

**The Effect of Collaboration on Performance in Public Management:
Evidence from Community Policing**

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By

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*The Effect of Collaboration on Performance in Public Management:
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Abstract

Practitioners and academics expect collaboration to matter in public management. Both treat it as an imperative to goal accomplishment and view collaboration as fundamental in community policing. However, existing research seems to study the elements of collaboration such as pre-conditions/antecedents, processes, and outcomes, either individually or with two of the three aspects in conjunction. This approach leaves one portion or the other in a “black box” because there is no comprehensive perspective evaluating all three together. Therefore, this dissertation uses mixed methods and a non-linear approach that tests the impact of collaboration capacity on performance outcomes as mediated by collaborative behavior in the context of community policing. This allows a study of all three elements simultaneously. Results from testing cross-sectional and longitudinal data via mediation analysis indicate a causal mechanism in which individual collaborative behaviors of police mediate the impact of organizational collaborative capacity on performance over shorter time spans, but only partially transmit that impact over longer time spans. Further, qualitative research based on this finding indicates that other potential reasons, such as institutional factors, may provide the additional mediation variables as the proximate cause for collaboration capacity to transmit its effect over longer time spans. This study contributes toward collaboration theory by opening its black box and explaining how the internal gears of the collaborative process are contingent and turn in either direction to positively or negatively affect performance outcomes depending on a multitude of factors. It offers an empirical approach that investigates the phenomena of collaboration from a non-linear perspective, at multiple levels. Lastly, it offers normative contributions by presenting a compelling institutional perspective that practitioners should account for in their daily practice and academics should consider as they design future research on collaboration.

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Chapter 1: Collaboration & Performance in the context of Community Policing

Practitioners and academics expect collaboration to matter in public management. Practitioners claim that collaboration is vital for any modern organization to accomplish its performance goals. For example, New York City Police Commissioner William Bratton explicitly expresses the need for collaboration in the title of his co-authored book, *Collaborate or Perish* (Bratton and Tumin 2012). The former director of the USAID mission in Iraq, James Stephenson, claims that the collaborative relationship between the USAID and the U.S. Army helped resolve many of the interagency problems existing between the two agencies during the U.S. war in Iraq from 2003 to 2014 (Stephenson 2007). In a book he wrote about his experience, he claims that the two agencies would not have realized the successes achieved during the “golden hour” of that conflict if not for collaboration between both organizations. In fact, based on lessons learned about the utility of collaboration during that war the U.S. military instituted the claim in its doctrine that collaboration is a prerequisite for joint military, interagency, and multinational operations (U.S. Department of Defense 2011a; U.S. Department of Defense 2011b).

At the local practitioner level of government, the common view from practitioners is that collaboration is necessary to the performance of public organizations. For example, emergency managers across the nation view collaboration as an essential element of the culture of the American emergency management system (Waugh and Streib 2006). When it comes to community policing, collaboration is given such credence in dealing with wicked problems encountered in the policing environment that Trojanowicz and Bucqueroux assert that “*the power of partnership and collaboration is such that even when mistakes are made, community*

policing often triumphs” (1998, 56). Claims such as these by practitioners attract academic researchers to study and verify such assertions.

Propositions of collaboration’s necessity to performance provide a salient topic for academic researchers (Keast and Mandell 2012; Mandell and Keast 2007; Mandell and Keast 2008; O’Leary et al. 2015). Some scholarly research affirms practitioners’ claims that collaboration is an “organizational imperative” to solving complex issues that require “accommodating traditional administrative systems to the demands of modern policy problems” (Kettl 2006, 12). The recognition of this collaboration necessity leads to viewing collaboration as “a central part of the strategy of many organizations” (Huxham and Vangen 2005, 7). Indeed, a growing body of literature suggests that the capacity to collaborate enables organizations to work better with citizens and other agencies to accomplish tasks and solve complex problems (Schermerhorn 1975; O’Leary, Gerard, and Bingham 2006; Bingham and O’Leary 2008; O’Leary and Bingham 2009; Daley 2009; Krueathep, Riccucci, and Suwanmala 2010). Others observe that the ability to collaborate provides practitioners with multiple ways to deal with unstructured problems, or wicked problems, that cut across academic disciplines, policy domains, and political/administrative jurisdictions (Roberts 2000; Kettl 2002; Conklin 2006; Weber and Khademian 2008).

Thus, the consistent theme emanating from both practitioner claims and scholarly literature is that collaboration matters; not only as a useful problem-solving activity for complex public issues but also as a solution to enhance the performance of organizations charged with solving those challenges. However, examples of collaboration failures, problems with measuring the effect of collaboration, and explaining the inner workings of how collaboration affects public

organizations' performance in solving those complex challenges point to the difficulty of studying collaboration.

Background of the problem

Four main perspectives set the context for the problem this dissertation tackles. There is the perspective of collaboration itself, an expansive concept that crosses several academic disciplines and practitioner domains, connotes many different meanings to the many different people from those multiple disciplines and fields, and is studied and measured in many different ways. There is the perspective of performance management, a relatively new concept in public administration emanating from the new public management movement within public administration, and discussed within the discourse of performance by management or measurement. Then there is the even newer perspective that explores both collaboration and performance management together, and how those two concepts inform one another; does collaboration lead to better performance and can that be measured and replicated. Finally, there is the setting of community policing in which this dissertation chooses to observe the three previously mentioned perspectives. Community policing is a contentious yet contemporaneous context to observe collaboration, performance, and their relationship. For example, at the time of writing this dissertation, the nation is observing broiling conflicts in communities that demonstrate a breakdown in collaboration's effect on performance in community policing. This breakdown, in cities like New York, Chicago, Ferguson, Baltimore, and Houston—some of which were once models for the implementation of community policing—now brings into question not only the efficacy of community policing but the collaborative capacity and efforts of the police and communities as well.

Collaboration. Collaboration is presented in so many diverse fields of practice and study, that the phenomenon itself is often called by many terms such as partnerships, alliances, coalition, network, community collaboration, and collaborative governance, to name a few (Connelly, Zhang, and Faerman 2008). It spans diverse public and private domains such as supply chain management (Bengt Ahgren et al. 2009; Le Meunier-FitzHugh et al. 2007; Tremblay and Tremblay 2010), health care delivery (Alexander et al. 2001; Lovelace 2000; Provan and Milward 1995; Sinclair and Whitford 2013), and state interagency operations (Agranoff 2008; Backer 2003; Grubbs 2000). As illustrated in the introduction above, often these diverse fields present collaboration as a net positive and treat it as a means for individuals and organizations to achieve goals or complete tasks that they could not otherwise accomplish alone without collaboration. However, a rich discourse questioning the efficacy of collaboration and proposing that maybe it has adverse effects is also present in the literature (Burk et al. 2007; Byles 1985; Connelly, Zhang, and Faerman 2008; Cunningham, Olshfski, and Abdelrazek 2009; Huxham 1996b; Daley 2009; Daughtery et al. 2006; Grubbs 2000).

The literature presents the discourse about collaboration as paradoxical tensions (Connelly, Zhang, and Faerman 2008). In the literature, some researchers observe the paradox of disparate organizations working together toward the same goal but at the same time maintaining their own separate and diverse goals. From this paradoxical observation, where organizations must attend to mutual as well as individual interests, a tension emanates between autonomy and interdependence (Connelly, Zhang, and Faerman 2008, 25), or autonomy and accountability (Huxham 1996b). In other words, there arises a tension between control and collaboration (Sundaramurthy and Lewis 2003) when two or more organizations work together.

Other paradoxical tensions observed come from leadership. Each organization has its leader, but each leader must both allow followers to take the lead at times, and learn when to share leadership with other agencies' leaders when in collaborations. In other words, leaders must retain "authority without becoming authoritarian" (Connelly, Zhang, and Faerman 2008, 24, 28–30).

The factors involved in these paradoxes can lead to both positive or negative outcomes. For example, the way members of organizations view the ratio between the cost and benefits of collaboration can set the stage for potential success or failure. While the literature may indicate that collaboration will provide a net gain, the forecasted cost may prevent individuals or organizations from even entering the collaboration. The unforeseen costs of time and relationship building, or necessary divergence from organizational self-interest, or even too many leaders providing conflicting direction or guidance may lead to failure in collaboration and leave individual members of organizations questioning why they chose to collaborate in the first place. This potential for success or failure highlights the main discourse surrounding collaboration, its efficacy, and its ability to provide an advantage, disadvantages, or cause inertia for organizations that adopt collaboration as a management strategy for organizational performance (Huxham 1996a; Huxham 1996b).

Performance Measurement and Management. In addition to collaboration, the other main public management issue preoccupying much of the public administration research over the last two decades has been performance (Amirkhanyan, Kim, and Lambright 2014; Boyne et al. 2005; Brewer and Selden 2000; Grady and Chen 2009; Moynihan and Pandey 2005; Selden and Sowa 2004). Performance as a theoretical term is ambiguous, and its meaning is often dependent on the perspective both internal and external organizational factors (Moynihan

2008b). Not surprisingly, a rich discourse on the meaning of performance, performance measurement, and performance management has developed in the literature. While the advent of New Public Management has brought forth an insatiable desire to measure organizational performance (Radin 2006), in particular, public organizational performance (Haskins and Margolis 2015), there resonates a consistent tension between the values of efficient democracy and the values of effective democracy, most notably when the tension occurs between disparate powers in a political process and the assumption that a single actor can manage that democratic performance (Agranoff 2005; Moynihan 2008a; Moynihan 2008b; Radin 2006; Zheng, Zhang, and Li 2012). Classical approaches to measuring performance, in terms of inputs, outputs, and outcomes is prevalent in the new public management literature because after all, “what gets measured gets done (Drucker 1974). However, this approach misses much of the point that accountability mechanisms devised to ensure public organizations work toward general public goals hampers what constituents want public organizations to accomplish. It also misses the point that one measure of success for one constituent does not always translate into a measure of success for another constituent, thus highlighting how a focus on efficiency can hamper equity (Frederickson and Frederickson 2006).

Another aspect of the performance management discourse is how it is described and measured. Moynihan (2008b, 15) defines it as “*a system that generates performance information through strategic planning and performance measurement routines and that connects this information to decision venues, where, ideally, the information influences a range of possible decisions.*” As such, it is often described from external or internal perspectives and measured accordingly along a continuum of objective to subjective (Amirkhanyan, Kim, and Lambright 2014; Boyne et al. 2005; Moynihan and Pandey 2005; Zheng, Zhang, and Li 2012). That is to

say, the performance management and the measurement thereof for organizations are contingent on exogenous environmental factors such as resources, partners, political situation, or endogenous internal factors such as capacity, resources, leadership, cultures. When measuring performance, quantitative variables that are readily observable and thus measurable are used. However, qualitative variables are also available, but the selection of their indicators is dependent on the number of perspectives used to conduct the qualitative measure and thus sets varying expectations for the quality of the performance. As such, the phenomenon of collaboration can have both internal and or external constituted variables that have an overall impact on performance and can serve as a critical explanatory variable for performance in public organizations (Bardach 1998; Bardach 2001; O’Leary and Bingham 2009). Given the fact that collaboration, as discussed earlier, is so encompassing a concept, when added to the issue of performance in terms of either collaborative performance or collaboration and performance, the context of the problem of measuring the impact of collaboration on performance doubles.

Collaboration and Performance. This dissertation further illuminates the problem it addresses by combining the concepts of performance and collaboration. In doing so, one irony that comes to light in the recent public management practice of making managers accountable for performance management outcomes is that performance is often reliant on multi-party collaborations for which public managers may only have indirect influence over (Moynihan 2008b). This irony may be especially so based on the discussion above on performance detailing the potential for subjectivity in performance management and measurement.

For academics, collaboration should theoretically contribute to higher performance. While the theoretical link between collaboration and organizational performance may appear inherent in public management literature and praxis, the compounded problems of defining both

collaboration and performance make measuring it no easy task. In addition to the multiple subjective perspectives, there are few quantitatively based empirical studies of the collaboration performance link other than the theoretically qualitative ones present in the extant literature. A review of the current state of the collaboration literature reveals more general theoretical and qualitative studies of collaboration than precise quantitative investigations (McGuire 2006; Getha-Taylor 2008; O’Leary and Vij 2012; Silvia and McGuire 2010; Thomson, Perry, and Miller 2009). This situation may exist because the literature treats collaboration as an “emergent” (Gray 1989, 233) or a “transient” phenomena (Thomson and Perry 2006, 20) appearing in various forms in multiple settings (McGuire 2006) that are not often easily observable in the tangential form necessary for quantification.

Furthermore, many of the existing quantitative studies on collaboration look at each element of collaboration separately, or go from pre-conditions to outcomes while leaving the analysis of the process in a “black box” (Wood and Gray 1991, 143). For example, Bardach (1998) argues that some studies of collaboration look at its emergence but fail to evaluate its outcomes or effect on performance. Because of this fact, some researchers are dubious about the impact of collaboration on performance or outcomes altogether (Huxham 2003; Teisman and Klijn 2002; Vangen and Huxham 2003). The parsimonious nature of the research on collaboration reveals a gap in explaining how the elements of collaboration link together; how do

the antecedents of collaboration lead to collaboration; and further, how collaboration leads to performance outcomes.¹

To alleviate or confirm the claims about collaboration's benefits, and to fill in the theoretical and empirical gap, calls for researchers to study collaboration by testing "specific models and hypotheses relating to [collaboration] components, their elements, and their interactions" are prevalent in the literature (Emerson, Nabatchi, and Balogh 2011, 22). Further, because the literature is rife with examples of competition rather than collaboration among public agencies (Huxham 1996b; C. W. Thomas 2003), it is important to understand why collaboration occurs when it does, and why efforts of collaboration either fail or are successful in producing the expected outcomes.

As such, the research of collaboration and its effect on organizational performance outcomes in public administration and management remains an important question to the study to fill this empirical lacuna. Nowhere is this question of collaboration and its effect on performance more important than in the issue of community policing. In light of the recent incidents highlighting the civilian police divide, such as the Brown incident in Ferguson, and similar events in New York, Baltimore and North Charleston there has been a renewed public interest in the role of community policing. (*The Boston Banner* 2015; Donovan 2014; Liasson 2014; Peters and Kesling 2014; Targeted News Service 2014). This public interest in police behavior has prompted many police officers to question their willingness to engage in

¹ For the purposes of this research the terms pre-conditions and antecedents are used inter-changeably as they are in the literature on collaboration (Hafkesbrink and Evers 2010; Plummer 2009).

community partnerships prevalent in community policing out of a fear of repercussions and the lack of seeing the benefit vice the potential costs (Martinez 2015; Sutton 2015; Wolfe and Nix 2015).

Community Policing. By most accounts, a professional model of policing emerged, as the U.S. knows it, in the early 1900s (Amadi 2014; Willis 2014). The traditional model was premised primarily on law enforcement and relied on a separation of the police from the community to gird against corruption and political influence over police actions. However, police administrators found this model insufficient to handle disturbances caused by large movements of social unrest in the urban cities that occurred in much of the 1960s (Gaines and Kappeler 2014). A considerable amount of research during the 1970's assessed that police were not able to handle the unrest effectively due to their philosophy of police-community segregation that formed their professional model of policing. Subsequently, government leaders at all levels searched for new forms of a professional police model inspired by a new philosophy of policing that was more effective than the traditional model of policing (Kappeler and Gaines 2015). The result of this search was a model of policing that focused more on solving policing problems through the synergy created by community relations. This new form of policing that emerged relied on collaborative efforts between the police and the community to solve community problems to both control crime and disorder. According to Trojanowicz and Bucqueroux, "By the early 1980s, a number of new names had appeared regarding police community relations: Neighborhood-Oriented Policing, Community-Oriented Policing, Community Policing. Over time, the simplest term prevailed, and community policing was born" (1998, 4). By the mid-1990's several cities had adopted community policing, some becoming the poster board models

of how to conduct community policing, like Chicago (Skogan 1997) and Houston (L. Brown 1987; Wycoff, Oettmeier, and National Institute of Justice 1994).

As a concept, community policing shares similar problems as the terms collaboration and performance. First, it suffers the same attributes of multiple definitions based on multiple perspectives and multiple expectations for the outcomes and how to measure those outcomes (Cordner 2014; Cordner et al. 1999; Eck and Rosenbaum 1994; Jiao 1998; Palmiotto and Donahue 1995; Pelfrey 2004). This condition makes community policing simultaneously “ambitious and ambiguous” (Eck and Rosenbaum 1994, 3).

The term combines the notions of the governed and the government into one term and connotes a symbiotic relationship. The term itself elicits competing inferences. The word community is an egalitarian term, connoting acceptance of others in proximity with or with which share some affinity and a sense of equality. Policing, on the other hand, connotes control, and that some in the community are not as equal as others. Nonetheless, the majority of the literature’s descriptions of collaboration coalesce on and are congruent with the Office of Community Oriented Policing Services’ definition of community policing:

Community policing is a philosophy that promotes organizational strategies, which support the systematic use of partnerships and problem-solving techniques, to proactively address the immediate conditions that give rise to public safety issues such as crime, social disorder, and fear of crime (U.S. Department of Justice. Office of Community Oriented Policing Services 2003, 3).

In essence, community policing is about collaboration between the community and police to identify and solve community problems. As a philosophy, community policing resides on a great deal of interaction and collaboration between police, citizens and other government and non-government organizations. Prominent in the definition above is the term “partnership” which connotes collaboration. When used in conjunction with “problem-solving” the implication is that collaboration leads to the performance objective in community policing that problems get solved through the use of collaboration.

Another problem that community policing shares with the other main concepts of this research is the questions of effectiveness of community policing (Cardarelli, McDevitt, and Baum 1998; Dietz 1997; Greene and Mastrofski 1988; Liederbach et al. 2008; Palmiotto and Donahue 1995; Pelfrey 2004; Rosenbaum 1994; Worsnop 1993). Given that community policing has been a strategy since the 1980’s, and relies on collaboration, the recent problems between police and their communities highlighted in Chicago, St. Louis, Houston, and New York requires an examination of the efficacy of collaboration as a part of the community policing philosophy.

An example that highlights the breakdown in performance and collaboration is the Department of Justice after action report on the law enforcement response to the demonstrations, protests, and rioting that occurred after the shooting of Michael Brown in Ferguson; The report included the following key findings:

- *inconsistent leadership and coordination in the direction, incident management, and tactical orders;*
- *a poor relationship between law enforcement and segments of the community;*
- *a reactive police response that failed to establish a strategic approach to effectively mitigate issues as they arose;*
- *inadequate communications and information sharing;*
- *ineffective and inappropriate strategies and tactics used; and*

- *a lack of consistency in the law enforcement response, exacerbated by the sheer number of smaller municipal law enforcement agencies involved in the response, each with disparate missions, policies, training, and cultures* (U.S. Department of Justice-Office of Community Oriented Policing Services 2015).

