

POLICE ORGANIZATIONAL STRUCTURE AND POLICE PERFORMANCE

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ABSTRACT

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Police play a pivotal, visible role in American society and operate within a complex matrix of environments that influences how they are structured. Police scholars understand how various external elements shape organizational structure, but little is known about how structure effects police output. This paucity of literature is troubling as police departments need to understand whether their very structural design is influencing the effectiveness and efficiency of their work.

To this point, few studies explain how organizational structure effect police performance and fewer still use correctly operationalized and empirically sound structural variables. Therefore, this study examines whether various elements of organizational structure, such as structural complexity, play a role in predicting police performance. The primary goal of this study is to understand the impact that organizational structural factors have on police output. The secondary goal is to determine if the organizational effect is tempered by the addition of community factors such as concentrated disadvantage and racial heterogeneity. By accomplishing these tasks, the study hopes to expand the police organizational literature.

Data were collected from 357 large police departments located across the United States. Results indicate that police organizational structure does not play a significant role in police performance, especially when included with community factors. Certain demographic elements of a police department do seem to decrease crime rate and

increase clearance rate but they are not consistent. Findings, policy implications, and directions for future research are discussed.

KEY WORDS: Police; Police organization; Organizational theory; Police performance

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CHAPTER I

Introduction

Policing is an omnipresent and omnipotent industry within the United States. On a daily basis, police make headlines across the country for both the right and the wrong reasons. Approximately 1.7 million citizens work for one of the 18,000 police departments in this country (Banks, Hendrix, Hickman, and Kyckelhahn, 2016). Logically, it is socially and economically imperative to understand how these police agencies work on an organizational level. Specifically, understanding police performance through the operationalization of organizational structure is key.

Organizational structures are multi-dimensional making them exceedingly difficult to measure. However, researchers agree on a general definition of structure. Blau (1974) defines structure as, “The distributions of people among social positions that influence the role relations among those people” (p. 16). Broadly speaking, structure refers to people and the relations amongst those people. Furthermore, structure organizes individuals to produce work through control and coordination (Blau, 1974). Police organization structure then, is the term most often used in reference to a large and varied list of organizational characteristics (Maguire, Shin, Zhao, & Haassell, 2003). Langworthy (1986) defines formal structure as, “The framework on which a police organization arranges its resources to conduct its activities” (p. 17). Similarly, Scott (1992) defines organizational structure as the formal apparatus through which organizations accomplish their two core activities which are the division of labor and the coordination of work. According to these two definitions, any measure of organizational structure needs to represent the approach organizations take to divide labor and direct

workers (Langworthy, 1983; Maguire, 2003). These two concepts are referred to as structural complexity and structural control.

Structural complexity can be defined as the degree of differentiation within a police department. Differentiation refers to the way an organization divides labor. The three types of differentiation are functional, spatial, and vertical (Maguire, 2003). The more differentiation a police department has in one or all of these areas, the more complex the organization becomes. Structural control is comprised of administrative overhead, formalization, and centralization (Maguire, 2003). Think of these as the amount of bureaucracy that exists within a police department.

Again, organizations are exceedingly complex meaning that their features are both dependent and independent variables. The organizational structural research can be broken down into 3 categories: studies that use police structure as an independent variable, studies that view police structure as a dependent variable, and attempts to explain police structure via a series of independent variables. In 2003, Ed Maguire authored "Organizational Structure in American Police Agencies." The first quarter of this book explained the better part of half a century of police organizational scholarship. During the course of his review, he concluded that studies using police organizational structure as an independent variable had conceptualized and operationalized structure poorly (Maguire, 2003). This marked a change in the way organizational theorists and scholars studied police organizations. The primary aim of police organizational research the past two decades has been to explain how the environment around police agencies effects structural complexity and structural control (Maguire, 2003; Blau, 1994; Jurek, Matusiak, and Matusiak, 2016; Jurek and King, 2020; Kimberly, 1976; King, 1999). In

other words, structure is the dependent variable. This shift was so important because it allowed researchers to examine police organizational theory directly due to the creation and use of more effective organizational measures. As a result, the field has acquired empirical evidence on the efficacy of structural control theory and institutional theory (King, 1999; Matusiak, King, and Maguire 2017; Zhao, Ren, and Lovrich, 2010).

Discussing structure as a dependent variable is best done in a historical context. Ostrom, Parks, and Whitaker (1978) were among the first to examine how the size of a department impacted personnel assignments. Monkkonen (1981) also examined departmental size, as he attempted to explain how size impacted the amount of bureaucracy in a department. As you can see, the initial use of structure as a dependent variable is relatively simplistic focusing on how size shapes one or two administrative variables. Until recently, Robert Langworthy's "The Structure of Police Organizations" was the sole comparative analysis of police organizational structure. He takes a large step forward and explicitly lays out five dimensions of organizational structure including spatial differentiation (number of police stations and beats), occupational differentiation (civilianization), functional differentiation (specialized divisions), administrative overhead (Number of employees designated to maintain the bureaucracy), and hierarchical differentiation (pay discrepancy between highest and lowest ranking officer) (Langworthy, 1986). More modern literature examines how police organizations change over time (King, 1999; Jurek, Matusiak, and Matusiak, 2017) and whether or not police departments have become more complex (Maguire, 2003). The most important element to come out of studies that use police organization as a dependent variable is a more nuanced and accurate measure of organizational structural variables.

Many studies have used and still use organizational structure as an independent variable. A number of structural elements are used as independent variables including bureaucratization (Harrison, 1975; Harrison and Pelletier, 1987; Maguire, 1994; Mastrofski, Ritti, and Hoffmaster, 1987; Monkkonen, 1981; Murphy, 1986; Smith and Klein, 1983; Smith 1984; Smith and Klein, 1984; Smith Visher, and Davidson, 1984; Worden, 1994), specialization (Swanson, 1978), centralization (Smith and Klein, 1984; Swanson, 1978), and organizational scale (Mastrofski, 1981). These studies examine many aspects of police departments such as the organization's effects on police officer's attitudes and behaviors (Harrison, 1975; Smith & Klein, 1983; Wilson, 1968; Worden, 1994), likelihood of arrest (Crank, 1990; Maguire, 1994; Mastrofski, 1981; Mastrofski, Ritti, and Hoffmaster, 1987; Murphy, 1986; Slovak, 1986; Smith and Klein, 1983; Smith and Klein, 1984; Smith Visher, and Davidson, 1984; Swanson, 1978), use of force (Worden, 1994), pursuit policy (Wells and Falcone, 1992), and child sexual abuse and human trafficking (Jurek and King, 2020; Maguire, 1994). For example, Wells and Falcone (1992) are interested in determining how organizational structure (vertical differentiation, hierarchical structure, and a formalized mission statement) effects pursuit policy. The authors operationalize vertical differentiation as the number of ranks and find that organizations with the highest vertical structures have the most complex pursuit policies. Hierarchical structure is operationalized as a two-part index intended to determine how restrictive the chain-of-command is and whether the police chief maintained an open-door policy. The results indicate that departments adhering to a strict hierarchy and a well-established chain-of-command had more restrictive pursuit policies and extensive record-keeping (Wells and Falcone, 1992). Lastly, the authors determined

whether a department had formalized mission statement and found that departments with said mission statement had more formalized and restrictive pursuit polices.

Purpose and Research Questions

Conceptualizing structure as an independent variable fell out of favor as the measure of structure always had a theoretical or empirical flaw. Notice the number of studies that use the term “bureaucratization” as an independent structural variable. Each one of these studies operationalizes bureaucratization differently. For example, Monkkonen (1981) uses the ratio of non-patrol to patrol officers to measure bureaucratization whereas Smith and Klein (1983, 1984) use an index consisting of specialization, structure, size, and civilianization. Maguire (2003), points out the various flaws coming to the conclusion that:

The measurement of structure in all of these studies suffers from at least one of several theoretical and/or empirical shortcomings, and other than enabling us to learn from past mistakes, does not offer much promise for guiding future research (p. 59).

With such a damning statement, it is little wonder why using structural variables as independent variables fell by the side during the 2010s. In essence, these independent structural variables were not well-thought out and suffered from the fact that they were wholly removed from any type of theoretical grounding. So why use organizational structural variables to determine police performance now?

The short answer is that organizational structure variables are now theoretically and empirically grounded constructs. As noted earlier, the past twenty years of organizational structural scholarship has been myopically focused on creating better

measures of structure (King, 1999; Langworthy, 1986; Maguire, 2003). To this point, there have been virtually no empirical tests of how these new measures of structure impact police output. This begs the question, how then do the new and empirically rigorous measures of police structure effect how police operate? With a question so broad, the current research will focus on how organizational structure effects police performance.

For the better part of six decades, a sizable portion of police scholarship has been focused on examining the environmental correlates of police agency outputs (Davenport, 1999; Maguire, 2003; Slovak, 1986, Wilson, 1968). In other words, this scholarship measures what police do and how good they are at doing it. This area of research is typified by using arrest rates, clearance rates, response time, reductions in serious crime, and enforcement productivity to measure performance (Sparrow, 2015). For two decades, researchers have begged police and scholars alike to consider using more accurate measures of performance. In *Policing a Free Society*, Goldstein lists the core functions of police. These functions include the ability to prevent and control serious crime, to provide aid to individuals who need it, to resolve conflict, and to maintain a feeling of safety among other things (1977). Inspired by Goldstein, Mark Moore penned *Recognizing Value in Policing: The Challenge of Measuring Police Performance* in which he discusses a set of seven dimensions that could offer a more efficacious foundation for assessing police performance (2002). Some of these dimensions include reducing criminal victimization, holding offenders accountable, and achieving a level of legitimacy among citizens being policed. In essence, Moore (2002) argues that solely using crime rates captures just one dimension (criminal victimization) of several

performance dimensions. He notes that it is critically important to try and measure as many elements as possible. In other words, crime reduction should be treated as a net revenue not gross revenue as there are many expenses incurred to achieve lower crime rates. In reality this is quite difficult to do as measuring legitimacy and fair use of force brings about its own methodological hurdles. Taking inspiration from Goldstein and Moore, this dissertation will employ both crime rates and clearance rates as the primary measures of police performance.

So then, how do the aforementioned empirically rigorous measures of police structure effect modern measures of police performance? The current research seeks to answer this question by evaluating how modern measures of police organizational structure impact more efficacious measures of police performance. To this point, few studies explain how organizational structure influences police performance and fewer still use correctly operationalized and empirically sound structural variables. Understanding how and to what degree the structure of a police department influences its performance is a critical question that has gone unanswered for too long. We live in an era of hypercritical police scrutiny. Many police departments are trying to modernize, trying to become more community oriented, and are trying to become more diverse but they lack the information to do so successfully. Police legitimacy has not been questioned to this degree since the civil rights movement and cooler heads are not prevailing. We need to help police departments understand what factors affect their performance, especially if it is coming from an administrative level as that is quite an easy fix. As will be clarified in the literature review, we have much more empirically rigorous measures of police structure and should be testing these measures to determine their effect on performance.

Police organizational structure is a powerful force as it is proven to have a significant impact on police stress (Zhao, He, and Lovrich, 2002) and clearance rate (Salimbene and Zhang, 2020). It is logical to assume that these organizational elements will also influence performance.

The sample used in this study consists of large police departments across the country as well as crime data from the city each respective department is located in. This study also aims to determine what community-level factors effect police performance. The goal here is threefold. First, to have a representative sample of large police departments representing pockets across America. Second, to include as many measures of structure as possible as they tend to work with one another. Lastly, to include as many potential covariates of police performance by including a series on control variables designed to measure community effects such as population, poverty, and population mobility.

CHAPTER II

Literature Review

The following review discusses organizational structure and related theories and police performance literature. This review will be broken into three sections. First, a review of related organizational theory. Second, an empirical review of organizational structure discussing its use as both an independent variable and a dependent variable. Third, an examination of the extant literature on police performance and how it is related to organizational structure.

A Brief History of Police Organization Theory

It is hard to imagine a world without police but just 200 years ago, police and police departments as we currently know them, did not exist. In fact, until the mid to late 18th century, a professional police force could not be found anywhere in the Western world as most towns and cities operated under a constable-watch system, which dates back to 13th century England. The constable acted as a part time peacekeeper who could require the help of ordinary citizens in making an arrest (Monkkonen, 1981). The movement away from an individual and informal constable-watch system towards a more organized body signaled the beginning of the professionalization of police. Today, police are an omnipresent force unified under an organizational umbrella that sets the standard for nearly every action they take. Even the much-maligned discretionary practices of officers are heavily controlled by the police department. The overwhelming force departments exert on police has captured the attention of police scholars for the better part of 70 years leading to a branch of police studies known as police organizational research.

The initial formalization of police departments took place in London during the 1800s (Klockars, 1985). London Metropolitan police commissioners created a collection of individuals with the shared goal of preventing crime. In the process, these commissioners made decisions that would shape the profession for centuries to come (Burruss, Giblin, & Schafer, 2017; Heininger and Urbaneck, 1983). During this initial founding period, scholars and practitioners focused on issues of the time such as labor shortages and uniform style (Monkkonen, 1981; Wren, 1972). Two hundred years later, the focus of scholarship has shifted to officer discretion, race relations, response time and a plethora of other topics. One area that has received extensive attention recently is the field of organizational theory and behavior.

Despite the fact that organizations have existed for nearly all of human history, organization theory - any generalization about an organization - is a distinctly 20th century phenomenon (Starbuck, 2003). The proper study of organizational theory can trace its origins to the early to mid-20th century when Max Weber, Henri Fayol, and Frederick Taylor discussed scientific management, means to structure work more efficiently, manners to increase workflow, and the importance of bureaucracy (Fayol, 1949; Taylor, 1916; Weber, 1968). The idea of 'organizational theory' might have originated with Gulick's (1937) phrase 'the theory of organization' but Starbuck (2003) argues that Simon (1952) promoted the phrase "organization theory." Simon (1952) took the bits and pieces from Weber, Taylor, and Fayol, and envisioned "organization theory" as an all-encompassing category of study including scientific management, industrial psychology, human resource management and study, industrial engineering, motivation, and culture.

