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Police Quarterly 2010 13: 92 originally published online 3 January 2010
DOI: 10.1177/1098611109357325

Police Quarterly
13(1) 92–120

DOI: 10.1177/1098611109357325
http://pqx.sagepub.com

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Abstract

In the past, police scholars have examined the impact of higher education on different measures of officer behavior, most notably arrest and the use of force. Much of this prior work has suffered from poor methodologies, such as inadequate samples and the inability to control for theoretically relevant variables. In addition, previous inquires have focused on but one single behavior per study. In an attempt to overcome some of these limitations, we examine the effect of officer education on three key decision-making points (i.e., arrest, search, and use of force) by relying on observational data from two medium-sized cities. The results of the analysis indicate that higher education carries no influence over the probability of an arrest or search occurring in a police–suspect encounter. College education does, however, significantly reduce the likelihood of force occurring. Results may be due to the amount of discretion officer's exercise in pursuing these behaviors. Recommendations for future inquiries revolving around theory development and the incorporation of research from the field of education are presented, as well as varying policy implications.

Keywords

police, education, arrest, search, force

Police scholars and practitioners have long called for the adoption of a college education requirement for police officers as a condition of employment (Carter & Sapp, 1990). Beginning with the professional movement in the early 1900s, the importance of education was seen as a means to a better style of policing. As the century progressed, several high-profile national commissions (e.g., Wickersham Commission and President's Commission on Law Enforcement and Administration of Justice) also heralded the benefits of police education. More recently, officer education has been linked to community policing, which is thought to require a greater aptitude for innovation and creativity among line-level officers (Carter & Sapp, 1992).

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Despite repeated calls for a college education requirement, few agencies have instituted such a policy. In fact, only 1% of local police departments in the United States require a 4-year college degree (Hickman & Reaves, 2006). The discrepancy between the recommendations of national leadership and actual departmental requirements may be attributable to a paucity of evidence suggesting that education has a desirable impact on police behavior. Although it seemed sensible to police reformers that a college education would result in a better police officer, the rationale for believing such a relationship existed was grounded primarily in rhetoric (Carter & Sapp, 1990). Indeed, numerous opponents of college education requirements question exactly which aspects of higher education enhance an officer's performance on the job (Bayley & Bittner, 1997; Bittner, 1970; Miller & Fry, 1976; Shernock, 1992).

Since the 1960s, a body of research has developed that attempts to empirically examine the impact of college education on the police. The majority of this research has focused on the effect of education on officer attitudes, finding that college-educated officers hold beliefs that are less authoritarian (Dalley, 1975), rigid (Roberg, 1978), and punitive (Carlan & Byxbe, 2000; Guller, 1972) than their non-college-educated colleagues. To a lesser extent, some research has focused on specific aspects of police behavior, examining the effect of education on an officer's propensity to arrest (Bozza, 1973; Fickenauer, 1975) and to use force (Worden, 1996). Unfortunately, many of these previous inquiries have been driven by weak methodologies, as National Academics Panel on Police Policy and Performance called attention to inadequate samples and the inability to control for theoretically relevant variables (Skogan & Frydl, 2004). Moreover, although there is some evidence suggesting college-educated officers behave differently than non-college-educated officers, findings regarding the direction of education's impact on police behavior have been largely inconsistent. Finally, and of particular relevance to the present article, prior work in this area has been limited to studies focusing on but one behavioral outcome at a time (e.g., arrest or force), thereby making it difficult to compare varying outcomes (e.g., the role of education on arrest vs. force).

The current inquiry attempts to overcome some of the limitations associated with previous studies. Using observational data from two medium-sized cities, this research examines the impact of officer education on three key decision-making points (i.e., arrest, search, and use of force).[1] The analysis will allow for a comparison of education's impact on these behaviors, which has not been available in the literature to date. If officer education has a significant effect on more than one of these behaviors, these effects may be compared to determine where education's impact on police behavior is strongest.

Historical Background

Questions concerning the link between higher education and the police arose from efforts in the early 1900s to professionalize the American police. Though there have been competing definitions of professionalism between scholars and practitioners (Baro & Burlingame, 1999; Skolnick & Fyfe, 1993), reformers sought to attain it

primarily through redefinition of the police mission, bureaucratization of police departments, and the improvement of personnel quality (Fogelson, 1977). From the origin of the professionalism movement, increasing the education level of officers was thought to be one such avenue of improvement (Sherman, 1978). By improving the education level of the police officer, reformers believed that not only would the officer become more effective in his or her day-to-day tasks and more proficient with technology but also the public image of the police as a whole would be heightened to that of a professional occupation (LeDoux, Tully, Chronister, & Gansneder, 1984).

The Status of the American Police Force in the Early 20th Century

The commonly held image of the American police in the early 1900s was that of ineffectiveness and corruption (Walker, 1977). Fogelson (1977) writes of media interviews in the 1930s where former officers depicted urban police as irresponsible drunks, dabbling in corrupt activities such as gambling and prostitution and purposefully employing excessive force to gain compliance from suspects. Reformers of the period recognized that amelioration of the moral and political shortcomings of the police could not be the only areas of improvement, as police personnel were also undertrained, undereducated, and incompetent. Indeed, at this point in history, only "two out of three [officers] finished grade school" and "only one out of ten graduated from high school" (Fogelson, 1977, p. 102). Moreover, at the time of the First World War, 75% of police personnel could not pass an Army intelligence test (LeDoux et al., 1984; National Commission on Law Observance and Enforcement, 1931; Sherman, 1978).[2] Increasing the education of police recruits, among other options, was viewed then as a vehicle to propel the police officer to a similar status as other professional occupations (Bittner, 1970; Fogelson, 1977). The first such organized attempts to tie the policing profession to academic achievement were lead by August Vollmer, the police chief in Berkley, California from 1905 to 1932 (Carte, 1973).

Vollmer's contributions in Berkley were largely in the form of implementing the use of new technologies to aid the police in their work (Walker, 1977). He posited that to use these technologies recruits would require skills that they could not learn while on the job. Advocating a college education was an effort then to provide would-be officers the background necessary to be a part of the prestigious, more technologically inclined police profession (Carte, 1973).

National Commissions From the 1930s to the 1970s

Wickersham Commission. Vollmer's achievements in Berkley and his tenure as the president of the International Association of Chiefs of Police (IACP) in 1922 gained him enough national recognition to be selected as a key contributor to the 1929 National Commission on Law Observance and Enforcement (i.e., the Wickersham Commission; Walker, 1977). The Commission's final report noted that higher education may play a role in improving the quality of police personnel and recommended

that departments consider higher education as a requirement for employment. Such a recommendation would receive little follow-through as administrators were skeptical of the benefits of a college education (Decker & Huckabee, 2002), especially when it was likely that they never attended college themselves (Bittner, 1970; Fogelson, 1977). At the time of the Wickersham final report, the majority of police agencies did not require even a high school education of their recruits (Roberg & Bonn, 2004).

