (233,294), but with far fewer officers (1.3 per 1,000 population). Roanoke County is the smallest in terms of population (93,694) with about 1.5 officers per 1,000 people.

Measures

Dependent variables. We draw upon responses to multiple survey questions in addressing our research questions. Our first survey question asked respondents "have you ever heard of the term *evidence-based policing*?" We view familiarity with the concept of EBP as a logical first step for assessing general receptivity. The variable is binary with "yes" responses coded as 1. To examine how officers view researchers and research, we combined responses to two questions. Respondents were asked to what extent they find information from research useful and whether they agree with the statement: "collaboration with researchers is necessary for a police agency to improve its ability to reduce crime." We coded respondents who both found research very or somewhat useful (as opposed to marginally or not at all useful) and

agreed or strongly agreed (as opposed to disagreed or strongly disagreed) that collaboration is necessary as 1.

We also use these two dependent variables as predictor variables in all subsequent models examining more specific indicators of receptivity. We view these first two dependent variables as important indicators of general receptivity and expect that they will be significant predictors of more specific views discussed below. Understanding what factors predict these variables, thus, may be important in understanding how to increase overall receptivity. We categorize these variables as general receptivity indicators because they represent an overall knowledge of and openness to EBP, research, and researchers.

We also examine four more specific indicators of officer receptivity. We call these specific because they examine officer views about particular tactics or situations (e.g., the effectiveness of POP or conducting a randomized experiment) or focus more directly on research in daily work. To assess officers' understanding of the research evidence, we focus on two outcomes. For 14 policing strategies, we asked officers how effective they believed each was for reducing crime and disorder.[2] Response options were "very effective," "effective," "somewhat effective," and "not effective." They could also mark "I have not heard of this tactic." We focus here on four strategies. To examine whether officers could correctly identify effective strategies, we focus on two strategies with strong evidence of crime reduction benefits, hot spots policing and POP. We create a dichotomous variable combining responses for these two strategies. Respondents who said both strategies were at least "somewhat effective" were coded as 1.

We also examined officer views on two strategies without strong evidence of effectiveness, random preventive patrol, and rapid response to 911 calls for service. These "standard model" traditional policing strategies are not linked to reduced crime (see Lum, Koper, & Telep, 2011; Weisburd & Eck, 2004). We dichotomized responses with 1 indicating officers who said both strategies were either not effective or only somewhat effective.

Officers were asked "in day-to-day decision making, what do you think the balance should be between the use of scientific research/knowledge (e.g., from universities and research organizations) and personal experience?" Officers could answer that the balance should be 90% experience, 10% research; 75% experience, 25% research; 50% each; 75% research, 25% experience; and 90% research, 10% experience. As prior research tends to suggest officers value experience more than research in guiding practice (see Buerger, 2010; Maguire et al., 2015), we were interested in examining the characteristics of officers who do view research as influential and a significant contributor to every day work. We dichotomized responses so that

individuals who said science should guide at least 50% of decision making were coded as 1.

To examine officer's openness to conducting empirical research, we created an eight-item scale ($\alpha = .80$; see the appendix) combining responses to questions asking about officers' willingness to use various strategies to evaluate the effectiveness of strategies the agency was currently using. Response options were "very willing," "quite willing," "somewhat willing," or "not willing" to questions such as "use data before the police implemented the tactic and compare it with data from after the tactic was up and running." Scale scores ranged from 8 to 32 with a mean of 18.97. Higher values indicate a greater willingness to engage in research.

Finally, we compare our most receptive officers with all others in a series of cross-tabulations. We define the most receptive officers as those who were coded as 1 on both of our general receptivity indicators and also were coded as 1 on one or more of our three binary indicators of specific receptivity or were in the top 25% of respondents on the research scale score (a score of at least 22). We focus on these 125 respondents to more carefully examine the characteristics of officers who show high levels of receptivity across multiple outcomes in an attempt to better guide future efforts to increase receptivity within and across agencies.