Classical approaches to organization theory focus on efficiency and effectiveness. As far as classical theory is concerned, structure is merely a determinant of how good an organization is at doing its job. The classical approach adheres to a “closed system” model meaning that organizations were separate from the environment (Maguire, 2009). The lynchpin theory during this time period is Max Weber’s rational-legal model, which assumes that the most efficient bureaucratic ideology is the most important determinant of structure (Weber, 1968). Weber argues that the formal structure of an organization is the primary determinate of employee behavior while the environment is irrelevant (Mastrofski, Ritti, and Hoffmaster, 1987).

Since the late 20th century, organization studies have shifted to an “open model” approach. In direct opposition to the closed model, the open system approach stresses the importance of the environment as the primary determinant of structure and organizational outcomes. The defining characteristic of an open system approach is the assumption that an organization is dependent on the environment for survival and is forced to adapt to said environment (Maguire, 2009; Scott, 1992). The core tenant of open system approaches has given rise to the two most notable modern police organization theories in structural control theory (Donaldson, 1995) and institutional theory (Meyer and Rowan, 1977).

Since the mid 20th century, organizational studies have become much more compartmentalized (Starbuck, 2003). For example, there are roughly two areas of study within organizational research. The first, organizational theory, now references a specific set of literature that examines organizations from a macro level (Porter, Lawler, & Hackman, 1975; Tompkins, 2005). The goal of organizational theory researchers is to

study variation across organizations as well as inter-organizational relationships (Burruss, Giblin, & Schafer, 2017). The second area of organizational research is referred to as organizational behavior, which takes a micro-approach to the discipline. Organizational behavior researchers focus on the effects the organization has on individual officers. Topics in this area include culture, workgroups, and attitudes (Paoline, 2003; Reuss-Ianni, 1983).

Modern organizational theory is dominated by the empirical testing of two competing theories: structural contingency theory and institutional theory. At its core, structural contingency theory (SCT) is an environmental theory. However, it does not focus on the political environment or the institutional environment or the inter-organizational environment. Instead, SCT focuses on the technical environment. Proponents of SCT argue that organizations exist in a rational, external environment in which success is determined by effectiveness and efficiency (Donaldson, 1995). They are rational because they adopt structures and activities that best aid them in achieving specific goals (Maguire, 2003). The most successful organizations have a clear purpose and actively move towards that purpose while constantly seeking structures to increase productivity (Mastrofski and Ritti, 2000). If an organization fails to meet its objective, the organization adapts its structure in an attempt to regain its efficient performance (Donaldson, 1995). SCT theorists focus on either how and why the environment affects an organization or how the organization interacts with the environment. The organization is always viewed as the dependent variable. Donaldson (1987) claims that when contingencies in the environment of an organization change, they will most likely experience a decrease in performance wherein the organization enters a state of misfit. In

order to regain fit, organizational leaders make changes to the organizational structure or approach to adapt to the new contingencies. The response of an organization to its environment is commonly referred to as the structural-adaptation-to-regain-fit model (Donaldson, 1987). Contingencies in the technical environment vary and include city population, socioeconomic status of a community, demographics and so forth.

SCT rests on the key assumption that “low uncertainty” tasks are best performed by a centralized hierarchy (Donaldson, 1995). Centralized hierarchies allow for fast, close, and cheap coordination between members of an organization. However, as tasks become more uncertain, the hierarchy must loosen control as they cannot possibly foresee every contingency. Whenever a hierarchy decreases control, the cheap and simple structure it once had is replaced by a more formalized and expensive structure. The benefit of decreasing simplicity is innovation (Donaldson, 1995). As the size of an organization increases, the once centralized structure grows into a hierarchical bureaucracy punctuated by specialized units. Donaldson (1995) explains, “Bureaucracy brings disbenefits through rigidity, dysfunction, and some loss of control, but these are more than out-weighed by the increase in predictability, lower average wages, reduction in managerial overhead and computerization...” (p.53).

The aforementioned contingencies influence various structural elements within an organization. For example, population size is likely to affect the number of police officers in a department. SCT is one of the most well tested theories with researchers looking at a vast assemblage of environmental factors such as community policing (Zhao, 1996), organizational size (Crank & Wells, 1991; Giblin, 2006; King, 2014; Maguire, 2003), and agency budget (King, 2014). Again, organizational leaders notice changes in the

aforementioned contingencies and then make a rational decision on how to adapt to their new environment in order to regain fit. SCT can best be described in a few words, adapt to change.

SCT is one of two predominant theories in the new paradigm of police organizational research. The contingency paradigm has been used to examine behaviors, structures, and practices of police organizations (Langworthy, 1986; Maguire, 2003; Zhao, 1996; Zhao, 1994). More recently, contingency theory has even been used to examine police innovation such as the implementation of community policing (Kelling and Moore, 1988; Mastrofski, 1988; Zhao, 1996) and the implementation of police gang units (Katz, Maguire, Roneck, 2002). Over the years, contingency theory has lost its appeal to many organizational theorists but is still used to determine whether organizations really are rational entities.

Institutional theory is the second preeminent theory in the modern organizational realm. Similarly, to the other environmental theories, institutional theory sees organizations existing in and interacting with an external environment. However, instead of residing in a technical environment or a political environment, institutional theory places organizations in an environment of legitimacy, tradition symbol, and mythology (Meyer and Rowan, 1977). There are two main paths through institutional theory. The first theory of institutional environment is presented by Meyer and Rowan (1977) in which they argue that the formal structure of an organization reflects “institutional myths” more than output or activities (p.341). Up until this point, organizational theory typically focused on external elements that affected the formalization or structure of an organization. Institutional environment theory looks inward, to the norms and values of

an organization as the most important predictors of formalization and structure. Meyer and Rowan (1977) state:

Formal structures are not only creatures of their relational networks in social organizations. In modern societies, the elements of rationalized formal structure are deeply ingrained in, and reflect widespread understandings of social reality. ...Elements of formal structure are manifestations of powerful institutional rules which function as highly rationalized myths that are binding on particular organizations (p. 343).

In essence, Meyer and Rowan argue that organizations must be seen as legitimate actors. The best way of conveying legitimacy is to adhere to myths (deeply ingrained traditions or rules) created by stakeholders within their environment (Meyer and Rowan, 1977). For example, police adopt a militaristic hierarchy or a technical innovation (2-way-radio or sidearm) not to increase efficiency but to make the organization look legitimate in the eyes of stakeholders. The crux of Meyer and Rowan's theory is that the primary concern of organizations is to increase legitimacy. Legitimacy can best be viewed as a currency that is gained or lost via interactions with institutional sectors such as community stakeholders, politicians, regulators, and so on (Aldrich, 1999; Donaldson, 1995; Meyer & Scott, 1983). Most importantly, gaining legitimacy by following rules set forth by stakeholders allows organizations to act with autonomy from their environment, therefore freeing the organization to design its own formal structure (Maguire, 2014).

The second major path in institutional theory addresses institutional isomorphism, or how organizations change (DiMaggio & Powell, 1983). Research on isomorphism,

then, centers on why organizations change as well as why organizations become more similar over time. In their theory, DiMaggio and Powell posit three categories of isomorphism. Mimetic isomorphism occurs when organizations mirror changes made by other organizations in an effort to gain legitimacy. Coercive isomorphism is change that is forced upon an organization. Lastly, the professionalization of a field is referred to as normative isomorphism (DiMaggio & Powell, 1983).

For two decades, scholars have argued over which approach is best. Recently, researchers have begun to directly compare elements of SCT and institutional theory in an attempt to determine whether technical elements or institutional elements are more likely to affect organizations (Brisner & King, 2016; Burruss, Giblin, & Schafer, 2010; Giblin, 2006; King, 2014; Matusiak, 2018; Mastrofski, 1988; Mastrofski & Ritti, 2000). A noteworthy finding is that these studies have consistently found more support for institutional theory than SCT. Matusiak (2018) determined that police chiefs were more heavily influenced by the institutional environment than the technical environment. Brisner and King (2016) found similar results noting that institutional influences were more important than environmental contingencies in a chief's assessment of threats to their agency.

Police Organizational Structure

While understanding modern police organizational theories is important, the current research is focused on police organizational structure, which is in essence, the actionable element of police organization theory. Organizational structure is typically broken into structural complexity and structural control (Maguire, 2003). Structural complexity is akin to differentiation and simply refers to the way an organization divides

labor. The three types of structural control are referred to as functional differentiation, spatial differentiation, and vertical differentiation (Langworthy, 1986; Maguire, 2003). Functional differentiation is defined as the extent to which tasks in a police department are broken into functionally unique units (Langworthy, 1992; Maguire et al., 2003). For example, the NYPD is more functionally differentiated than a small-town department as the NYPD has separate units for homicide, arson, terrorism, and so forth. Over the past century, police have become more functionally differentiated, creating specialized task forces each designed to tackle a unique problem (Mastrofski, Ritti, and Snipes, 1994). Langworthy (1986) includes a fourth measure of differentiation he termed occupational differentiation. Similarly to functional differentiation, occupational differentiation covers the extent to which a department has specially trained employees such as SWAT units. Both occupational and functional differentiation are measures of division of labor, but they exist at different levels of measurement. Functional differentiation measures the number of tasks an organization performs, while occupational differentiation is focused on titular distinction within the staff (Langworthy, 1986; Maguire et al., 2003). For our purposes, we will treat occupational differentiation as a sub-category of functional differentiation. A few studies examine how functional differentiation effects police work. Two studies examine how functional differentiation effects police but result in no appreciable findings (Mastrofski, Worden, and Snipes, 1993; Novak, Hartman, Holsinger, and Turner, 1999).

Spatial differentiation measures how spread out (geographically) a department is (Langworthy, 1986). Concerning police departments, spatial differentiation is typically measured by counting the number of station houses and beats (Langworthy, 1986;

Maguire, 2003). A police department with one central headquarters is less spatially differentiated than a department with multiple small stations spread across their jurisdiction. Lastly, vertical differentiation (also called hierarchical differentiation) focuses on the range of a command structure. There are three ways to measure hierarchical differentiation. The first, referred to as segmentation, is to count the number of spaces between the lowest line officer and the chief (Maguire, 2003). The second measurement, concentration, is a means to differentiate the hierarchical structure in a given organization. For example, most organizations would resemble the shape of a pyramid with more employees at the bottom and fewer at the top. A top-heavy organization would have more executives than middle managers. The final element of vertical differentiation, height, was proposed by Langworthy (1986) and is focused on income. Height is typically measured by determining the income disparity between the lowest ranking line officer and the chief.

Structural control, comprised of administrative overhead, formalization, and centralization, is the final element of organizational structure. Structural control is designed to measure the elements used by an organization to exert/maintain coordination and control amongst its workforces. Administrative overhead refers to the size of the administration, which consists of all employees whose job relates to the organization itself rather than the various tasks of the organization. (Langworthy, 1986; Monkkonen, 1981). Another way to think of the level of administrative intensity is to imagine it as the level of bureaucracy in an organization. Secretaries, mailroom clerks, and maintenance workers who work in police departments would all be included in this category. They do

not carry out the organization's central objective, but they are vital to maintaining organizational stability.

The second element of structural control, formalization, is the extent to which organizational members are controlled by formal written rules and regulations (Hall, Hass, & Johnson, 1967; Maguire, 2003). Formalization is best conceptualized as the amount of red tape an officer must cut through to do their job efficiently. Certain departments are far less formal than others relying on basic means of officer control, while others create contingencies for most situations an officer will encounter in the field. Maguire (2003) defines the last element of structural control, centralization, as, "The degree to which the decision-making capacity within an organization is concentrated in a single individual or small select group" (p. 17). Police departments that are centralized tout more organizational control but are less efficient. Departments that decentralize are more efficient but could be susceptible to police misconduct, lawsuits, and public disapproval.

Throughout the decades many studies used these measures of police organizational structure as a focal point of their study. Literature covering the organizational structure area can be broken down into two types: studies that use police structure as an independent variable and studies that use police structure as a dependent variable. The current scholarship falls into the first category. First, I will discuss studies that use police structural variables as an independent variable.

Police Organizational Structure as an Independent Variable

Organizations are highly complex institutions with features that can be both dependent and independent variables (Maguire, 2003; Maguire, 2009). As noted in the introduction, numerous structural elements are used as independent variables including bureaucratization (Harrison, 1975; Harrison and Pelletier, 1987; Maguire, 1994; Mastrofski, Ritti, and Hoffmaster, 1987; Monkkonen, 1981; Murphy, 1986; Smith and Klein, 1983; Smith 1984; Smith and Klein, 1984; Smith, Visher, and Davidson, 1984; Worden, 1994), specialization (Swanson, 1978), centralization (Smith and Klein, 1984; Swanson, 1978), and organizational scale (Mastrofski, 1981). These studies examine many aspects of police departments such as the organization's effects on police officer's attitudes and behaviors (Harrison, 1975; Smith & Klein, 1983; Wilson, 1968; Worden, 1994), likelihood of arrest (Crank, 1990; Maguire, 1994; Mastrofski, 1981; Mastrofski, Ritti, and Hoffmaster, 1987; Murphy, 1986; Slovak, 1986; Smith and Klein, 1983; Smith and Klein, 1984; Smith Visher, and Davidson, 1984; Swanson, 1978), use of force (Worden, 1994), pursuit policy (Wells and Falcone, 1992), and child sexual abuse and human trafficking (Jurek and King, 2020; Maguire, 1994).

A few studies explore the effect that police organizational structure has on individual officers (Harrison, 1975; Harrison and Pelletier, 1987; Mastrofski, 1981; Mastrofski, Ritti, and Hoffmaster, 1987; Smith and Klein, 1983; Smith, 1984; Smith and Klein, 1984; Smith et al. 1984; Wilson, 1968; Worden, 1994). Most prominent amongst these studies is Wilson's 1968 piece where he discusses a model in which police are constrained by their local political culture. The key element in this scholarship is that Wilson attempts to explain why officer behavior varies from police department to police

department. Using aggregate arrest statistics, Wilson identified three responses to local political culture (watchman, legalistic, and service) commonly referred to as Wilson's taxonomy of departmental styles. Mastrofski, Ritti, and Hoffmaster (1987), explain that Wilson presented a constrained and rational model of organizational influence. In other words, so long as a department operates in a manner consistent with their local government, a "zone of indifference" exists where administrators have little control over individual officers (Mastrofski et al., 1987).