Based on these key findings, one lesson learned relating to collaboration in community policing was that law enforcement officers should receive training on topics related to procedural justice, implicit bias habits, cultural diversity, and related topics that promote community policing to help build trust and legitimacy in diverse communities. The training identified in this lesson-learned touch on the elements of collaboration required for community policing. In essence, understanding how collaboration affects organizational performance is more than an exercise in academic research; it is fundamental to the basic operations of local democracy manifested between the governed, the community, and the governing, the police. Thus, the study of collaboration's effect on performance situated in the setting of community policing sets the context of the problem this dissertation is addressing.

The Study of Collaboration and within Community Policing

In the arena of community policing, collaboration occurs between police and unorganized citizens that police encounter in the normal routines of their patrol activities. It occurs between police and organized citizen or community groups such as neighborhood associations, business associations, and non-profit community organizing groups. Collaboration also occurs between police and other law enforcement and government agencies. Law enforcement practitioners recognize that community policing is “in essence, a collaboration between the police and the community that identifies and solves community problems” (U.S. Department of Justice, Bureau of Justice Assistance 1994, vii). Based on this, researchers have long associated community

policing with collaboration (Rosenbaum 1994; Peak 1996; Morash and Ford 2002; Grabosky 2009; Palmiotto 2011; Kappeler and Gaines 2015).

Not surprisingly, criminologists often study aspects of collaboration in their evaluations of community policing effect on police performance (Rosenbaum 1994; McGillis 1997; Trojanowicz and Bucqueroux 1998; Grabosky 2009; Miller, Hess, and Orthmann 2010; Palmiotto 2011; Kappeler and Gaines 2015). Consistent with the study of public organizations in general, the literature in the field of police administration and criminology view collaboration as a core problem-solving element of community policing (U.S. Department of Justice, Bureau of Justice Assistance 1994, 13). However, similar to the public management literature, police studies predominately focus separately on the aspects of collaboration; either pre-conditions, or processes, or outcomes.

From this literature, two perspectives emerge that incorporate the effect of collaboration in community policing. The first perspective focuses on “service provision, fear reduction, and community mobilization,” and the second focuses more traditionally on “complete crime control, prevention, and reduction” (Moore 1994, 293). In the first, the role of collaboration is described as necessary to work with the population writ large, either by mobilizing them to take self-policing actions or in spreading the work of the police presence in hopes to reduce the fear quotient regarding crime. In the second perspective, descriptions of collaboration are provided to inform aspects of interagency and intergovernmental collaboration efforts at tackling crime. Despite the positive picture painted by the early public management literature on collaboration’s mere presence equating to success, the two perspectives above do not show any statistical evidence of collaboration actions leading to solutions for many of the wicked problems presented in criminal justice such as crime prevention (Bennett 1994, 243). This incongruence may be

because issues like prevention and community participation are slippery subjects to measure. Further, criminologists acknowledge that there are many factors outside of law enforcement's control, such as prosecutor and judicial discretion, that may contribute to or prevent crime prevention (J. Q. Wilson 1983). However, when one adds in collaboration and all of the elements estimated to be necessary for collaborations to be successful, factors outside of police control increases exponentially.

To overcome the obstacles in measuring the outcomes of police implementation of community policing, some researchers have turned to measuring police performance. The fundamental difference between performance outcomes is that while measures of outcomes evaluate if a program achieved its goals, measures of performance evaluate if organizations implement the program as intended. Thus, some researchers turn to other measures of police performance such as clearance rates, assistance to prosecutors resulting in convictions, and public attitude to determine how police perform (Greenwood, Chaiken, and Petersilia 1977).

When collaboration is the sole focus in the study of community policing, it is studied in terms of three main types: inter-organizational (i.e. interagency), intra-organizational (i.e. teamwork), and with the public (i.e. community collaboration). Inter-organizational collaboration occurs both with public and nonpublic organizations. Collaboration between police agencies and other government agencies occurs when both need to seek expertise routinely from each other in solving an issue. For example, police often seek assistance from code enforcement, sanitation, and parks and recreation offices and vice versa (U.S. Department of Justice, Bureau of Justice Assistance 1994). Further, collaboration between nongovernment agencies and institutions constitute another important collaborative partner for police. These

organizations are often brought into the process to give a focal point of access for the community to engage the police.

Sometimes, members of these organizations are included in training sessions conducted by the police, such as citizen academies, to help develop a common language in discussing community problems that require collaboration. Lastly, every patrol officer is a potential connecting node to the community at large, engaging with storefront owners, residents, and neighborhood adolescents thus establishing an informal communication network that allows the police to gauge the problems in the community (Ferrandino 2014). In fact, the latest in collaboration initiatives within policing are organizational structures called fusion centers which are meant to increase information sharing necessary for collaboration with public, private, and citizen organizations (2014, 61). This type of collaborative activity in community policing corresponds with the type of activities that researchers of networks observe, wherein collaborative networks form because no one actor alone can solve the problems prevalent in community policing and therefore must rely on other actors (Salamon and Elliott 2002). Thus when partners come together in a network, they tend to adopt formal collaborative structures in which they exchange information (Agranoff 2003). Therefore, police agencies engaged in community police activities are a good level of analysis for this study since the very nature of community policing is to interact with the community and other organizations to accomplish the goals of this type of strategy.

Legislatures and city councils have committed considerable public resources to the implementation of community policing activities. By some estimates, as much as \$11.3 billion in grants have been issued to local police departments to implement community policing programs and hire community police. (J. M. Wilson 2013). With that much invested by federal

and state governments, interest in the efficacy of such programs is very high. Political leaders want their police forces to use effectively the resources they provide them. The police forces want to know that any policy prescriptions they enact will deliver that measure of effectiveness. This fact makes research into the impact of collaboration in programs like community policing not just very academically interesting, but necessary to the public interest. Studying collaboration in the context of community policing further interests scholars because as Vigoda (2002) observed, “collaboration is contradictory to the entirely hierarchal, bureaucratic model of traditional policing since it calls for negotiation, participation, and cooperation, free and unlimited flow of information, innovation, agreements based on compromises and mutual understanding, and a more equitable distribution and redistribution of power and resources” (2002, 529).

The Significance for Public Management Scholars

Collaboration and the process to develop the capacity to collaborate is a resource intensive activity and extremely time-consuming (Huxham and Vangen 2005). Public managers want to know that if they invest resources in developing their organization’s capacity to collaborate and if they further implement collaborative efforts, their investment will be rewarded. The extreme resource constraints present in many of the local municipalities are a prime concern for police departments in their decision to implement community policing. Therefore, public management scholars have a duty to examine this issue empirically and confirm or deny this theory and thereby explain collaboration in ways that are useful to their kindred practitioners. However, the majority of the literature I reviewed in this regard fails to connect capacity to outcomes through the behaviors of collaboration.

Therefore, this present study seeks to contribute to the theory on collaboration and performance by untangling the contrary discourse within the literature. It seeks to provide an empirical contribution by seeking empirically based mixed methods of measuring collaboration with the objective of testing a model of collaborative public management over time. Additionally, it provides an empirical contribution by connecting quantitative and qualitative observations to deepen our understanding of how and why collaboration capacity and actions either contribute to or deplete performance in ways that the literature I reviewed does not show. This contribution is a particularly important contribution because while collaboration is assumed to matter, we have yet to develop empirically based studies fully to understand how collaboration affects or does not affect performance. Neither do we know how the elements of collaboration work together to manifest that effect, or how collaboration capacity – the potential for collaboration- turns into collaborative behavior – the activities of collaboration- and how this transfers of capacity’s effect on performance. Further, while this study proposes that collaboration matters it further provides normative contributions to the study of collaboration and performance by proposing that collaboration matter to performance because the elements of collaboration (antecedents, processes, and outcomes) are related to one another in very complex ways that affect performance. In doing so, I build on earlier normative work attempting to link collaborative capacity, processes, and performance (Bardach 1998; Bingham and O’Leary 2008; O’Leary and Bingham 2009; Meier and O’Toole 2002; Wood and Gray 1991).

To flesh out this proposition, I expand on previous collaborative public management literature and on my previous research using community policing as the background to study the effect of collaboration on performance. In doing so, I hope to report on the organizational performance of police agencies in terms of crimes cleared by arrest as an effect of collaborative

capacity and collaboration behaviors. Through a mixed methods approach, detailed further in the research plan discussed below, I attempt to produce a comprehensive, yet concise, study that seeks to find out if collaboration capacity and actions do in fact matter when they do matter, and why they do not when we assume they should.

To summarize, this research contributes to the study of collaboration in three important ways. First, takes on the disparate propositions that collaboration positively affects performance and the observations of when it does not by articulating a model for how the elements of collaboration relate in various ways that provide both positive, negative and neutral effects on performance. Secondly, it provides empirical evidence through mixed methods analysis for the confirmation or disconfirmation of the assumption that collaboration matters to organizational performance by taking a longitudinal view that has yet to be applied the data sources of community policing that this study uses, followed by explanatory and descriptive interviews. This research expands on previously employed research methods described in the literature to test collaboration theory through a mixed methods process to provide a deeper understanding of how and why collaboration capacity and actions either contribute to or detract from performance. Finally, this research contributes normatively to practitioners who rely, or plan on using collaboration as an organizational strategy by assessing the value of collaboration when investing in developing the capacity to collaborate and deciding when and how to implement collaboration practices such as those in the business of community policing.

Outline of the Study

This study unfolds in six basic chapters: the introduction; literature review; research design and methodology; analysis of quantitative results; analysis of qualitative results; and a final chapter

that discusses the quantitative and qualitative results together and concludes the study. In chapter two, the literature review, I summarize the previous research literature on collaboration that discusses the importance of both collaboration capacity and collaboration behavior to the achievement of performance objectives. In doing so, I draw on that literature to develop hypotheses to test the idea of collaboration capacity requiring time to have an effect on performance and how collaboration behaviors mediate that effect. Additionally, chapter two further establishes the utility of studying collaboration and its effect on performance within the context of community policing.

In chapter three, I describe the study's research design and methodology. Essentially, the research design takes an explanatory sequential mixed methods approach that occurs in two methodological phases. The first phase is a quantitative research phase that attempts to validate previous findings via an updated cross-sectional mediation model specification and expands that model longitudinally to test assumptions of a lag time requirement in a longitudinal mediation model. By adding more demographic control variables, per previous reviewer recommendations of my past research on this topic, and transforming the independent variables into factors of both collaboration capacity and collaboration behavior via confirmatory factor analysis methods, I attempt to confirm my previous findings. Additionally, in this chapter I discuss how I merge multiple years of the same data set and conduct longitudinal data analysis to determine if my factors composing the independent variables require time to develop an effect on performance. Finally, in this chapter, I discuss how I utilize the latest regression models to analyze the mediated effect of collaboration behavior on collaboration capacity toward outcomes and performance.

The second phase is a qualitative research phase that builds on the quantitative findings and goes further by providing descriptive narratives from interviews that illustrate aspects of collaboration capacity and behavior that the quantitative analysis cannot capture alone. This chapter will discuss what those aspects are and the type of protocol used to elicit those qualitative findings. For example, what may be the intangible reasons for collaboration capacity to require time to register an effect on performance? Are there similar conditions present in my samples, to what Huxham (2003) would describe as the potential for collaboration inertia or paralysis? Additionally, this qualitative approach provides an opportunity to discern variables that I did not account for in my data sets. For example, trust, which the literature often views as an antecedent of collaboration (Bstieler 2006; Kramer 1996), is not explicitly measured quantitatively in the data sets that my research is using. This approach is in line with the literature describing similar mixed methods of qualitative research following quantitative investigations (Agranoff 2007; Creswell 2013; Durant 2007; King, Feltey, and Susel 2001; McNabb 2013; Riccucci 2010).

Chapter four and five discuss the results of the quantitative and qualitative phases of this study respectively. While chapter four primarily discusses the testing of the models specified in chapter three for the statistical effect factors of collaboration on performance, it also leads to the qualitative questions that chapter four does not specify due to limitations in the quantitative data sets. For example, it seeks to study the effects of trust and leadership in collaboration and how those concepts may or may not affect performance. Chapter five starts from the unanswered questions in chapter four and discusses potential answers to those questions that potentially lead to richer descriptions of the effect of collaboration on performance.

Finally, Chapter 6 discusses the study's quantitative and qualitative results together to identify what is found in the "black box" of collaboration when one studies its antecedents, processes, and outcomes comprehensively. It covers the limitations of this study and charts a course for future research. The discussion concludes with how this study contributes to the larger study of collaboration and the practice of collaboration in public organizations.

Chapter 2: Literature Review and Operationalization of Collaboration

Many scholars from several disciplines have studied collaboration. Early studies refer to collaboration between organizations as an element of inter-organizational relationships (Negandhi 1975; Pfeffer and Salancik 1978; Pfeffer 1982; Van de Ven and Ferry 1980, 297; Warren et al. 1975). This early research focused more on the transactional relationships between organizations studying how they exchange resources such as money, physical facilities and materials, customer, or client referrals, technical staff, and services to achieve their aims. Early proposals to study the effectiveness of collaboration focused on assessing these inter-organizational relationships by measuring the effectiveness of those relationships in allowing each organization to achieve their objectives (Van de Ven and Ferry 1980, 301). The logic behind this line of research was that scholars could quantify collaborative relationships through measuring the flow of resources transacted between organizations.

Some scholars criticize the transactional concept of collaboration because it does not account for the integrative nature of relationships that evolves from inter-organizational collaborations (Austin 2000; Fombrun 1986; Gray 1989; Laumann, Galaskiewicz, and Marsden 1978; Madhok 2000; D. L. Rogers and Whetten 1982). Those scholars claim that "transactional studies under-represent the dynamic, emergent, and mutable character of inter-organizational relationships" (Gray 1989, 227). More current literature indicates that researchers better study collaboration by examining the pre-conditions/antecedents, processes, and outcomes and their dynamic relationship as a starting point for research on collaboration (Wood and Gray 1991, 140; McGuire 2002, 599; Bingham and O'Leary 2008, 8–9).

To begin this encompassing approach to study collaboration, this chapter first reviews the literature on collaboration pre-conditions/antecedents, processes, and outcomes in terms of

collaboration capacity, collaboration behavior, and the effects of capacity and behavior on performance outcomes respectively. Additionally, this review demonstrates the utility of studying collaboration within the context of community policing and the use of police agencies as the unit of analysis. Studying collaboration through the lens of community policing allows for observations of collaboration in all three of the settings it occurs: multi-or intra-agency collaboration (inter-organizational collaboration), intra-agency collaboration (collaboration within teams, or teamwork), and between individual and groups of citizens and police organizations collaboration (collaboration with the public). Therefore, studying collaboration in the context of police organizations allow researchers to generalize results to other similar organizations that use collaboration as a central part of their organizational strategies. These results are generalizable to other organizations across several levels of analysis from national to the local level. Secondly, this review informs the theoretical background from which I develop propositions and hypotheses thus linking the collaboration elements together to study them as a whole rather than separately as seen in the extant literature. These propositions and hypotheses will operationalize the quantitative and qualitative approaches taken in this study.

Given the broad scope of collaboration in different settings, before I begin the literature review, I first discuss the definition and scope of collaboration that this particular study is taking. Then, I launch into an analysis of collaboration where most of the literature does, the capacity to collaborate in the first place. Following this, I review what the literature says about collaboration behaviors and performance. Finally, I cover the community police literature that sets the scene for studying collaboration capacity and activity within that context. Drawing from this literature review, I specify the propositions and hypotheses that guide the direction for the rest of this dissertation.

Collaboration: Definition and Scope

Definitions of collaboration are important to theory building across the many disciplines that study it (Wood and Gray 1991). However, with so many disciplines studying collaboration and providing their unique definition of collaboration (O’Leary and Bingham 2009), picking a definition and applying it in the proper scope and context of a study that tests the theory is even more important. Three definitions of collaboration stand out as applicable to public administration and public management. The first is the definition of collaboration itself. The literature across most disciplines commonly cites Gray’s (1989, 11) definition:

Collaboration occurs when a group of autonomous stakeholders of a problem domain engages in an interactive process, using shared rules, norms, and structures, to act or decide on an issue.

Five key aspects of this definition are important. First, all participants in the collaboration are independent but yet interdependent stakeholders to a situation. Second, they develop solutions to their problem at hand by constructively dealing with their differences. Third, they assume joint ownership of the decisions involved in the process. Fourth, they assume collective responsibility for the direction those decisions take them and the consequences. The last key aspect is that the collaboration process is an emergent process that is contingent up the decision and the reaction of the environment to those decisions. While Gray’s definition is inclusive of collaboration in all contexts, the next definition below scopes to the public setting.

The catchphrase for a large extent of the literature on public management is “collaborative public management” (Bingham and O’Leary 2008). Bingham, O’Leary and

Carlson (2008) use the following definition adapted from Agranoff and McGuire's (2003, 4) definition:

Collaborative public management is a concept that describes the process of facilitating and operating in multi-organizational arrangements to solve problems that cannot be solved or easily solved by single organizations.

While Gray's definition includes the inference to cooperative behavior between one or more actors to solve a problem, Agranoff and McGuire's definitions further scopes collaboration to the public realm. There the collaborative activities entail the engagement of one or more organizations in a purposive or contractual arrangement as a public policymaking tool. It is the simplicity of this definition that led to my decision to use it in the description of the interview protocols for the qualitative portion of this study (see Appendix A). However, while this definition is encompassing of the public realm, the additional observation of collaborative interactions between public, nonpublic, and nonprofit organizations lead other researchers to more expansive definitions.

To address collaboration of the sort that encompasses all interactive co-labor efforts, Emerson, Nabatchi, and Balough (2011) use the term collaborative governance, which they define as:

The processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the

public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished (2011, 2).

This definition is more holistic than seen in the literature and draws from a wide range of disciplines to describe collaborative governance. Further, this definition resonates with scholars and practitioners alike because it captures the common characteristics of collaboration that each would recognize in similar settings. Additionally, their description of collaboration as an integrative, collaborative governance regime takes into account all of the components and elements enabling the multi-level analysis of the external and internal dynamics of collaboration, as well as the causal pathways of collaboration and its effect on performance and outcome.