The issue of college education for police recruits received little attention between the 1930s and the 1960s. However, the lack of congruence between commission recommendations and the educational requirements of police agencies did not stop academic institutions from providing a law enforcement–based education. During that time, some of the first full-time college curriculums designed for police officers was being created. In 1935, Michigan State University became the first institution to offer a full-time 5-year preservice curriculum (LeDoux et al., 1984). Besides a few select programs at some universities, the majority of curriculums designed for police recruits existed in community colleges as 2-year associate degree programs in police science. By 1957, survey data indicated that 77 degree-granting programs in police-related science existed in the United States (Germann, 1957; Stephens, 1976).

Commissions of the 1960s and 1970s. College education would again receive national attention in the 1960s. A growing crime rate (Sherman, 1978) and high-profile clashes between urban police, minorities, and civil rights activists across the United States forced the issues of competence and discrimination to the forefront of policing debates (Hahn, 1971). Walker (1977), reflecting on that period, concluded that the previous era of police reform in the 1920s and 1930s from a service-oriented approach to a legalistic, paramilitary approach was the cause of the more recent lack of adaptability. This shift was posited to be the cause of the police becoming further separated from, and antagonistic toward, the communities in which they served (Jacobs & Magdovitz, 1977).

Beginning with the 1967 President's Commission on Law Enforcement and the Administration of Justice, numerous reports recommended that the police would reform their role to adapt to a changing society. Among the numerous commissions, a common perception was that for the police to effectively adapt to complex tasks in a complex society and reduce pervasive discriminatory behavior, educational standards must be raised (Carter & Sapp, 1990; Hawley, 1998).[3] Many of the commissions went as far as recommending all police officers obtain a 4-year degree within the next decade (National Advisory Committee on Criminal Justice Standards and Goals, 1973).

As a result of these recommendations, the 1968 Omnibus Crime Control Act allowed for the creation of the Law Enforcement Education Program (LEEP), which provided federal funding to colleges and universities to create curriculums for police, and funding to police departments to provide incentives for officers to attend college (Carter & Sapp, 1990). The result was an explosion in the number of degree-granting programs designed for law enforcement personnel. In 1966, there were 184 colleges and universities offering such programs, and by 1976, this figure had increased to 1,070 institutions, though most were offered at community colleges with classes being taught by fellow police officers (Sherman, 1978).

Based on federal subsidies, police officers took advantage of the available funds. In 1960, only 3% of officers held a 4-year degree, but by 1974, the figure had increased to 9%. The proportion of officers who had taken at least one college course also increased substantially over the same period (National Planning Association, 1978). Despite increases in the education level of officers, police agencies had not increased their requirements by similar lengths. In 1975, only 6% of departments required any college education of their recruits, and less than 1% required a 4-year degree (National Planning Association, 1978).

Police Higher Education 1980s to Present

Following the period of the 1960s which saw the police violently clash with the communities they served, the 1980s would see reform that attempted to mend the gap between officers and citizens. The community policing approach attempted to change the focus of police effectiveness from quantities such as the number of arrests or stops made to a focus on the ability of police to solve problems (Goldstein, 1979; Trojanowicz, 1994; Xu, Fiedler, & Flaming, 2005). Adapting such an approach was also thought to broaden the role of the police in the context of community issues. Officers were encouraged to establish rapport with citizens to more effectively identify sources of disorder and locate problems as identified by residents (Paoline, Myers, & Worden, 2000; Wilson & Kelling, 1982).

Though no nationally appointed commissions recommended a college degree requirement in this period, in 1988 the Police Executive Research Forum (PERF) conducted a national survey examining the state of police education in the United States, which included a review of the literature and survey of police agencies (Carter & Sapp, 1990). The results of the study indicated that the adoption of a community policing model increased the responsibilities of patrol officers, which required them to be better decision makers, more innovative, and more tolerant. The authors of the PERF report believed that these findings made college education for police officers more relevant than in the past (Carter & Sapp, 1990, 1992).

The PERF survey also reported changes in the education level of police officers. The most dramatic change from the past was seen in officers holding a 4-year degree. The findings indicated that 23% of the 250,000 officers surveyed held 4-year degrees, up from 9% in 1974. Still, the increase in the percentage of officers with college degrees appeared to have happened despite little growth in the number of agencies requiring a college degree (i.e., by 1988, only 9% of departments required a 2-year degree with less than 1% requiring a 4-year degree; Carter & Sapp, 1990, 1992). More recent data from the Law Enforcement Management and Administrative Statistics Survey (LEMAS) indicates that although police officers continue to become more educated, police departments still lag in terms of minimum education requirements. For instance, results from the 2003 LEMAS survey show that the percentage of agencies requiring a 2-year degree is 9% whereas those requiring a 4-year degree remains at 1% (Hickman & Reaves, 2006).

Since the Wickersham Commission first called for a college education requirement in 1931, departments have been reluctant to follow through. In attempting to explain the disconnect, Bell (1979) and Hawley (1998) suggest that police administrators may be concerned about factors such as keeping officers representative of the communities they serve, or that instituting a minimum college requirement may be discriminatory toward women and minorities. Carter, Sapp, and Stephens (1988) posit that agencies seeking to hire college recruits would have to consider the available applicant pool, how much additional salary departments would have to offer to remain competitive with private industry and how much additional recruit background investigation would have to be conducted given that college students tend to be a more transient population.

Perhaps the primary reason police departments are reluctant to implement an educational requirement is the lack of evidence to date demonstrating that a college education leads to tangible desirable outcomes (Skogan & Frydl, 2004). As Carter and Sapp (1990) point out, the recommendations of the commissions were largely based on intuition and rhetoric rather than empiricism. Reflecting on the lack of empirical basis for the arguments of previous commissions, the 1973 National Advisory Commission on Criminal Justice Standards and Goals concluded that they had not provided sufficient justification for a minimum education requirement for police recruits and failed to link higher education to desirable objectives.

Previous Inquires Examining the Effect of Education on Police Behavior

Since the late 1960s, a limited body of literature has emerged that empirically examines the impact of higher education on police officers. Although much of this literature has been concerned with the effect of education on officer attitudes, our focus is on the extant literature that centers on studies involving performance-based measures. Given that the performance of police officers is multifaceted, researchers have employed a number of different measures. These include measuring performance through perceptions of quality or satisfaction (e.g., citizen complaints; Brandl, Stroshine, & Frank, 2001), supervisor ratings (Smith & Aamodt, 1997), injuries on the job (Cohen & Chaiken, 1973), and personal job satisfaction (Dantzker, 1993). The current inquiry centers on previous studies that focus on officer–suspect encounters involving arrests, searches, and the use of force.