Following Wilson's seminal study, a question arose regarding the degree to which the organization influenced individual behavior. A number of studies attempted to answer this question during the 1970s and 1980s. The term bureaucratization, the most common independent structural variable, stems from a study conducted by Smith and Klein (1983) as they believed Wilson's taxonomy was constructed by "cross-classifying," "bureaucratization," and "professionalization" (Maguire, 2003, p. 49). Using data from the Police Services Study, Smith and Klein (1983) examine the effects of Wilson's taxonomy on arrest decisions. They determined that the probability of arrest decisions increases as the amount of bureaucratization increases. Furthermore, arrest decisions decrease in less professionalized departments. Maguire (2003) notes that Smith and Klein never define bureaucratization, nor do they defend how they operationalize it. Despite this flaw, Smith uses a similar method of operationalization in other papers and finds similar results; as bureaucratization increases so too do arrest rates (Smith, 1984; Smith and Klein, 1984; Smith et al. 1984).

Worden (1994) uses a similar methodological design when he examines police use of force. He finds that reasonable use of force increases in more bureaucratized

departments. Other scholars offer an alteration on the same theme of bureaucratization (Harrison, 1975; Harrison and Pelletier, 1987). These studies are of particular relevance to the current dissertation because the authors measure “perceived” bureaucratization and its effects on self-perceived role performance and organizational effectiveness. Harrison and Pelletier assume that the bureaucracy is something officers feel rather than truly experience, almost mimicking institutional theory. They discovered that high levels of bureaucratization typically led to the perception of low organizational effectiveness. Interestingly, they also discovered that, in highly bureaucratized departments, a perception of heightened role performance led to an actual improvement in organizational performance (Harrison and Pelletier, 1987). Despite the fact that bureaucratization is used more frequently than any other structural component in this category, authors have routinely declined to define it, discuss how it is operationalized, or why it is assumed.

Shifting away from bureaucratization, in an attempt to predict the probability of arrest, Smith and Klein (1983) include the term centralization as an independent variable. They define centralization as the amount of contact between patrol officers and patrol supervisors. Smith and Klein (1983) conclude that centralization has no effect on officer arrest probability. Mastrofski (1981) defines a new independent structural variable, organizational scale, as the population of any assignment area. He discovers that organizational scale has virtually no effect on officer behavior. Importantly, Mastrofski’s study is the first instance of someone acknowledging that organizations divide work into small pieces.

A separate set of studies using organizational structure as the independent variable tests the effects of police organizational structure on organizational-level

attributes (Crank, 1990; Monkkonen, 1981; Maguire, 1994; Slovak, 1986; Swanson, 1978). One study finds that bureaucratic growth, the ratio of non-patrol to patrol officers, had little effect on arrest rate (Monkkonen, 1981). Maguire (1994), using an additive index of five structural variables, discovered that more “bureaucracy” actually led to fewer clearances of child sexual abuse cases. Finally, other studies conceive structure as a multi-dimensional element and in doing so, assess the effects of structural variables individually (Morgan and Swanson, 1976; Swanson, 1978; Slovak, 1986; Crank, 1990). Findings in this area are generally mixed with one study finding a positive relationship between specialization and centralization (Swanson, 1978) and another finding mixed outcomes when looking at similar variables (Crank, 1990).

More modern studies have started to use organizational structure variables as independent variables to test its impact on a number of agency outputs including police performance and adaptation (Choi, 2011; Jenness and Grattet, 2005; Katz, Maguire, and Roneck, 2002; Maguire, 2009), community policing (Burruss and Giblin, 2009; Lilley and Hinduja, 2006), police culture and employee make-up (Chamlin and Sanders, 2010; Hassell, Zhao, and Maguire, 2003; Helms, 2008; Kadleck, 2003; Paoline, Myers, and Worden, 2000; Paoline and Sloan, 2003), arrest decisions (Chappell, MacDonald, and Manz, 2006; Dichter, Marcus, Morabito, and Rhoades, 2011; Donohue and Levitt, 2001; Eitle, 2005; Eitle and Monahan, 2009; Eitle, D’Alessio, and Stolzenberg, 2009), and use of force (Hickman and Piquero, 2009). Despite the number of modern studies that utilize structure as an independent variable, only one directly tests how organizational factors influence police performance.

Of particular relevance to the current dissertation are the studies that examine how organizational factors effect police performance. Choi (2011) comes closest to the current study as he sets out to determine how social disorganization and police force size impact police performance. The author focuses on two dimensions of performance: output and crime reduction/citizen satisfaction. His central argument is that social disorganization influences output and police agency size influences crime reduction and citizen satisfaction (Choi, 2011). While this study is close in theme to the current dissertation, it does not include multiple measures of police organizational structure and thus leaves a gap to be filled. Katz, Maguire, and Roneck (2002) examine how three theories, structural contingency theory, social threat theory, and resource dependency theory impact a department's likelihood to have a specialized gang unit. Included in their study is a series of control variables designed to measure age, vertical, functional, and occupational differentiation. Interestingly, they found that only the age of a department was significantly related to the establishment of a gang unit (Katz, Maguire, and Roneck, 2002). While the creation of a gang unit is not a measure of performance per say, it shows how various organizational variables have the potential to influence departmental activity.

Jeness and Grattet (2005) set out to explore how organizational structure effects hate crime policies. While not directly testing police performance, one could argue that effective hate crime policies are an indicator of general performance. Their organizational measure, organizational perviousness, is designed to measure how susceptible a department is to environmental influence when faced with innovation of a new policy. The authors measures perviousness via an index consisting of potential outside influences

including community group meetings, community policing practices, and workplace heterogeneity (Jenness and Grattet, 2005). The authors found that their measure of perviousness is a central mediating variable through which law is turned into policy. Large departments operating in high-crime areas with low levels of organizational resources were more susceptible to outside influences. This study highlights two important points. First, the environment that an organization operates in must be accounted for. Second, the size of a department could potentially be a factor in how it performs, a notion I will cover later. Lastly, Maguire (2009) explores how various structural factors effect child sexual abuse case attrition. He includes a number of structural independent variables including, size, functional differentiation, vertical differentiation, occupational differentiation, administrative intensity, and formalization. He discovered that organizational size and height (vertical differentiation) had the most impactful effect on child sexual abuse case attrition. Specifically, large and vertically differentiated departments have lower arrest rates.

As evidenced by this section, police structure has been used as an independent variable in a number of studies. Unfortunately, early studies in this area of scholarship is traditionally riddled with shortcomings. Maguire (2003) argues that the continued use of organizational structure as an independent variable is methodologically flawed and could not produce any positive scholarship in its current state. The major issue is that none of the early studies do a particularly good job operationalizing structural variables or justifying their use as independent variables. The new crop of studies that use organizational structure as an independent variable are methodologically sound but have generally failed to determine how structure directly effects police performance.

Remember that the current scholarship is using multiple, methodologically and empirically valid measures of structure to determine its effect on modern measures of police performance. The next set of studies attempts to avoid the aforementioned issues with using structure as an organizational variable altogether by using structural variables as the dependent variable.

Police Organizational Structure as a Dependent Variable

While the current study will not use structure as a dependent variable, it is critically important to discuss its use as such as the majority of theory testing takes place here. Over the years, organizational theorists developed a long list of variables designed to capture variation in organizational structures (Langworthy, 1986; Maguire, 2003). A few of the more commonly used structural variables include autonomy, centralization, complexity, differentiation, professionalization, span of control, formalization, and specialization (Blau and Schoenherr, 1971; Maguire, 2003). Unfortunately, these measures never implicitly state what an organizational structural variable is and contain a significant amount of overlap between variables. Langworthy (1986) attempted to clarify this issue when he penned the first comprehensive empirical review of organization structure focusing on theories that apply organizational structure to policing. Importantly, he defines five measures of organizational differentiation as dependent variables. Administrative overhead is the proportion of employees on administrative duty. Spatial differentiation is defined as the number of station houses and beats in an agency's jurisdiction. Occupational differentiation is the rate of civilianization. Functional differentiation is a measure of task complexity (i.e. how many specialized units a department contain) Lastly, hierarchical differentiation is measured as pay differential

within a department. Langworthy's work is the first step towards a better understanding of police organizational structure as he defines what is meant by organizational structure and explains why each variable is important.

Using police structure as a dependent variable is and has been a relatively uncommon practice. Until Maguire (2003) fully defined the elements of organizational structure only a handful of studies operationalized structure as a dependent variable (Ostrom, Parks, and Whitaker, 1978; Monkkonen, 1981; Langworthy, 1986; Crank, 1989; Crank and Wells, 1991; King, 1999). Before Langworthy's work, using structure as a dependent variable was virtually non-existent. Ostrom, Parks, and Whitaker (1978) explore how department size effects personal assignments such as patrol, investigation, and administration. Personal assignment is defined as the percentage of sworn officers assigned to various organizational tasks. Monkkonen (1981) used bureaucratization, operationalized as the proportion of patrol to non-patrol officers, as a dependent variable. Monkkonen made the very modern argument that as departments became larger, they would hire more specialists, which in turn, caused them to become more "bureaucratized" (Monkkonen, 1981). Post Langworthy (1986) but pre-Maguire (2003) scholarship sees a similar dearth in studies that use structure as a dependent variable. Slovak (1986) focused in on the effect that agency size has on span of control (number of patrol officers per sergeant), civilianization (number of employees who are non-sworn employees), and patrol concentration (number of officers on patrol duty). Lastly, King (1999) also uses Langworthy's five structural variables as indicators of structure.

Clearly, organizational theory is rife with ideas about how elements of formal organizations affect operational output as well as the actions of their members. In

Organizational Structure in American Police Agencies, Maguire, finally brings a semblance of order to the structural literature. He notes that all the dimensions of structure are similar and deposits them into one of two categories: structural complexity and structural control. Structural complexity is how much differentiation occurs within an organization (Robbins, 1987). Maguire (2003) deduced that complexity has three separate components known as vertical, functional, and spatial differentiation. Structural control, on the other hand, "...Refers to the formal administrative apparatuses that an organization institutes in order to achieve coordination and control among its workers and its work" (Maguire, 2003, p. 16). Administrative intensity, formalization, and centralization are the three elements of structural control (Maguire, 2003). In total, these six structural elements have been widely examined in the police organizational structure literature and share similar operationalizations making them relatively easy to measure (Crank, 1989; Crank and Wells, 1991; Jurek, Matusiak, and Matusiak, 2016; King, 1999; Langworthy, 1986; Maguire, 2003; Matusiak, Campbell, and King, 2014; Monkkonen, 1981; Ostrom, Parks, and Whitaker, 1978; Slovak, 1986).

Again, the current dissertation is interested in using the aforementioned structural elements as independent variables in an attempt to determine how structure effects performance. Considering that organization structure has come a long way from its undefined and methodologically questionable origins, it is time to determine its effect on police work.

Explaining Organizational Structure

It is difficult to discuss police organizational structure without discussing the elements that shape it. Organizational context is a reference to the many factors, such as the organizational environment and organizational size, that push and pull the organizational structure. As studies of organizational structure advanced, a series of causal explanations began to surface as a way to explain why structural elements existed. The four most consistent factors are size, structure, environment, and age (Crank, 1989; Crank and Langworthy, 1992; Crank and Wells, 1991; King, 1999; Langworthy, 1986; Monkkonen, 1981; Ostrom, Parks, Whitaker, 1978). Hall (1972) reasons that, “When size (and growth) is taken in conjunction with technological and environmental factors, predictions regarding organizational structures and processes can be made” (p. 139). Maguire (2003) and King (1999) also note the importance of organizational age. Though not as prevalent as size, technology and environment, age should be considered a primary explanation of formal organizational structure.

Organizational Determinants of Police Activity - Size

Organizational size is the single most researched organization structure correlate in the literature. Given its broad usage, the conceptualization and measurement of size varies. Some scholars include size as a structural element, but most treat it as a contextual variable between environment and structure (Maguire, 2003). Size is so frequently included in studies of police departments and organizations because of the general assumption that the larger a police department is, the more complex a structure it needs to control employees. Size has been operationalized a number of ways including square

footage, net assets, and as a rate (Kimberly, 1976; Salimbene & Zhang, 2020; Scott, 1972). However, most studies measure size as the number of employees in a department.

One of the earliest and largest studies on the effect of police organizational size was conducted by Ostrom, Parks, and Whitaker (1978). Using data from over 1,000 police departments of different sizes, found that smaller departments actually put more officers on the street than larger departments. Since smaller agencies had much less specialization than large agencies, they had more human resources to put on regular patrol, despite their small size. Langworthy (1983) found a positive relationship between agency size and officer ratio, which is exactly the opposite of Ostrom, Parks, and Whitaker's initial result. To this point, there have been no more large-scale studies on this topic, leaving us in the dark on the relationship between size and organizational success.

Research on how organizational elements effect individual officer's actions is slightly more thought out. Regarding size, early work suggests that officers in larger departments arrest and use force against citizens more often than smaller departments (Mastrofski, 1981) and that officers in smaller departments provided more assistance to citizens and are better at investigating crimes than their large department counterparts (Parks, 1979). However, these broad findings do not hold up across various offenses. For example, Wilson (1968) discovered that departments in small, suburban areas had higher rates of peace offense arrests than their city neighbors. Another result indicates that officers from small agencies (5 or fewer officers) made roughly three times as many DUI arrests as their large city peers (Mastrofski and Ritti, 1996).

Until recently, most studies found a positive relationship between the size of an organization and the structural complexity, meaning that as departments get larger, the

organizational structure becomes more complex (Blau, 1994; Blau and Schoenherr, 1971; Kimberly, 1976; Langworthy, 1992; Langworthy, 1986; Meyer, 1972). However, this support is far from global. Blau (1970) along with Crank and Wells (1991) argue that the effect between size and structure is nonlinear. In reality this would indicate that at some random level of size, its effect on structure would begin to decrease. Some researchers have failed to find a positive relationship between size and structure all together. One reason for the mixed findings is the lack of a centralized measurement of size. Maguire (2003) muses, "It may be that these different indicators are not equally reliable measures of organizational size" (p. 20). Another problem is that size is typically used as a correlate of structure which is comprised of complexity and control. Many studies focus on one of these elements, when it should be accounting for both. Few scholars claim that measuring the impact of size on structure is impossible to do at a cross-sectional level (Meyer, 1972). The present scholarship addresses the root cause of using size situation by operationalizing size as a rate and factoring in elements of both structural complexity and structural control.