While Emerson, Nabatchi, and Balogh's definition is integrative of the many definitions available, the inclusion of the term governance and its implication of a regulated relationship still leave it ambiguous as to who the regulator of that relationship is and who is regulated. It further leads to normative questions such as who should be the regulator and who should be regulated in these relationships.

Therefore, adapting from Agranoff and McGuire and Emerson, Nabatchi, and Balough, this research defines collaboration in the following manner:

Collaboration is the inter/intra-organizational processes of developing the capacity to collaborate, and the implementation of inter/intra collaborative behaviors that mediate capacity's effect on performance outcomes; i.e. to solve problems that could not otherwise be solved.

This definition allows the context of collaboration to encompass the inter and intra-organizational aspects of the concept, while at the same time keeping the issue scoped to the

solving of problems and the effect that collaboration has on performance while leaving aside potentially conflicting issues of governance between organizations. More importantly, it maintains the comprehensive perspective of Bingham, O’Leary, and Carlson by allowing for the systemic investigation of the antecedents, processes, and outcomes of collaboration by studying them in terms of capacity, behavior, and performance.

Pre-Conditions/Antecedents of Collaboration: The Capacity to Collaborate

Much of the literature proposes the concept of capacity as an example of a pre-condition/antecedent, to collaboration (Beyerlein, Johnson, and Beyerlein 2004; Bardach 1998; Bingham, O’Leary, and Carlson 2008; Fitzgerald 1994; Hocevar, Thomas, and Jansen 1994; Huxham 1996b; Fitzgerald 1994; Foster-Fishman et al. 2001; McGuire and Silvia 2010; Page 2004; Weber, Lovrich, and Gaffney 2007). For example, Eugene Bardach (1998) claims that collaboration capacity is vital to the potential of an organization to engage in collaboration activities. Chris Huxham takes this idea further and proposes that developing collaboration capacity is a long-term strategy that organizations use to develop their problem-solving abilities (1996a, 36–37). Based on the propositions described above, collaboration capacity can be defined as the inherent and potential ability of organizations to collaborate with other organizations (Bardach 1998; Goodman et al. 1998; Huxham 1996b).

Following the logic of the literature, this study in part focuses on ways to identify and measure that capacity developing efforts that enhance collaboration’s effect on performance; i.e., what does collaboration capacity look like and how can we measure its effect on performance? Bardach (1998, 49) claims that collaboration capacity consists of “various smart practices, craft skill, and ability.” He proposes measuring collaboration capacity in terms of both objective and

subjective components. The objective components consist of quantifying the personnel, resources, training, or technical capacity to enact a collaborative activity required. The subjective component consists of qualifying the relevant collaborating actors' expectation of each other's "availability for and competency at performing of a particular collaborative task" (1998, 21). Based on this description, one way to measure capacity is through observing organizations for quantifiable indicators such as number of hours spent training on collaborative tasks, the number of personnel assigned to that task, and the screening of personnel for collaborative skills such as cultural diversity knowledge, problem-solving skills, and conflict management skills as a part of the hiring process. Understanding the subjective aspects of capacity require more qualitative methods of observation, such as interviewing or surveying organizations for their perceptions of capacity and expectations for collaboration.

Organizations develop personnel policies for training, recruiting and evaluation to cultivate and connect collaboration capacity to internal behaviors of organizational members. For example, Goldsmith and Eggers observe that network organizations attempt to develop this capacity by recruiting, training, rewarding, and promoting personnel with collaborative skills (Goldsmith and Eggers 2004, 159). Thus, it is expected that training individuals in the art and practice of collaboration, or specifically recruiting individuals with those skills will increase the capacity of organizations to collaborate (Bardach 1998; Bardach and Lesser 1996; Ingraham and Getha-Taylor 2004).

Additionally, some research demonstrates that formal evaluations of collaborative endeavors are significant to organizational members' perception of the overall value of collaboration, leading to more collaborative behavior among personnel (Daley 2009). Thus, linking concrete rewards to collaborative performance is significant to effective collaboration

because it creates the capacity of expectation in the return of investment in the collaborative activity (Daley 2009, 488). Therefore, to evaluate collaborative capacity development, researchers can observe if organizations recruit, train, evaluate, and reward their personnel on their collaborative skills.

However, understanding what capacity is necessary for collaboration inside the organization may not be enough. Probably more important than having capacity is developing the capacity to collaborate. Sullivan and Skelcher (2002) concur that building collaboration capacity is an activity that is conducted both internally to organizations, but also propose that it is done externally as well by shaping the resources, knowledge and skills of other organizations or with citizens themselves.

Other strategies to study collaboration capacity revolve around the selection of the level of analysis to investigate. Foster-Fishmen et al. (2001) propose that collaboration capacity occurs at four critical levels: (a) within the individual members; (b) within relationships between collaborators; (c) within the structure of the organizations; and (d) within the programs that implement the collaboration. The need for collaboration capacity within the individual members consists of core competencies to collaborate such as skills and knowledge. For example, Goldsmith and Eggers (2004) propose that proficiency in skills such as negotiation, mediation, risk analysis, trust building, and project management are essential to managing collaborative networks, and are often described not only as capacity factors but also as activation behaviors (Agranoff and McGuire 2003). Although Foster-Fishermen et al. offer several additional core skills and knowledge attributes that they propose as necessary to build that capacity within individual members, Heather Getha-Taylor's (2008) research on collaboration competencies finds that "interpersonal understanding is the most important factor" (2008, 118).

It contributes to enhancing the interrelationship of individuals from different organizations and agencies. Additionally, Getha-Taylor found that the ability to work cooperatively on a team and exhibit traits of team leadership were significant to managers' perceptions of which collaborative skills and knowledge would serve as a guide to both individual and organizational success in collaborative activities. Therefore, observations of organizations either recruiting or developing collaborative competencies within their members might predict their members are then able to enact certain behaviors that in turn leads to better performance traits.

Similar to the levels of analyses for studying indicators of relationship, structural, and programmatic collaboration capacity identified by Foster-Fishmen et al. (2001), Emerson et al. (2011, 14) conceptualize collaboration capacity as the combination of four necessary elements: procedural and institutional arrangements, leadership, knowledge, and resources. Emerson et al. describe the element of knowledge similar to the way in which Getha-Taylor treats competencies, skills, and knowledge. However, procedural and institutional arrangements include "the range of process protocols and organizational structures necessary to manage repeated interactions over time" (Emerson, Nabatchi, and Balogh 2011, 15). These arrangements can consist of protocols or policies that govern both the internal and external activities of organizational collaboration activities.

Internal policies could consist of the plans that outline the structure and rules of the collaboration activities that organizations participate in and how they do so. These protocols could be adopted formally in organizational mission statements as an example (Thomson, Perry, and Miller 2009, 30; Weber, Lovrich, and Gaffney 2007, 204). Therefore, researchers can observe if organizations have formal plans or mission statements that govern their collaboration

activities as quantifiable measures of collaboration capacity for procedural and institutional arrangements.

Resources are another driver of the capacity an organization has to collaborate (Bingham and O'Leary 2008; Thomson and Perry 2006). Scholars propose that resources are critical to supporting positive effects on performance and thus are a major driver of collaboration (Bingham and O'Leary 2008, 88). The resource dependency literature has long asserted this proposition (Alter and Hage 1993; Chen 2010; Lowndes and Skelcher 1998; Klijn 1997; Pfeffer 1997; Pfeffer and Salancik 1978). Essentially, resource dependency theory focuses on the reasons that organizations and individuals decide to find and use resources among other actors in the environment. It conceptualizes those decisions in terms of patterns of conflict, power struggle and attempts to dominate the use of those resources in an environment where resources are scarce (Alter and Hage 1993; Klijn 1997).

Drawing from resource dependency theory, but in stark contrast to its implicit characteristics of instrumental competition over scarce resources, collaboration theory expands the proposition to include the concept of a synergistic relationship whereby actors intentionally program and benefit from sharing resources, risks and rewards. This behavior in turn leads to creating an advantageous capacity to achieve desired performance objectives and outcomes (Huxham 1996a; Lowndes and Skelcher 1998). Accordingly, the resources that compose this capacity are a synergistic use of funding, time, technical and logistical support, or administrative and organizational expertise and assistance (Emerson, Nabatchi, and Balogh 2011).

Additionally, having the technological capability to collaborate in terms of communication systems over the Internet, or other forms of information technology, represents another major source of resource capacity for collaboration. In fact, having the technological

capacity to collaborate is viewed by some researchers as important enough to offset some of the disadvantages present when there is a lack of trust in the collaborative relationship (Daughtery et al. 2006; Sharfman, Gray, and Yan 1991; Vangen and Huxham 2003).

Leadership is another crucial component to organizational capacity (Fredericksen and London 2000). It is necessary to the capacity of organizations to collaborate (Agranoff and McGuire 2003; Ansell and Gash 2008; Bryson, Crosby, and Stone 2006; Saint-Onge and Armstrong 2012; Susskind 1987). As such, leadership is important because it is essential to the governance of collaborative structures according to Emerson et al. (2011). In fact, Silvia and McGuire (2010) posit that just as other forms of organizational behavior require leadership to function effectively, collaborative behaviors require an inherent resource of leadership that can facilitate the activity and move it toward a successful resolution of a problem. Thus, leadership can serve several roles in providing the capacity to collaborate. These roles may include “sponsor, convener, facilitator/mediator, representative of an organization or constituency, science translator, technologist, and public advocate, among others” (Emerson, Nabatchi, and Balogh 2011, 15).

Regardless of the form, leadership is the “mechanisms that make things happen” in a collaborative effort. It directs and governs the ways to achieve the desired outcomes from collaborations (Huxham 2003, 415–416). In essence, leadership provides collaboration capacity by creating and maintaining the circumstances to draw out the most and best of skills, competencies, and resources from the multiple participants in the collaboration (Vansina, Taillieu, and Schruijer 1998). Therefore, when looking for sources of leadership as a capacity to collaborate, researchers can observe for the competencies as outlined by Getha-Taylor (2008), For example, she identifies interpersonal skills, ability to work on a team, or teamwork

leadership as necessary collaboration competencies. They can also look for leadership role behaviors as outlined by Emerson et al (2011) such as sponsor, convener, facilitator, advocate. More definitively, they can observe to see how leadership can conduce collaboration behaviors that unleash the potential of collaboration capacity to effect performance.

The last source of capacity addressed in this study is trust. Considerable research has gone into the role that trust plays in collaboration (Lane and Bachmann 2000; Smith, Carroll, and Ashford 1995). While the literature treats trust as both a necessary antecedent, for example as relationship capital (Cullen, Johnson, and Sakano 2000), it also treats trust as a potential outcome of collaboration (Huxham 2003; Innes and Booher 1999). Giddens provides an encompassing definition of trust as:

The confidence in the reliability of a person or system, regarding a given set of outcomes or events, where that confidence expresses a faith in the probity or love of another, or in the correctness of abstract principles (2013, 34).

While this definition is very encompassing, it also demonstrates the intangibility of trust. For example, what benchmark is used to measure the reliability of trust? How does one express their faith in the probity or love of another? How is love defined? The fact that trust is usually accepted in the literature as a *prima facie* concept and assumed to be understood by everyone, makes itself an interesting question to look at when studying how it relates to collaboration.

The ambiguity of the definition of trust leads some scholars in collaboration to view trust as “confidence in the face of risk (Sydow 2000, 35), while others question the validity of trust in collaborations altogether. For example, Huxham and Vangen (2005) find that the common

wisdom that trust is a necessary component in collaboration does not always prevail in practice. Throughout several interviews with participants of collaborative efforts, Huxham and Vangen observed that trust was often described as weak or lacking altogether. This finding raises the question of not only how to measure trust in collaborative relationships but asks if it is even necessary for collaborations to work effectively in all instances.

The overall conclusion from the literature is that collaboration capacity is that the capacity for joint, or collaborative practice, provides a “vital link between strategy and performance” (Emerson, Nabatchi, and Balogh 2011, 14). Thus, for the purpose of this research, Dosi and Winter’s description of capacity provides the scope from which to elaborate the first proposition and build the first testable hypotheses:

To be capable of something is to have a generally reliable capacity to bring that thing about as a result of intended action. Capabilities fill the gap between intention and outcome, and they fill it in such a way that the outcome bears a definite resemblance to what was intended (2000, 2).

However, these descriptions also present the major gap in the literature on collaboration capacity. For while there are several proposed ways to measure collaboration (Milward and Provan 1998; Podolny and Page 1998; Provan and Milward 2001; Weber, Lovrich, and Gaffney 2007; Weber and Khademian 2008), the literature still lacks an empirical model describing how capacity fills the gap between intention and outcome, and method to measure the link between that capacity and performance outcomes. Thus much of what we understand about the impact of collaboration capacity resides primarily in the theoretical black box. Research has isolated each

of the core elements of collaboration to study their effect on performance (Keast and Mandell 2013; Provan and Milward 1995; Provan and Kenis 2008; Agranoff and McGuire 2003). A better understanding has resulted from the distillation of the effect of each component on performance (Turrini et al. 2010). However, empirically based understanding of how the elements of collaboration act in relation to one another is still superficial (Keast and Mandell 2013). For example, whereas the literature provides nearly full illumination regarding the motivations or drivers for collaborative network behavior (Cigler 2001), little is still known about how each element of collaboration affect the organizational structures or behaviors, or even the expected performance outcomes (Keast and Mandell 2013).

From a logical standpoint, the part that is missing is the connecting thread tying the capacity to collaborate to the resulting performance outcomes through the exhibition of some sort of activity or behavior. Thus, the connecting thread could logically very well be the collaborative behaviors that manifest the effects of capacity onto performance outcomes.

Processes: Collaboration Behaviors

The mere possession of the organizational capacity does not necessarily mean that individual members will automatically use capacity to collaborate. While the literature presents a rich study of collaboration capacity development, Bingham and O’Leary (2008) contend that research on collaboration requires understanding how collaborative actions are governed, structured, and led. However, the activities that make up that process remains little studied and often unspecified (C. W. Thomas and Koontz 2011). The prevailing methods for measuring activity still include quantifying public manager contact with other agencies, organizations, and entities as evidence of the process of collaboration or the measurement of collaboration based on geographic distance

and proximity (Agronoff and McGuire 2003). The fact that mere contact, while limited, is still considered a good approximation of collaboration activity (McGuire 2002; Meier and O'Toole 2005) highlights the need for contribution from studies attempting to provide a robust description of the collaboration process and activities. Other incongruities with previous ways of studying collaborative activities exist. For example, in studying emergency managers and the size of their districts, McGuire (2009) found that contrary to propositions that geographical size and distance mattered, the size of the area of an emergency manager's responsibility has no statistical significance to the level of collaborative activity or behavior.

To fully comprehend collaboration's effect on performance, we need to look at other ways to study collaborative behavior in conjunction with collaborative capacity because collaboration is a behavior that actively manages differences (Gray 1989) based on the capacity to do so. Therefore, another way the literature presents the study of collaboration behaviors is by their categorization of behavior types or activity. This categorization of consist of either time-based approaches such as binning them into practical frameworks such as phases of behavior over time, or thematic categorizations of based on the type of activity, or a combination of both as reflected in organizational leadership actions.

To flesh out a theory of collaborative behavior, Gray (1989) list three distinct phases over time. First, collaborative behavior consists of problem setting, followed by direction setting, and lastly implementation, in sequence. Within the first phase, collaborators conduct problem identification, stakeholder identification, and resource identification type behaviors. With the second phase, they conduct behaviors that include organizing, rule setting, and the formalization of collaboration efforts. Within the third phase, the prevalent collaborative behaviors consist of monitoring agreements and ensuring compliance. This method studies collaboration in a logical

time-ordered step. However, collaboration may still be a messy business that does not occur in a neatly ordered process, and to start with a straight linear assumption may lead to form-fitting reality to a theoretical perspective instead of using the theoretical perspective to elaborate reality. For this reason, we find in the collaboration literature examples of research that forgo the phased evaluation of collaboration in preference for a thematic categorization of collaborative behavior.

Huxham and Vangen (1996; 2000a) identify five themes they use to study collaborative behavior developed from interviews with practitioners in a variety of fields and practices asking about their collaborative activities. Those themes include collaborative practices based on common aims, the use of power in collaborative activities, membership structuring, trust, and leadership. Through their study of collaboration behavior through this thematic approach, they observed that the process of collaboration did not necessarily follow sequentially ordered phases. For example, while they agree with previous research propositions that having common aims is arguably the starting point for any collaborative initiative, they found that often common aims between organizations and individuals are often not present in practical settings. Often collaborations begin by taking action and working out the differences in the multiples goals as the process moves along (Huxham 2003, 405).

They did find, however, that the role of power is ubiquitous in all collaborative situations, especially in resource scarce settings, but not in ways normally assumed. Common wisdom would hold that those who have the resources have the power to set the collaborative agenda. However, Huxham and Vangen observed that there were many more points in the process besides control over resources where power is exerted to control the collaboration. For example, individuals and organizations may have the power to exit the process and thus delegitimize the effort. Also, the power to name the effort is extremely important and control over naming the

type of effort may be influenced by outside organizations such as the media, or today's world social media over the internet. Lastly, the power to set the agenda for the effort remains an important element, but one that is often shared among collaborators to prevent exit. Thus, equity in resources does not always indicate which actors wield which types of power to control the actions of the collaboration.

The third theme Huxham and Vangen use to discuss collaborative behavior is the structure of the collaboration participating process. They describe this theme regarding the makeup and membership of the organizations and individuals that participate in the collaboration activity, similar to how the network literature describes structure (Agranoff and McGuire 2001). Huxham and Vangen characterize the structure of collaboration as ambiguous, complex, and dynamic. The structure is ambiguous because it is not always self-evident as to who should or should not be a participant, or what each participant can or could bring to the table. Further, deciding who participates in the process and how they participate is a major function in the activity of the collaboration process. Thus, participants attempt to shape the structure of the collaboration process to attempt to control who participates (Goldsmith and Eggers 2004; Beyerlein, Johnson, and Beyerlein 2004; Sullivan and Skelcher 2002). It is complex because just as with any other human endeavor, collaboration involves the many facets of political, social, and cultural norms and values that each participant brings to the collaboration table. The more participants added, the more complex the collaborative activity becomes. This is because as this additive process occurs the more political, social, and cultural perspectives, and thus interests, get added. Lastly, collaborative structures are dynamic because players change, as do their motivations for collaborating and, sometimes, the overall goals each organization or individual expect to achieve by participating in the collaborative practice (2000b). These propositions on

the ambiguity, complexity, dynamisms of collaboration structures correspond with research that highlights the effect of networks and the structure of networks on the ability to collaborate (Podolny and Page 1998; O'Toole and Meier 1999; Mandell 2001; Agranoff and McGuire 2003; McGuire and Silvia 2010). For example, Agranoff's (2008) claims that boundaries between nodes in a network do in fact matter, but Huxham and Vangen's (2000b) point out that we yet do not fully understand how these boundaries affect collaborative behavior and thus present paradoxes of collaboration.