Predictors. We use a number of independent variables to examine how responses to our outcomes of interest vary based on officer characteristics. At the officer level, we look at background experiences and interactions with research, job characteristics, and personal characteristics. To examine the impact of exposure to information on research, we asked respondents about which publications from a list of seven they had read in the past 6 months.[3] We use two binary measures to code for officers who read one magazine or journal, and respondents who read two or more magazines or journals. The reference group is those who answered "none of the above" to that question. We also include a dummy variable for respondents who answered "none of the above" when asked whether they had read information on police effectiveness from any organizations in the past 6 months.[4] We use a second binary variable to indicate respondents who said they had read information on police effectiveness from their own agency. Respondents who reported reading information from another organization serve as the reference group.

We also use variables that control for whether officers had attended a conference in the last year and whether they responded that they had received any training on effective policing strategies. These were both yes/no question with the option for the officer to include the specific conference or training attended. In addition, we use a dummy variable that indicates whether

respondents answered "I have not heard of this tactic" to three or more of the 14 strategies we included when asking officers to rate the effectiveness of various policing tactics. Respondents coded as 1 were not familiar with at least three of these strategies. We measure officer education with two dummy variables, one for officers whose highest level of education was a bachelor's degree and one for officers who received a master's degree or higher. Officers with less than a bachelor's degree (e.g., some college, associate's degree) serve as the reference group.

In terms of job characteristics, years of experience is measured continuously, ranging from 0 to 39 ($M = 12.13$). We include a dummy variable for respondents who said their job involved supervising others. Finally, we use a dummy variable for rank with patrol (line level) officers coded as 1. In terms of personal demographics, we code male respondents as 1 and dichotomize officer race with White respondents coded as 1. We also control for departmental variation using dummy variables for Richmond, Roanoke County, and Reno. The Sacramento Police Department serves as the reference group. A review of correlations does not suggest any significant concerns about collinearity. Descriptive statistics for all variables are in Table 1.

Before turning to our multivariate results, we note some interesting findings from our descriptive statistics. Although, as we discuss below, having heard of EBP is an important indicator of general receptivity, only 26.7% of our respondents were familiar with the term. A majority of respondents (52.2%) were both willing to work with researchers and found research useful. About half (47.5%) of our respondents identified both hot spots policing and POP as effective, and far fewer (22.7%) identified both rapid response to 911 calls for service and random preventive patrol as somewhat or not effective. As in prior research, our respondents largely believe that experience should play a more important role than research in day-to-day decision making with only about 20.4% of respondents saying science should be at least an equal partner.

Results

General Indicators of Receptivity

We present logistic regression results for our two indicators of general receptivity in Table 2. As noted above, we view having heard of EBP and being receptive to research and collaboration with researchers as important general indicators of receptivity and use them as predictors in subsequent models. Respondents who read at least two publications and those who have a master's degree are significantly more likely to have heard of EBP. Well-read

Table 1. Descriptive Statistics.

Variable	*n*	Categories (*M*/*SD* if applicable)
Dependent		
Heard of EBP	980	26.7% yes/73.3% no
Research and collaboration useful	962	52.2% yes/47.8% no
Hot spots/POP effective	948	47.5% yes/52.5% no
Standard model not effective	992	22.7% yes/77.3% no
Science 50%+ in decision making	978	20.4% yes/79.6% no
Research scale	952	18.97 (4.49)
Most receptive officers	970	12.9% yes/87.1% no
Predictors		
Read one publication	992	19.8% yes/80.2% no
Read two or more publications	992	8.2% yes/91.8% no
Read no information on effectiveness	992	42.1% yes/57.9% no
Read agency effectiveness document	992	46.4% yes/53.6% no
Attended a conference	975	14.2% yes/85.8% no
Prior training on effectiveness	972	13.2% yes/86.8% no
Never heard of 3+ strategies	992	50.0% yes/50.0% no
Supervisor	955	20.8% supervises others/79.2% does not supervise
Patrol officer	956	71.0% patrol/29.0% higher rank
Bachelor's degree	958	58.8% bachelor's
Master's degree or higher	958	7.8% master's
Less than a bachelor's degree (reference)	958	33.4% associates, some college, or high school diploma
Years of experience	940	12.16 (7.59)
Male	966	84.1% male/15.9% female
White	860	82.0% White/18.0% non-White
Richmond respondent	992	27.8% Richmond officer
Roanoke County respondent	992	7.2% Roanoke County officer
Reno respondent	992	12.3% Reno officer
Sacramento respondent (reference)	992	52.7% Sacramento officer