Organizational Determinants of Police Activity - Environment

Recently, a pattern of growth has emerged in the organizational structure of policing (Giblin, 2006; Jurek, Matusiak, and Matusiak, 2016; Maguire, 2014; Maguire and King, 2004; Maguire, Shin, Zhao, and Hassell, 2003; Zhao, Ren, and Lovrich, 2010). What is unclear is how this growth has affected police organizational structure. As with most studies in police organizational literature, the findings are mixed, which is typically attributed to extant data (Maguire, 2014). A few explanations for the rapid growth have been proposed, one being the proliferation of community-oriented policing (Maguire et

al., 2003; Zhao et al., 2010). Proper implementation of community-oriented policing requires a paradigm shift where the police organizational hierarchy is flattened. Interestingly, Zhao et al. (2010) found that agencies who adopted community-oriented policing practices retained stable organizational structures. Maguire et al. (2003) also determined that the community-oriented policing paradigm shift did not occur during the 1990s. However vertical and functional differentiation increased during this time period (Maguire et al., 2003).

Remember that the majority of scholarship uses elements of structure as a dependent variable, while this study uses it as an independent variable. Therefore, the remainder of this review will focus on structure as an independent variable. Researchers have theorized that structural aspects most likely play a role in influencing how officers do their job. So much so that much of the modern police reform movement centers on making structural changes to departments. Those who want to make the police more efficient, for example, stress increasing functional differentiation to make police within departments more specialized. Another example comes from the community policing advocates who call for a restructuring of the hierarchy (bottom-up approach) in police departments. Despite the many calls to reform police agency structure, there is very little evidence to substantiate taking action. Only one study discusses how decision making is spread out through a department. Maguire, Shin, Zhao, and Hassell (2003) examine how formal organizational structure, specifically centralization, changed during the community police reform era of the 1990s. Their findings are mixed indicating that some changes to centralization have been made, made in the opposite direction, or not made at all (Maguire et al., 2003). In addition, they did not examine how these changes in

structure affect police activity. Unfortunately, there are no other studies that discuss the dispersion of decision-making in a department.

Despite being largely no more knowledgeable about how elements of structural complexity effect police work, we do have a fair amount of evidence suggesting elements of structural control (administrative overhead, formalization, centralization) play a key role in influencing an officer's decision-making on the street. Police are allotted a fair amount of discretion, but they are by no means free from bureaucratic influence. In the mid 2000s, police leadership began severely restricting how and when officers could use coercive powers such as deadly force. Given the events of the last five years, it is only logical to assume that use of force policies will become more and more restrictive. Considering the severity of deadly force, many studies empirically assess how shooting policies effect an officer's likelihood to shoot. A longitudinal study examining firearm discharge among NYPD officers found a large decline in shooting incidents after a restrictive shooting policy was implemented (Fyfe, 1979). Restrictive shooting policies became a trend in the 1970s and time series studies found a similar downward trend (Fyfe, 1988; Gellar and Scott, 1992).

There is also evidence suggesting elements of structural control can influence an officer's decision to arrest. A perfect example is how officers approach a domestic violence incident. A national mandate, implemented over the last 20 years, encourages or forces officers to make an arrest at the scene of a domestic violence call. Sherman, Schmidt, and Rogan (1992) determined that police have become much more likely to arrest domestic abusers since the policy change.

Organizational Determinants of Police Activity - Technology

Technology, another influencer of organizational structure, refers to the work an organization does (Scott, 1992). Thompson and Bates (1957) were the first to discuss the connection between technology and structure but Woodward (1965) was the first to discuss empirical findings that suggested a tenable link between technology and structure noting that organizations who use “small batch” technologies (made-to-order products) adopt a more simple command structure than organizations who use continuous process technologies (assembly lines). Unfortunately, literature discussing the link between technology and structure is rife with conceptual operational inconsistencies (Maguire, 2003). Looking through the literature, almost every study defines technology differently. Thankfully, Scott (1992), condensed all of the different measurements and categorized them into three dimensions. The first is complexity and diversity of inputs. The second is uncertainty and unpredictability of work. Lastly, Scott (1992) notes the interdependence of tasks. Maguire (2003) surmises that the key takeaway is that all of these dimensions are describing the same phenomena which is, “The nature of the raw materials that an organization processes, and methods used to process these materials are what defines an organization’s technology” (p. 23).

Organizational Determinants of Police Activity - Age

As noted above, age is also an important factor in the police organization literature but is not as frequently studied as size, technology, or environment. Monkkonen (1981) found that changes in police structure were brought about by external demands (environment) as well as through the “natural growth” of the department (also known as age) (p. 147). In other words, police bureaucracies were forced to change due to age

effects. King (1999) conducted a study in which he operationalized age as the length of time since an organization was founded. His goal was to determine whether chronological age or a cohort effect caused differences in organizational structure. He found little support for the hypothesis that age increased structural elaboration (King, 1999).

Another study specifically examining how age effects organizational structure determined that older organizations were less likely to create a specialized gang unit (Katz, Maguire, and Roncek, 2002). Similar to humans, older organizations are more rigid and less accepting of change. Maguire (2003), hypothesized that structural elaboration, the expansion of police departments as they age, would be affected by various elements of the organizational structure including age. He discovered no significant predictors of administration or formalization. However, he did determine that police department size predicted both functional differentiation and vertical differentiation, while age significantly predicted vertical differentiation (Maguire, 2003). Lastly, Jurek, Matusiak, and Matusiak (2016) examined how time effects structural elaboration. The authors discovered that, while police departments are becoming complex, little of that complexity is due to time.

The current study aims to take all the lessons learned from previous studies of organizational structure and apply them to create a series of empirically rigorous, properly operationalized, and inclusive structural variables. These organizational variables will be used to explore how organizational elements such as structural control and structural complexity affect police performance as a whole. The few studies that examined the relationship between performance and structure either did not include all

measures of structure (Choi, 2011) or did not examine police performance per se (Maguire, 2009).

A Review of Police Performance

What is Police Performance?

Again, the purpose of this dissertation is to determine how organizational structure effects police performance. To this point, very few studies exist that do just that. Police performance is a complex concept because there is relatively little consensus on what it is or how to measure it (Alpert, Flynn, and Piquero, 2001; Langworthy, 1999; Maguire, 2004). This is due mostly to the fact that the police are a multidimensional organization that deliver a plethora of services to communities they serve. Police performance literature is extensive in its depth but limited in scope. Existing police performance studies typically focus on attempting to create better measures of police performance with the primary goal of giving police departments a more accurate way to measure their “success” at doing their job. There are also a few studies on how organizational stressors, police education, police personality traits, and demographic variables effect police performance.

How is Police Performance Measured?

Police performance can be divided into the individual and organizational level. The focus of this study is at the organizational level, which is typically defined as achieving organizational goals as effectively and efficiently as possible (Berman, 2002). Police departments are unique in that they are not for-profit and therefore, have an ambiguous goal (Chun and Rainey, 2005; Lee, Rainey, and Chun, 2010; Pandey and Wright, 2006). For both police managers and scholars, selecting elements of policing that

can be accurately measured and represent the effectiveness and efficiency of a department comes down to a personal preference (Hur, 2013). In 1999 a collection of 15 essays titled “Measuring what matters” was published. It was funded by the National Institute of Justice (NIJ) and the Office of Community Oriented Policing Services (COPS Office) and highlighted the diversity of thought with regard to measuring police performance. The major disagreement sprung from those supporting the New York Police Department’s CompStat model, with its myopic focus on bottom line policing (crime reduction), and those supporting a more nuanced police process model (Sparrow, 2015). These opposing views can be called the law enforcement function and the community function.

The law enforcement function of police typically takes precedent over the service side of the profession given its ease of measurement and tangible results. Therefore, within departments and at the empirical level, police performance is measured almost exclusively via crime rates, clearance rates, response time, and measures of enforcement productivity such as number of arrests or citations. Occasionally, departments use citizen satisfaction surveys, but this is by no means common. Departments tend to fixate on the first category, crime rates, specifically reductions in serious crime. Clearance rates are difficult to standardize, and response time does not give a nuanced picture of how well police are responding to crime, just how fast they get there (Sparrow, 2015).

There are a number of issues with using reduction in serious crime as the sole metric of success. Sparrow (2015) notes the focus is too narrow as police have many more jobs than crime control. Second, the obsessive focus on serious crime is narrower still. Third, pressure to lower the numbers could result in failing integrity within the

reporting system. Finally, unreported crime experiences are nearly invisible as the victimization level is two to three times higher than reported crime rates and focusing on the crime rate does not include any analysis of the strategies used to lower crime rate. All these issues in concert call into question the efficacy of traditional measures of police performance.

Moore (2002) proposes a solution to these problems by designing a framework of seven elements that more accurately measures police performance and includes elements of the broader police mission. Some of these elements include measuring a reduction in criminal victimization instead of reported crime, using financial resources intelligently, using force fairly efficiently, and effectively, and satisfying the customer's demand via legitimacy. Unfortunately, measuring these abstract concepts such as fair force and legitimacy are extremely difficult with existing data. The current study hopes to improve previous measurement flaws by examining crime rates and clearance rates across all cities in the sample to gather a more accurate picture of how police are performing.

Crime Rates

For better or worse, crime rates are frequently used as a measure of police performance. Despite arguments to the contrary, it is safe to say that the modern police mission remains crime control and crime reduction. The discipline of criminal justice has been using crime rates in studies since its inception and the number of studies that include a measure of crime rates is nearly endless. Luckily, Pratt and Cullen (2005) undertook the task of conducting a meta-analysis on 214 empirical studies and determined the effect size and rank order of macro-level predictors of crime. Their findings indicate that the strongest predictors (top 15 out of 31 predictors) of crime rate

are largely demographic and community oriented including strength of noneconomic institutions, unemployment, percent nonwhite, family disruption, poverty, racial heterogeneity, and percent black (Pratt and Cullen, 2005). These findings indicate the importance of using demographic and community variables as controls to mitigate the risk of misspecification error. Interestingly, the authors discovered that the weakest predictors of crime rates were elements within the police department's control including police department size, education effects, police expenditures, sex ratio, and structural density. It would seem that crime rates are, in and of themselves, not an effective means of measuring police performance as police cannot control demographic trends within a community. Furthermore, the elements that are within police control have seemingly little effect on the crime rate.

Clearance Rates

Clearance rates are another common metric of police performance (Alpert and Moore, 1993; Pare, P., Felson, R., and Ouimet, M., 2007; Sparrow, 2015). Similarly to crime rates, many scholars are vocal opponents to using clearance rates as an indicator of police performance as recording practices and definitions of a cleared incident vary across departments (Brodeur, 1998; Hoover, 1996; Marx, 1976; Reiner, 1998). Despite its limitations clearance rate is still commonly used as performance indicator due to the lack of alternative measures (Pare, Felson, and Ouimet, 2007; Reiner, 1998; Sparrow, 2015). Pare, Felson, and Ouimet (2007) conducted a comprehensive review of the effect of community context on clearance rates. They discovered that crime clearance was higher in small communities, heavy workload did not affect clearance rates, crime clearance is

higher in poor communities, and violent crimes are more likely to be cleared than misdemeanor and property crimes.

Response Time

Police response time is another correlate of police performance. Studies that examine determinants of response time can be broken down into two sections: those that focus on the community-level factors and those that examine both incident-and community-level factors. A few studies examine the relationship between community characteristics and variations in police response time (Chian, Zhang, and Hoover, 2012; Mladenka and Hill, 1978). Mladenka and Hill (1978) discovered that response time was significantly faster in low-income and minority neighborhoods. Chian et al. (2012) landed on similar findings, concluding that police response time was faster in disadvantaged neighborhoods and a faster response time lead to a higher likelihood to arrest. Chian (2014) also discovered that elements of social disorganization (concentrated disadvantage, immigrant concentration, etc.) were significantly associated with response time but were dependent on ecological situations.

Analysis that includes incident-and community-level factors reveal that time of day, community (social disorder, SES), and incident-level factors (type of call) all play a significant role in determining police response time (Blake and Coupe, 2001; Lee, Lee, and Hoover, 2017; Salimbene and Zhang, 2020). Recently a study examined how organizational elements such as departmental workload and size effect response time. Results indicated that the size of a police department, measured as a ratio, was a significant predictor of police response time while the workload was not (Salimbene and Zhang, 2020).

In sum, police organizational literature is nuanced and has been operationalized as both a dependent and independent variable. The vast majority of organizational literature attempts to explain how organizational structure influences some aspect of policing (i.e. arrest rates, community policing, employee demographics, performance) and how various environmental elements impact some aspect of structure (i.e. size, technology, environment, and age). A significant gap of knowledge exists regarding our understanding of how organizational structure effects police performance. Police performance is a catch all term typically applied to any measure of police output. This contextualization has led to an array of performance measures, some more appropriate than others. The current dissertation aims to fill the aforementioned gap in the organizational literature by exploring how various structural variables shape police performance as measured by crime rate and clearance rate

CHAPTER III

Method

The central research question is quite simple: how does police organizational structure influence police performance? As discussed earlier, police organizational theory is a broad conceptualization designed to reference any potential questions about a police organization in and of itself. Most organizational theories are designed to address elements and forces that shape police departments or influence police executives. Organizational structure is slightly different. It is critical to understand that organizations are very similar to people in that they can do things and can be influenced to do those things a certain way. This unique set of attributes drew the attention of early organizational scholars as they recognized the importance of studying the police organization separately from the officers within them. As Ed Maguire (2003) succinctly puts it, "...Organizations vary. Explaining this variation is worthwhile" (p. 10). Organizational theorists tend to use the organization itself as the unit of analysis zeroing in on process, structure, and goals. Organizational structure is the actionable arm of organizational theory in that it allows scholars to examine how organizations divide labor and coordinate work (Scott, 1992).

A bevy of variables designed to measure structure were created between 1950 and 2000. With very little standardization, these variables were rife with inconsistencies and empirically flawed. Luckily, we have more effective measures of structure today. The six structural measures are categorized into one of two camps: structural complexity and structural control. Structural complexity (functional/occupational differentiation, spatial differentiation, and vertical differentiation) is how a department divides labor while

structural control (administrative overhead, formalization, and centralization) captures how police departments coordinate and control its workforce.