The two final themes include variables that also have attributes of capacity as discussed earlier: trust and leadership. Trust is another theme with prevalent common wisdom attributes. While common wisdom would indicate that trust is a strong pre-condition for collaboration to occur, what Huxham and Vangen report observing is that suspicion among collaborators seems to be the prevalent element in practice. Therefore, collaborators will tend to make calculations of risk based upon their expectations of the behavior of other collaborative partners and thus begin to engage in collaboration only after completing that risk assessment.

Leadership, like trust, is relevant to collaboration capacity, but also to collaborative practice. Several researchers conclude, like Huxham and Vangen, that the components of leadership are important to the collaboration process (Waugh and Streib 2006; Lambright 1997; Lambright and Pizzarella 2008; Connelly 2007; Huxham and Vangen 2000c). However, while Huxham and Vangen observe that leadership plays an important capacity function, the ways in which leadership conduct their activities are important to how the organizational members implement their collaborative behaviors as well. For example collaboration efforts to which organizations send authoritative representatives may be more likely to have the capacity to make necessary decisions to achieve the aims of the effort. Alternatively, executing judgment in

leadership decisions about when to foster the collaboration, when to recruit more members, when to cut off membership, and when to expel members and when to move from debate to action are a balancing act that leadership provides to collaborative actions. In following Huxham's and Vangen's use of studying leadership in collaboration, Lambright and Pizzarella (2008) found that leadership is a key component in the collaboration process because leaders who champion the philosophy of collaboration within their organizations influence their subordinates and empower them to implement effective partnerships. Thus, understanding leadership behaviors in collaborative settings is another way to categorize collaboration behaviors.

Agranoff and McGuire (2001) and McGuire (2002) propose four categories to house the collaborative behaviors in networks: activating, framing, motivating, and synthesizing. According to their research, activation behavior identifies and integrates the resources and people with the expertise needed to achieve the goals of the collaboration. Activation is the first behavior that taps into the available capacity resource and directs them toward specified performance objectives. Those activation behaviors are measurable by more than just simple interactions among participants. For example, the level of intensity in the collaborative activity, if it occurs on a scheduled basis, or mild, occurring when necessary (Banal-Estañol, Jofre-Bonet, and Meissner 2008), can provide other qualitative measures of collaboration that may have an impact on how collaborative behavior translates capacity into performance.

Framing behaviors are activities that arrange the structure of the collaboration by facilitating agreement on participant roles, operating rules, and adjudicating the prioritization of values among participants. Accordingly, framing behaviors attempt to affect the collaborative activities by directly influencing the setup of the organizational and inter-organizational arrangements, or at least the perceptions of those rules among the participants. In essence,

framing behaviors shape how the actors use collaborative capacity, and toward what objective. While activation behaviors provide the initiative, framing behaviors begin to provide the direction for that initiative to follow.

The next type of behavior is mobilizing behaviors. This observation follows the logical progression of collaborative behavior model that Agranoff and McGuire layout. At some point bringing all of the required capacity resources together (aka activation) and directing toward a focused goal (aka framing) need to start to adapt participant behaviors from divergent behaviors, toward convergent behaviors. After all, collaboration is the art of managing differences (Gray 1989). According to McGuire (2002), mobilizing thus becomes the next step to developing the necessary support for the collaboration processes through advocating among all relevant internal and external stakeholders to begin to act together in one direction. It is the step in which the coalescence of collaborative capacity comes together to begin the necessary changes in the environment that the collaborative partners are trying to achieve.

Lastly, synthesizing behaviors exhibit the participants' attempts to create the environmental conditions favorable for productive interactions leading to the achievement of desired end states. That favorable environment may consist of leaderships' development of trust (McGuire and Silvia 2009b) or the reciprocation of trust as participants go through a period of trial and error in their problem-solving endeavors (Agranoff and McGuire 1999). This synthesizing behavior can lead to performance results through the deliberate management of participant collaborative behavior deriving from collaborative capacity, or from the collective "interaction between the strategies of all actors involved" (Klijn and Teisman 1997, 99). This last point highlights the fact that much of the literature assumes these collaborative behaviors are directed and managed centrally and deliberately. However, the research does not adequately

distinguish between conditions in which they are centrally directed or commonly coalesced, for example, as observed in the collaborative behaviors common among participants in common pool resources (Ostrom 1990). Regardless, the current literature still treats collaborative behaviors as a distinct element, separate from any influence of the capacity to collaborate, translated through the behaviors indicating collaboration, to effect the performance of organizations who employ collaboration as a strategy.

Collaboration and Performance Outcomes

The measure of collaboration's impact on performance began relatively late in most disciplinary fields that studied organizational theory (Sullivan and Skelcher 2002). Early in some disciplines studies of collaboration's effect on performance considered the mere presence of collaborative efforts as performance success. In fact, early research describes the mere presence of collaboration as a positive function in solving public management problems and appears almost laudatory (Berry et al. 2004) because it posits collaboration as the approved strategy in all situations without testing that assumption. As such, relatively few early empirical studies on the impact of collaboration exist (McGuire 2002; O'Leary and Vij 2012).

Regardless, in an era of dwindling fiscal resources, the need to demonstrate a return on investments of resources to collaborate rises accordingly with the investiture of those resources (Mandell 2000; Mandell and Keast 2008; Keast et al. 2004; Mandell and Keast 2007; Voets, Verhoest, and Molenveld 2015). Researchers who recognize that collaboration and performance are broad concepts that entail a variety of social, political, and organizational arrangements call for less research efforts directed toward the mere presence of collaboration. Instead they propose more research toward the variety of perspectives that unravel the mystery of the effect

collaboration has on performance outcomes (O’Leary and Vij 2012), and even more so on the value it brings via building legitimacy and social or organizational capital (Bardach 2001; Bingham and O’Leary 2008). Even more than this, researchers recognize that due to the complexity involved with collaboration, future research needs to incorporate a holistic and integrative approach that applies a magnifying glass to the black box of the entire collaboration enterprise. This investigation should encompass its pre-conditions, its implementation, and its effect on performance and outcome (Emerson, Nabatchi, and Balogh 2011; Keast and Mandell 2013).

Early research does lay the theoretical groundwork for empirical studies of collaboration to extrapolate from and test the effects of collaboration on outcomes (Provan and Milward 1995; O’Toole and Meier 1999; Milward and Provan 2003; Page 2003; Cooper, Bryer, and Meek 2006; Cooper, Bryer, and Meek 2008; Page 2008). Further, this theoretical research not only discusses outcomes in terms of task or project completion, or goal accomplishment, but also in theoretical terms of building social legitimacy and organizational capital (Bingham, O’Leary, and Carlson 2008) or producing public value (Bardach 1998). Despite the theoretical assertions on how capacity and activities translates into performance and outcome success, much of the early work remains empirically unclear on how specific organizational activities translate capacity into meaningful practice to achieve desired performance outcomes (Schreiner and Corsten 2004; Mitchell, O’Leary, and Gerard 2015). Further, collaborative performance outcomes are the least-studied aspect of collaboration (Kelman, Hong, and Turbitt 2013; C. W. Thomas and Koontz 2011; Koontz and Thomas 2006).

One recommendation to provide a better specification to the study of collaboration and performance is to study collaboration by following the logic of evaluation which enables

researchers to discern the effectiveness of collaboration as a strategy (Sullivan and Skelcher 2002). Through a holistic evaluation of collaboration, researchers can investigate collaboration's impact regarding the effect of the elements of collaboration (capacity and behavior) on performance outcomes. In measuring collaborative performance, researchers should articulate the expected value of collaboration on goal achievement and the return on investment by the act of collaboration. At the same time, researchers must understand that the impact of results in one direction, positive or negative, may illicit outcome results in polar opposite directions. Sullivan and Skelcher (2002) offer as an example that a 5% reduction in crime may be a plausible goal, thus causing the police to emphasize an effort on organized crime. However, this focused effort may detrimentally affect the overall goals of community policing and crime prevention due to limited police resources employed in a different direction (2002, 187).

The tension between performance objectives and outcome goals in collaboration stem from the fact that outcome goals are often associated less with task accomplishment and more with the resulting benefits provided to the participants of the collaboration (Owen and Rogers 1999; Weiss 1997). To disentangle the confusion about the impact of collaboration brought on by the tension between performance outcomes, researchers recommend taking into consideration multiple stakeholders' evaluation of the impact of collaboration (Amirkhanyan, Kim, and Lambright 2014; Sullivan and Skelcher 2002).

Over the last decade, the literature has begun to move further along toward the investigation of collaboration's effect on performance (O'Leary et al. 2015). This later research explores how perceptions, context, and structure affect performance or collaboration participants' views on performance. Some researchers have discovered that both participant and leadership perception matter to the assumption that collaboration successfully contributes to

performance or not. For example, Ulibarri (2015) found that collaboration influences a range of collaborative participants' opinions of perceived outputs and outcomes. In studying collaboration participants' opinions of process and outcomes, she demonstrated that the collaborative dynamics of principled engagement, shared motivation, and capacity for joint action most influenced collaborative participants' perceptions of process outcomes such as process efficiency, growth in relationships between participants, and participant learning. However, her greatest finding is also her study's greatest weakness. She found that reliance on participants' perception of collaborative impacts did not always match observed impacts. For example, the assumptions from participants, who predicted positive outcomes because they perceived that their collaborations were going well, did not align with actual economic outcomes such as license impacts on power production and the local economy around hydropower plants. Other researchers who also rely on participant perceptions of collaboration to inform their findings on collaboration's impact on performance find similar asymmetries between perception and reality.

Varda and Retrum (2015), like Ulibarri, rely on participants' perceptions to measure what elements of collaboration affect the degree of agreement or disagreement participants have on performance outcomes. Their research shows that while higher trust and greater resource contributions led participants to perceive greater success in the collaboration effort, more resources and higher amounts of diversity among participants led to less agreement that the collaboration was successful. Thus, Varda and Retrum conclude that contrary to the assumption, prevalent in collaboration and network literature, that more diversity is better for collaborative performance because it lessens the transactional cost and increases the pool of labor and ideas, network diversity may, in fact, hinder perceptions of success.

These research findings above point to the normative nature of conceptualizing performance. That is to say, that regardless if a collaboration is successful or not, often certain pre-conditions of collaboration such as numbers and diversity of participants and amount of resources present may, in fact, skew participants' understanding and view of that success or lack thereof. The use of participant perception of collaboration impact on performance is not limited to total participants; often organizational leadership serves as the unit of analysis for research on the perception of collaboration's impact.

Following this normative assumption of collaborative performance, Mitchel, O'Leary, and Gerard's (2015) find that organizational leadership's perceptions of the positive benefits provide the main impetus for decisions to engage in collaborative efforts. Decisions not to engage result from leadership perceptions of potential costs regarding power, time, conflict, stress, process, suboptimal outcomes, and resources when engaging in collaborative efforts. These leader perceptions either contribute to or prevent the organizational capacity from translating an effect through collaborative behaviors toward performance outcomes.

Similar to the research discussed above, Mitchel, O'Leary and Gerard's finding point out that the current weakness in the extant literature on collaboration's impact on performance is that it is almost completely reliant on respondent perceptions and predictions of impacts rather than on actual observed outcomes. Nonetheless, this research does contribute to the literature by pointing out ways to better refine estimation models. For example, if as the literature above indicates, that perception drives collaboration decisions, then the inquiry on causation of collaboration from a decision-making process perspective and how this connects to expected outcomes may allow for the exploration of other possible mediation variables that influence performance outcomes. This potential supports further investigation using triangulation methods

that may better calibrate the validity of estimated impacts of the elements of collaboration on performance, and the use of mediational analysis techniques to study the multiple elements of collaboration and performance.

Taking this cue for new methodological approaches some researchers have identified that much of the current literature links collaboration to performance through methodologies that rely on process, relationships, and participatory perceptions on outcomes, thus leaving the linkage between collaboration indicators and determinants of collaboration effectiveness unclear (Ofek 2015, 608). To compensate for this, Ofek (2015) proposes that evaluations of collaboration effects on performance should use both anticipated performance (ex-ante) and observed past performance (ex-post) measures with ongoing “traditional” performance, but should evaluate structural and dynamic complexities of the collaboration effort separately. According to Ofek, “while dynamic complexity influences the collaboration approach, structural complexity dictates the degree of management involvement in the hierarchical coordination of the evaluation” (2015, 626). Thus, he recommends the dynamic complexity of collaborative effort should be the primary indicator to the researcher in deciding to use either an actor- or program-oriented methodological approach to bridge between network research and evaluation studies.

The issue of dynamic complexities arises in the work of Scott and Thomas (2015) which offers empirical evidence of how collaborative groups affect organizational networks. Scott and Thomas’ research indicates that the likelihood of two organizations developing a network tie increases with the extent to which both organizations participate in the same collaborative group. However, this association is negatively affected the more the number of collaborative groups to which the organizations belong increases. While they find that the context in which collaborative groups increase their access to information and resources and their awareness of other

organizations, thus changing the nature of the network and its function, they also admit that their research does not address if those changes affect any eventual performance outcomes.

Therefore, they recommend further research utilizing longitudinal analysis to observe for outcome performance impacts. As such, Scott and Thomas' work, along with Ofek's, further point to the necessity to move beyond traditional methods of simple linear regressions using opinion based variables toward more empirically based and non-linear evaluative methods to study the complexities of collaboration's effect on performance holistically.

Other methodological recommendations to address studying the impact of collaboration on performance include the selection of the performance levels and units of analysis. Emerson and Nabatchi (2015) recommend three different performance levels and three different units of analysis based on their Collaborative Governance Regime model (CGR) (Emerson, Nabatchi, and Balogh 2011) for researchers to use in assessing the productivity of collaborative efforts. They recommend selecting from one of three performance levels (actions, outcomes, and adaptation) and evaluating these at one of three units of analysis (participant organizations, the CGR itself, or target goals). In using this methodology in a case study of a CGR operating on the U.S.-Mexico border, Emerson and Nabatchi found that the "Border Patrol reported reductions in the delays and costs of installing infrastructure" for action/outputs. They attributed increased safety for the public and border patrol personnel to the collaboration between federal, state, and local agencies and used this as a measure of outcomes. They also reported that the agency reported filling dedicated liaison positions in all departments, and that joint interdictions had become routinized (2015, 736). While Emerson and Nabatchi advance the literature on collaboration and performance by offering an integrative approach to conceptualizing productivity performance for CGR's, they conclude that further specification and

operationalization of each of their proposed dimensions is required and that more specific data collection and analysis methodologies such as quantitative data and analysis are necessary.

While Emerson et al.'s collaborative governance regime model comes the closest to depicting a holistic picture (Emerson, Nabatchi, and Balogh 2011), their methodology remains at the conceptual level and requires more development toward more precise specification (Emerson and Nabatchi 2015, 740). That is to say, that while each of the elements of collaboration, are most often studied parsimoniously, it is still the case that seldom are more than two elements studied empirically together at any one time. Rarer still are all three elements addressed comprehensively together in an empirical fashion.

This latest literature studying collaboration and performance conforms with earlier literature on collaboration. It offers “proof that collaboration is not always wise, and that potential collaborators should evaluate before they collaborate whether a number of resources (broadly defined) devoted to a collaborative endeavor will yield the desired increase in performance” (O’Leary et al. 2015, 576). More importantly, it indicates that while the latest research advances understanding elements of collaboration in relation to performance outcomes, there is still much more work to be done in developing and proving holistic, collaborative models. Further, from the review of the literature on collaboration that I was able to assess, it is clear that the literature presents the theoretical treatment of all the elements of collaboration throughout in great detail; however, they are not all addressed together empirically in an integrative and comprehensive manner. Therefore, in the next chapter, I outline a method using both quantitative and qualitative data that studies all of the elements of collaboration comprehensively and empirically. To set up chapter three, I first need to revisit the research

question driving this particular study and elaborate more on the specific derivative propositions and hypotheses.

Research Questions, Collaboration Mediation Model, and Hypotheses

Based on the problem of studying collaboration as described in the literature above, my central research question is: How do the elements of collaboration affect performance? To answer this question, I previously conducted preliminary research that developed specific hypotheses to test the empirical relationship between collaboration and performance. This initial research also led to the development of secondary questions and a basic proposition that collaboration does in fact matter, but that we have yet to understand fully how its elements matter and in what ways they matter when viewed together.

During my preliminary exploration of this question, I used law enforcement agencies as the unit of analysis and quantitatively studied their collaboration capacity and practices in the context of community policing. To do this, I quantitatively specified human resource policies, such as training and evaluations for community policing as measures of collaboration capacity, and community-policing activities, such as engaging with community partners as a measure of collaboration practice (Lira 2013). I then evaluated the effect of those variables on police performance regarding their ability to clear crimes by arrest. Per the literature discussed above, I hypothesized a positive relationship between both collaboration capacity and collaboration

activity² on performance outcomes. Using ordinary least squares (OLS), I evaluated cross-sectional data from 735 police departments as reported in the U.S. Department of Justice's Law Enforcement Management and Administrative Statistics (LEMAS) and Uniform Crime Report surveys of 2007. The initial results indicated a statistically significant relationship between collaboration activities and performance as theoretically expected. However, the study did not find a statistically significant relationship between collaboration capacity and performance. See Table 1 on page 53 below. This finding seemed counter to theoretical expectations described in the literature on collaboration capacity. For example, research findings seem to indicate that the capacity to collaborate and the actual act of collaboration provides a clear advantage to achieving performance goals (Gray 1989; Huxham and Vangen 2005).

² During this initial research I used the term collaboration activity instead of the term behavior as used in this current study.