Note. EBP = evidence-based policing; POP = problem-oriented policing.

respondents are 4.1 times more likely to have heard of the term than those who were not reading any academic or practitioner publications, whereas those with at least a master's are 2.7 times more likely than officers without a college degree to be familiar with EBP. In addition, respondents who had not heard of at least three of the tactics we asked them to rate the effectiveness of were 33% less likely to be familiar with EBP. Officers in Roanoke

Table 2. Logistic Regression Results for Impact of Predictors on Whether Respondents Had Heard of Evidence-Based Policing and Whether They Believe Research Is Useful and Agree That Collaboration With Researchers Is Necessary.

	Heard of EBP		Research/collaboration useful	
Predictor	*b* (*SE*)	Exp(*b*)	*b* (*SE*)	Exp(*b*)
Read 1 publication	0.33 (.21)	1.39	0.03 (.19)	1.03
Read 2+ publications	1.40 (.32)	4.05**	0.63 (.32)	1.87†
Read no effectiveness documents	−0.04 (.29)	0.96	0.11 (.25)	1.11
Read departmental effectiveness documents	0.08 (.27)	1.08	0.36 (.24)	1.43
Attended a conference	0.27 (.24)	1.31	0.36 (.23)	1.43
Prior training on effectiveness	0.40 (.24)	1.50†	0.31 (.23)	1.36
Never heard of 3+ strategies	−0.41 (.17)	0.67*	−0.43 (.15)	0.66**
Supervisor	0.33 (.24)	1.39	0.03 (.22)	1.03
Patrol	−0.25 (.23)	0.78	−0.17 (.21)	0.85
Bachelor's	0.02 (.20)	1.02	−0.10 (.17)	0.90
Master's	0.99 (.33)	2.69**	0.45 (.33)	1.57
Years	0.001 (.01)	1.00	−0.003 (.01)	1.00
Male	−0.27 (.23)	0.76	−0.09 (.21)	0.91
White	0.18 (.24)	1.20	−0.58 (.20)	0.56**
Richmond	−0.21 (.22)	0.81	−0.89 (.19)	0.41**
Roanoke Co.	1.11 (.30)	3.03**	−0.28 (.29)	0.75
Reno	−0.23 (.30)	0.80	−0.90 (.25)	0.41**
Nagelkerke R^2	.17 (n = 801)		.11 (n = 791)	

Note. EBP = evidence-based policing.
†$p < .10$. *$p < .05$. **$p < .01$.

County were 3.0 times more likely than Sacramento respondents to say they have heard of the concept. There was also a marginally significant positive impact from having had prior training on police effectiveness.

Respondents who had read two or more publications were also more likely to believe research and collaboration with researchers are useful, although the effect here is only marginally significant. Not having heard of at least three tactics was negatively related to receptivity once again; these respondents were about 35% less likely to view research and collaboration with researchers as beneficial. Officers in Richmond and Reno were significantly less likely than those in Sacramento to agree that collaboration is necessary and research is useful, again indicating departmental variability in responses.

Table 3. Logistic Regression Results for Impact of Predictors on Whether Officers Correctly Identify Effective and Less Effective Tactics and Whether They Believe Science Should Play a Significant Role in Day-to-Day Decision Making.