The Effect of Officer Education on Arrests

Researchers have posited that education affects arrest behavior in different ways. For example, Glasgow, Green, and Knowles (1973), as well as Bozza (1973), examined the arrest patterns of 24 officers from the Costa Mesa, Arizona Police Department. Glasgow and colleagues hypothesized that officers with lower levels of education will make more arrests because of an assumed theoretical tie between higher education

and dissatisfaction with police work. That is, a lesser educated officer will be more satisfied and thus produce arrests at a higher level than an officer with more education, and thus, an inherent dissatisfaction with his or her work. Bozza, however, posited that young officers with high levels of education would be eager to prove themselves and thus arrest at higher levels than older officers with lower levels of education. Glasgow et al., contrary to their hypothesis, found that higher levels of education were associated with higher rates of arrest. Bozza, analyzing the data somewhat differently, found that young officers with more education made more arrests than older officers with less education.[4]

Contrary to the findings uncovered by Glasgow et al. (1973) and Bozza (1973), Fickenauer (1975), as well as Smith and Klein (1983), found that more education led to fewer arrests. In the latter study, which relied on data from the Police Services Study (PSS), the authors note that such an effect was found when considering the education level of the department as an aggregate measure (i.e., officers in departments with a higher average level of education made fewer arrests than officers in departments with a lower average level of education). However, when examining education at the individual level, no effect was found. Similarly, Worden (1989), Brandl and colleagues (2001), and Smith and Aamodt (1997) all found no direct relationship between individual officer education and the propensity to arrest.

The Effect of Officer Education on Searches

There have been a number of studies concerned with the effect of citizen characteristics on officer decision making (see Schafer, Carter, & Katz-Bannister, 2004), particularly within traffic stop encounters. However, only three works include characteristics of officers in their analyses (Decker & Rojek, 2002; Paoline & Terrill, 2005; Smith & Petrocelli, 2001), none of which include officer education as an independent measure. Furthermore, of the two major reviews on the causes of police behavior (Riksheim & Chermak, 1993; Sherman, 1980), neither examines the effect of education on searches. Despite the dearth of scholarly attention, Schafer and colleagues (2004) hypothesized that officer education may be related to search behavior, although they were unable to test such a hypothesis. Given the importance of police search behavior as a key decision-making point, combined with a lack of previous research, we include such an examination in the current inquiry.

The Effect of Officer Education on the Use of Force

Compared to arrests and searches, there have been substantially more studies that have examined the role of education on use of force behavior. Several of these studies have relied on observational data from the Project on Policing Neighborhoods (POPN) and have found that college-educated officers use force less often than their less educated counterparts (Paoline & Terrill, 2007; Terrill & Mastrofski, 2002). Other studies have examined education's impact on an officer's propensity to discharge their weapon.

For instance, using data from 186 officer-involved shootings in Southern California, McElvain and Kposowa (2008) found that officers with a college degree were more than 41% less likely to discharge their firearms than officers with a high school diploma or some college but no degree. A similar finding was produced by Binder, Scharf, and Galvin (1982) in a report to the National Institute of Justice two decades earlier. Furthermore, in a meta-analysis of studies examining the effect of education on officer performance, Aamodt (2004) found that better educated officers use force less often, though he does not include a discussion of how force was measured.

In contrast to the above studies, a smaller number of inquires have found that college-educated officers are more (not less) likely to use force as opposed to non-college-educated officers. A report by Milton, Halleck, Lardner, and Abrecht (1977) for the Police Foundation notes that officers involved in violent incidents typically held more years of education than the average of the department in which they served. In addition, using PSS data, Worden (1996) found that college-educated officers were significantly more likely to use reasonable force in suspect encounters. However, the same was not found for incidents involving excessive force.

A third group of studies has found that college-educated officers and non-college-educated officers do not behave differently in regard to their use of force (i.e., use neither less force nor more force). Analyzing 7 years of shooting data from the Kansas City, Missouri Police Department, Sherman and Blumberg (1981) found that officer education appeared to have no significant effect on discharging firearms when controlling for assignment, age, and length of service.[5] Four years earlier, Inn and Wheeler (1977) produced similar results, finding that college education did not cause significant differences in shooting incidents among officers. In addition, Hayden (1981) found that individual officer characteristics, including education, did not predict the decision to use deadly force.

In sum, Sherman and Blumberg (1981) noted in the early 1980s that "depending on where and how police use of force is measured . . . more educated police officers appear to use force less often, more often, or just as often as less educated officers" (p. 318). To date, the effect of education on police use of force behavior still remains inconclusive as the above review indicates. Nonetheless, it does appear that more recent findings have gravitated toward college-educated officers using force less often than non-college-educated officers.

The Current Inquiry

After a review of the literature, the National Academics Panel on Police Policy and Performance stated that there was insufficient evidence to conclude that higher education has a desirable effect on police performance (Skogan & Frydl, 2004). The panel commented that the literature is characterized by inconsistent findings and generally poor methodologies (Hudzik, 1978; Sherman, 1980), while calling for "rigorous research on the effects of higher education on [officer] job performance" (Skogan & Frydl, 2004, p. 141). Our review of the literature confirms the panels' conclusions.

Worden (1990) has also noted that previous studies have examined the role of education on but a single outcome measure per study. Given the multifaceted nature of police behavior, the result is a fragmented understanding of the relationship between higher education and officer behavior. The current research attempts to bridge the gap in the literature by examining the effect of education on three key decision-making points (i.e., arrest, search, and force) within a single study. If there is a significant effect present in more than one of the outcomes, a comparison can be made to determine where the effect of education is the strongest. More directly, using data from the Project on Policing Neighborhoods, the present analysis centers on two research questions:

1. What is the effect of an officer's education level on his or her propensity to arrest, search, and use force?
2. If there are significant educational effects in more than one outcome, where is the influence the strongest?[6]

Method

The data used for the present inquiry were collected as part of the Project on Policing Neighborhoods (POPN) in Indianapolis, Indiana and St. Petersburg, Florida (1996-1997) by means of observation and interviews with officers (Paoline et al., 2000). A sample of 12 beats in each city was selected for observation based on a socio-economic index that included percentage families with children headed by a female parent, percentage adults employed, and percentage population living below 50% of the poverty level (Parks, Mastrofski, DeJong, & Gray, 1999).

The observation data were collected through a technique called *systematic social observation* (SSO; see Mastrofski et al., 1998, for a detailed description) in the manner of observer-participant. As an observer-participant, the researcher not only makes no effort to keep a distance from the subject they are observing (in this case, police on patrol) but also makes no effort to participate in the interactions between the observed officers and citizens (Babbie, 1995). Prior to beginning observations, field workers (students from Michigan State University and the State University of New York at Albany) took a semester-long course in SSO and participated in training rides with officers at local police departments (Terrill & Mastrofski, 2002).

The observers took notes on officer–citizen encounters, detailing the persons involved and how the encounter transpired. Following each day of field observation, the observers would transcribe their notes and enter into a SPSS data set. Officers received assurances of confidentiality and were allowed to read the notes of the researcher for which they were assigned but not the notes of researchers assigned to other officers (Parks et al., 1999).

After all field observations had taken place, observers in Indianapolis had ridden along with 194 different patrol officers over the course of 2,800 hr of observation and witnessed 6,485 encounters with citizens. Observers in St. Petersburg had ridden along with 128 different patrol officers over the course of 2,900 hr, witnessing 5,500

encounters with citizens (Paoline et al., 2000). The current inquiry uses a subsample of 3,356 encounters between officers and citizens suspected of some manner of wrongdoing (i.e., officer–suspect encounters).