Grounded in structural theory, the current scholarship aims to explore how organizational structure impacts police performance. The current dissertation will use elements of both structural complexity and structural control to answer this research question. The data used in the current dissertation allows for the conceptualization of functional differentiation, hierarchical differentiation, occupational differentiation, agency size, and administration.

Police performance is the attempt to determine how effective and efficient police are at achieving a specific output. Previous scholarship typically uses a single measure of performance be it crime rate, clearance rate, response time, arrests, and reductions in serious crimes. While these measures, individually, are flawed and do not capture the whole of police activity, the current dissertation has decided to simultaneously include two measures of police performance, namely crime rate and clearance rate. The goal being to determine how the aforementioned structural elements effect performance. The present dissertation has four broad hypotheses.

1. Hierarchical, occupational, and functional differentiation will exert a significant positive effect on police performance (i.e. police performance will improve).
2. Police agency size will have a significant positive effect on police performance.
3. All of the previous relationships will be weakened by the addition of community-level variables.

Data

The current research utilizes secondary data collected from three separate sources. The dependent variables, measures of police performance, were pulled from the Uniform Crime Reporting Program Data: Offenses Known and Cleared by arrest (UCROKCA) (2016). The overarching goal of any UCR collection program is to provide a more accurate and nuanced picture of crime across the United States. Data points are collected from participating law enforcement agencies on a monthly basis and then compiled into yearly datasets. The UCR: Offenses Known and Clearances by Arrest dataset is a collection of all reported offenses law enforcement agencies get in a year. In this study's case, 2016 is the year of interest. Given the scope of criminal enterprise in the United States, the UCROKCA limits its compilation to those crimes people are most likely to report to law enforcement. The analyses focus on the following aggregate crime categories: murder, rape, robbery, aggravated assault, burglary, larceny, and motor vehicle theft. Data collected for the UCROKCA are submitted by participating city, county and state law enforcement agencies on a voluntary basis. Depending on the location, some departments return forms directly to the FBI while others submit their data to state collection agencies, who then submit that data to the FBI.

Organizational independent variables were pulled from the Bureau of Justice Statistic's (BJS) Law Enforcement Management and Administrative Statistics (LEMAS). LEMAS is a multi-wave single point of contact (SPOC) establishment survey (Matusiak, Campbell, and King, 2014). Being multi-wave means it is a survey that is repeated over time. Being SPOC, refers to the fact that only one person within a department responds to the survey. Being an establishment survey references the fact that LEMAS is designed to

compile information about a department's organizational structure and operations. The 2013 iteration will be used for all organizational variables in this study. During this particular wave, 3,272 general purpose state and local law enforcement agencies that employed 100 or more sworn officers including 2,327 local police departments, 895 sheriffs' offices, and 50 state agencies. After enacting a strict selection criterion and only including large (defined as 100 or more sworn officers), city and state police departments, the final sample size of this study is 538 departments. The final source of data in the current study is U.S. Census Data used for general population statistics.

Since its inception in 1987, LEMAS has been used in 114 peer-reviewed research pieces (Matusiak et al., 2014). Remembering the literature review on police organizational structure, one of the biggest roadblocks to successfully studying the police organization was a lack of continuity in measuring and operationalizing structural variables (Maguire, 2003). The advent of LEMAS, coupled with the 114 peer-reviewed studies using LEMAS as a source of data, has all but eliminated this issue. Roughly 18 variables have been used 6 or more times in any of the 114 LEMAS studies denoting more than a modicum of reliability (Matusiak et al., 2014). The current research uses LEMAS data to create a series of organizational structural and administrative variables. The research goal is to determine how organizational variables effect police performance.

The LEMAS data set provided a basis for the sample. There were initially 2,826 departments included in the dataset. A series of strict selection criteria were followed. First, only departments that had at least 100 sworn, full-time officers were included. Second, a police department had to serve a clearly defined city. This requirement eliminated all sheriff's departments and municipal departments leaving a total of 538

departments. Furthermore, all county departments were removed as their jurisdiction coincided with city police in some instances. These criteria resulted in a total sample of 357 departments spread throughout the country.

The last source of data is provided by the American Community Survey (ACS). The ACS replaced the long-form census in 2010, instead providing a rolling sampling strategy. The aim of the ACS is the same as the census, to provide detailed socioeconomic, demographic, and education information about American communities. The current scholarship uses a 1-year estimate dataset from 2016 in order to match the UCROKCA data. The ACS data is used to provide measures of poverty, population size, demographic make-up, and mobility, among other variables that will be discussed later.

Dependent Variables: Police Performance

As noted in the introduction and literature review, the purpose of this research is to determine how police organizational factors effect police performance as measured by crime rate and clearance rate. Both of these measures, individually, have been criticized as measures of police performance (Brodeur, 1998; Hoover, 1996; Marx, 1976; Moore, 2002; Reiner, 1998; Sparrow, 2015). What makes this sample unique, is its use of both measures at the same time in a representative sample of large American police departments.

Crime Rate

The Uniform Crime Reports (UCR) compile index crime counts from law enforcement agencies across the country. Although this crime data is limited (see Black, 1970; Merton, 1957; Skogan, 1970), the UCR remains a go-to source of crime statistics (Regoli and Hewitt, 2000; Nolan, 2004). The UCR data can be broken into two sections.

Crime volume, which is a raw count of the number of crimes in a specific jurisdiction on a month-to-month or yearly basis and crime rate, which is the contextualized version of crime volume in that it measures crime on a per capita basis as a rate of x out of 100,000 citizens. The current study uses calculations of seven index crime rates including murder, rape, robbery, aggravated assault, burglary, larceny, and motor vehicle theft. In addition, a summation of violent and property crime was used to create an overall violent and property crime rate.

Clearance Rate

The FBI defines a criminal clearance as an offense, "...Cleared by arrest or solved for crime reporting purposes when at least one person is arrested, charged with the offense, and turned over to the court for prosecution" (FBI, 1984, p. 41). As noted in the literature review, clearance rate is still commonly used as performance indicator due to the lack of alternative measures (Pare, P., Felson, R., and Ouimet, M., 2007; Reiner, 1998; Sparrow, 2015). Every UCR iteration contains raw count data for each of the index crimes (murder, rape, robbery, aggravated assault, burglary, larceny, and motor vehicle theft) in every participating law enforcement agency jurisdiction. Each UCR iteration also includes the number of cleared index crimes in every participating law enforcement agency jurisdiction. The present study uses both counts to compute clearance rate by dividing the number of cleared index crimes by the total number of that same index crime. Like crime rates, an overall clearance rate for violent and property crimes was calculated.

Independent Variables: Police Organizational Structure

Organizational/Agency Size

As noted previously, agency size is the most frequently used structural variable, appearing in nearly 50% of all studies that use LEMAS and has been included in all nine LEMAS waves (Matusiak et al., 2014). Maguire (2003) notes that generally, size is operationalized as the number of full-time organizational employees. The current research operationalizes size as the total number of full-time sworn personnel within a department. Although not the traditional operationalization, scholars have used this approach in the past when methodologically appropriate (Zhao and Lovrich, 1997). In an effort to paint a more nuanced picture of how many police serve a given city, the decision was made to calculate size as a rate, which has been done before, again where methodologically appropriate (Salimbene and Zhang, 2020).

Functional Differentiation

Functional differentiation is the extent to which police departments are broken down into functionally distinct units (Langworthy, 1992; Maguire et al., 2003). In essence, functional differentiation is a way to measure how many specialized work groups operate within a given police department. Functional differentiation is a frequently used variable as well, appearing in 30 peer-reviewed studies (Matusiak, et al., 2014). These studies typically operationalize functional differentiation by counting the number of specialized units with at least one full-time employee. Some studies use this count variable as their measurement of functional differentiation (Helms, 2008). Others take the count data and compile into an index (Eitle and Monahan, 2009; Hassell, Zhao, and Maguire, 2003; Hickman and Piquero, 2009). The current research takes the later

approach by creating a categorical variable denoting whether an agency has no specialized units, one to six specialized units, or seven or more specialized units.

Occupational Differentiation/Civilianization

Occupational differentiation is similar to functional differentiation in that they are both measures of division of labor. However, Langworthy (1986) posits that one can adequately measure occupational differentiation by using the proportion of non-sworn employees within an agency, which is why it is sometimes referred to as “civilianization” (Hickman and Piquero, 2009). The current study operationalizes occupational differentiation as the proportion of nonsworn personnel to sworn personnel.

Hierarchical Differentiation/Vertical Height

Hierarchical differentiation refers to the range of a command structure in a department. There are many hierarchies within a police department but LEMAS has consistently provided a measure for vertical height, which is essentially the amount of “space” between those individuals at the top of the organizationally sanctioned power structure and those at the bottom (King, 2005; Langworthy, 1986; Maguire, 2003). Studies typically operationalize vertical height as the pay gap between the highest grossing chief executive and the bottom-level employee (Hickman and Piquero, 2009; Matusiak, et al., 2014). The current research operationalizes hierarchical differentiation via a similar method by subtracting the highest departmental salary by the lowest. That difference is the measure of vertical height.

College Education

For the better part of 50 years, researchers have attempted to determine how the level of educational attainment in police departments impacts how an officer interacts with citizens (Cascio, 1977; Cohen and Chaiken, 1973; Kappeler, Sapp, and Carter, 1992), approaches police work (Dalley, 1975; Roberg, 1978; Shernock, 1992), communicates to citizens (Carter, Sapp, and Stephens, 1989; Worden, 1990), is committed to police work (Cascio, 1977; Cohen and Chaiken, 1973), uses force (Paoline and Terrill, 2007), and general performance (Truxillo, Bennett, and Collins, 1998). Studies in this area measure education a number of ways including the number of years of school one has achieved (Truxillo, Bennett, and Collins, 1998), level of completed formal education (Paoline and Terrill, 2007), and what degrees have been earned (Truxillo, Bennett, and Collins, 1998). The current dissertation takes the last approach but focuses exclusively on college education. The education information in LEMAS was converted into a dichotomous variable denoting whether no officers in a department have a college degree (0) or at least one officer in a department has a college degree (1).

Department Demographics

Demographic variables of each department in the study are also included. This is represented as a percent specifying the number of male and female officers, white, black, Latin, and a category for “other” officers in each department.

Control Variables: Census Data

It is impossible to discuss police performance without including demographic information. Pratt and Cullen (2004) note that demographic variables such as poverty, racial heterogeneity, transience, family disruption, and concentrated disadvantage have a

much stronger effect on crime rate than police department level factors such as police size, education, and arrest ratio. These will be referred to as community characteristics going forward. Community characteristics are mediating variables for several criminal justice outcomes including crime rate, clearance rate, and victimization. The present research collects these community-level characteristics from the 2016 census. The data from the census includes variables such as racial demographics, poverty, mobility, and joblessness among the 357 cities included.

Next, Chapter IV will detail how these data were further prepared for analysis. This explanation includes a discussion of descriptive statistics and normality of the organizational, performance, and community variables. Next, results of OLS regression models will be presented. Lastly, Chapter V will consist of a discussion of the results of the OLS regression models within the context of police performance and police organizational literature.

CHAPTER IV

Data Analysis

Before any meaningful data analysis, the data were analyzed to determine if they met the necessary Ordinary Least Squares (OLS) regression criteria. There is no missing data to speak of and both dependent variables are continuous, unbounded. There were some distribution issues, especially among the dependent variables. Some of the variables were log transformed and will be described in the following sections. A detailed description of each set of variables is presented below.

Descriptive Statistics

Dependent Variables

Although crime rate and clearance rate were originally coded into several categories, one for each crime type, they were each recoded into two responses for a total of two crime rate variables and two crime clearance variables. First, a raw crime count variable was created for each type of violent and property crime. The count variable for violent crime includes murder, rape, robbery, and aggravated assault, while the count variable for property crime includes burglary, larceny, and motor vehicle theft. The same process was carried out for crime clearances. Crime rate is presented as total violent crime rate $[(\text{total violent crime} / \text{total population}) * 1,000]$ and total property crime rate $[(\text{total property crime} / \text{total population}) * 1,000]$ per 1,000 citizens. As shown in table one, the mean violent crime rate is 5.47 (SD = 4.15) violent crimes per 1,000 citizens with a range of .29 to 28.84. The mean property crime rate is 32.22 (SD = 14.58) property crimes per 1,000 citizens with a range of 7.19 to 92.23. The crime rate data were positively skewed so the decision was made to conduct a logarithmic transformation to

bring them within bounds of normality. Clearance rate, meanwhile, is presented as violent crime clearance rate $[(\text{cleared violent crime} / \text{total violent crime}) * 1,000]$ and property crime clearance rate $[(\text{cleared property crime} / \text{total property crime}) * 1,000]$ per 1,000 crimes. The mean number of violent crimes cleared per 1,000 violent crimes conducted is 409.15 (SD = 192.70). Cities in the current analysis averaged 165.42 (SD = 89.04) property crime clearances per 1,000 property crimes. These clearance rates are normally distributed.

Table 1

Descriptive Information for Police Performance

	Mean	SD	Minimum-Maximum
Crime Rate			
Violent Crime Rate	5.47	4.15	.29 - 28.84
Property Crime Rate	32.22	14.58	7.19 - 92.23
Clearance Rate			
Violent Crime Clearance Rate	409.15	192.70	0 – 921.21
Property Crime Clearance Rate	165.42	89.04	0 – 591.22

Independent Variables: Police Organizational Structure

This project explores how various elements of police organizational structure effect police performance. The first step in answering these questions involves understanding the organizational structural information. As an aside, all organizational variables are normally distributed and non-categorical (education is dummy coded), meeting the requirements for a regression analysis. The first structural variable, police department size, measures how many officers serve 1,000 citizens in each of the 357 cities. This rate will be how police department size is operationalized in the analysis. The average city has 2.04 (SD = .992) officers per 1,000 citizens with the smallest rate at just .76 officers and the largest at 10.90 officers. Using the rate of officers per 1,000 citizens

offers a much more nuanced measure than the typical count version of police department size as it provides one a better understanding of how many officers serve their citizenry.

Occupational differentiation is the second organizational structural variable.