Table 1: Preliminary Research Findings

Preliminary Research Findings		
Table : 1 OLS results		
VARIABLES	(1) CLR. RATE (%)	
Collaborative capacity	CM SCREENING	-0.922 (1.015)
	RECRUITING	-1.279 (1.209)
	IN-SERVICE TRAINING	-0.522 (0.936)
	EVALUATION	-0.283 (1.089)
	TECHNOLOGY	-0.319 (0.959)
Collaborative Action	# OF PARTNERS	-0.0234 (1.211)
	Collaboration Index	-0.838*** (0.282)
	Collaboration Index2	2.815** (1.098)
	SURVEY	2.023** (0.927)
	Collaboration PROJECTS (%)	0.0397** (0.0156)
	Police/Population (every 1000 in pop.)	-2.207 (1.578)
	Crime/Police	-0.0770 (0.0744)
	Budget/Police (1000 of dollars)	-0.00668 (0.0113)
	Budget/Population	-0.000202 (0.00806)
	CRIMERATE (# per every1000 population)	0.00129 (0.0423)
	Constant	37.46*** (3.261)
	Observations	735
	R-squared	0.057

Robust standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Several reasons may explain my initial non-finding of collaboration’s effect on performance. One reason may stem from model design and the use of cross-sectional data. The model used was additive in nature analyzed binary data with OLS, and all came from a single time period. Any of these reasons may have contributed to the insignificant finding. Another theoretical reason may be that capacity needs time to develop an observable effect on performance (Gollob and Reichardt 1991; Lusthaus, Adrien, and Perstinger 1999; Zahra and George 2002). Further, using cross-sectional data from one-time period cannot resolve potential

endogenous effects that performance may have on the initial or further development of collaboration capacity. That is to say, it cannot distinguish from the effect of random successful collaboration outcomes potentially leading to a desire for the development of the capacity to predictively repeat that successful performance. Nor can it provide clarity on any interaction effect collaboration behavior may have on capacity or vice versa. Still, the non-finding of capacity variables' effect on performance remains curious.

Theoretically, the factors that compose collaboration capacity should have an effect on performance. Perhaps, however, that effect is indirect and not readily available to empirical observations given the time periods necessary for capacity to build up an effect. In my previous study, the basic model of collaboration assumed that capacity and practice affected performance simultaneously; an organization needs to develop the capacity to collaborate, and it needs to execute the activities of collaboration to reap the benefits. However, logically to execute the activities of collaboration perhaps an organization must develop the capacity to do so first. This idea changes the basic model to collaboration capacity affects collaboration practice that then affect performance. Thus, capacity may indirectly affect performance. Carrying this thought further, potentially an organization could develop the capacity to collaborate, but not fully use that capacity in practice, or it may misapply that capacity. In this sense, performance results not only rely on having the capacity, but also on how actors use that capacity. Therefore, perhaps collaboration capacity's effect on performance is mediated somehow by collaboration practice.

Taking the collaboration literature into account, which indicates that antecedents of collaboration exist and have a consequential effect on performance, and my initial research which indicates that capacity and behavior may have more than just a linear effect on performance, I propose that collaboration capacity transmits its effect through the intervening

mediation of collaboration behaviors. The basic model in my research becomes a simple mediation model, demonstrated in figure 1 below.



Figure 1: Simple Mediation Model of Collaboration

This leads to my main proposition, labeled general proposition:

Collaboration matters to performance outcomes, but it does so based on how collaborative behaviors mediate the capacity to collaborate.

Diagrammed as such, the general collaboration mediation formula is specified as follows:

Equation 1: General Collaboration Mediation Formula:

$$\text{Performance Outcomes} = f(\text{Collaboration Capacity} + \text{Collaboration Behavior})$$

The idea that a third variable transmits the effect of one variable to another is simple in concept and well established in the methodological literature on mediation analysis (Baron and Kenny 1986; MacKinnon 2008; Rozeboom 1956). It defines mediation as “the generative mechanism through which the focal independent variable influence the dependent variable of interest” (Baron and Kenny 1986, 1173). Also, according to MacKinnon “in a mediation model, the independent variable causes the mediator which then causes the dependent variable” (2008, 8). Of further interest relating to the findings of my previous investigation of collaboration capacity’s effect on performance is the proposition that “a mediated effect may exist whether or

not there is a statistically significant effect of the independent variable on the dependent variable” (MacKinnon 2008, 50). This proposition may explain the apparent disconnect between the theoretical expectations of the effect of collaboration capacity on performance and a lack of empirical findings of an effect in my previous research.

Together, the idea of a lag time needed for collaboration capacity to develop an effect on performance and the idea that collaborative behaviors mediates that effect is a notion that is not explored currently in the collaboration and performance literature. This notion calls for a more precise model specification to test the lag time and mediation effect, which I developed in chapter three, the design and method chapter. Sufficed to say at this point, my overall proposition is that collaboration affects performance through the development of collaboration capacity, which in turn affects the practice of collaboration and the way that actors implement that practice. This behavior mediates capacity’s effect on performance over time.

Another point that is clear from the literature review above is that many variables can compose the capacity to collaborate. This point supports the assertions that collaboration capacity affecting both the performance outcomes of collaboration relationships, is composed of many observable indicators such as policy and institutional arrangements. These arrangements in turn provide the structure for collaboration to exist, the training and screening of recruited personnel to develop the competencies viewed as necessary to carry out collaborations, the availability of resources in various forms to include technology, the manpower, and the finances. Other factors may include less tangible aspects of collaboration capacity, such as leadership and trust.

Similar to the many factors of collaboration capacity, several factors make up the entire concept of collaboration behaviors. Those specific factors may include actions such as engagement with partners qualified by the nature of the relationship, if it is formal or informal, or quantified by the active engagement in problem-solving collaborations, the active assignment of geographical locations, or the size of the network or number of partners included in the collaboration activity.

Developing a measurement to operationalize all of these factors within a holistic approach may prove problematic. However, one way to go about measuring it is by developing latent variables of capacity and behavior through confirmatory factor analysis. Several researchers recommend observing for the capacity and behavior indicators that make up the factors or component variables of collaboration (T. A. Brown 2006; Thomson, Perry, and Miller 2009). Based on this, I use the latent factor variables of collaborative capacity and collaborative behaviors as the independent and mediation variables respectively. I explain the process for doing this and the testing of those latent factor via confirmatory factor analysis in chapter three.

By operationalizing collaborative capacity and collaborative behavior as latent factor variables, as part of a larger model depicting the mediated collaboration theory, I will explain how collaboration capacity leads to performance through a path that goes through collaborative behaviors. Based on the literature above, to observe the capacity factors as part of the mediation model, I offer the following hypotheses to test the direct effect that independent variable of collaboration capacity has on performance outcomes:

H₁ The latent factors of collaboration capacity demonstrate a direct and positive influence on the achievement of performance outcomes.

I have tested this direct effect relationship in previous research. However, given the results of my previous research into the connection of collaboration capacity on performance showing an insignificant relationship between capacity and performance outcomes, and the dearth of research providing the literature information on this, I must investigate another element of collaboration. Based on my overall thesis, that the effect of collaboration behavior mediates collaboration capacity's effect on performance and following recommended procedures for analyzing mediation (Baron and Kenny 1986; Hayes 2013; MacKinnon 2008), I propose the hypothesis below which specifies an effect from collaboration capacity factors on collaboration behaviors factors.

H₂ The latent factors of collaboration capacity demonstrate a direct and positive influence on collaboration behaviors leading to the achievement of performance outcome.

These activities in turn directly affect the achievement of performance objectives and outcome goals. This effect leads to the following hypothesis that as a component of collaboration, the latent factors of collaborative behavior positively influence performance outcomes. Thus, the following hypothesis is proposed:

H₃: The latent factors of collaboration behavior, in turn, demonstrate a positive effect on the achievement of performance outcomes.

Further, combining the literature on collaboration capacity, which posits that capacity has a positive effect on outcome but weakly demonstrates it empirically, and the literature on collaboration behavior, which also posits that the activity of collaboration behaviors provides a distinct advantage to organizations' ability to achieve positive results, I offer the following hypothesis:

H₄: The latent factors of collaboration capacity factors also demonstrate a significantly positive indirect influence on performance outcomes as mediated by collaboration behaviors.

Taking the general proposition and hypotheses described above, I now turn to describing how I operationalize the variables used in my research in the next chapter.

Chapter 3: Research Design, Variable Operationalization, and Method

Research Design: A Mixed Methods Approach

The last chapter's review of the literature on how to study collaboration leads to the conclusion that, by themselves, neither the closed-ended approach of the quantitative methods nor the open-ended approach of the qualitative methods provides enough to understand completely how the elements of collaboration affect performance outcomes. The review showed that the use of separate quantitative and qualitative approaches returns seemingly disparate findings, thus making an approach that combines both methods appealing. Therefore, the research design of this study takes a mixed methods approach. The design involves collecting both quantitative and qualitative data, integrating the two, and using distinct analytical designs that involve philosophical assumptions and theoretical frameworks to provide a better understanding of the research problem than either approach can alone (Creswell 2013).

According to Creswell (2013), applying a mixed method approach to research is appealing on three different levels. At the general level, a mixed methods approach can integrate the paradoxical findings from both the quantitative and qualitative studies of collaboration. It can synthesize those apparently incongruent pieces of data and provide clarity to separate findings. From a practical level, applying a mixed methods approach moves the study of collaboration to the cutting edge of new research procedures by providing a sophisticated approach for researchers that can access both quantitative and qualitative data. From a procedural level, it is a useful strategy to allow researchers to compare the findings between both types of data. Further, it allows for a deeper explanation of findings from either set, whether the findings in the qualitative more fully explain the quantitative data or vice versa.

The type of mixed method approach used in the research design for this study is the explanatory sequential mixed method approach (Creswell 2013, 224). See Figure 2 below:

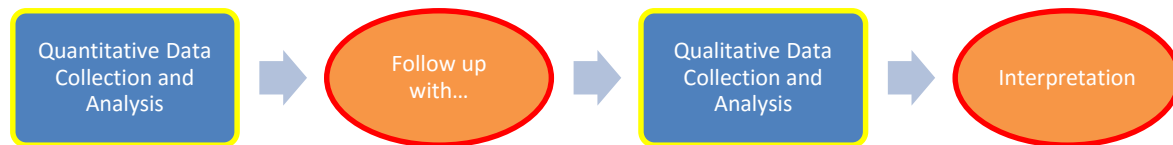


Figure 2: Explanatory Sequential Mixed Method
(Creswell 2013, 220)

For this particular research effort, quantitative data was first collected and analyzed, which informed the qualitative collection and analysis procedures. A joint interpretation of both quantitative and qualitative findings followed the qualitative collection and analysis. Utilizing this method involved a two-phase approach to this study.

In the first phase, I utilized survey data collected from two Federal Bureau of Justice surveys, the Law Enforcement Management Administration survey (LEMAS) from years 2000, 2003, and 2007; the Uniform Crime Reports (UCR) surveys from the same years; and demographic data from the 2000 U.S. Census. I first analyzed this data via confirmatory factor analysis to generate factor scores that served as key independent and mediation variables in the cross-sectional and longitudinal mediation analysis. The results from the quantitative analysis then informed the development of an interview protocol for the qualitative phase of the study.

The intent of the qualitative phase is to explain the variables observed in the results survey further and to expand my study of collaboration beyond the quantitative phase. My qualitative analysis first employs semi-structured, open-ended interviews to ask participants in

community policing, e.g. police administrators, line officers, and their community partners to describe aspects of the variables drawn from the LEMAS survey used for this study of collaboration. Those variables consist of the collaborations capacity components and collaboration behavior components as described in chapters one and two. My expectation is that these interviews will provide a richer explanation of those variables than the quantitative analysis can do alone. For example, I expect to draw better descriptions of the intensity of the collaborative relationship that each agency develops with its collaboration partners from the interviews. For while the quantitative analysis measures numbers of relationships it does not provide the rich detail of the quality of that relationship between partners. This richer detail may provide a greater explanation of the reasons that collaborations work or do not work in certain situations.

Further, I also use the qualitative portion of my study to obtain descriptions of variables that the quantitative portion does not address and to identify potential ways further to operationalize those variables for future quantitative analysis. For example, trust in collaboration is one variable that several researchers claim are important, but is hard to measure quantitatively (Amabile et al. 2001; Huxham 2003; Page 2008; Thomson 2001). Leadership is another variable that researchers deem critical to collaboration (Huxham and Vangen 2000c; Thomson and Perry 2006; O’Leary and Gerard 2012), but is also hard to measure quantitatively for statistical significance. Investigating variables, such as trust and leadership, through semi-structured interviews, could better inform the findings from previous quantitative analyses and may lead to better ways to operationalize hard to measure variables for future quantitative studies (Creswell 2013). Since the LEMAS and UCR surveys did not investigate leadership and trust, investigating them in the qualitative portion of this study provides the necessary description and develops their

potential for future research. To meet the objectives for this portion of my research, I drew the qualitative sample from interviews of police personnel and their community partners in their jurisdictions. I further stratified this sample by following the ranking by the Department of Justice's Office of Community Oriented Policing Services (COPS) on a crime and community policing index scale, which will be discussed in depth later.

Adopting this form of research presents several challenges. First, it requires extensive data collection, to include the manipulation of that data into analyzable formats for both quantitative and qualitative analysis. Secondly, the time to analyze both data sets is just as intensive as the collection process. Lastly, it requires the researcher to be both familiar and comfortable with both forms of research (Creswell 2013).

In addition to the procedural challenges, there are several ethical issues as well. It is the ethical duty of researchers to take all precautions to protect their research participants. This ethical duty is especially so in mixed methods research because depending on how participants view the quantitative data could bias them to one conclusion or another, which may not be their own. Further, if the participants' responses are counter to the weight of the quantitative evidence, this may put participants at odds with the power brokers of their organization, or social group, who may use the quantitative findings to legitimize and expand their power over the members of that group. Thus, presenting an alternative perspective to not only the opinions of the group but quantitative data as well could open the participants to negative social repercussions. Therefore, researchers need to exercise ethical due diligence in promoting the integrity of their research methods, as well as safeguard the participants from a potential backlash from their parent organizations or institutions (Creswell 2013; Israel and Hay 2006). This study keeps the identity of participants and their locations anonymous to comply with this

requirement. Appendix A, discusses the interview protocol procedures and provides the complete description of the security protocols.

Data Sources: Quantitative and Qualitative

As mentioned earlier, the quantitative data sources for this study come from combining two primary survey instruments: The Law Enforcement Management Administration survey (LEMAS) and the Uniform Crime Reporting Program Data of Offenses Known and Clearance by Arrest (henceforth referred to as UCR). I used additional demographic data from the 2000 U.S. Census database. The Bureau of Justice Statistics (BJS) compiled the LEMAS survey every three to four years from 1987 until 2007. After 2007, the BJS no longer collected data for this family of surveys. The fact that the dataset I use ranges in age from nearly ten years to sixteen years old presents a significant limitation for this dissertation. I will deal more directly with this limitation in the final chapter; nonetheless, I believe the data is still pertinent to the context of this study. It is further useful since one aspect of this study is to test a model of collaboration that will set the condition for a future updated study that uses the most recent data possible.

Additionally, what data the LEMAS did collect comes from a nationally representative sample of over 3,000 state and local law enforcement agencies in the U.S. The BJS designed the LEMAS to be representative of all general-purpose state and local law enforcement agencies in the United States. Thus the data includes standard demographic questions about agency personnel, expenditures and pay operations, community policing initiatives, equipment, and computers and information systems, but more importantly for this study, it includes questions about community policing training, policies, and activities. The data collected about community policing provide the source of the independent and mediation variables for this study.

The dependent variable for my quantitative section, which is the known crimes cleared by arrest, comes from the Federal Bureau of Investigation's (FBI) family of Uniform Crime Reports, specifically the report on offenses known and clearances by arrest. The FBI has compiled these reports since 1930 to serve as periodic nationwide assessments of reported crimes not available elsewhere in the criminal justice system. This report includes monthly data on the number of crime index offenses reported and the number of offenses cleared by arrest. Crimes are considered cleared by arrest when the arrest meets three conditions: the police actually arrest a person; the police actually charge that person with the commission of an offense, and the police turn that person over to the court for prosecution (U.S. Department of Justice and U.S. Federal Bureau of Investigations 2010). The types of crimes counted include all reports of index crimes (excluding arson) received from victims, officers who discovered infractions, or other sources. The FBI limits the type of crimes included in this compilation to those crimes that people are most likely to report to police and those crimes that occur frequently enough for analysis across time. Such crimes included are criminal homicide, forcible rape, robbery, aggravated assault, burglary, larceny-theft, and motor vehicle theft.

To evaluate the effect of collaboration on the crimes cleared by arrest, I used three waves of data from the years 2000, 2003, and 2007 from both the LEMAS and UCR surveys tools. Although the LEMAS surveys were constructed each year differently, questions about community policing first appeared in the 2000 version. The questions were coded differently in the following years but were similar enough to allow me to identify the same questions in all three years that were necessary to compose the latent variables that make up the mediation and independent variables for mediation analysis using both cross-sectional and longitudinal techniques.

Although the sample size of each survey was about 3000 agencies each, I reduced the sample size of my study to 665 total observations. This lower number consisted of the local police agencies and Sheriff's departments that provided answers to the community policing questions in all three years of data that this study used.

The fact that the quantitative data used for this study was opportunity data that is, data previously collected for other purposes but manipulated to meet this study's research requirements, is a leading limitation in this study. While there are many well-founded criticisms of using purposive, or convenience samples, the use of such sampling techniques in combination with random sampling in the quantitative portions, such as in mix-methods, followed by in-depth qualitative exploration, addresses those methodological concerns. Further, I deal with this limitation in the concluding chapter of this dissertation by elaborating on the investigative nature of this line of inquiry as a bellwether indicator. In other words, this research proves fruitful as a source of initial inquiry, it will demonstrate that a more resource intensive collection method to investigate the phenomena of collaboration in community policing is worth the investment to continue this line of inquiry in future research efforts.

My qualitative data comes from semi-structured interviews of community policing representatives (both law enforcement officers and their collaborative partners) from locations where police agencies surveyed in the LEMAS and UCR questionnaires. The interviews were semi-structured to focus questions and responses based on the initial findings of the quantitative study regarding the collaborative capacity, activities, and outcomes of collaboration within the context of community policing at each agency. Despite the structure of the questions used, the interviews were open-ended enough to elicit a rich description and thus explanation of the topics explored.

I selected five police departments from across the U.S. for interviews based on their final award ranking in the 2013 COPS Hiring Recovery Program (CHRP) applicant rankings conducted by the Department of Justice's office of Community Oriented Policing Services (COPS) (U.S. Department of Justice-Office of Community Oriented Policing Services 2013). This ranking system orders police department applicants for community policing grants based on a cumulative index of reported crimes, planned community policing efforts, and financial need. The final percentage index ranking for each department is based on a combined rating of up to 50 points for fiscal health factors and 50 points for reported crime and planned activities of community police together. The greater number of points assigned indicates the greater amount of financial need and the greater amount of crime relative to the number of planned community police activities. According to the office of COPS, this ranking process demonstrates an even valuation for the importance of fiscal distress and crime relative to planned community policing strategies (U.S. Department of Justice-Office of Community Oriented Policing Services 2013).