	Hot spots/POP		Standard model		Science 50%+	
Predictor	*b* (*SE*)	Exp(*b*)	*b* (*SE*)	Exp(*b*)	*b* (*SE*)	Exp(*b*)
Heard of EBP	0.67 (.19)	1.96**	0.47 (.21)	1.60*	0.45 (.21)	1.56*
Research/ collaboration	0.41 (.17)	1.51*	0.19 (.19)	1.20	1.28 (.21)	3.58**
Read 1	−0.37 (.46)	0.69†	0.38 (.22)	1.46†	0.45 (.23)	1.57*
Read 2+	−0.65 (.33)	0.52†	0.18 (.34)	1.20	0.23 (.35)	1.25
No effectiveness documents	−0.70 (.27)	0.50*	0.05 (.28)	1.06	−0.89 (.29)	0.41**
Departmental effectiveness documents	−0.26 (.26)	0.77	−0.58 (.28)	0.56*	−1.09 (.27)	0.34**
Conference	−0.35 (.24)	0.71	0.91 (.24)	2.48**	−0.17 (.27)	0.85
Effectiveness training	0.28 (.24)	1.33	0.06 (.26)	1.06	−0.004 (.27)	1.00
Never heard of 3+ strategies	−0.21 (.16)	0.81	−0.13 (.24)	0.88	−0.001 (.19)	0.99
Supervisor	0.19 (.23)	1.21	0.20 (.26)	1.22	0.13 (.26)	1.14
Patrol	−0.44 (.22)	0.65*	−0.24 (.25)	0.79	−0.22 (.25)	0.80
Bachelor's	0.06 (.18)	1.06	0.27 (.22)	1.31	−0.02 (.22)	0.98
Master's	0.30 (.36)	1.35	0.65 (.36)	1.92†	0.33 (.36)	1.39
Years	−0.001 (.01)	1.00	0.01 (.01)	1.01	0.03 (.02)	1.03†
Male	−0.01 (.22)	0.99	0.78 (.29)	2.17**	−0.24 (.25)	0.79
White	0.23 (.22)	1.26	−0.12 (.24)	0.89	−0.07 (.25)	0.93
Richmond	1.24 (.21)	3.47**	−0.20 (.24)	0.82	−0.06 (.25)	0.94
Roanoke Co.	1.25 (.31)	3.50**	0.14 (.34)	1.15	0.07 (.34)	1.08
Reno	1.69 (.27)	5.41**	0.82 (.28)	2.27**	0.10 (.31)	1.10
Nagelkerke R^2	.12 (n = 761)		.15 (n = 784)		.18 (n = 779)	

Note. POP = problem-oriented policing; EBP = evidence-based policing.
†$p < .10$. *$p < .05$. **$p < .01$.

Specific Indicators of Receptivity

In Table 3, we examine officer views about effective and ineffective strategies and the role of science in day-to-day decision making. Here, we are especially interested in whether our general indicators of receptivity can predict officers' more specific views about the effectiveness of particular strategies and whether science should be playing a role in daily work. As predicted, our general indicators of receptivity are generally strongly linked to these specific factors. Having heard of EBP was related to "correctly" answering questions for both strategy effectiveness outcomes, with a stronger finding

for the hot spots and POP outcome measure. In addition, having heard of EBP significantly increased the odds that officers would view science as an important component of day-to-day work.

Respondents who found both research to be somewhat useful and agreed that collaboration with researchers is necessary were also more likely to correctly identify hot spots policing and POP as effective, while the effect on standard model tactics was positive but not statistically significant. The impact on the role of science was stronger, with respondents valuing research and collaboration 3.7 times more likely to say that science should guide at least half of day-to-day decision making.