In-person interviews were conducted with the officers with whom the observers were riding. These interviews lasted approximately 25 min and were conducted by personnel trained for interview data collection only. Survey questions pertained to officer background characteristics, most important in the case of the present study—education, as well as the officer's perceptions and experiences of the beats in which they patrolled. The response rates were 95% and 97% in Indianapolis and St. Petersburg, respectively (Terrill, 2001).

Variables

Dependent variables. The present analysis employs three dichotomous dependent outcome measures. The first, *arrest*, is defined as taking a person into custody for the purpose of charging him or her with a criminal offense. The second, *search*, is defined as a search of the suspect, suspect's vehicle, or the area immediately surrounding the suspect which goes beyond plain view by the primary observed officer. The third, force, is defined as acts that threaten or inflict physical harm on citizens.[7] In the measurement of these dependent variables, each variable captures whether an event (e.g., an arrest, a search, or the use of force) took place in a police–citizen encounter. Encounters in which these behaviors occurred are coded as one, and thus the reference category is zero. Given a dichotomous outcome variable, the preferred method for a multivariate analysis is binary logistic regression (Hanushek & Jackson, 1977; McKelvey & Zavoina, 1975).

Independent variables. The primary independent variable in the analysis is the education level of the officer. The officer's education is captured using two dichotomous measures, one for some college exposure but no baccalaureate degree, and one for a 4-year degree. The reference category consists of encounters involving officers with a high school diploma or less. As Worden (1990) points out, measuring education in this way (as opposed to by years of formal education or credits accumulated) is desirable in that it has the potential to capture the nature of the curriculum that the officer was exposed to (e.g., a 4-year institution vs. some college experience vs. no college experience). Higher levels of education are hypothesized to reduce incidences of the three outcome measures.

To maintain an appropriately specified model, the analysis also includes variables that have exhibited theoretical relevance and/or have been found to be significant in previous research (Gould & Mastrofski, 2003; Novak, Frank, Smith, & Engel, 2002; Terrill, 2001). All variable and coding descriptions along with hypothesized effects are offered in Table 1, followed by descriptive statistics in Table 2. There are three groupings of control variables. The first group captures characteristics of the officer. In addition to the officer's education, control variables in this group include measures of officer experience, gender, and race. Measured as a continuous variable, it is hypothesized that more experience officers will be less likely to arrest, search, and use

Table 1. Independent Variable Descriptions and Hypothesized Effects

Variable	Hypothesized effect	Definition
Officer characteristics		
Education		
Some college	–	1 = *some college, no BA/BS*, 0 = *all other*
4-year degree	–	1 = *4-year degree, or higher*, 0 = *all other*
Experience	–	Years of experience
Male	+	1 = *male*, 0 = *female*
Non-White	+/–	1 = *non-White*, 0 = *White*
Suspect characteristics		
Age	–	1 = *0-5 years*, 2 = *6-12 years*, 3 = *13-17 years*, 4 = *18-20 years*, 5 = *21-29 years*, 6 = *30-44 years*, 7 = *45-59 years*, 8 = *60+ years*
Non-White	+	1 = *non-White*, 0 = *White*
Male	+	1 = *male*, 0 = *female*
Socioeconomic condition	–	Observed level of wealth: 1 = *chronic poverty*, 2 = *low*, 3 = *middle*, 4 = *above middle*
Resistance	+	Level of suspect resistance: 1 = *none*, 2 = *passive*, 3 = *verbal*, 4 = *defensive*, 5 = *active*
Conflict	+	Suspect in conflict with another citizen on scene: 1 = *none*, 2 = *calm verbal*, 3 = *agitated verbal*, 4 = *threatened assault*, 5 = *assault*
Weapon	+	1 = *suspect has weapon*, 0 = *all other*
Demeanor	+	1 = *suspect disrespectful to police in language or gesture*, 0 = *all other*
Drug or alcohol	+	1 = *suspect shows behavioral effects of drug/alcohol*, 0 = *all other*
Evidence	+	Summative index (0-7), evidence of the target's or requester's violation of the law
Citizen request arrest	+	1 = *citizen requests arrest of suspect*, 0 = *all other*
Arrest	+	1 = *suspect is arrested*, 0 = *not arrested*
Encounter characteristics		
Number officers	+/–	Number of officers on scene
Number bystanders	+/–	Number of citizen bystanders on scene
Proactive encounter	+	1 = *officer initiates encounter*, 0 = *all other*
Observation site	+	1 = *Indianapolis*, 0 = *St. Petersburg*
Serious problem	+	1 = *aggravated assault, robbery, sexual attack, homicide*, 0 = *all other*

force. Officer gender and race are measured as dichotomous variables whereas male and White officers constitute the reference category. Given that previous research has shown inconsistent findings regarding the effect of officer gender and race in police–suspect encounters (see Paoline & Terrill, 2004; Terrill, 2001), we leave the hypothesized direction of an effect open to analyses.

Table 2. Descriptive Statistics (N = 3,356)

Variable	Range	*M* (*SD*)
Dependent variables		
Arrest	0-1	0.15 (0.36)
Search	0-1	0.23 (0.42)
Force	0-1	0.58 (0.49)
Officer characteristics		
Education		
Some college	0-1	0.44 (0.50)
4-year degree	0-1	0.42 (0.49)
Experience	1-32	7.73 (5.97)
Male	0-1	0.85 (0.36)
Non-White	0-1	0.21 (0.41)
Suspect characteristics		
Age	1-8	5.24 (1.35)
Non-White	0-1	0.63 (0.48)
Male	0-1	0.72 (0.49)
Socioeconomic status	1-4	2.36 (0.56)
Resistance	1-5	1.21 (0.66)
Conflict	1-5	1.13 (0.57)
Weapon	0-1	0.02 (0.12)
Demeanor	0-1	0.10 (0.30)
Drug or alcohol	0-1	0.21 (0.41)
Evidence	0-7	1.32 (1.70)
Evidence prior arrest	0-7	1.27 (1.53)
Citizen request arrest	0-1	0.01 (0.12)
Arrest	0-1	0.11 (0.31)
Encounter characteristics		
Number officers	1-26	2.21 (1.61)
Number bystanders	1-100	4.20 (5.63)
Proactive encounter	0-1	0.45 (0.50)
Observation site	0-1	0.56 (0.50)
Serious problem	0-1	0.04 (0.19)

The second grouping of control variables describes characteristics of the suspect in the encounters. Previous reviews of research (Riksheim & Chermak, 1993; Sherman, 1980) have shown situational factors, such as suspect characteristics, to be influential on police behavior. These variables include demographic measures such as age, race, gender, and socioeconomic status. As opposed to officer characteristics, which were available from interview data, the suspect characteristics are based on the researcher's observations. This grouping also includes information about the suspect's behavior, including whether a suspect resisted an officer's attempt at control, was in conflict with another citizen during the encounter, was carrying a weapon, was disrespectful to the officer, was displaying signs of alcohol or drug use as well as the extent of evidence present during the encounter implicating the suspect of wrongdoing.[8] With the

Table 3. Bivariate Distribution of No Arrest/Arrest by Education (N = 3,351)

	High school or less		Some college, no BA/BS		4-year degree or higher	
	N	%	*N*	%	*N*	%
No arrest	412	84.6	1,246	85.5	1,179	83.8
Arrest	75	15.4	211	14.5	228	16.2
N	487		1,457		1,407	

Note: Chi-square = 1.64, p = .441.

exception of suspect socioeconomic status, which is hypothesized to decrease the likelihood of the outcome measures at higher levels, each variable in this group is hypothesized to increase the likelihood of arrests, searches, and force.