Remember that this variable is designed to capture the ratio of nonsworn personnel to sworn personnel. As exhibited in table 2, the mean ratio is .319 (SD = .151) nonsworn to sworn personnel. The range is quite large and begins at just .03, indicating that this department consists mostly of sworn personnel with very few support staff members. The largest ratio is .92 and is evidence of a department that has a very large (almost 1:1) support and administrative staff. The third structural variable is hierarchical differentiation. This variable captures the separation between the highest ranking sworn officer and the lowest level line officer in each department via salary differential. The mean salary discrepancy is \$105,555.14 (SD = 36,783.12). The sample ranges from a \$19,710 differential, indicating a lower hierarchical differentiation, to a \$276,609 differential, indicating a large hierarchal differentiation.

Education is the fourth structural variable and is designed to capture what type of educational requirements each department has. LEMAS lists six separate dichotomous (yes/no) variables asking departments whether they have no high school requirement, a high school or equivalent requirement, some college requirement, require an Associate's degree, require a Bachelor's degree, or have some other education requirement. All responses were recoded into a single dichotomous variable where "0" denotes a high school or less requirement and "1" denotes more than a high school requirement. Most departments in this study require a high school degree or do not have any requirement

(74.5%) while less than a quarter of departments maintain some type of college credit or degree requirement (23.8%).

The final set of variables in the organizational structure section are police department demographics and include gender and ethnicity measures. As seen in table 2, the mean sworn police male percentage is 88.58 (SD = 4.92) and the mean sworn female percentage is 11.42 (SD = 4.92). The demographic spread indicates that the mean percent of sworn white officers is 70.84 (SD = 22.73). Given that the “white officer” variable is the most frequently occurring, the decision was made to make this the reference category. The percent of sworn African American officers exhibited a mean of 10.19 (SD = 12.68), while the mean percentage of sworn Latino officers is 12.86 (SD = 16.02). Lastly, officers identifying as Native American, Asian, or other were placed into an “other” race category containing a mean of 3.11 (SD = 3.17) percent of officers.

Table 2

Descriptive Information for Organizational Variables

	Mean	SD	Minimum-Maximum
Department Size	571.62	2075.69	101 – 34,454
Department Size (Rate per 1,000)	2.04	.992	.76 - 10.90
Occupational Differentiation	.319	.151	.03 - .92
Hierarchical Differentiation	105,555.14	36,783.12	19,719 – 276,609
Education			
High School or Less	74.5%	-	-
More than High School	23.8%	-	-
Demographics			
Male	88.58	4.92	44.79-57.75
Female	11.42	4.92	1.94-42.90
White	70.84	22.73	0-100
African American	10.19	12.68	0-93.04
Latino	12.86	16.02	0-97.95
Other	3.11	3.17	0-22.75

Control Variables: Community Factors

The link between social disorganization and crime is well documented (Bursik 1999; Krivo and Peterson, 1996; Massey and Denton, 1993; Pratt and Cullen, 2005; Sampson and Lauritsen, 1994; Sampson, Morenoff, and Earls, 1999). Therefore, it is imperative to include these measures in the present study. Several studies present factors that are typical of areas with high social disorganization. These factors include minority populations, number of non-citizens, level of education, population mobility, female-headed families, number of rental properties, unemployment, poverty, and the number of young males in a community (Abranson, Tobin, and Vandergoot, 1995; Krivo and Peterson, 1996; Morenoff, Sampson, and Raudenbush, 2001). Some of these factors will be used as a general measure of concentrated disadvantage in the present study.

Typically, social disorganization factors include concentrated disadvantage, community diversity, and residential mobility. Traditionally, concentrated disadvantage is measured by accounting for the percent of a population below the poverty line, those on public assistance, female-headed households, those who are unemployed, the percent of the population under 18, and the percent of African Americans. Community diversity is measured by the percentage of minorities and foreign-born residents in each city.

Based on the aforementioned studies and in accordance with the conventional method (Sampson et. al, 1997), a factor analysis was applied to explore any common latent factors that exist among the community factors in the present study. This factor analysis was originally conducted on several measures that typically represent the construct of social disorganization including the percent of non-U.S. citizens, those who have moved within the last year, percent of young males, rental rate, female-headed

households, unemployment, poverty, percent African American citizens, and the percent of Latino citizens. Results of the exploratory factor analysis indicated that not all these community variables had common underlying factors. Only four of the nine variables, female headed households, unemployment and poverty rate, and the percent of African Americans could load onto one latent factor. The results of the final factor analysis are presented in table 3. The current analysis will examine four indicators of social disorganization, referred to as concentrated disadvantage (Sampson et. al, 1997), including the percent of female headed households, unemployment and poverty rate, and the percent of African Americans in each city. The percent of female headed households (3.14, SD = 1.20) loaded onto the latent factor strongest with a score of .804. Unemployment rate (8.12, SD = 2.80) exhibited a score of .743, while poverty rate (18, SD = 7.49) factored slightly lower with a score of .684. Lastly, the percent of African American citizens (17.48, SD = 16.98,) loaded onto the latent factor with a score of .601. Consistent with prior studies (Pratt and Cullen, 2005; Sampson and Lauritsen, 1994; Sampson, Morenoff, and Earls, 1999), this factor will be referred to as concentrated disadvantage. The Chronbach's Alpha for concentrated disadvantage is .861 indicating a relatively strong factor.

As noted earlier, there are typically two more measures of social disorganization. In an effort to measure community diversity, a racial diversity index (RDI) was created. In essence, the RDI calculates the probability that two random individuals will differ in ethnicity. A racial diversity index is calculated based on the equation $1 - (\sum p_i^2)$ where p_i is the proportion an ethnic group that has been squared and summed across all ethnic groups. The mean RDI in this presentation is .542 (SD = .124). The second measure of

community diversity is the percent of Latino citizens in each city (24.99, SD = 20.12). This measure contains two variables used in numerous studies on neighborhoods and crime. For example, Chamberlin and Hipp (2015), use a general measure of racial and ethnic heterogeneity and a specific variable that captures the Latino percentage in each neighborhood. The percent of African American citizens was not used in the measure of community diversity as it is included in the measure of concentrated disadvantage, as per prior studies (Sampson et al., 1997).

The last measure of concentrated disadvantage is neighborhood instability. In the present research, neighborhood instability includes those who do not live in the same house as last calendar year, (6.56, SD = 1.59) and the renter rate (61.79, SD = 10.72). Finally, the percent of young (18–24-year-old) males (11.80, SD = 4.92) is typically a part of a high crime age group measure (Krivo and Peterson, 1996; Sampson et. al, 1997) so it is classified into the “other characteristics” category.

There is a possible explanation as to why these five variables did not load into one or two factors as is the norm. Most studies that use measures of concentrated disadvantage and collective efficacy pull data from the neighborhood level (Krivo and Peterson, 1996; Morenoff, Sampson, and Raudenbush, 2001; Sampson, Morenoff, and Earls, 1999). For example, Sampson et. al (1997) collect their data from neighborhood clusters across Chicago. Furthermore, Krivo and Peterson (1996) focus on neighborhood disadvantage and collect their data from census tracts throughout Columbus, Ohio. The present study gets its data from the macro city level. Again, despite these five variables’ reticence to factor and given the robust nature of social disorganization in prior literature, the decision was made to include all the non-factoring variables as individual variables.

Table 3*Descriptive Information for Community Factors*

	Mean	SD	Minimum- Maximum	Factor Loadings	Cronbach's Alpha
Racial Composition					
Latino/a	24.99	20.12	.93 - 96.27	-	-
RDI	.542	.124	.039 - .746	-	
Neighborhood Instability					
Moved One Year Ago	6.56	1.59	3.80 – 15.20	-	
Renter Rate	61.79	10.72	26.10 – 92.50	-	-
Other Characteristics					
Percent Male (18-24)	11.80	4.92	5.20 – 44.10	-	
Concentrated Disadvantage					
Female-Headed	3.14	1.20	.86 – 6.74	.804	
Household	8.12	2.80	3.40 – 22.10	.743	.861
Unemployment	18.00	7.49	3.60 – 39.40	.684	
Poverty	17.48	16.98	.32-88.71	.601	
African American					
Crime Rate	37.70	17.59	7.72-118.97	-	-

Results

Prior to conducting any regression models, the data underwent several diagnostic checks. To determine if any multicollinearity exists, all variables were entered into a bivariate correlation. After examining the correlation matrix in table 4, it was determined that not having a high school degree ($r = .720$, $p < .001$) and the percent of non-U.S. citizens ($r = .640$, $p < .001$) were strongly and significantly associated with the percent of Latino citizens. In order to avoid any issues with multicollinearity, they were removed from further analysis. In addition to the removal of and transformation of a few variables discussed above, the data were examined for heteroscedasticity, normality, and linearity. These data met the necessary criteria to conduct OLS regression, in particular multilinear regression (Hair et al., 2010). In total, ten multilinear models regressed the impact of organizational structural variables and community variables for each of the police performance measures.

Table 4*Community Bivariate Correlation Matrix*

	1	2	3	4	5	6	7	8	9
1. Latino Population	1								
2. African American Population	-.299**	1							
3. Not U.S. Citizen	.640**	-.186**	1						
4. Not High School Graduate	.720**	.125*	.561**	1					
5. Not Same Residence 1 Year	-.050	.075	-.007	-.047	1				
6. Female Headed Household	.096	.634**	-.118*	.484**	-.065	1			
7. Rental Rate	.183**	.252**	.284**	.417**	-.008	.501**	1		
8. Unemployment	.135**	.551**	.010	.505**	.088	.588**	.362**	1	
9. Poverty	.163*	.456**	-.002	.551**	-.027	.575**	.540**	.446**	1
10. Percent Male	-.077	.050	-.123	-.038	.060	.016	.221**	.048	.433**

$p < .05^*$, $p < .001^{**}$

Results of Crime Rate Models

Table 5 presents the regression coefficient, standard error, and standardized regression coefficient for the first two regression models with dependent variables of violent crime rate and property crime rate. Table 6 presents the same information for the third and fourth models with dependent variables of violent crime clearance rate and property crime clearance rate. All models are statistically significant.

Each dependent variable has its own table. Crime rates have two models, one with just organizational factors and one with organizational factors and community factors. Focusing on table 5, models 1 and 2 assess the independent variables' impact on violent crime rates. The first model regressed the organizational variables onto violent crime rate. A few conclusions can be drawn from model 1. First only three organizational variables, department size (.210, $p < .001$), education (-.003, $p = .003$), and sworn African American officers (.009, $p < .001$) are significant predictors of violent crime. Interestingly, two measures, size and African American officers, are positive meaning that as the log odds of department size and African American officers increase, violent crime also goes up. The measures of education however, is negative. This hints that departments who require more than a high school education, correlate with a lowering of violent crime. The adjusted R^2 indicates that this model explains 23.2% of the variation in violent crime rate, a moderate effect size.

Model 2 adds community factors into the regression. This is the strongest model in the entire analysis. Only two organizational variables hierarchical differentiation (.168, $p < .001$) and sworn female officers (.109, $p = .017$) were significant and positive predictors of violent crime rate but their effect size is relatively small. As the log odds of

hierarchical differentiation and sworn female officers increase, so too does violent crime. Notice that the addition of community variables eliminated the significance and effect of some variables (police department size, education, African American officers) while increasing the significance of other structural variables (Hierarchical differentiation and sworn female officers). This is an early indication that organizational structural variables are not particularly good predictors of police output. Moving to the community variables in model 2, the rental rate (.119, $p = .014$) is also a positive and significant predictor of violent crime rate. Concentrated disadvantage (.618, $p < .001$) is a very strong significant and positive predictor of violent crime. Overall, concentrated disadvantage is the strongest predictor of violent crime rate and has the highest beta in the analysis. In other words, as the log odds of concentrated disadvantage increases, so too does violent crime. Lastly, adding community factors hugely improves the model's predicting power as model 2 explains 55.9% of the variation in the dependent variable.

Table 5
Multiple Regression Analyses for Violent Crime Rates

	Violent Crime Rate (Model 1)		Violent Crime Rate with Community (Model 2)	
	B(SE)	Std. b	B(SE)	Std. b
Organizational Structure				
Department Size (Rate per 1,000)	.077(.020)**	.210	.009(.017)	.025
Occupational Differentiation	-.015(.117)	-	.124(.092)	.053
Hierarchical Differentiation	.001(.000)	.006	.002(.000)**	.168
Education (High School Required)	-.107(.036)*	.060	-.023(.029)	-
Sworn Female Officers	.006(.004)	-	.008(.004)*	.032
Sworn African American Officers	.009(.002)**	.003	-.002(.002)	.109
Sworn Latino/a Officers	.001(.001)	.071	-.001(.002)	-
		.298		.074
		.048		-
				.055
Neighborhood Instability				
Moved One Year Ago	-	-	.002(.008)	.008
Rental Rate	-	-	.004(.002)*	.119
Other Characteristics				
Percent male (18-24)	-	-	.001(.003)	.016
Racial Composition				
Percent Latino/a	-	-	.000(.001)	.018
RDI	-	-	.156(.116)	.055
Concentrated Disadvantage	-	-	.248(.023)**	.681

(continued)

R ²	.232	.559
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p<.05*, *p*<.001**

Moving to table 6 and model 3, the organizational only model reports that departmental size (.276, *p*<.001) is significant. Occupational differentiation (.182, *p* = .001) is also a positive and significant predictor of property crime rate. As with the violent crime models, these organizational variables are positively related to property crime, indicating that property crime rises when departmental size and occupational differentiation rise. Organizational size in the organizational only model, exhibits the largest effect size of any organizational variable in any model. Notice that model 3 successfully predicts 12% of the variation in property crime rates, a relatively weak effect size.

Model 4 presents results with the addition of community variables. We can see that department size (.159, *p* = .007) retained its significance but lost some predicting power. This model has a few more significant findings. When regressed onto property crime rate, occupational differentiation (.240, *p* <.001) remains a significant and positive predictor of property crime rate. In fact, its beta increases with the addition of community variables. As the log odds of department size and occupational differentiation increase, so too does property crime. The final significant predictor of property crime is the percent of African American officers (-.148, *p* = .042) in a department. Unlike its organizational counterparts in models 1,2, and 3, this variable has a negative effect on property crime hinting that an increased number of African American officers leads to a modest decrease in property crime.