Other individual-level predictors were less consistent. Attending a conference increased the odds of respondents identifying standard model strategies as less effective but was not a significant predictor of the other outcomes. Even when controlling for our general predictors, having a master's degree increased the likelihood that respondents would recognize the ineffectiveness of standard model strategies ($p < .10$). Not reading any documents on the effectiveness of strategies was also associated with a decreased likelihood of identifying hot spots and POP as effective and viewing science as important for daily work.

Two findings were interesting and more difficult to explain. Reading one publication was significantly linked to believing science should play a role in day-to-day decisions, but reading one or two publications decreased the odds that respondents would correctly identify the effectiveness of evidence-based strategies ($p < .10$). Reading departmental effectiveness documents decreased the odds that respondents would view science as important or correctly categorize standard model strategies as less effective.

Departmental context again plays an important role. Respondents in the three other agencies, for example, were significantly more likely to correctly identify the effectiveness of hot spots policing and POP compared with Sacramento officers. Reno respondents were also more likely to identify standard model tactics as less effective. Interestingly, there was no significant departmental variation in whether science should play a significant role in decision making.

In Table 4, we present results for the ordinary least squares regression using our research scale as the dependent variable. Our general indicators of receptivity were again strong predictors with respondents who had heard of EBP having scale scores about 1 point higher, on average. The strongest predictor in the model was our indicator of respondents who believe that research is useful and agree that collaboration with researchers can reduce crime. These officers have scale scores that are about 2.1 points higher, on average.

Table 4. OLS Results for Impact of Predictors on Willingness to Conduct Research Scale.

Predictor	*b*	β	*SE*
Heard of EBP	1.04**	.11	.48
Research/collaboration	2.05**	.24	.35
Read 1 publication	0.10	.01	.38
Read 2+ publications	0.90	.08	.62
No effectiveness documents	−0.31	−.03	.50
Agency effectiveness document	−0.14	−.02	.48
Attended conference	0.64	.05	.45
Never heard of 3+ strategies	0.008	.001	.31
Effectiveness training	−0.32	−.03	.45
Supervisor	0.25	.02	.44
Patrol officer	−1.32**	−.14	.41
Bachelor's degree	0.55	.06	.33
Master's degree	0.74	.04	.61
Years of experience	−0.02	−.03	.02
Male	0.49	.04	.41
White	−0.35	−.03	.40
Richmond	0.02	.003	.38
Roanoke County	1.44*	.09	.57
Reno	1.42**	.11	.49
Constant	18.04**		.95

Note. R^2 = .15 (n = 766). OLS = ordinary least squares; EBP = evidence-based policing.
†p < .10. *p < .05. **p < .01.

Patrol officers had significantly lower research scale scores, by 1.4 points on average, than non-patrol officers. There was variability once again at the department level. Officers in both Reno and Roanoke County had scale scores about 1.3 points higher than Sacramento respondents, on average, indicating a greater level of willingness to engage in research.

A Closer Look at the Most Receptive Officers

Finally, we briefly explore differences between the most receptive officers in our sample and all others. In Table 5, we present results from a series of cross-tabulations comparing these 125 officers with all others on all of our model predictors. We only display factors where the most receptive officers varied significantly (p < .05) based on the chi-square value. For each row, the total column indicates the total number of respondents coded as 1 on that

Table 5. Cross-Tabulations Comparing Characteristics of Most Receptive Officers Versus All Others.

Predictor	Total	Most receptive (n = 125)	Others (n = 867)	χ^2
Read 2+ publications (n = 970)	76 (7.8%)	29 (23.2%)	47 (5.6%)	46.91**
Attended conference (n = 956)	133 (13.9%)	32 (25.6%)	101 (12.2%)	16.40**
Never heard of 3+ strategies (n = 970)	490 (50.5%)	48 (38.4%)	442 (52.3%)	8.43**
Effectiveness training (n = 954)	124 (13.0%)	27 (21.8%)	97 (11.7%)	9.71**
Supervisor (n = 934)	192 (20.6%)	44 (35.5%)	148 (18.3%)	19.51**
Patrol officer (n = 936)	665 (71.0%)	66 (54.5%)	599 (73.5%)	18.40**
Master's degree (n = 938)	70 (7.5%)	22 (17.9%)	48 (5.9%)	22.27**
Male (n = 945)	797 (84.3%)	96 (77.4%)	701 (85.4%)	5.17*
Roanoke County (n = 970)	71 (7.3%)	22 (17.6%)	49 (5.8%)	22.36**

†$p < .10$. *$p < .05$. **$p < .01$.

variable, whereas the third and fourth columns indicate the number of most receptive or all other respondents who were coded as 1 and the percentage of the category total represented.