To categorize the selected departments for this study, I broke the COPS index percentile into quartiles. The first quartile contained those departments ranked between 0 and 25 percent, indicating low fiscal need and low crime relative to community policing activities. The second, third, and fourth quartiles went up in need per index respectively. I used an additional selection criterion of the size of the department relative to the population it served. I intended to use at least one department from a small, medium, and large population categorization relative to the overall sample. Since the qualitative sample was based on units of observations from the quantitative sample, I utilized these selection criteria so as to include a measure of variability between the selected departments to compare the differences in responses based on size and ranking.

Of five departments solicited, only three departments agreed to the interview protocol. The main reason cited by the two departments who did not accept the solicitation were the concerns about how publication of this information would affect their budget and the lack of time available to community police officers to participate in the interviews. Two of the police departments that agreed to the interview protocol did so contingent that their department would remain anonymous. Only one department was willing to participate that was not concerned with their department being named publicly. In fact, according to their Police Chief, the transparency of their actions was part of their community policing strategy. However, to comply with the structure of the interview security protocols, I keep all three departments anonymous, and I do not share the names of the other two major metropolitan police departments that declined interviews of their personnel. Therefore, based on this condition, the three departments utilized in the qualitative phase of this study are referred to Westville, Centerville, and Smallville throughout the report.

Westville, with a population of about 350 thousand was ranked in the 3rd quartile of the final index percentile according to the COPS award ranking system. Centerville, with a population of about 145 thousand, was ranked in the 4th quartile. Smallville, with a population of about 54 thousand, was ranked in the 2nd quartile. Therefore, while the quantitative portion of this study investigates a general sample of police departments across the US, the qualitative portion aims for more purposive samples that sample different community settings in order to get richer descriptions of collaboration based community policing activities. This type of sampling is suitable for the type of in-depth qualitative research in which the focus is often to understand complex social phenomena (Marshall 1996; Small 2009) and thus aligns with the aims of this current study.

The individuals selected for interviews were based on rank, position, and associated proximity to the process of collaboration activity in community policing. For example, I was able to interview each of the Police Chiefs (or in the case of Westville, I obtained publicly released recorded interviews on community policing), and mid-level leaders from each of the departments. These were important individuals to interview so that I could gain information on hiring and training practices, and department-level policies that contributed to the development of collaboration capacity. Several street-level community police officers were also interviewed in order to ascertain the type and level of collaboration behaviors they conducted on a day-to-day basis that went beyond what was captured in the LEMAS survey on community policing activities. Finally, to gain a fuller picture of the impact of collaboration, in accordance with the logic of evaluation (Owen and Rogers 1999; Weiss 1997), I followed Sullivan and Skelcher's (2002) and Amirikhanyan et al.'s (2014) recommendation to interview multiple collaboration partners. Therefore, I talked to as many community police collaborative partners of each department as would agree to interviews. These partners were composed of private organizations (such as managers of residential communities), community activist organizations, citizen residential representative organizations, and other governmental organizations that work with the police departments in a community police context.

Operationalization of Variables

As discussed in chapter two, my main proposition is that collaboration matters to achieving performance objectives and achieving positive outcome goals, but it depends on the actors' collaboration capacity and collaborative behaviors. Collaboration capacity may indeed have an effect on performance outcomes; however, that effect may be mediated through the collaboration

activities that collaborators perform. Based on the literature review in chapter two and my previous investigation into this link, it is possible that the collaboration capacity and collaboration behaviors may, in fact, be composed of latent factor variables that work through a mediation process to have individual component effects on organizational performance outcomes. This led to the general collaborative model described by figure 2, in chapter two. However, because that model is useful for bringing the reader into an appreciation of the mediation process, it is too simple to explain the how that process works. Therefore, I need to expand that general mediation model to demonstrate the proposed mediation relationship between all three variables (dependent, independent, & mediation variables) fully. This leads to the hypothesized collaboration mediation model in figure 3 below which expands the general collaboration model (figure 1) by incorporating the hypotheses proposed in chapter two:

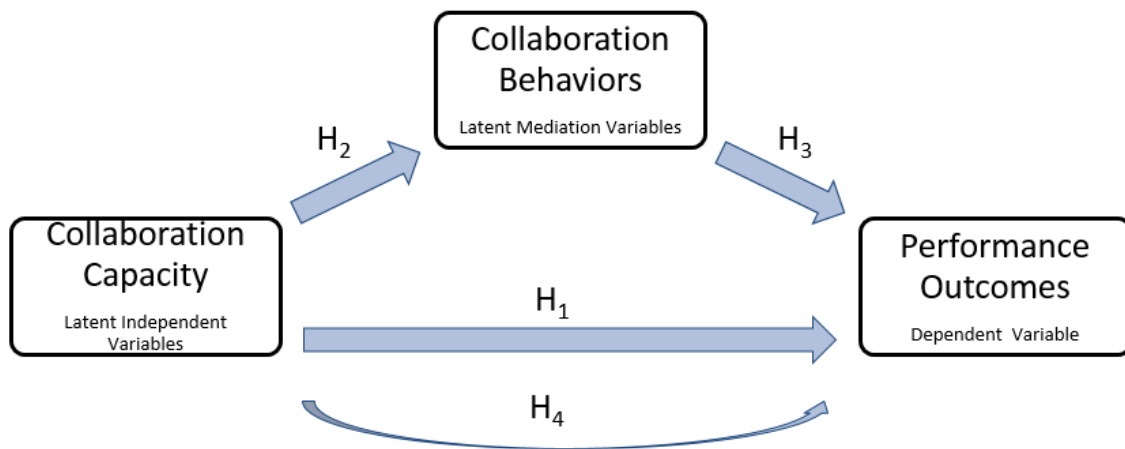


Figure 3: Hypothesized Collaboration Mediation Model

Below is a recap the hypotheses developed in chapter two:

H₁ The latent factors of collaboration capacity demonstrate a direct and positive influence on the achievement of performance outcomes,

H₂ The latent factors of collaboration capacity demonstrate a direct and positive influence on collaboration behaviors leading to the achievement of performance outcomes,

H₃: The latent factors of collaboration behavior demonstrate a positive effect on the achievement of performance outcomes, and

H₄: The latent factors of collaboration capacity also demonstrate a significantly positive indirect influence on performance outcomes as mediated by collaboration behaviors.

With the c collaborative mediation performance model thus specified, I now describe the variables of the model. I start with the dependent variables first.

The Dependent Variable

For this research, I define the dependent variable as crimes cleared by arrest, which is the count of all crimes cleared that meet all three of the following qualifications as defined by the FBI.

The crimes were actual reported crimes, determined criminal, the police arrested at least a single person, and sent this person's case before a judge for prosecution (U.S. Department of Justice and U.S. Federal Bureau of Investigations 2010). See Figure 4 on page 76 below.

The literature on police sciences is replete with discussions and debates on the type of dependent variable that is useful in studying police organizations (Jiao 1997; Braga et al. 2013;

Buchner et al. 2008; Cohen et al. 1972; Davis 2012; Day and Freeman 2005; Eck and Rosenbaum 1994; Forero et al. 2009; Gruber, Griffith, and Whatley 2014; Mazerolle, Lum, and Braga 2014; McAllister 1968; Metcalf 2004; Palmiotto and Donahue 1995; Dietz 1997). In the majority of the literature, I reviewed on the subject of measuring police performance, all resonated around the variables of effectiveness, equity, and efficiency as the most used dependent variables (Eck and Rosenbaum 1994). In terms of effectiveness, police are assumed to be effective at crime control, rendering immediate aid to citizens in distress, delivery of justice in terms of arresting those in society who violate its laws, and delivery of non-emergency services such as roadside assistance for vehicles disabled along busy roadways. By equity, the literature usually refers to the police's ability to follow due process for all suspected criminal and distribute police serves equally to all community member. By efficiency, the majority of the literature indicates a concern for how police mobilize their resource and use them to accomplish their mission. Separately each measure of performance has strengths and weaknesses. However, the major problem in the police science literature is that there is often no distinction made between each of these variable, because when addressing one variable, researchers invariably have to address the other two (Eck and Rosenbaum 1994, 6). According to Eck and Rosenbaum (1994), the inability to isolate the dependent variable in research on police science makes it hard to distinguish between the means and ends of adopted strategies. This ambiguity can lead to the ability of police administrations to make window dressing or cosmetic changes without making fundamental reforms to change their practice, structure, or organizational habits. Given this dilemma, I chose to isolate a dependent variable from the effectiveness performance measurements that was both measurable and meaningful toward evaluating an impact of collaboration in community policing.

Still, there are both pros and cons about using crime and the arrest of criminals as a measure of the effectiveness and performance of law enforcement agencies (Choi and Choi 2012; Nicholson-Crotty and O'Toole 2004; Parks and Ostrom 1980; Whitaker et al. 1982; J. Q. Wilson 1983). However, two perspectives from the literature on measuring outcomes of community policing arise. The first perspective is based on the traditional role of police as providing "complete crime control, prevention, and reduction," and the second is based on the progressive view of police role as "service provision, fear reduction, and community mobilization" (Moore 1994, 293).

With regard to collaboration, the early public management literature paints a positive, almost rosy, picture. In contrast, however, the criminology literature's review of coloration within the two perspectives above does not show any statistical evidence of it leading to solutions many of the most wicked problems presented in criminal justice, such as crime prevention (Bennett 1994, 243). Problems with operationalizing collaboration notwithstanding, many criminologists acknowledge that there are several factors, such as prosecutor and judicial discretion, that are outside of law enforcement's control that may contribute or obstruct the prevention of crime (J. Q. Wilson 1983).

To overcome the obstacles in measuring the outcomes in implementing community policing, some researchers have turned to solely measuring police performance. The fundamental difference between performance evaluations and outcome evaluations is that while measures of outcomes evaluate if a program achieved its goals by providing some benefit to its participants, measures of performance evaluate if the organization implemented the program as intended. Thus, some researchers turn to other measures of police performance such as clearance

rates, assistance to prosecutors resulting in convictions, and public attitude (Greenwood, Chaiken, and Petersilia 1977).

Greenwood, Chaiken, and Petersilia (1977, 32) claim that the use of clearance rates the traditional metric in law enforcement studies to policy impacts on police performance. Just as in the FBI's use of the metric, most police studies define clearance rates as the number of cases cleared in a specified period divided by the number of crimes reported to the police in that same period. However, they also cite that there are serious shortcomings in using clearance rates because the crimes associated with an arrest during a specific period may not necessarily be the same crimes reported to the police during the same period.

Definitional issues also complicate the use of crimes cleared as a dependent variable. According to Greenwood, Chaiken, and Petersilia, police report that a case is "cleared" for other reasons than if the perpetrator is identified and arrested. For example, "exceptional" clearances exist if the police cannot make an arrest for some reason, but close the case due to the suspect dying, or if another jurisdiction is holding them for prosecution. In these situations, it is clear that the effect of exceptional clearance did not result from police performance. Therefore, studies that do not specify the clearance of crimes committed during the same period and specifically cleared by arrest from the agency responsible for investigating the crime may be suspect.

Despite these shortcomings, several researchers continue to use crimes cleared as a dependent variable (Choi and Choi 2012; Dunn 2014; Nicholson-Crotty and O'Toole 2004; Parks and Ostrom 1980; Whitaker et al. 1982). For example, Parker and Ostrom (1980) and Whitaker et al. (1982) use the variable of crimes cleared by arrest in their study of organizational structure on police performance. Specifically, Parker and Ostrom use crimes cleared by arrest as

a dependent variable to demonstrate that the way police inputs change into police outputs varies based on the size of the police department. Whitaker et al. (1982) argue that the limits of data collection and the wide variation of problems and priorities within each department require researchers to use performance measures, such as crimes cleared by arrest, more as ways of learning about the processes of policing than comparing the performance of departments. As such, Whitaker (1984) argues that while evaluation studies that use the most basic task associated with policing, that of identifying and apprehending criminals, may be simplistic, it is nonetheless an adequate measure of base technical proficiency and stand as a good proxy for performance. It is most certainly the expectation of the citizens that their police force can perform well the basic police function of arresting criminals. As Reiss (1971) indicates, regardless if much of what police do appears related to crime control, it does not diminish the fact that police agencies, as the outward face and principal arm of enforcement for local governments, police have one fundamental core function; the mandate to control crime and arrest criminals. Further, the three qualifications for crimes cleared by arrest address the majority of the criticisms based on definitional issues.

Figure 4 below on page 76 visually demonstrates how this study uses only “actual” crimes reported, unlike similar studies that use crimes cleared by arrest divided by “all” crimes reported (Nicholson-Crotty and O’Toole 2004). Actual crimes reported are reports that police evaluate to determine if the case meets the criteria of a crime. If it does, they continue to investigate the crime. Adding this extra criterion strengthens the theoretical predictability of the dependent variable because it de-conflates the relationship of collaboration used to clear by arrest from the variable of all crimes cleared. Again, this is because crimes cleared may consist of some crimes which the police may never have investigated and thus would have no

connection to collaborative efforts to solve them. Therefore, crimes cleared by arrest are calculated from the number of crimes cleared by arrests in a given year divided by the number of reported actual crimes in that year.

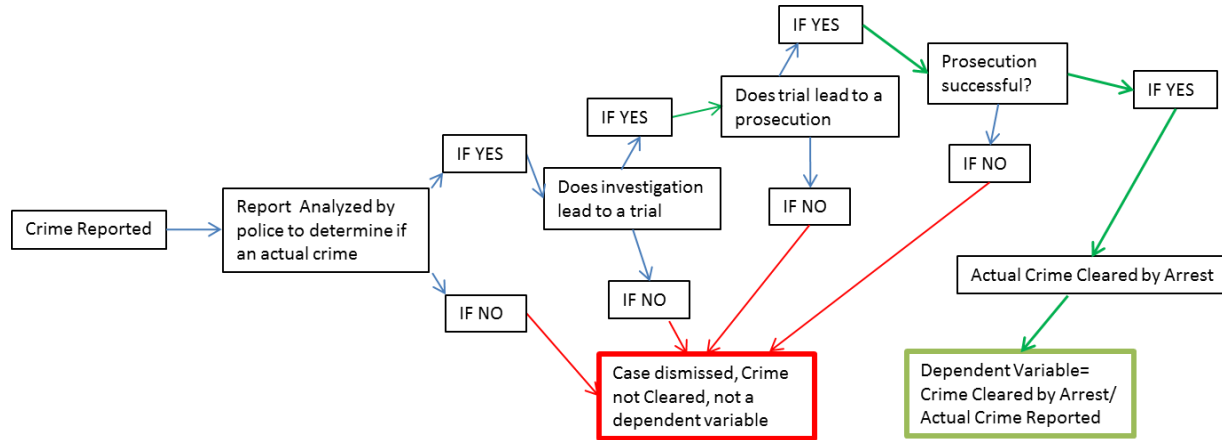


Figure 4: DV=Crimes Cleared by Arrest

Table 2 below presents the descriptive statistics of the dependent variable:

Table 2: Descriptive Statistics of the Dependent Variable

Crime Reported and Crimes cleared by Arrest by Time Period: N= 665				
Variable	Mean	Std. Deviation	Minimum	Maximum
<u>2000</u>				
Reported	9,766.84	21,998.42	0	288,311
Cleared	2,362.55	5,168.72	0	65,044
<u>2003</u>				
Reported	10,011.58	21,137.71	0	236,215
Cleared	2,291.08	4607.73	0	64,095
<u>2007</u>				
Reported	9,602.68	19,359.74	0	199,941
Cleared	2,229.16	3,945.70	0	44,728

An interesting aspect about the dependent variable used in this study is its distribution as observed in the obtained quantitative data sets. The distribution of crimes cleared by arrest does not follow a normal distribution in the data sets used but instead exhibits a zero-inflated distribution, which is consistent with count data (Wooldridge 2007). As a count variable, it takes on non-negative integer values, thus count data demonstrates an overdispersion which occurs when the response variance is greater than the mean (Hilbe 2011). See the statistical distribution of the dependent variable in Figure 5 below.

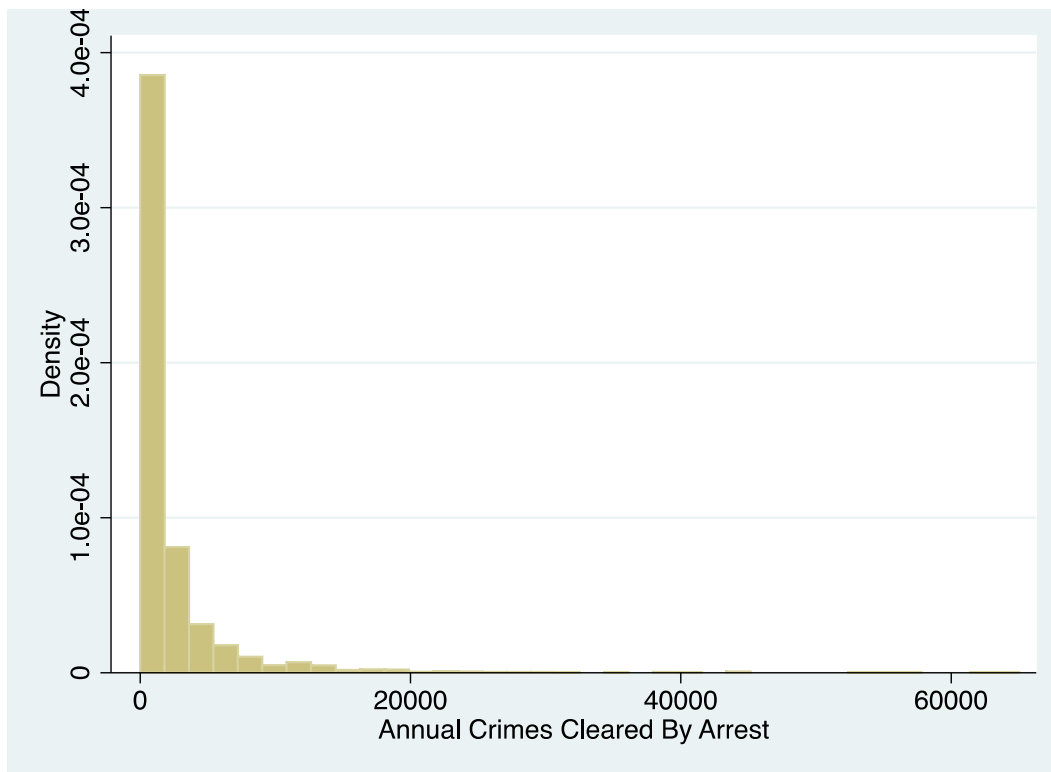


Figure 5: Dispersion of Crimes Cleared by Arrest

To handle this type of distribution, linear models of regression, such as ordinary least squares may be adequate if researchers transform count data in a manner to where they present a more normal distribution. However, such transformations may have shortcomings in deriving accurate estimates in more complex longitudinal studies (Wooldridge 2007, 723). Therefore, other regression models such as nonlinear least squares, or generalized linear models (GLM) such as Poisson or negative binomial regression models may be more appropriate for more sophisticated models (Hilbe 2011). The characteristic of the dependent variables used for this study plays heavily into which family of regression models I use for the both the cross-sectional and longitudinal analysis. As such, for the regression models used in the cross-sectional analysis I use a variation of the log transformation of the dependent variable. However, I use the normal count data and the GLM family of regression models for the longitudinal inquiries. While the

normal approach to study such data may be the use of structural equation modeling, the data sources used for this study were not developed from their start to support SEM modeling. As such, SEM will be part of future designs in this study if the GLM models prove predictive as hypothesized.