The final grouping of variables describes characteristics of the setting of the encounter. The group includes measures of the number of officers present on the scene, the number of citizens present, whether the officer initiated the encounter with the suspect, and whether the encounter took place in Indianapolis or St. Petersburg. Although both the number of officers and the number of citizens on the scene may have an impact on the observed officer's behavior, the direction of the impact may be contingent on a number of factors such as whether the officer feels in control of the situation or if the additional citizens are nonparticipating bystanders or are attempting to support the suspect in the encounter. Because of these reasons, the hypothesized effect of both these variables is unclear. As for the remaining variables, officers that are proactive in initiating the encounter are hypothesized to be more likely to arrest, search, and use force. Because of the less-aggressive, problem-solving approach of the St. Petersburg police department, their officers are hypothesized to be less likely to engage in the measured outcomes.

Although the modeling of arrest, search, and force has great overlap in terms of the independent variables used to predict the outcome behavior of interest, there is some variation. To account for this, we alter the models in two ways to ensure properly specified models. First, citizen preference and problem type have been shown to be fairly consistent predictors of the decision to arrest (Novak et al., 2002; cf. Mastrofski, Snipes, Parks, & Maxwell, 2000). As such, these variables are incorporated into the arrest models in addition to the other controls. Second, the decision to arrest has been shown to be a predictor of police use of force (Terrill, 2001) and thus is included in the force models.

Results

The initial analyses presented are at the bivariate level, and consist of joint distributions of the dependent variables across officer education levels. As shown in Table 3, officer education and arrests are independently distributed ($\chi^2 = 1.66$, $p = .441$), indicating that they are not related at the bivariate level. Across all levels of education, the

Table 4. Bivariate Distribution of No Search/Search by Education (N = 3,353)

	High school or less		Some college, no BA/BS		4-year degree or higher	
	N	%	*N*	%	*N*	%
No search	374	76.8	1,127	77.3	1,070	76.0
Search	113	23.2	331	22.7	338	24.0
N	487		1,458		1,408	

Note: Chi-square = 0.69, p = .710.

Table 5. Bivariate Distribution of No Force/Force by Education (N = 3,356)

	High school or less		Some college, no BA/BS		4-year degree or higher	
	N	%	*N*	%	*N*	%
No force	157	32.2	644	44.1	610	43.3
Force	330	67.8	815	55.9	800	56.7
N	487		1,459		1,410	

Note: Chi-square = 22.71, $p < .001$.

proportion of encounters involving arrest varies little, from 14.5% for some college exposure to 16.2% for a 4-year degree. Similar to arrests, Table 4 shows that search behavior is also independently distributed ($\chi^2 = 0.69$, $p = .710$) and thereby not related to officer educational levels. Once again, the amount of variation varies little (between 22.7% and 24.0%). In contrast to arrest and search behavior, officer education level and the use of force are related at the bivariate level as indicated in Table 5 ($\chi^2 = 22.71$, $p < .001$). For example, approximately 56% of the encounters involving officers with some college or a 4-year degree resorted to force, whereas nearly 68% of encounters involving officers with no college experience used force.

Our next set of inquires center on multivariate analyses to examine the effect of education on arrest, search, and use-of-force behavior. As noted earlier, the multivariate technique employed is binary logistic regression. The analyses are presented in a stepwise manner, beginning with officer characteristics and subsequently adding the suspect- and encounter-level variables. Presenting the analysis in this way allows one to examine how each group of variables contributes to the model and how the impact of education changes as more variables are considered.

Arrest Modeling

Table 6 presents the arrest models. In the full model, neither some college ($b = –0.17$, $p = .336$) nor a 4-year degree ($b = –0.03$, $p = .853$) are significant predictors of arrest relative to encounters involving officers with no college education. Furthermore, none

Table 6. Binary Logistic Regression of *Arrest* on Officer, Suspect, and Encounter Characteristics (N = 3,351)

	Model 1—Officer		Model 2—Officer & suspect		Model 3—Full model	
	b (*SE*)	Exp(*b*)	*b* (*SE*)	Exp(*b*)	*b* (*SE*)	Exp(*b*)
Intercept	−1.65 (.20)	0.19	−2.54 (.60)	0.08	−3.50 (.66)	0.03
Officer characteristics						
Education						
Some college	−0.09 (.15)	0.91	−0.11 (.17)	0.90	−0.17 (.18)	0.84
4-year degree	0.01 (.15)	1.01	−0.01 (.17)	0.99	−0.03 (.18)	0.97
Experience	−0.01 (.01)	0.99	0.00 (.01)	1.00	0.01 (.01)	1.01
Male	0.06 (.14)	1.06	−0.10 (.16)	0.92	−0.13 (.16)	0.88
Non-White	−0.06 (.12)	0.94	−0.06 (.14)	0.95	−0.11 (.15)	0.90
Suspect characteristics						
Age			−0.12 (.04)	0.89**	−0.04 (.05)	0.96
Non-White			0.32 (.12)	1.37**	0.21 (.13)	1.23
Male			0.29 (.13)	1.34*	0.23 (.14)	1.26
Socioeconomic status			−0.50 (.10)	0.61***	−0.45 (.11)	0.64***
Resistance			0.48 (.07)	1.62***	0.37 (.08)	1.44***
Conflict			−0.07 (.09)	0.93	−0.11 (.10)	0.92
Weapon			−0.01 (.42)	0.99	0.02 (.44)	1.02
Demeanor			0.31 (.17)	1.36	0.49 (.19)	1.63**
Drug or alcohol			0.72 (.13)	2.05***	0.59 (.14)	1.80***
Evidence			0.58 (.03)	1.79***	0.65 (.04)	1.91***
Citizen request arrest			0.45 (.41)	1.56	−0.07 (.44)	0.94
Encounter setting						
Number of officers					0.45 (.04)	1.57***
Number of citizens					−0.03 (.01)	0.97**
Proactive encounter					−0.39 (.13)	0.71**
Observation site					0.61 (.13)	1.83***
Serious problem					0.87 (.25)	2.38***
N	3,351		3,351		3,351	
−2 log likelihood	2,869.22		2,265.47		2,036.13	
Model χ^2	2.86		606.61***		835.95***	
df	5		16		21	
Cox & Snell R^2	.001		.166		.221	

*$p < .05$. **$p < .01$. ***$p < .001$.

of the officer characteristics demonstrate a statistically significant influence on the odds of an arrest taking place. Such a finding is similar to that uncovered by Worden (1989) who, using PSS data, also found that officer characteristics did not influence arrest behavior. It is worth noting that when these characteristics are considered alone (Model 1), the model is not significantly different from a null model containing only the intercept.