Our findings here largely reinforce our multivariate results, but help demonstrate what factors distinguish officers who show receptivity on multiple outcomes of interest across both general and specific indicators. In terms of exposure to research, our most receptive officers are significantly more likely to have read two or more publications, recently attended a conference, and had prior training on police effectiveness. About 18% of the most receptive officers had a master's degree compared with just 5.9% of all other respondents. The most receptive officers are also less likely to work in patrol and more likely to supervise others. At the department level, Roanoke County officers are overrepresented among the most receptive group. Only 7.2% of our sample is from Roanoke County, but 17.6% of the most receptive officers work in that agency.

Discussion and Conclusion

We focus on three key issues related to our findings before concluding. First, we find strong evidence that our general receptivity variables are related to

more specific indicators of openness to, and understanding of, research. This suggests increasing the percentage of officers who have heard of EBP and who believe that research and researchers are useful may have important implications for building receptivity in a number of areas. Although individual and job-related predictors were not entirely consistent, there is evidence that advanced education, as well as exposing officers to research through multiple publications and training that ideally cover a range of policing innovations could all play a role in increasing general receptivity. Having a master's degree, recently attending a conference, reading multiple publications, and having prior training on effectiveness all distinguished the top 13% of our sample in terms of receptivity from all other respondents.

In particular, reading two or more publications was linked to both our general indicators of receptivity, whereas reading a single publication had a more mixed impact on specific receptivity. Not reading any effectiveness documents and reading agency-created effectiveness documents were also both associated with lower levels of specific receptivity. Overall, these findings suggest the importance of exposing officers to the research evidence, ideally through multiple means. The findings on agency-produced effectiveness documents also suggest documents produced internally may emphasize the importance of traditional strategies and deemphasize the value of science. Officers rarely read academic publications, with a larger (but still small) percentage consulting professional publications, which thus, should be seen as a necessary but not sufficient way for researchers to present findings to a practitioner audience. Translation tools, such as the Evidence-Based Policing Matrix (Lum et al., 2011), the Police Foundation's new EBP mobile app, and the Department of Justice's CrimeSolutions.gov are all designed to make research more accessible and digestible for practitioners, and their impact on receptivity should be examined in future research.

Educational attainment also was related to several outcomes. Interestingly, having a bachelor's degree was not significant in any model, but having at least a master's degree was associated with an increased likelihood of having heard of EBP and identifying the lack of effectiveness of the standard model. We also find it surprising that despite none of these agencies requiring a bachelor's degree for employment, nearly 67% of our respondents had at least a bachelor's degree, suggesting, as Paoline, Terrill, and Rossler (2015) found, that police officers are becoming more highly educated regardless of agency requirements.

Only a small percentage of our sample had a master's degree, but more closely examining the views and experiences of these officers would be useful in future studies. Our findings suggest the benefits of advanced education for both general and specific receptivity. Bittner's (1972) early work on

police education advocated for agencies to eventually require a postgraduate policing degree for new recruits. Although his ideas have not greatly changed minimum educational standards, many officers are now exceeding those minimum requirements.