Operationalizing Independent and Mediation Variables via Confirmatory Factor Analysis

As presented in the literature review of chapter two, both the capacity and behavior indicative of collaboration are predicted to affect performance outcomes. However, the literature contains a lacuna when it comes to describing the interplay between these two variable sets. Therefore, following the logic of the general mediation proposition presented in chapter two, I use collaboration capacity as the independent variable and collaboration behavior as the mediation variable. Since the convenience data sets used present each type of variable as dichotomous variables, I use factor scores to transform the key independent and mediation variables from those data. The confirmatory factor analysis derived factor scores from using indicators that are present in all three waves of data (2000, 2003, and 2007) used from the LEMAS family of surveys.

Several studies in the public management and criminology literature that use the LEMAS family of surveys, often use principle component analysis or factor analysis to reduce the number variables used in regression-based analysis. For examples see Choi and Choi (2012), Lanworthy (1999), Nicholson-Crotty and O'Toole (2004), and Thomson et al. (2008), all of which use either component scores or factor scores for key independent variables in their regression models.

While there is a running debate among statistical methodologists from different disciplinary backgrounds about which is better to use, principal component or factor analysis, I chose to use factor analysis in an attempt to strengthen arguments about the generalizability of the findings of my study. According to Woods and Edwards (2008), principle component analysis has no particular interpretation beyond the “linear combination of” indicator variables resulting from their reduction into components. In essence, they argue that the component scores are unsuitable to make any generalizable interpretation outside of the data set from which the indicator variables manifest. On the other hand, the purpose of factor analysis is to explain covariation among the indicator variables of latent factors and is useful to understanding the underlying structure of the data. This understanding is what makes generalizable interpretations to larger populations outside of the sample in the data set feasible. In cases, where this is the goal, Woods and Edwards contend that factor analysis is applicable, whereas they contend that principal component analysis is not (2008, 375).

Of the family of factor analyses available, exploratory factor and confirmatory factor analyses, I chose to conduct confirmatory factor analysis due to the development of pre-conceived hypotheses based on the literature review. Researchers use exploratory factor analysis to determine underlying constructs or factors, in which variables have high correlations among themselves, but low correlations with other variables (T. A. Brown 2006). On the other hand, researchers will use confirmatory factor analysis in cases where they have a priori assumptions or hypotheses about the pattern of interrelationships revealed through the factor analysis (T. A. Brown 2006). Since the review of the collaboration literature in chapter two leads to the ideas that certain indicators of collaboration provide the antecedents of collaboration, I predict that in general, these pre-conditions will compose the factor of collaboration capacity. Similarly, my

take from the literature review is that certain activity indicators from collaborators will compose the factor of collaboration behavior. According to Stapleton (1997) and Brown (2006), the requirement to have a hypothesis developed before confirmatory methods makes support for the construct validity found by confirmatory factor analysis stronger.

Another reason I chose to use latent variables to represent the independent and mediation variables of this study was to address potential measurement error. According to MacKinnon (2008), measurement error is common in all fields including the social sciences. It is particularly disruptive to mediation analysis since it can potentially reduce the demonstration of the effect of the independent variable on the mediation variable, and also the demonstration of the effect of the mediation variable on the dependent variable (Hoyle and Kenny 1999, 202). Thus, MacKinnon (2008, 175) recommends when possible to specify a mediation model that uses latent variable factor scores of the individual measures of interest. Therefore, I specify the following latent factor formulas to capture manifest variables from the LEMAS data sets that relate to the factors of collaboration capacity and behavior:

Equation 2: Collaboration Capacity Factor Formula

$$[2] \mathbf{X} = \Lambda_x \xi_x + \delta, \text{ and}$$

Equation 3: Collaboration Behavior Factor Formula

$$[3] \mathbf{MV} = \Lambda_{mv} \xi_{mv} + \delta$$

In the above formulas, X and MV are the independent and mediation variables respectively. The Λ_x represents the relationship between the observed indicators of latent variables of collaboration capacity (ξ_x), and Λ_{mv} represents the relationship between the observed indicators

of the latent variables of collaboration practice (ξ_{mv}). In the next two sections, I describe the observable indicators present in my quantitative data set that I propose to compose the latent factors for both the independent and mediation variables. I test those hypotheses using confirmatory factor analysis (CFA) and report the results of that CFA following the descriptions of each variable below in this chapter.

Independent Variable: Indicators & Latent Collaboration Capacity Factors

Based on what the literature review in chapter two posits regarding how factors make up collaboration capacity, I propose theoretically based confirmatory factor hypotheses for the quantitative portion of this study about certain collaboration indicators that are present in all three waves of LEMAS data sets I used to demonstrate the collaborative capacity variables. These hypotheses predict the linkage of these indicators to four latent factor variables representing elements of collaboration capacity discussed in the literature. The four factors, are not exclusive of the components described in the literature, see Thomson, Perry, and Miller (2009) for example, but are present in the convenience data sample this study uses. They consist of collaboration capacity policies, collaboration capacity training, collaboration capacity screening of recruits, and collaboration capacity resources.

Collaboration capacity policies (CCP) are the various organizational policy arrangements managers use to induce the potential of collaboration capacity from their organizations. Consistent with the description of collaboration policy arrangements in chapter two, this factor consists of two categorical indicators present in the data set. These indicators are items such as policies to plan for collaboration in community policing, and policy requiring the evaluation of officer performance on their participation in collaboration endeavors. Having a strategic plan, as

a matter of policy, to conduct community planning is theoretically linked to enhancing the capacity of police organizations to collaborate with their community and other agency partners. Planning provides capacity by anticipating contingencies in community policing, thus giving police departments flexibility to adapt to changing situations (L. Brown 2012). It also provides capacity by harnessing the resident expertise in developing the structures, rules, and parameter activities of community policing (Kenney and McNamara 1999).

The use of personnel policies that requires an evaluation of performance in collaborative settings is also indicative of collaboration capacity policies. As described by Daley (2009), evaluating the participation of individuals in collaboration endeavors has a significant effect on their viewing collaboration positively, and thus theoretically induces more collaboration. More specifically, Wycoff et al. (1994) point out that performance evaluations tap into the capacity of personnel within the context of community policing because such policies elicit a socialization of the expectations of the behavior required for community policing. Each of the data used in this study provides a categorical observation indicating the presence of such policies. The positive presence of policies demonstrates the presence of the collaborative capacity from personnel policies.

The second latent variable factor, collaboration capacity training (CCTNG), is composed of two categorical indicators as well. The first indicator is the proportion of newly recruited officers that receive training in community policing techniques. The second indicator is the proportion of veteran officers that receive at least 8 hours of community police training. Both sets of training for both new recruits and seasoned officers consists of items such as communication skill development, interpersonal skill development, and analytical problem-solving skills, community organizing, and other specialty skills that relate to developing the

necessary competencies of collaboration in community policing strategies (L. Brown 2012, 222). In fact, recruit training in police academies that is specifically aimed at increasing the effectiveness in professional competencies such as community participation, communication, and innovative problem-solving (Aguilar-Moya et al. 2013, 769), all relate to the development of collaboration capacity.

The third latent factor of collaboration capacity is the capacity gained through the screening of recruits (CCSCR). This latent variable consists of another two categorical indicators. The first is the administration of a personality inventory for potential recruits. The second is a written aptitude test for potential recruits. Both sets of screening tools filter candidates for their personality traits and aptitude toward skills that relate to collaboration. For example, personality inventories are primarily used to screen out candidates who do not possess the requisite professional personality traits such as those that relate to collaboration competencies (Archbold 2013; Dantzker 2011; Forero et al. 2009; Kenney and McNamara 1999).

Traditionally, written aptitude exams measured basic writing skills (Alpert, Dunham, and Stroshine 2014). However, due to the prevalence of community policing strategies adopted by police agencies around the nation, written aptitude screening tools have started measuring competencies in analytical thinking and problem-solving (Archbold 2013). The presence of these screening tools is indicative of collaboration capacity development.

The final latent factor of collaboration capacity is the capacity gained through accumulated resources (CCR). This latent variable also consists of two observable categorical indicators in the data used that reflect resources in manpower and technology. The first indicator identifies if the police department maintained a specific community police unit with full-time

personnel. The second indicator identifies if police agencies upgraded their technology to support the analysis of community problems.

Resource dependency theory indicates that organizations will look to their environment for required resources and that the external control of resources causes the organization to adapt and reshape itself in the process of seeking out resources (Pfeffer and Salancik 1978). According to Archbold (2013, 215–216), police departments structure their organizations consistent with resource dependency theory. Since police are heavily dependent on their external environment for resources, they have to be adaptive and flexible enough to acquire those resources. As such, many police departments around the nation adopted community police units to become eligible to receive federal funding from the COPS program to hire personnel. According to the funding guidelines, new personnel was to be used to implement community policing. The data used in this study identifies if the police agency maintained a community police unit or not. Based on the purpose associated with maintaining such specialized police units, whether or not a police department maintains a community police unit can be an indicator if they can control the resources necessary to perform the collaborative activities associated with community policing.

The second indicator of collaboration resources is technological resources. These consist of items such as computer equipment and other networking devices. Additionally, several studies have posited that applying information technology to the problems of community policing can serve to enhance their efficiency (L. Brown 2012). For example, technological advances in analytical computing have allowed police to use crime mapping software and community interaction social media (Archbold 2013; Bratton and Tumin 2012) to collaboration with other government agencies and the community. The increasing use of technology as a resource to community policing activities leads some researchers to posit the technology will

have an effect in determining the outcomes of community policing (Bond and Gebo 2014). In light of this assertion, the Department of Justice's Community Oriented Policing office lists technological resource capacity as one of its indicators on its Community Policing Self - Assessment Tool (U.S. Department of Justice-Office of Community Oriented Policing Services 2011).

Taken all together, I posit that the eight observable indicators present in 2000, 2003, and 2007 LEMAS survey tools all relate to four latent factors of collaboration capacity for this study, and I use these factors as the independent variables in my collaboration mediation model. I confirm this assertion via confirmatory factor analysis, the result of which I present in the next section below.

CFA OF INDEPENDENT LATENT VARIABLES

As stated earlier, the key independent variables for this study were latent variables of collaboration capacity that provided factor scores through the process of confirmation factor analysis. As shown above, the latent formula for the key independent variables is restated as:

$$[2] X = \Lambda_x \xi_x + \delta$$

Once transformed through CFA, each indicator of described above assumes the general variable name of listing ξ_x and will be referred to as such throughout the rest of this study. I used Mplus version 7 to derive the necessary factors scores from the stated model. Based on the categorical nature of the indicators used as independent variables the estimator used was weighted least squares means and variance adjusted (WLSMV) estimation. As stated earlier there were 665 observations used to create the factor of collaboration capacity. I treated missing data by listwise deletion.

As described above the data that composed collaboration capacity was fitted into four separate proposed factor models. Each conceptually grouped factor structure was composed of two factors each, presenting four confirmatory factor models for the factors of collaboration capacity. The results of the confirmatory factor analysis are displayed in Table 3 below and described following.

Table 3: CFA Results of Independent Variable Factors

Latent Variable/ Model Fit Model estimation: WLSMV in Mplus 7.0	Indicator		(%) Positive Proportion		
			2000	2003	2007
<u>Enabling Policies</u> (CCP) ◦ $X^2(15) = 627.10, p < 0.000$ ◦ RMSEA = 0.055, ◦ 90% CI [0.026 - 0.087] ◦ CFI = 0.983 ◦ TLI = 0.948	CP Plan	=	.88	.42	.44
	Evaluate CP Performance	=	.31	.35	.31
<u>Screening</u> (CSCR) ◦ $X^2(15) = 389.23, p < 0.000$ ◦ RMSEA = 0.061, ◦ 90% CI [0.032 - 0.093] ◦ CFI = 0.965 ◦ TLI = 0.895	Interview	=	.53	.43	.60
	Written Test	=	.74	.73	.82
<u>Training</u> (CCTNG) ◦ $X^2(15) = 798.82, p < 0.000$ ◦ RMSEA = 0.000, ◦ 90% CI [0.000 - 0.047] ◦ CFI = 1.000 ◦ TLI = 1.004	New Recruit	All =	.70	.65	.65
		Half =	.03	.03	.03
		> ½ =	.06	.06	.05
		None =	.18	.26	.27
	Veterans	All =	.26	.18	.17
		Half =	.17	.11	.11
		> ½ =	.38	.37	.32
		None =	.19	.33	.40
<u>Resources</u> (CCR) ◦ $X^2(15) = 435.63, p < 0.000$ ◦ RMSEA = 0.051, ◦ 90% CI [0.020 - 0.083] ◦ CFI = 0.979 ◦ TLI = 0.937	Designated a CP unit	=	.74	.69	.53
	Increased Technology	=	.62	.55	.54
CFA Results for the Latent Independent Variables Factor: Collaboration Capacity;4 Factor Models; N= 696					

The fit of Collaboration capacity policies (CCP) as a factor of collaboration capacity. As mentioned earlier, data describing collaboration capacity policies fit a 2-factor model based on

the hypothesis developed from the literature review regarding how the implementation of policies geared to induce collaboration to create the capacity to collaborate. The resulting X statistic (627.10, $df = 15$) is significant and indicates the models is significantly different ($p < 0.000$). The Root Mean Square Error of Approximation (RMSEA) is .055. The Comparative Fit Index (CFI) is .983. The Tucker-Lewis index is .0948. These fit indices indicate that the data fits the proposed model from a good to a high degree. Table 3 above presents the item factor weights, item error scores, and item variance for this factor model.

The fit of collaboration capacity training (CCTNG) as a factor of collaboration capacity.

I also fit data describing collaboration capacity training to a 2-factor model based on the hypothesis developed from the literature review regarding how an organization can develop the capacity necessary to collaborate through training. As predicted, the resulting X statistic (798.82, $df = 15$) is significant indicating the models was significantly different ($p < .000$). The Root Mean Square Error of Approximation (RMSEA) is 0.000. The Comparative Fit Index (CFI) is 1.0. The Tucker-Lewis Index is also 1.0. These fit indices indicate that the data is a perfect fit for the proposed model. Table 3 above also presents the item factor weights, item error scores, and item variance for this factor model.

The fit of collaboration capacity through the screening of recruits (CCSCR) as a factor of collaboration capacity. Data describing the development of collaboration capacity through the screening of recruits for the traits expected to support collaboration in community policing also fit to a 2-factor model based on the hypothesis developed from the literature review. As predicted, the resulting X statistic (389.231, $df = 15$) is significant indicating the models is significantly different ($p < .01$). The Root Mean Square Error of Approximation (RMSEA) is .061. The Comparative Fit Index (CFI) is .965. The Tucker-Lewis index was .895. These fit

indices indicate that the data fit the proposed model from an acceptable to a high degree. Table 3 above also presents the item factor weights, item error scores, and item variance for this factor model.

The fit of collaboration capacity gained through accumulated resources (CCR) as a factor of collaboration capacity. Data describing the development of collaboration capacity through the acquisition of resources also fit a 2-factor model based on the hypothesis developed from the literature review. As predicted, the resulting X^2 statistic (435.629, $df = 15$) is significant indicating the models was significantly different ($p < .01$). The Root Mean Square Error of Approximation (RMSEA) is 0.051. The Comparative Fit Index (CFI) is 0.979. The Tucker-Lewis index was 0.937. These fit indices indicated that the data fit the proposed model from a good to a high degree. Table 3 above presents the item factor weights, item error scores, and item variance for this factor.

Based on the four-factor models tested and confirmed through CFA, I extracted the factor scores for each factor (ξ_{CCP} , ξ_{CCTNG} , ξ_{CCSCR} , and ξ_{CCR}) from each wave of data (2000, 2003, and 2007). While this proves useful to my overall mediation model, it does present the dilemma of how to manage multiple separate independent variable factors in the mediation analysis of the quantitative portion of my study. This is a common dilemma faced by researchers investigating complex scenarios (MacKinnon 2008). Two options are available given the statistical approach used, either conduct mediation analysis separately for each independent variable and average the results, or combine all independent variables and conduct one simplified mediation regression (Hayes 2013).

To deal with the multiple independent variables in my model, I chose to mean center each independent variable and use the decomposed average in the mediation analysis regressions. While optimal for use in more complex structural equation methods, according to Iacobucci (2008, 19) mean centering is an acceptable method for reducing multivariate problems to univariate problems when using more simple regression techniques. Therefore, mean centering offers a convenient way to handle multiple independent or mediation variables in mediation analysis. The next section will describe the makeup of the latent factors that compose the mediation variable of collaborative behavior.