Table 6 shows that four community variables exhibit a significant relationship when regressed onto property crime. There are two negative correlations in model 4:

moved one year ago (-.097, $p = .042$) and percent Latino citizens (-.221, $p = .016$). The other two significant community variables include the percent of young males in a city (.120, $p = .016$) and concentrated disadvantage (.546, $p < .001$). In essence with a one unit increase in the log odds of young males and concentrated disadvantage, property crime increases whereas the increased presence of Latinos and mobility lead to a decrease in property crime. Once more, concentrated disadvantage exhibits the largest coefficient. Again, adding community variables doubled the variance explained, which is now at 28%.

Table 6

Multiple Regression Analyses for Property Crime Rates

	Property Crime Rate (Model 3)		Property Crime Rate with Community (Model 4)	
	B(SE)	Std. b	B(SE)	Std. b
Organizational Structure				
Department Size (Rate per 1,000)	.057(.012)**	.276	.033(.012)*	.159
Occupational Differentiation	.239(.071)*	.182	.315(.065)**	.240
Hierarchical Differentiation	0(0)	-.025	.001(0)	.096
Education (High School Required)	-.011(.022)	-.027	.013(.020)	.032
Sworn Female Officers	.002(.003)	.050	.001(.002)	.026
Sworn African American Officers	.002(.001)	.129	-.002(.001)*	-.148
Sworn Latin Officers	7.67(.001)	.006	.002(.001)	.135
Neighborhood Instability				
Moved One Year Ago	-	-	-.012(.006)*	-.097
Rental Rate	-	-	-.001(.001)	-.048
Other Characteristics				
Percent Male (18-24)	-	-	.005(.002)*	.120
Racial Composition				
Percent Latino/a	-	-	-.002(.001)*	-.221
RDI	-	-	.109(.082)	.068
Concentrated Disadvantage	-	-	.112(.016)**	.546
R ²	.120		.280	

$p < .05^*$, $p < .001^{**}$

Results of Crime Clearance Rate Models

Now let's move onto discussing the results of the clearance rate models. Clearance rates have three models, one with just organizational factors, one with organizational factors and community factors, and one with organizational and

community factors as well as the overall crime rate. Observing table 7, you can see results from models 5, 6, and 7. Focusing on model 5, you will immediately notice that only one organizational variable is a significant predictor of violent crime clearance rates: sworn female officers (-.172, $p = .006$). Like the previous crime rate models, the presence of female officers seems to have the logically inverse effect on clearance rates as for a one unit increase in female officers, violent clearance rates decrease .172 units. The overall predicting power of the model decreases from the previous regression analyses as it explains only 7.8% of the variation in violent crime clearance rates.

When the community factors are added, as you can see in table 7 model 6, The number of female officers remains significant (-.230, $p < .001$) and sworn Latino officers (.194, $p = .047$) also becomes significant. Notice that the sworn female officer variable becomes more significant and more powerful with the addition of community variables. The model 6 findings in table 7 are interesting as they indicate that as the number of female officers increases, violent crime clearance decreases but as the number of Latino officers increases, so too does violent crime clearance rate. Neither agency size, occupational differentiation, or hierarchical differentiation are significant predictors of violent crime clearance. As for the community factors, both percent Latino citizens (-.305, $p = .003$) and concentrated disadvantage (-.269, $p = .002$) were negative predictors of violent crime clearance rate. A one unit increase in the percent of Latino citizens and concentrated disadvantage lead to a decrease in violent crime clearance rate. Finally, the rental rate (.189, $p = .005$) was a significant and positive indicator of violent crime clearance rates. In other words, as the percent of renters increases, violent crime clearance rate increases as well. The strongest predictor in model 6 is not concentrated

disadvantage but the percent of Latino citizens in each community. Lastly, variance explained doubles to 15.2%.

Turning our attention to model 7 in table 7, you can see that the only difference is the addition of the overall crime rate. The idea of creating this model is to determine if the crime rate played any role in the clearance rate of a given police department. This crime rate addition slightly increased the predicting power of sworn female officers and sworn Latino officers. In addition, it also increased the coefficient of percent Latino. However, it decreased the effect of concentrated disadvantage. As you can clearly see, the addition of an overall crime rate decreased the variance explained to 12.4%.

Table 7

Multiple Regression Analyses for Violent Crime Clearance Rate

	Violent Crime Clearance Rate (Model 5)	Violent Crime Clearance Rate with Community (Model 6)	Violent Crime Clearance Rate with Community and Crime Rate (Model 7)
	B(SE)	B(SE)	B(SE)
	Std. b	Std. b	Std. b
Organizational Structure			
Department Size (Rate per 1,000)	-7.19(12.32)	-9.43(12.92)	-5.09(13.11)
Occupational Differentiation	-14.22(70.79)	-20.18(69.66)	9.78(71.48)
Hierarchical Differentiation	.382(.290)	-.038(.313)	.025(.314)
Education (High School Required)	-8.04(21.79)	-9.14(21.64)	-7.98(21.58)
Sworn Female Officers	-7.28(2.64)*	-9.73(2.66)**	-9.79(2.65)**
Sworn African American Officers	-1.96(1.09)	-.110(1.27)	-1.81(1.26)
Sworn Latin Officers	-.923(.655)	2.32(1.17)*	2.48(1.17)*
Neighborhood Instability			
Moved One Year Ago	-	6.41(6.33)	4.98(6.36)
Rental Rate	-	3.39(1.19)*	3.28(.979)*
Other Characteristics			
Percent Male (18-24)	-	3.07(2.15)	3.40(2.15)
Racial Composition			
Percent Latino/a	-	-2.92(.972)*	-3.17(.979)*
RDI	-	-19.42(87.57)	-10.15(87.44)
Concentrated Disadvantage	-	-53.46(17.18)*	-41.43(18.45)*
Total Crime Rate	-	-	1.25(.707)
R ²	.078	.152	.124

p < .05*, *p* < .001**

The final table, table 8, reports the regression for property crime clearance rates. The initial, organizational only model shows that four variables present as significant. Hierarchical differentiation (-.192, $p < .001$), sworn female officers (.150, $p = .015$), sworn African American officers (-.295, $p < .001$), and sworn Latino officers (-.160, $p = .003$). Again, notice how three of the four variables predict a decrease in crime clearance rates. As hierarchical differentiation, African American officers, and Latino officers increase, property crime clearance rate decreases. The organizational variable only model explains 11.2% of variation in property crime clearance rate.

Model 9 introduces community variables into the model. Overall, two organizational variables retained significance and both are negative. Hierarchical differentiation (-.177, $p = .003$) and sworn African American officers (-.295, $p < .001$) are significant negative predictors of property crime clearance rate. This indicates that as hierarchical differentiation and the number of sworn African American officers increases, property crime clearance rates decrease. However, hierarchical differentiation has a lower beta in the community factors model. With the addition of community variables both sworn female officers and sworn Latin officers lost their significance. The only significant community factor is the percent of Latino citizens in a city (-.305, $p = .003$). Once more this is a negative relationship indicating that as the Latino population increases, the property clearance rate decreases. Adding the community variables increases the variance explained to 15.2%. The addition of total crime rate in model 10 completely reduces the significance of sworn African American officers. Crime rate also slightly reduces the predicting power of the Latino population (-.296, $p = .004$) but

slightly increased the predicting power of hierarchical differentiation ($-.181, p = .003$).

The addition of crime rate reduces the variation explained to 11.6%.

Table 8

Multiple Regression Analyses for Property Crime Clearance Rate

	Property Crime Clearance Rate (Model 8)	Property Crime Clearance Rate with Community (Model 9)	Property Crime Clearance Rate with Community and Crime Rate (Model 10)
	B(SE)	B(SE)	B(SE)
	Std. b	Std. b	Std. b
Organizational Structure			
Department Size (Rate per 1,000)	6.67(5.57)	5.61(5.60)	4.89(6.07)
Occupational Differentiation	21.41(32.03)	29.65(32.13)	24.66(33.11)
Hierarchical Differentiation	-467(.131)**	-429(.144)*	-440(.145)*
Education (High School Required)	-8.70(9.86)	-11.12(9.98)	-11.31(9.99)
Sworn Female Officers	2.93(1.20)*	2.29(1.22)	2.30(1.23)
Sworn African American Officers	-2.15(.493)**	-2.15(.584)**	-2.14(.585)
Sworn Latin Officers	-882(.296)*	.325(.537)	.298(.540)
Neighborhood Instability			
Moved One Year Ago	-	.977(2.92)	1.22(2.95)
Rental Rate	-	.026(.550)	.044(.551)
Other Characteristics			
Percent Male (18-24)	-	-432(.991)	-487(.995)
Racial Composition			
Percent Latino/a	-	-1.35(.448)*	-1.31(.453)*
RDI	-	-65.76(40.39)	-67.30(40.50)
Concentrated Disadvantage	-	-1.20(7.92)	-3.20(8.54)
Total Crime Rate	-	-	.207(.327)
R ²	.112	.152	.116

p<.05*, p<.001**

Overall, the ten models exhibit a low to strong effect on the variance of the four dependent variables. The strongest predictor across the models is concentrated disadvantage. It is significantly related to three of the four dependent variables and had the highest effect size when regressed onto violent crime rate. Interestingly, when added into models with community factors, police department size was only a significant predictor of property crime rate and a relatively weak one at that. Furthermore, the fact that the organizational variables were more often than not positively associated with crime rates and negatively associated with clearance rates indicates that they may not be of particular importance in various performance outcomes. Furthermore, in most instances, the significant organizational factors either lost power or completely lost significance when regressed into a model with community factors. The variance explained also doubled every time community factors were added. In essence, organizational factors alone lack the predicting power they achieve when combined with a model containing community factors. In addition, overall crime rate was included as a control in two of the crime clearance models but failed to increase the explanatory power of each model. Only one independent variable, the racial diversity index, was insignificant across all four models indicating that racial diversity is not a significant predictor of crime rates or clearance rates. Lastly, no variable was significant in all ten models. A discussion of the results follows.

CHAPTER V

Discussion

The final section links previous chapters via a discussion centered on the findings of this study. This research is grounded in organizational theory, specifically the study of organizational structure. In essence, this research attempts to determine how the theoretical constructs of organizational structure predict real world outcomes. These effects are then controlled by factors of community disorganization. The central themes of this discussion are twofold. First, the discussion will focus on the relatively weak and inverse effect of police organizational variables on police performance. Second, the discussion then turns to the strong impact of community effects, particularly concentrated disadvantage, on police performance measures. The implications of this study's findings will also be discussed in greater detail.

This chapter will begin with a summary of the relevant scholarship surrounding police organizational structure. A discussion of the relevant findings across both groups of independent variables including theoretical and policy implications will follow. Lastly, suggestions for future research will be examined.

Summary of Extant Literature

A long line of research has examined what elements shape the organizational structure of a police department. Factors such as age, technology, and environment have all contributed to how police departments organize themselves (Maguire, 2003).

Recently, studies have sought to discover how those organizational structural elements impact individual police officers and larger departmental decisions (Jurek and King, 2020). Despite advancements in the use of structural factors as independent variables,

virtually none of this literature discusses the impact of organizational structure on measurable police output. The current study is unique in that it brings two separate topic areas, organizational structure and police performance, together in an attempt to determine where and how they overlap. In discussing the current study, it is important to remember that organizational structure is essentially the actionable arm of police organizational theory in that it allows researchers to differentiate between various police departments. As an independent variable, structure plays a significant role in a few police agency outputs including community policing, police culture, arrest decisions, and use of force. Most importantly, prior studies indicate that organizational factors can play a role in influencing police performance and adaptation (Choi, 2011; Jenness and Grattet, 2005; Katz, Maguire, and Roneck, 2002; Maguire, 2009), which is the central hypothesis of this study.

Prior research indicates police performance is a catch-all term used to describe any form of police output. It is measured by several competing variables including crime rates, clearance rates, response time, reductions in criminal victimization, the effective and efficient use of resources and force, as well as achieving legitimacy amongst the citizenry. Literature shows that performance is influenced by stress, particularly organizational stress (Shane, 2010), police subculture (Reuss-Ianni, 1984), and experience (Smith and Aamodt, 1997). While some of the new measures of police performance are promising, data limitations forced this dissertation to use more traditional measures of police performance, namely crime rates and clearance rates.

Summary of the Current Study

The purpose of the current dissertation is to evaluate the influence of both organizational and community factors on police performance as measured by crime rate and clearance rate. The research question then is a relatively simple one; how do organizational structural factors impact police performance? Secondary to the primary research question, this study is also concerned with determining how various elements of the community impacted measures of police performance and whether they influenced the structural effect.

To answer the research question, this scholarship drew data from a sample of 357 large police departments located across the county. The LEMAS dataset acted as the central piece of data as it is where the sample was refined, and final selections were made. After the sample was determined, two measures of structural complexity (occupational differentiation, and hierarchical differentiation), along with department size, education requirements, and various police department demographic variables were pulled from LEMAS. These variables were used to answer the central research question. In addition, two measures of police performance, crime rate and clearance rate, were gathered from the UCROKCA. Lastly, numerous community measures including concentrated disadvantage, neighborhood instability, and racial composition were collected from the American Community Survey and tested to determine their effect on police performance.

Review of Organizational Findings

Findings central to the primary research question, organizational structure, produced insightful results. As noted earlier, this research is unique in that it is one of

only a handful of studies to examine how organizational factors effect police performance. Unfortunately, this also means that there is not much relevant literature to compare with the current findings. This study concludes that, overall, police organizational structure is not a particularly impactful element when regressed onto police performance. That is not to say there are no significant findings, there are. However, these findings are inverse of what the first hypothesis predicted. In most cases, these organizational variables predicted increases in crime rates and decreases in clearance rates. Let's discuss the results in detail.