Concerning suspect characteristics (socioeconomic status, resistance, intoxicated, evidence), numerous variables show consistent effects in the hypothesized direction. In addition, several interesting differences between Model 2 and the full model emerge. Introducing the encounter-level variables causes some physical characteristics of suspects—age, sex, and race—to no longer significantly predict the likelihood of an arrest. Moreover, suspect demeanor (e.g., whether the suspect was disrespectful to the officer) significantly increases the odds of an arrest taking place in the full model. Finally, all five encounter-level variables significantly influence the odds of an arrest.

Search Modeling

The binary logistic regression models for searches are presented in Table 7. Similar to the findings for arrest, attending college does not significantly influence search behavior (some college, $b = 0.06$, $p = .652$; 4-year degree, $b = –0.04$, $p = .777$). Contrary to the arrest models, however, one officer characteristic, officer race, produces a significant impact whereas non-White officers are less likely to search suspects relative to their White colleagues.

When suspect characteristics are considered in the full model, the presence of younger, male, and low-socioeconomic-status suspects all increase the odds of a search taking place. Other factors found to increase the likelihood of being searched include arrest, weapon, and intoxication. Conversely, suspects involved in higher levels of conflict with other citizens on the scene are less likely to be searched. Finally, when encounter-level variables are included in the full model, an increase in the number of citizens being present decreases the odds of a search taking place, whereas encounters with more officers present and proactive encounters are more likely to result in a search of the suspect.

Force Modeling

The binary logistic regression results for the use of force are shown in Table 8. Officer education level is significantly related to the probability of an officer using force in an encounter. When all other variables are held constant, officer education level is still significantly related to the use of force. Specifically, officers with some college exposure and 4-year degrees are significantly less likely to use force in an encounter ($b = –0.49$, $p < .001$ and $b = –0.68$, $p < .001$, respectively) relative to non-college-educated officers. Although more experienced officers are also less likely to use force, the introduction of encounter-level variables controlled for the relationship between officer race and the use of force.[9]

Model 2 controls for the effects of suspect characteristics. Introducing these variables does not mediate the influence of officer education level on the probability of force occurring. With the exception of suspect demeanor, which is not statistically significant, all the suspect-level measures are related to the use of force in the

Table 7. Binary Logistic Regression of *Search* on Officer, Suspect, and Encounter Characteristics (N = 3,353)

	Model 1—Officer		Model 2—Officer & suspect		Model 3—Full model	
	b (*SE*)	Exp(*b*)	*b* (*SE*)	Exp(*b*)	*b* (*SE*)	Exp(*b*)
Intercept	−1.10 (.17)	0.34	−0.74 (.37)	0.48	−1.23 (.39)	0.29
Officer characteristics						
Education						
Some college	−0.07 (.13)	0.94	0.03 (.14)	1.03	0.06 (.14)	1.07
4-year degree	−0.09 (.13)	0.92	−0.04 (.14)	0.96	0.04 (.14)	0.96
Experience	−0.02 (.01)	0.98**	−0.02 (.01)	0.98*	−0.01 (.01)	0.99
Male	0.23 (.12)	1.25	0.17 (.13)	1.19	0.13 (.13)	1.14
Non-White	−0.34 (.11)	0.71**	−0.34 (.12)	0.72**	−0.33 (.12)	0.72**
Suspect characteristics						
Age			−0.13 (.03)	0.88***	−0.14 (.04)	0.87***
Non-White			0.24 (.10)	1.28*	0.17 (.10)	1.19
Male			0.75 (.11)	2.12***	0.71 (.12)	2.04***
Socioeconomic status			−0.31 (.08)	0.73***	−0.31 (.08)	0.74***
Resistance			0.01 (.07)	1.01	0.04 (.07)	0.96
Conflict			−0.19 (.09)	0.83*	−0.11 (.09)	0.90
Weapon			0.98 (.31)	2.65**	0.97 (.31)	2.64**
Demeanor			−0.25 (.16)	0.78	−0.16 (.17)	0.86
Drug or alcohol			0.61 (.11)	1.83***	0.64 (.11)	1.90***
Evidence			0.04 (.03)	1.05	0.03 (.03)	1.03
Arrested			1.78 (.13)	5.95***	1.71 (.13)	5.52***
Encounter setting						
Number of officers					0.23 (.03)	1.26***
Number of citizens					−0.05 (.01)	0.95***
Proactive encounter					0.38 (.10)	1.46***
Observation site					0.08 (.10)	1.08
N	3,353		3,353		3,353	
−2 log likelihood	3,816.52		3,193.77		3,119.79	
Model χ^2	23.80***		448.54***		522.52***	
df	5		16		20	
Cox & Snell R^2	.007		.125		.144	

*p < .05. **p < .01. ***p < .001.

hypothesized direction. In addition, when introducing the encounter-level variables into the model (the full or Model 3), the education findings hold (i.e., those with some college or a 4-year degree are less likely to use force), whereas proactive encounters and those occurring in Indianapolis are more likely to lead to force.

Table 8. Binary Logistic Regression of *Force* on Officer, Suspect, and Encounter Characteristics (N = 3,356)

	Model 1—Officer		Model 2—Officer & suspect		Model 3—Full model	
	b (*SE*)	Exp(*b*)	*b* (*SE*)	Exp(*b*)	*b* (*SE*)	Exp(*b*)
Intercept	0.97 (.15)	2.64	0.11 (.32)	1.12	−0.30 (.34)	0.74
Officer characteristics						
Education						
Some college	−0.61 (.11)	0.55***	−0.61 (.12)	0.54***	−0.49 (.12)	0.61***
4-year degree	−0.66 (.12)	0.52***	−0.67 (.13)	0.51***	−0.68 (.13)	0.51***
Experience	−0.03 (.01)	0.97***	−0.03 (.01)	0.97***	−0.03 (.01)	0.97***
Male	0.13 (.10)	1.13	0.11 (.11)	1.11	0.11(.11)	1.11
Non-White	0.20 (.09)	1.22*	0.21 (.10)	1.23*	0.14 (.10)	1.15
Suspect characteristics						
Age			−0.15 (.03)	0.86***	−0.14 (.03)	0.87***
Non-White			0.27 (.08)	1.32***	0.22 (.09)	1.25**
Male			0.35 (.08)	1.41***	0.33 (.09)	1.39***
Socioeconomic status			−0.23 (.07)	0.80***	−0.25 (.07)	0.78***
Resistance			0.77 (.11)	2.16***	0.77 (.11)	2.16***
Conflict			0.41 (.09)	1.51***	0.46 (.09)	1.59***
Weapon			1.38 (.42)	3.98***	1.36 (.43)	3.91***
Demeanor			−0.11 (.15)	0.90	−0.03 (.15)	0.97
Drug or alcohol			0.51 (.10)	1.66***	0.57 (.10)	1.76***
Evidence			0.16 (.02)	1.18***	0.16 (.02)	1.17***
Arrest			1.05 (.15)	2.90***	1.08 (.16)	2.95***
Encounter setting						
Number of officers					−0.01 (.03)	1.00
Number of citizens					−0.00 (.01)	1.00
Proactive encounter					0.36 (.08)	1.43***
Observation site					0.43 (.08)	1.53***
N	3,356		3,356		3,356	
−2 log likelihood	4,509.37		4,060.38		4,008.07	
Model χ^2	57.70***		506.69***		559.01***	
df	5		16		20	
Cox & Snell R^2	.017		.140		.153	

*p < .05. **p < .01. ***p < .001.