Engel and Whalen (2010), for example, discussed a collaboration between the Cincinnati Police Department and the University of Cincinnati. Talented officers can receive a master's degree while on duty, receiving valuable instruction on policing research and evaluation methods that ideally will guide their future work. We recognize that the motivation for attaining an advanced degree may be based more on a desired increase in salary than an interest in EBP. Nonetheless, if graduate degrees are linked to increased receptivity, then departments seeking to be more evidence based may see benefits from encouraging and incentivizing education. Indeed, the President's Task Force on 21st Century Policing (2015) recommended that the Justice Department work in collaboration with universities to develop a "national postgraduate institute of policing for senior executives with a standardized curriculum preparing them to lead agencies in the 21st century" (p. 55).

Second, we also find a number of our nonsignificant predictors noteworthy. There is little evidence that many individual-level predictors have a consistent or even significant impact on attitudes regarding EBP. Race, gender, and years of experience (which is highly correlated with age) showed no consistent pattern and each was significant at the $p < .05$ level in at most one of our six models. Although these individual factors may play a more important role in other reform efforts, we do not find that officer demographics are highly influential in explaining either general or specific receptivity.

There was more evidence, although still somewhat inconsistent, that rank plays a greater role and in the expected direction. Patrol officers were less likely to correctly identify hot spots and POP as effective and tended to show less openness to engaging in research. The finding on effective strategies is especially important, as hot spots and POP both require buy in from patrol officers for successful implementation at the street level. This suggests the importance of better informing line-level officers about research findings related to police effectiveness.

Finally, for five of our six models, there was at least one significant departmental dummy variable, suggesting substantial variability across departments in terms of receptivity to research. Roanoke County officers seemed more receptive compared with Sacramento officers in multiple areas, including having heard of EBP, recognizing the effectiveness of hot spots and POP, and being open to conducting research. We suspect this reflects the innovative chief leading the agency at the time of survey

administration, and may suggest the greater ability of leaders to influence the views of officers in smaller and mid-size agencies. We suggest further research more closely examining these issues in a variety of departments.

On the question of the balance between science and experience, however, we find no significant differences across agencies, similar to Telep and Lum's (2014) finding of almost identical responses across three agencies. Although we must be cautious in generalizing beyond our four agency sample, this suggests there may be something inherent about the policing profession in terms of officer views on this subject. Although, as Telep and Winegar (2016) found, there may be more variability across agencies at the executive level, there seems to be greater consistency at the officer level in terms of the proportion of officers viewing science as an equal partner to personal experience in guiding decision making. This suggests that efforts to combine an emphasis on rigorous research evidence with an appreciation for the value of officer experience, or as Willis and Mastrofski (2014) described, "integrating craft and science" may be useful across a variety of departmental contexts (p. 321).

Limitations

Before concluding, we recognize that our research is not without limitations. Our sample of four agencies allows for preliminary assessments of differences across departments, but this is neither a random sample of police agencies, nor one large enough to allow us to generalize about U.S. policing more generally. Within each agency, we were able to survey a sizable proportion of officers, but we recognize that our sample may be more receptive to research than the department as a whole, as agreeing to participate in a study is itself a demonstration of some level of receptivity to research.

Missing data were an issue for some questions. Some officers did not provide personal information that they may have been concerned would be used to identify their responses, despite assurances of confidentiality. More than 10% of responses were missing for officer rank, years of experience, and race. We conducted supplemental analyses using both multiple imputation and hot deck procedures in SPSS 23.0 (Myers, 2011). None of our results were substantively changed when we re-ran analyses on these larger samples, and so we presented results above using listwise deletion. In addition, although we identified a number of statistically significant predictors in our models, we also left much of the variation in each dependent variables unexplained, suggesting there may be other excluded variables impacting receptivity. Finally, although we view receptivity to research and EBP as important for improving

policing practice, we acknowledge critiques of the appropriateness of the EBP framework (e.g., Moore, 2006; Sparrow, 2011), and agree that rigorous research evidence alone cannot guide police policy and practice.