First, models including just the organizational variables, explain, on average half of the variance their community and organization counterparts do. In essence, the models with structural variables alone are worse at predicting the outcome (crime rate and clearance rate) than they are when modeled with community elements. Second, organizational size, was a significant positive predictor of both measures of crime rate and was a non-significant predictor of both types of clearance rate. For example, department size is a moderate, significant, positive predictor of violent crime clearance when included in the structure only model. Yet, once community variables are added, it completely loses its significance in predicting the violent crime rate. A similar correlation exists in the property crime models. Department size starts out as a moderate, significant, positive, predictor of property crime but once community variables are added, it loses roughly half of its predicting power. This finding only adds to the mixed results in police organizational literature but lands in the category of studies that find size does not necessarily affect outcome. For example, Cordner (1989) discovered that environmental variables had a far greater effect on police agency investigative effectiveness than

organizational variables, including size. Brooks and Piquero (1998) found a rather similar pattern regarding size when examining officer stress in that size played a role in police agency stress, but it did not explain much of the variance in police stress. Kleck and Barnes (2014) also determined that the number of police officers per capita did not increase any general deterrent effect on crime. It is safe to say that, while these findings are counter to the organizational structural literature denoting size as a major predictor of structure (Blau, 1994; Blau and Schoenherr, 1971; Kimberly, 1976; Langworthy, 1992; Langworthy, 1986; Mastrofski, 1981; Meyer, 1972; Wilson, 1968), they are lock step with the broader police environmental literature claiming size does not affect police outcome.

Let's turn our attention to the two formal measures of police structure and the related departmental demographics. The positive effect on violent and property crime rate is not just isolated to police department size. Occupational differentiation was a significant, positive, and moderate predictor of property crime rate. Occupational differentiation is the measure of the civilianization within a department (Langworthy, 1986). This measure was included as departments with a more occupationally differentiated structure are typically seen as a flat, less formalized departments. These departments are theorized to have close bonds to their communities given their less formal nature (Langworthy, 1986; Maguire, 2003). The current study does not find much support for that hypothesis. In fact, the inverse is true as the increase of occupational differentiation leads to an increase in property crime rate. Perhaps, like department size, occupational differentiation is simply controlled by various environmental factors (Donaldson, 1995).

Hierarchical differentiation is a significant and positive predictor of violent crime and property crime clearance rates. Hierarchical differentiation is the measure of the chain-of-command separation between the lowest level line officer and the highest-ranking officer. Police departments that are hierarchically complex (vertical) exercise more effective control over police, while police departments that are less complex (flat) do not and are also less formalized (Zhao, Ren, and Lovrich, 2010). Few studies apply the measure of hierarchical differentiation to various outputs, so it is difficult to place this finding in the broader literature. Randol (2012) discovered that hierarchical differentiation had no effect on terrorism response preparedness in local police departments. Maguire (2009) discovered that vertical height did have an impact on child sexual abuse case attrition in that it led to lower arrest rates. This finding, though focused on a singular aspect of policing, falls in the same category as the current study's discovery in that vertical height has the logically opposite effect on an output. In other words, increasing the complexity of police department hierarchy has no net gain on policing effectiveness itself. It is most likely a result of the environmental matrix a police department operates in (Donaldson, 1995; Meyer and Rowan, 1977).

Completing the discussion of structural findings are the various department demographic variables including an education requirement (at least high school required), and the number of sworn female, African American, and Latino officers. Education is only significant in the organization only model, with the violent crime rate model having an extremely weak coefficient. This finding is consistent with prior literature. Smith and Aamodt (1997) discovered that police officer education has no effect on the volume of arrests and, more importantly, police who hold a college degree are typically better

performers but only when combined with experience. Furthermore, once the community effects were added, police education lost its significance.

The police gender and race variables were quite mixed but offered some interesting results. For example, the percent of African American officers was a significant, moderate, and positive predictor of violent crime rate (model 1) but when the community variables were added, they completely lost their significance. Interestingly, in model 4, the percent of African American police in a department exhibited the only significant, negative effect on crime rate of any organizational variable. Similarly, in models 6 and 7, the percent of Latino officers exhibits a significant positive effect on violent crime clearance rates, meaning that more Latino officers leads to an increase in violent crime clearance rate. This finding is only strengthened by the addition of community variables.

An increase in the number of minority officers is frequently floated as a policy initiative, especially in the recent wake of various police shootings. The extant literature produces mixed results regarding this suggestion where some studies find minority officers treat black citizens more harshly and are more likely to profile black citizens (Antonovics and Knight, 2009; Brown and Frank, 2006; Thompson, 1976). Other studies argue that, due to organizational conformity, no real results will be seen until a critical mass of black officers are employed (Kanter, 1977). The present findings seem to support both sides of the argument depending on the output being examined. Support for critical mass theory exists in the finding that minority (Black, Latino, and female) officers, in certain circumstances (Latino officers and violent crime clearance; African American officers and property crime rates; female officers and property crime clearance rates

without community effects), do reduce crime rate and increase clearance rates.

Conversely, support for the notion that minority representation does not matter exists in certain circumstances (African American officers and violent crime rate; female officers and violent crime rate with community added; female officers and violent crime clearance rates; African American and Latino officers and property crime clearance rates), does increase crime rate, and decrease clearance rate. Further analysis is needed to parse out what is actually occurring.

In sum, the organizational findings are generally inversely related to crime rates and clearance rates with a few exceptions. These findings seem to support the notion that police departments and organizational factors do not and cannot affect crime rates. In addition, organizational factors are weak predictors of clearance rate, a metric that is directly in a police department's control, with the notable exception that an increase in minority officers, can decrease crime rate and increase clearance rates in certain circumstances. The clearance rate finding only adds to the mixed literature. Typically, clearance rates are most influenced by the type of crime committed (Pare, Felson, and Ouimet, 2007), the size of a community (Felson, 1998; Pare, Felson, and Ouimet, 2007), and neighborhood poverty (Sampson et al., 1997). In essence, prior literature indicates that, similarly to crime rates, clearance rates are mostly influenced by factors outside of the police department's control. The present study finds similar results.

Theoretical Implications

Structural Contingency Theory (SCT) and institutional theory are the two preeminent perspectives in organizational theory. Despite their nuanced differences, at their core, SCT and institutional theory both argue that the police organization is strongly

influenced by factors that exist outside of the police department. SCT focuses on environmental factors such as neighborhood diversity and city size (Donaldson, 1995), while institutional theory focuses on the influence of tradition, symbolism, and the influence of stakeholders (Meyer and Rowan (1977)). The present scholarship finds a fair amount of support for SCT. The fact that virtually none of the organizational factors had a negative effect on crime rates or a positive effect on clearance rates, indicates that various technical and environmental factors play a stronger role in determining crime rate and clearance rate than organizational structure. In other words, the structure of an organization is shaped by the environment and cannot exert any meaningful change on said environment in its current form.

Review of Community Findings

Complicating the relationship between the organizational factors and performance is the presence of community attributes such as racial diversity, poverty, and various elements of structural disadvantage. It is a well-established fact that violent neighborhood crime is higher in neighborhoods characterized by a large amount of social disorganization (Sampson et al., 1997). Therefore, it was imperative to include several community-level variables to act as mediators. Interestingly, every time community factors were included in a model, the R^2 value increased and, in some cases, more than doubled. This is evidence of the extreme influence that community factors have over crime and police work. Most community findings, unlike their organizational counterparts, either increased crime rate or decreased crime clearance rates.

Concentrated disadvantage was far and away the strongest predictor of crime rates and clearance rates. It is significant in four of the six models it is included in and

consistently shows the highest coefficient. This finding aligns well with prior studies. It is well-established that concentrated disadvantage is a robust predictor of crime rate at both the neighborhood level (Pratt and Cullen, 2005; Sampson, Morenoff, and Gannon-Rowley; Sampson et al., 1997) and, importantly for this study, the larger city level (Balkwell, 1990; Crutchfield, Geerken, and Grove, 1982). The current scholarship simply reaffirms these conclusions. Even when modeled with organizational factors, concentrated disadvantage remained a strong, positive, predictor of violent and property crime rate as well as a moderate, negative predictor of violent crime clearance rate. Concentrated disadvantage was, however, not a significant predictor of property crime clearance rates. A possible explanation for this finding can be found in extant literature, which indicates a fair amount of nuance when trying to predict clearance rates using community variables. Every property crime is differentially influenced by various elements of neighborhood disorder. For example, residential instability significantly reduces burglary clearance but has no effect on motor vehicle theft (Roth, 2017). The present study uses a summed rate of all property crimes in a community, thereby not allowing an exact determination of which crimes are affected by which community variables.

The measures of neighborhood instability, another aspect of social disorganization, is theorized to affect clearance rates by weakening neighborhood relationships, thus weakening the ability of individuals to notice crime. The current measure of neighborhood instability consists of two variables: those who moved to a location one year ago and the rental rate. The rental rate only presented as significant in three models (2, 6 & 7). When regressed onto violent crime, the rental rate exhibits a

significant positive effect on violent crime rate. This finding is generally consistent with prior literature, indicating that a large rental community leads to more criminal activity (Sampson, et al., 1997). However, the same rental rates seem to predict an increase in the violent crime clearance rate, which is counter to the belief that more renters would equal more crime. There is a possible explanation for this result. This sample was collected from large cities across the U.S. These cities have very high rental rates, typically above 60%. Given that a small percentage of rental properties generate most incident reports (Rephann, 2007), it stands to reason then that the power of a few troubled rental communities is reduced when many other rental communities exist in each city. Furthermore, the increased cost of living in cities, could have all but eliminated troubled rental areas via gentrification and demographic shifts. The findings seem to suggest that something along these lines is happening as rental rates are not significant predictors of property crime and increase violent crime clearance. This finding speaks to the potential fact that demographic changes in cities could be contributing to a general decrease in crime.

The other element of neighborhood instability in this study, those who moved one year ago, effectively acts as a measure of residential stability. The present study found that the percent of people who moved to their current residence one year ago significantly decreased property crime rate. Similarly, to the rental rate, changing demographics could be associated with this finding. As for the general non-significance of the mobility measure, studies indicate that homicide rates are higher in cities with long term residents (Borg and Parker, 2001), while other studies point to the fact that residential instability is not significantly associated with robbery or homicide clearance (Ousey and Lee, 2010;

Roberts, 2008; Roth, 2017). The percent of young males in a community only presented as significant in the property crime rate model. In addition, it exhibits a relatively weak but positive coefficient.

The final community element is the racial composition of a community, consisting of a racial diversity index and the percent of Latino citizens in a city. The Latino population was a significant negative predictor of property crime, and a significant negative predictor both violent and property crime clearance rates. In other words, the presence of Latinos decreased the property crime and decreased both types of clearance rates. Both findings are in line with prior research. First, studies show that homicide rates are twice as low in Latino communities than in Black communities (Velez, 2006). In addition, Latino communities exhibit lower levels of concentrated disadvantage, more community members who present mechanisms that fight crime, better relationships with economic officials, and are closer to more advantaged, white communities (Velez, 2006). It follows then that these communities would also see a decrease in violent crime, the more visible of the two types of crime. Regarding the decreases in clearance rates, literature suggests homicides involving Latino victims are 2.5 times less likely to be cleared than White victims (Litwin, 2004). In sum, the community effects are significant and generally robust predictors of crime rates and clearance rates.

Policy Implications

The point of police research is to help police departments understand the various forces that influence their job so that they can adjust and adapt to various conditions. The present findings indicate that police departments themselves have little to no control over crime rate and clearance rate, two primary measures of performance in the extant

literature. In reality, this finding indicates that either, crime rate and clearance rate are not effective and accurate measures of police performance as alluded to by Moore (2002), or police organizational structure simply is not a predictor of how well a police department does its job. Both conclusions are quite important for police. As Sparrow (2015) opines in his report to the National Institute of Justice, police departments should not judge their success or failure based solely on production metrics. They need a more nuanced way of determining their impact in a community.

Limitations

The current study is not without limitations. First, the study only draws from large police departments across the country. These findings will not reflect the same reality in smaller departments. Additional research is needed to determine if small departments experience similar results. The cross-sectional nature of the data limit conclusions such as any interaction among variables over time. This also places a limitation on the time-order of variables as one cannot diagnose trends in crime rates across time. The other primary limitation exists in the fact that only measures of structural complexity are tested. It is exceedingly difficult to find data for structural control and even more difficult to operationalize said administrative variables. Lastly, using crime rate as a measure of police performance is, admittedly, not the best method. However, crime rate is one of the only accessible and measures of police output. That being said, Moore (2002) suggests a number of new, more accurate measures of police performance including reductions in violent crime, citizen satisfaction, and number of violent police encounters among others.

Conclusion

The present research applied elements of organizational theory to police output. In doing so, principles of organizational structure were identified and regressed onto police performance. Through data obtained from a sample of 357 police departments, organizational and community components have been tested to determine if they have an influence on police performance. The data indicate that police department structure lacks the power to influence police performance, with some minor exceptions. Community considerations, such as social disorganization and neighborhood instability, are much more robust predictors of police performance. The present research adds to the mixed findings from prior literature in that it does not find support for the notion that police organizational structure plays a role in police performance (Choi, 2011; Roneck, 2002; Jenness and Grattet, 2005; Maguire, 2009). However, the current findings fall in line with a myriad of studies observing crime rates in that community factors are clearly the most important predictor and the police department lack the ability to exact meaningful change (see Pratt and Cullen, 2005). This scholarship moves past previous prior literature in demonstrating the importance of proper measures of organizational structure on police performance, using nationally representative city-level data.

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Peer-Reviewed Publications

Salimbene, N. A., & Zhang, Y. (2020). An examination of organizational and community-level effects on police response time. *Policing: An International journal of Police Strategies and Management*, 43, 935-946.

Salimbene, N. A. (2019). The genesis of formal police agency creation in U.S. cities. *Police Practice and Research: An International Journal*, DOI: 10.1080/15614263.

Research Interests

Policing
Police Organizations
Police Performance
Organizational Theory

Papers Presented

Salimbene, N. A., & Zhang, Y. (2018). *An examination of organizational and community-level effects on police response time*. Paper presented at the Midwestern Criminal Justice Association (MCJA) annual meeting in Chicago, IL.

Salimbene, N. A., & King, W. (2017). *Historical antecedents of police agency creation*.

Paper presented at the American Society of Criminology (ASC) annual meeting in Philadelphia, PA.

Salimbene, N. A., & King, W. (2017). *Racial threat: The genesis of police agency creation in U.S. cities*. Paper presented at the Midwestern Criminal Justice Association (MCJA) annual meeting in Chicago, IL.

Funded Research/Projects

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Teaching Experience

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