Discussion

Previous examinations of the relationship between higher education and police behavior have focused on a single outcome, thereby impeding the comparability of education's potentially differential impact on a variety of officer behavioral outcomes. The purpose of the present article was to examine the impact of higher education on three key police

decision-making points—arrests, searches, and force. This analysis allowed for a comparison of higher education's impact to be made across more than 3,000 police–suspect encounters in two cities.

Overview of Findings

Officer education level yielded no influence over the probability of an arrest taking place in an encounter. This was true not only when suspects- and encounter-level characteristics were held constant but also when individual officer characteristics were considered alone. This finding supports previous indications of a null relationship between officer education and arrests (Brandl et al., 2001; Smith & Aamodt, 1997; Smith & Klein, 1983; Worden, 1989). Indeed, only a minority of studies from the mid-1970s have indicated a discernable relationship between officer education and arrest behavior. Two of these studies used a very small sample of officers (Bozza, 1973; Glasgow et al., 1973), and one did not actually measure arrests per se but rather officer attitudes toward the use of arrests (Fickenauer, 1975).

Schafer and colleagues (2004) hypothesized that officer education could be related to search decision making but were unable to test for such an effect. In fact, no previous inquiry has examined the effect of officer education on the propensity to search suspects. The results of the present analysis indicate that at both the bivariate and multivariate levels, higher education does not affect whether a search will take place in a given police–suspect encounter.

When compared to arrest and search behavior, there have been substantially more studies that have examined the role of education on the use of force. Much of this work, especially more recent research in this area (Aamodt, 2004; McElvain & Kposowa, 2008; Terrill & Mastrofski, 2002), has found that college-educated officers use force less often than their less educated counterparts. Our analysis indicates similar findings. More specifically, officers with some college exposure or a 4-year degree are significantly less likely to use force relative to non-college-educated officers.

Further Questions for Consideration

The findings as a whole beg the question as to how and why higher education has a differential impact on these three dimensions of police behavior. In the past, researchers have approached this in three different ways. In one approach, researchers have proceeded atheoretically (e.g., Cascio, 1977; Cunningham, 2006; Fickenauer, 1975) and do not directly discuss why higher education would affect officer decision making but instead focus on the question of whether higher education influences officer behavior. Researchers following a second approach identify some underlying hypotheses but fail to test them directly (e.g., Paoline & Terrill, 2007; Sherman & Blumberg, 1981).[10] The final group includes those studies that have tested various hypotheses. Unfortunately, this literature has produced inconclusive results (Dantzker, 1993; Paoline et al., 2000; Shernock, 1992; Worden, 1990) and only applied a broad theoretical framework in relationship to higher education and attitudes/values (Worden, 1990).

The present analysis itself is not capable of providing a satisfactory answer as to how and why education may or may not matter. As indicated, this is partially due to the lack of empirically tested hypotheses regarding higher education and policing that could be used to interpret the results. Nonetheless, some speculative interpretation may be useful and hopefully subjected to empirical analysis in future research.

The nature or distinctive roles that arrest, search, and force acts play within a police–suspect encounter may be one reason why higher education offers a differential impact. Arrests are generally an end to the encounter, representing the point at which the police have brought an individual into the formal criminal justice system. Force, however, represents a means for officers to achieve an end. Searches occupy a middle ground between arrests and force in that they can represent an end to the encounter if no evidence is uncovered, or may be used as a means to obtain evidence toward another end (e.g., the arrest of the suspect). This distinction carries implications toward the exercise of discretion in resorting to these behaviors.

Unlike arrests or searches, the use of force is not inherently an end to the encounter but primarily a very different phenomenon. Force may be used throughout encounters as a means to controlling the behavior of suspects (Muir, 1977). In any given encounter, police officers are permitted to use force if they feel it would be appropriate (Bittner, 1970). The police are thus afforded great discretion in the application of force to suspects as it is not legally required or prohibited in any encounter. On this point, Klockars (1996) states, "the police need not invoke 'the law' to use force, though they may decide to use force to invoke 'the law'" (p. 12). In one sense then, as opposed to the decision to arrest or search, there is more room for officer education to have an impact on discretion with respect to force.

Limitations of the Current Inquiry

Several limitations are worth mentioning. First, the manner in which this analysis attempted to capture police behavior—by dichotomizing particular outcomes—has the potential to ignore a wide variety of intermediate decisions which may have been relevant (see Terrill, 2001). Because the analysis was concerned only with whether the behaviors of interest were present during the encounter, the results may underestimate the influence of higher education on officer behavior.

Second, similar to previous studies of education and officer behavior, the present inquiry was not capable of testing specific hypotheses regarding the mechanism by which higher education influences officer behavior. Because the focus of POPN was not specifically on higher education, officer education level was captured using a single, eight-category variable. Future research should include a multitude of measures to better capture officer exposure and involvement in higher education. Potential measures may include whether the degree was earned prior to, or during, police employment as well as whether college major, extracurricular activities, and grade point average matters in some way (see Hudzik, 1978).

Third, given the age of the data used for the current inquiry (12 years), the results may not be indicative of the impact of modern higher education on police behavior. In

the time since the data were collected, access to online education and other forms of distance learning have increased substantially. During the 1996-1997 academic year, 1.6 million students were enrolled in distance learning courses in the United States (U.S. Department of Education, 1999). By 2006-2007, this figure was estimated to have grown to 12.2 million (Parsad & Lewis, 2008). Although research has not shown consistent differences in the effectiveness of distance learning versus classroom education (e.g., Bernard et al., 2004), it is unclear as to how many police officers are using various forms of distance learning to gain a college education, and what impact, if any, this education carries to their performance. Nonetheless, despite the age of the POPN data, we believe this data set is still valuable relative to other data sets currently available.

Fourth, although a qualitative analysis would provide richer detail as to how higher education may influence officer decision making, such an approach was ultimately dismissed for two reasons: lack of an explicit theoretical framework within the prior literature and insufficient detail found within the narrative accounts of the POPN data. More directly, the paucity of literature on possible explanations fails to offer a sufficient guide as to what to look for within narrative accounts (e.g., certain cues or patterns that may lead one to better understand the role of higher education with respect to arrest, search, or force). Furthermore, the level of detail included in POPN observer "debriefing" sessions was sparse, if provided at all.[11] Hence, with little theoretical guidance and limited narrative descriptions, the ability to conduct any type of meaningful qualitative analysis was eliminated.

Directions for Future Research

The relationship between higher education and officer behavior remains unresolved; however, the potential for research in this area is both abundant and exciting. It is important for future research not to ignore the need for developing hypotheses regarding how and why higher education influences officer behavior. Analyses which produce findings regarding the direction of education's impact on officer behavior will be useful in deciphering unresolved relationships, and those findings will certainly benefit from empirically derived, stable explanations. In the past, hypotheses have generally been presented as a means for interpreting results but have not been tested themselves. Given this, findings regarding higher education's impact on officer behavior have been interpreted through any number of hypotheses, each with little empirical support. Rather than interpreting results through the best explanation, researchers have to often simply picked explanations compatible with their findings.