Conclusion

This study adds to the small but growing body of studies examining officer receptivity to research and evidence-based practice in policing, and is the first to examine receptivity using multivariate models. Additional studies should examine these issues in other agencies and contexts using a variety of methodological approaches. In future work, we plan to expand our sample of agencies, assess change over time in officer views, more closely examine departmental practices that may impact receptivity, and expand our data collection efforts and tools to more fully capture attitudes and beliefs toward EBP.

Our findings here suggest that increasing officer familiarity with EBP and the perceived usefulness of research and researchers can positively impact understanding the evidence base, using research on the streets, and openness to engaging in specific evaluation activities. Enhancing general receptivity through mechanisms such as advanced education and exposure to research from publications, conferences, and training could facilitate agency efforts to be more evidence based. Exploring these processes in detail is also an important focus for future studies. Our results also suggest that agency matters, and understanding what departments are doing (or not doing) to encourage the use of evidence to guide policy and practice is important.

In the current context of U.S. policing, reform efforts have focused less on whether crime control strategies work and more on the implications of officer actions for police–community relations. It is impossible though to separate police fairness and effectiveness. EBP advocates such as Sherman (1998) and Lum (2009) point to multiple benefits of EBP, including reduced crime and disorder, increased efficiency, and strengthened transparency and justification for departmental practices. These benefits could all positively affect resident perceptions of the police, particularly when evidence on fair and impartial policing is integrated into efforts to increase effectiveness. For these gains to be realized, officers and agencies must be open to research and EBP. Bittner's (1972) argument about improving the police profession is still relevant today more than 40 years later: "For better or for worse, in our society occupations progress in efficiency, sophistication, importance, and dignity proportionately to the strength of the connections they maintain with academic scholarship" (p. 80).

Appendix

Descriptive Statistics for the Questions Used in the Research Scale.

Respondents answered "how willing would you be to take the following actions to test whether a particular tactic the police are currently using is effective?"

Question	*n*	*M*	*SD*
Stop the tactic to see if the problem gets worse	983	2.24	.89
Stop the tactic in one area and compare what happens in another area where you did not stop the tactic	982	2.48	.88
Find the top 20 areas where the problem exists and toss a coin to assign 10 areas to have the tactic and 10 areas not to receive the tactic and compare	978	2.05	.96
Use data before the police implemented the tactic and compare it with data from after the tactic was up and running	977	2.88	.86
Approach a researcher to help you evaluate	971	2.08	.88
Seek assistance in the organization on designing an evaluation	970	2.65	.84
Undertake online research to see what others have done	973	2.50	.89
Stop the tactic based on a researcher saying it was ineffective	975	2.06	.83

Note. Scores for each question range from 1 (*not willing*) to 4 (*very willing*).

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Notes

1. In Richmond, Roanoke County, and Reno, we also surveyed civilian employees. We focus here though only on respondents who reported being a sworn officer. We attempted to survey all officers in Richmond and Roanoke County and reached out to all but about 20 officers (who infrequently visited the station) in Reno.

2. These strategies were random preventive patrol, hot spots policing, community-oriented policing, problem-oriented policing (POP), rapid respond to 911 calls, follow-up visits for domestic violence, "pulling levers" interventions for violent offenders, Drug Abuse Resistance Education, use of civil remedies such as nuisance abatement, restorative justice, mandatory arrest for misdemeanor domestic violence, traffic enforcement to reduce gun crime, zero tolerance policing, and legitimacy policing.
3. These publications were *The Criminologist, Criminology and Public Policy, Criminology, The Police Chief, Justice Quarterly, Police Quarterly, The Police Chief*, and *FBI Law Enforcement Bulletin*. Officers could also select "other" and provide additional publications.
4. These organizations were the respondent's own agency, National Institute of Justice, Bureau of Justice Assistance, Police Executive Research Forum, Police Foundation, International Association of Chiefs of Police, Bureau of Justice Statistics, Office of Justice Programs, the Office of Community Oriented Policing Services, a university, or a library database. Officers could also select "other" and provide additional organizations.

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