To test varying hypotheses involving higher education, one might draw on Carter and colleagues (1988) list of assumed benefits. According to these researchers, one advantage to hiring college-educated, as opposed to non-college-educated, officers is that higher education "[permits] the individual to learn more about the history of the country, the democratic process and appreciation for constitutional rights, values and the democratic form of government" (Carter et al., 1988, p. 16). This particular hypothesis may be reduced to posit that higher education positively influences an officer's appreciation of and commitment to democratic values. It would be possible to test this

hypothesis by creating a scale that measures such appreciation and commitment. One could then test whether college-educated and non-college-educated officers differ significantly in their attitudes, and if so, whether such attitudes help explain differences in behavior. If it is found that it does, this finding would begin to chip away at the questions of how and why higher education influences officer behavior as it would provide evidence that higher education affects officer behavior by positively influencing democratic values.

Aside from testing hypotheses which have been forwarded by police scholars, research in the field of education has produced a large amount of empirical studies regarding education's impact on students in general (e.g., Feldman & Newcomb, 1973; Pascarella & Terenzini, 1991, 2005). Very little has been done to relate this research to criminal justice actors. What could be gained through a careful examination of education research are new insights on research methodology to isolate the effects of education on behaviors and a better understanding of the salient effects of higher education.

As an example, previous research in education illustrates that some salient effects of college on students are improvements in critical thinking, reflective judgment, and communication skills (Pascarella & Terenzini, 1991, 2005). Police scholars may consider examining the extent to which college-educated officers differ from non-college-educated officers in these respects. If it is found that they do differ significantly, researchers may examine whether differences in these skills explain any variation in officer behavior or decision making. As with the example above, findings from such an inquiry would begin to build a better explanation for how and why higher education influences officer behavior. An examination of higher education and officer communication skills would be especially relevant to the literature on police use of force, as Muir (1977) posited that communication skills play an important role in the skillful use of force. This is a falsifiable hypothesis that may be tested and such an examination could shed light on how and why higher education influences the use of force. Also, armed with information approximating the areas where one may expect to see higher education have an influence on officer behavior, researchers may wish to examine the extent to which police training or culture degrades, mediates, or amplifies those effects. The potential for research in this area is bountiful.

Implications for Policy

In any examination of the impact of higher education on police behavior, the most prudent policy implication regard whether police departments should include a college degree as a prerequisite for employment. The findings of the present analysis alone do not warrant a reversal of the statement of the National Academics Panel on Police Policy and Performance (Skogan & Frydl, 2004) when it found that there was insufficient evidence to recommend a college education requirement for employment as a police officer. This is not particularly good news for proponents of higher education (although it does not represent bad news either). There is simply not enough quality evidence to determine whether higher education has a desirable effect on police performance.

As noted, this is an area of policy which can benefit immensely from future lines of research. It may be possible in the future to address whether the effect of college diminishes over time, as such studies would attest to the potential value of providing incentives for officers to return to school later in their careers. Research may also identify characteristics of higher education which produce outcomes most beneficial to the police, such as college major, the impact of the quality of the institution, or enhanced critical thinking, reflective judgment, and communication skills. Police administrators would benefit from a better picture of what their department could expect to receive should they decide to require a college degree of their recruits. Regarding research in this area, Carlan (2007) recently examined officer's perceptions of the perceived benefits of a criminal justice degree in particular, providing evidence that such a degree not only improved officer's knowledge of the criminal justice system and its functions but also improved the officer's communication and administrative skills, relative to degrees in other fields of study. Although studies such as this show much potential for evidence of a beneficial effect of higher education to be found, scholars and practitioners also need to remain open to the notion that higher education may be unrelated to some dimensions of police performance.

In closing, research in the area of higher education and policing has the potential to produce not only valuable knowledge regarding the nature of education but also the improvement of police performance. It should not be expected that a college education requirement will provide amelioration of all the intricacies of police discretion. The enterprise of using scientific inquiry to improve the practice of policing, however small an improvement it may be, should not be discounted.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the authorship and/or publication of this article.

Funding

This article is based on data from the Project on Policing Neighborhoods, supported by Grant No. 95-IJ-CX-0071 by the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice. Points of view are those of the authors and do not necessarily represent the official position or policies of the U.S. Department of Justice.

Notes

1. We chose arrest, search, and force as they represent key decision-making points. This is not to say that other behavioral outcomes should not be explored in future studies (e.g., problem solving, victim treatment, corruption, etc.); only that we felt it was imperative that these traditional behaviors be examined in a comparative manner.
2. The army intelligence test being referred to was the Army Alpha intelligence test created by Yerkes (1921). Gould (1996) offers a scathing critique of Yerkes methods, questioning the test's reliability, and providing evidence that it does not actually measure intelligence but

rather familiarity with American culture. As such, this figure of "75%" should be approached with caution.

3. The other commissions being the 1969 National Commission on Causes and Prevention of Violence, the 1971 President's Commission on Campus Unrest, the 1973 American Bar Association Project on Standards for Criminal Justice, and the 1973 National Advisory Commission on Criminal Justice Standards and Goals (Sherman, 1978).
4. Bozza (1973) did not attempt to isolate the effect of education, instead comparing groups of young, higher educated officers to older, lesser educated officers. He concedes that the difference between the groups could be attributed to more experienced officers learning methods of solving problems without deferring to the arrest process.
5. Sherman and Blumberg (1981) concede that their findings may be the result of a lack of older, more experienced, college-educated officers in their sample.
6. As the analysis will use binary logistic regression, odds will be compared to make this determination.
7. There are limitations when measuring some of these outcomes as simple dichotomies. For instance, in regard to searches, variation in discretionary and nondiscretionary searches will be lost. Also, measuring use of force dichotomously ignores the severity of force or different types of force that may be used (e.g., restraint techniques versus impact methods, verbal versus physical force; Terrill & Mastrofski, 2002). However, if these variables are not measured similarly (i.e., dichotomously), their comparability would subsequently be reduced in the analysis.
8. This evidence scale is a summative index of evidence implicating the suspect as a violator of the law. It is weighted to appropriately capture the relative importance of some pieces of evidence over others. The value increased by 3 if the officer observed the suspect engage in illegal behavior, 2 if the officer heard the suspect confess, 1 for physical evidence on the scene, 1 for circumstantial evidence, and 1 for hearsay evidence from citizens on the scene, for a maximum possible score of 8.
9. These findings are not surprising given that the analysis used the same data and a similar set of variables as an analysis by Paoline and Terrill (2007). However, the point of including officer use of force in the analysis was to compare it to arrests and searches in terms of how higher education may or may not impact these decisions.
10. Carter and colleagues (1988, pp. 16-18) compiled a list of these hypotheses, most of which revolve around differences in attitudes.
11. In some cases found within the POPN data, officer decision-making rationale was queried as part of a "debriefing" session, where the observer would probe officers regarding their approaches and reasons for handling the police–citizen encounter.

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