The Mediation Variable: Indicators & Latent Collaboration Behavior Factors

As indicated by the literature review in chapter two, simply having the capacity to collaborate does not guarantee that collaboration will occur, or that if it occurs, it will successfully lead to good performance or the achievement of desired goals. As implied by the propositions listed at the beginning of this chapter, I posit that for the dependent variable to exhibit the full effect of collaboration capacity, that effect must be mediated by the actions of collaboration behavior. Similar to the description of the independent variable above, I hypothesized relevant theoretical estimates of collaborative behavior indicators that are present in all three waves of data used for this study. I contend that these indicators, according to the literature review, compose the latent factor of collaboration practice present in the data used. The first three indicators are categorical variables that measure if officers engage in active problem-solving activities with collaborative partners if officers actively took their collaborative partners feedback into consideration for developing collaboration efforts, and if community police officers were assigned to a specific geographical location. The fourth indicator is the total count of the number of partners that each

agency reported having formal written collaboration agreements with and have officers actively involved in a collaborative partnership. All four indicators loaded onto one factor variable with an acceptable goodness of fit scores that I estimate to approximate the latent variable of collaborative practice. I discuss the outcomes of the CFA for the mediation variable, collaborative behavior, in a later section below.

Problem-solving in collaborative behavior involves the active transmission, receipt, and synthesis of knowledge between partners (Weber and Khademian 2008). The active engagement in problem-solving, as observed by the LEMAS survey, is at a minimum the indicator the partners to collaboration agree there is a problem, that it needs to be solved, and that they will actively work to solve it (Emerson, Nabatchi, and Balogh 2011). Aside from that minimum threshold for describing how the problem-solving indicator shapes the collaborative process, the agreement on how to solve it, or the exact nature of the problem is open to interpretation based on the various perspectives from all of the partners. This may affect how the collaboration effort moves forward in solving the problem and may, in fact, lead to unsuccessful problem-solving attempts (Huxham 1996b; Koppenjan and Klijn 2004). As Graddy and Bin (2006) point out, the nature of the relationship between partners has an effect on the outcome of problem-solving efforts.

However, the point of including this indicator is that it aligns theoretically with the idea that the demonstrated willingness of participants to actively engage in the collaboration effort creates vibrant partnerships from which they can better energize and tap into resources that they would not otherwise have access to (Weber, Lovrich, and Gaffney 2007). Collaborative partners thus shape the outcome by providing the necessary first step of active engagement necessary to accessing the collaborative capacity that each partner brings to the table. For example,

Feyerherm (1994) found in an early longitudinal study of collaborative rule-making that active engagement in problem-solving led to an observable diffusion of leadership skills throughout the members of the participating individuals in the collaboration, thus spreading the capacity to identify the problem and influence others in the organization to select a solution. As such, if capacity is mediated by practice, as assumed by my study, it is logical to predict that active engagement allows capacity, such as leadership, to affect the eventual outcomes of the collaborative efforts. Further, it can be posited that to the extent that participants come across new problems, they have to, at a minimum, engage actively in collaborative problem-solving to solve those problems (Behn 2010).

The second indicator is the accounting for the feedback of collaborative partners in the decisions for collaborative plans. This indicator contributes to the contention that active problem-solving engagement, as a collaborative practice, mediates the effect of collaborative capacity on performance outcomes. Not only does it demonstrate police agencies are actively engaging in problem-solving efforts but also, in accordance with the literature on collaborative problem-solving theory (Innes and Booher 1999; Weber, Lovrich, and Gaffney 2007), that they are adapting their solutions to incorporate the recommendations of their collaborative partners. Further, in accordance with the mediation analysis literature, organizational feedback, especially on performance or of the type that shapes future organizational actions, often displays a mediating effect (James and Brett 1984).

The third indicator, assignment of geographical locations to community police officers, aligns with a theory in the literature that geographic proximity plays a significant role in collaboration (Crowcroft et al. 2004; Katz 1994). In police studies, the frequent rotation of beat patrols is asserted to be tantamount to “stranger policing” (Murphy and Plate 1978, 225). This

can lead to disruptions in community and police relations, such as a breakdown in trust with the community which can inhibit the ability of officers to make arrests based on information gained from the community (Whitaker 1984; Whitaker et al. 1982). Further, the Federal Bureau of Investigations, recommends smaller beats that are routinely assigned because it asserts that they are more conducive to community policing since it allows police to promote community networks actively while providing efficient traditional police services (U.S. Department of Justice, Bureau of Justice Assistance 1994).

The final indicator of the latent factor of collaborative behavior is the number of collaboration partners. According to the LEMAS survey in 2000, 2003, and 2007, agencies listed the number of collaboration partners with whom they have active written collaboration agreements. The number of collaboration partners is estimated to correlate with the theoretical propositions of network size in the network literature (Agranoff 2003; Agranoff and McGuire 2001; Granovetter 1983; Koppelman and Klijn 2004; Milward and Provan 1998; Meier and O'Toole 2005; O'Toole and Meier 1999; Phelps, Heidl, and Wadhwa 2012; Powell, Koput, and Smith-Doerr 1996; Provan and Kenis 2008; Schilling et al. 2007). For example, Provan and Kenis (2008) posit that the size (e.g. the number of participants) of a network, among other factors, effects the adoption of particular forms of network governance systems such as "shared governance" collaborations. Though there may be a point of diminishing returns in which size causes partner fatigue (Lowndes and Skelcher 1998), other researchers posit that the increasing number of partners that organizations acquire are signs that organizations are setting the conditions to be able to leverage the use of multiple sources of resources. Additionally, it shows that it is a sign that they are becoming more open, and perhaps, adept at handling multiple and diverse relationship patterns (Powell, Koput, and Smith-Doerr 1996). Nonetheless, the number

of partners a police agency works with theoretically contributes to the factor of collaboration behavior and demonstrates a rate of effort for that behavior. Therefore, size can serve as a relevant indicator of how the practice of collaboration mediates the effect of collaboration capacity.

CFA OF MEDIATION LATENT VARIABLE

Like the latent factors of the independent variable described earlier, the key mediation variable for this study was collaboration practices that provided factor scores through the process of confirmation factor analysis. As shown above, the latent model for the key mediation variable is restated as:

$$[3] MV = \Lambda_{mv}\xi_{mv} + \delta$$

The fit of four indicators of collaboration behavior (CB) as one factor of mediation variable. As described above the data describing the process of collaboration practice, estimated to mediate the effect of collaboration capacity on performance, fit a 4-factor model based on the hypothesis developed from the literature review. As predicted, the resulting X^2 statistic (1847.581, $df = 66$) is significant indicating the models was significantly different ($p < .000$). The Root Mean Square Error of Approximation (RMSEA) is 0.037. The Comparative Fit Index (CFI) is 0.977. The Tucker-Lewis index was 0.964. These fit indices indicate that the data fits the proposed model from a good to a high degree. Table 4 below presents the item factor weights, item error scores, and item variance.

Table 4: CFA Results for the Mediation Variable

Model Fit Model estimation: WLSMV in Mplus 7.0	Indicator	(% Positive Proportion)			
		2000	2003	2007	
	Active Problem Solving	= .57	.54	.46	
	Incorporates Feedback From CP Partners	= .85	.77	.76	
	Assigns Geographical Areas	= .47	.74	.74	
Model fit ◦ $X^2(66) = 1847.58$, $p < 0.000$ ◦ RMSEA = 0.055, ◦ 90% CI [0.025 - 0.049] ◦ CFI = 0.977 ◦ TLI = 0.964		0 =	.03	.15	.21
		1 =	.05	.08	.03
		2 =	.06	.10	.04
		3 =	.10	.09	.05
		4 =	.11	.10	.05
		5 =	.11	.08	.06
		6 =	.09	.08	.08
		7 =	.10	.07	.10
		8 =	.08	.08	.11
		9 =	.08	.17	.27
		10 =	.18	Not Surveyed	Not Surveyed
Latent Mediation Variables: Collaboration Practices; 1 Factor Model; N= 665					

The latent factors forming the independent variables associated with collaboration capacity ($\bar{\xi}_{cc}$), and the latent factors associated with collaboration behavior that form the mediation variable (ξ_{cb}) taken together provide two of the three necessary variables for mediation analysis. While I estimate that these latent factors of the independent variable and mediation variable contribute to the total effect on performance outcomes, they are not the sole variables predicted to be significant. To control for as much of the variance from other external factors that may affect that relationship, I include several covariates, which are described in the next section.

The Control Variables: Covariates of the Mediation process

I used several control variables in this study. Two are standard variables used to account for the mass effects highlighted by the literature on crime and police. The rest are considered general impact variables that are theorized to affect the general collaboration mediation model and the count of crimes cleared by arrest. The first sets of variables are standard demographic variables shown to have statistically significant effects on crime rates in previous studies on crime and police. The first standard covariate is population and Population density (Bailey 1984; Land, McCall, and Cohen 1990; McCall, Land, and Parker 2010). Population is measured as the total population in each city in 2003 according to the U.S. Census data. Population density is measured by the total number of residents per square mile in a jurisdiction and comes from the LEMAS survey and confirmed in U.S. Census data.

The second set of covariates is added based on the expected impact of police size on the count of crimes cleared by arrest, as described in the literature, and the budget resources of the police departments included in the data. The first impact variable, the total size of the police force relative to the population will affect the amount of tasks assigned to each officer and impact their ability to conduct collaboration over traditional police functions. Therefore, I use total police force, measured by the number of total police with arrest power per every 1000 persons in the jurisdiction, as a control variable.

The second impact variable is the budget per police. While several early studies on crime and police use per capita variables as controls for resources—i.e. amounts of financial resources available for a given population—see Choi and Choi (2012), Nicholson-Crotty and O’Toole (2004), Langworthy (1999), and Reisig (2010) for example—Wilson and Weiss (2013) contend that per capita approaches may risk a bias determination of resourcing needs because they may

not accurately account for changes in workload, such as population changes due to seasonal migrations. They also do not account for variation in policing styles between police departments, or other environmental differences among jurisdictions such a terrain and geography. Therefore, I use amount budgeted per police officer as a control variable to indicate the effect of resources available to officers so they can accomplish whatever task they are assigned given their geographic and philosophical conditions. This variable controls for the amount of internal financial resources each agency has per officer to conduct operations, especially community police operations. The use of this control variable is based on the notion that financial resources for officers are positively related to the police officers' ability to perform one of their most basic and primary functions, the arresting of criminals. I estimate that the more resources per officer, the higher the level of clearances by arrest. Therefore, my over model needs to control for this variable.

The third and fourth impact variables predicted to affect the count of crimes cleared by arrest are the racial and gender make-up of the police force. In accordance with Sklansky's (2006) findings, the demographic impact of race and gender have an overall competency, organizational, and community effect on changing the attitudes of police officers, which could shape the collaborative relationship between the community and the police department. From a competency perspective, Sklansky reports that some studies have posited that minority officers have better skills to gain a better understanding of minority community and thus gain more legitimacy among the minority community. One example, Sklansky points to illustrate the potential effect of race is the decline of the use of force among bi-racial partner teams. However, Sklansky also provides contradictory findings from studies where race had no effect and concludes that the complete effect of race is still unknown. However, if race has an effect on

decisions to use force, a strand of traditional police activity, then theoretically it should also affect the decision to collaborate. Therefore, based on the assumptions about how race may affect collaborative efforts, I add the ratio of black officers to the total population as a control variable to the study.

With regard to gender, Sklansky reports the same conflicting findings among the research on gender in police studies. Regardless, he reports that some studies contend that female officers are better at de-escalating potentially violent situations and at gaining community trust and cooperation. These assumptions lead to similar theories, like race, about the effects of gender on collaboration. Therefore, I also include the ratio of female officers to the total population as a control variable.

The Methods Used

As mentioned in the introductory chapter, I use two primary categories of research methods, quantitative and qualitative, in an explanatory and sequential mixed methods process to conduct this study. The quantitative procedure includes both cross-sectional analysis and longitudinal data analysis. The qualitative process includes semi-structured interviews based on the initial findings from the quantitative studies. Given the manipulation of the data and the operationalization of the independent and mediation variables described above, I am now able to explain the specific procedures used for the quantitative phase. This explanation follows in the next section. Then I will discuss the specific procedures used in the qualitative phase.

Quantitative Methods Used

The quantitative section utilizes methods composed of mediation analysis. In fact, I propose both the cross-sectional and longitudinal mediation specifications to both address

hypotheses of the contemporaneous effect of collaboration capacity on outcomes through collaborative behaviors, as well as the hypothesized effects of capacity and behavior over time on performance outcomes. However, before discussing the contemporaneous and longitudinal approaches for the mediational analysis, I first need to discuss basic mediation analysis using multiple regression analysis for both cross-sectional and longitudinal inquiries.

BASIC MEDIATION ANALYSIS

The work of Baron and Kenny (1986) has highly influenced the field of mediation analysis according to Hayes (Hayes 2013) Mackinnon (2008), and Valeri and VanderWeele (2013).

Simply put, mediation analysis is causal analysis. That is, it allows the researcher to explain how something comes about, which is the essence of scientific research (Kenny 2008). Baron and Kenny define the mediation variable as the one variable that “accounts for the relation between the predictor and the criterion” (p. 1176). Thus, according to Baron and Kenny “mediators speak to how or why effects occur” (p. 1176). Baron and Kenny present a diagram of their mediational model as seen in the following figure:

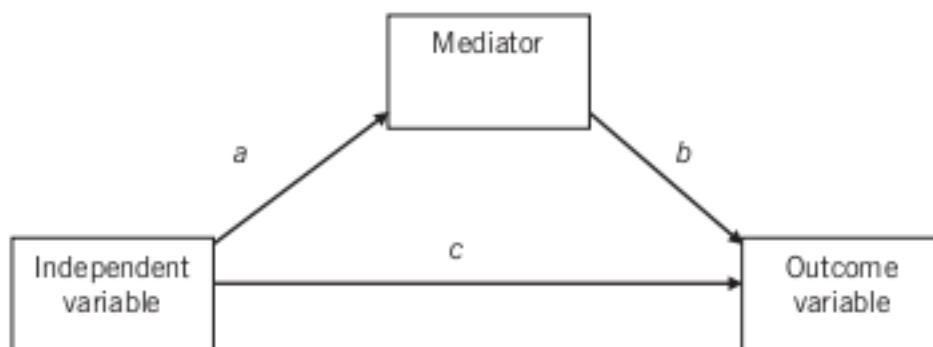


Figure 6: Baron and Kenny's Simple Mediation Model

Using this model, Baron and Kenny explain that a “causal chain” uses two “causal paths” (“b” and “c” in the diagram above) to fully describe the overall effect of the independent variable on the dependent variable.

For the causal mechanism of the mediational model shown above to work, Baron and Kenny offer a list of “conditions” to test the mediation hypothesis for any context in which mediational analysis is the chosen method of research. The classic form of mediation devised by Baron and Kenny (1986), requires the following criteria be satisfied for a variable to be considered a mediator:

- (a) A change in levels of the independent variable (IV) significantly affects the changes in the mediator variable, as demonstrated by path “a” in the model above;
- (b) There is a significant relationship between the mediation variable (MV) and the dependent variable (DV), as demonstrated by path “b” in the model above;
- (c) A change in levels of the IV significantly affects the changes in the dependent variable, as demonstrated by path “c” in the model above; and
- (d) When the previously defined paths (“a” and “b”) are controlled, and the previously significant relationship between the IV and DV is reduced (for example, if the path from the IV to the outcome variable is lowered to zero or toward zero after the

inclusion of the mediation variable) then the strongest demonstration that mediation occurs is provided (Barron & Kenny, 1176) & (Valeri and VanderWeele 2013, 138).

Jose (2013) points three caveats these four propositions. First, according to Barron and Kenny's proposal, the relationship between all three variables, IV, MV, and DV must be statistically significant. The second point, not explicitly stated by Barron and Kenny, but discussed by many other researchers, is that while statistical significance is required, it matters not to the demonstration of mediation if the relationship is positive or negative. The third and most confusing point according to Jose is that mediation is demonstrated when the path between the IV and DV (path "c") is statistically reduced when the MV is introduced into that path. Many researchers assume that to demonstrate mediation, demonstrating that the previously significant IV to DV relationship went from significance to insignificant was enough to support the hypothesis that the mediation variable mediated the effect of the IV on the DV (Jose 2013, 29). However, Jose points out that further on in Barron and Kenny's article they contend that it is more probable just to find a significant reduction due to multiple unobserved causes and not mediation.

Upon making the propositions that demonstrate mediation, Barron and Kenny then offer specific regression formulas to test for mediation. They argue that researchers must use three multiple regressions to demonstrate mediation occurred:

1. First, the DV is regressed on the IV, to demonstrate that the IV predicts the

DV:

Equation 4: Baron and Kenny's 1st Conditional Formula

$$[4] Y = i_1 + cX + e_1$$

2. Then the MV is regressed on the IV first to demonstrate that the IV predicts the MV's outcome;

Equation 5: Baron and Kenny's 2nd Conditional Formula

$$[5] MV = i_2 + aX + e_2$$

3. Finally, the DV is regressed on the IV and the MV to demonstrate the predictive nature of the MV toward the DV; (Jose 2013, 29-30).

Equation 6: Baron and Kenny's 2nd Conditional Formula

$$[6] Y = i_3 + c'X + bMV + e_3$$

In the formula [4] "c" refers to the coefficient of the relationship between the IV and the DV and that e_1 refers to the variance in Y that is not explained by X (i.e., the residual). Figure 7 below demonstrates this model using the variables from this present study: collaboration capacity, as the IV; and Performance Outcomes, as the DV.

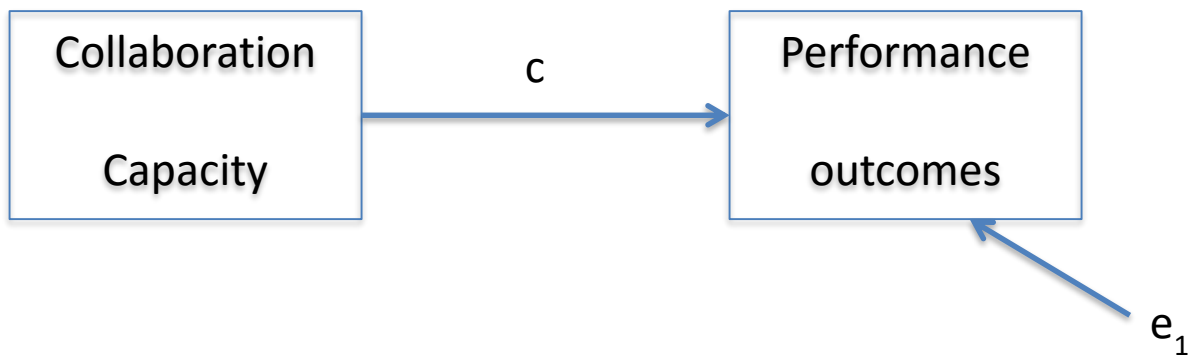


Figure 7: First Regression Model with statistical notations

Formula [5] is provided to demonstrate the causal effect of mediation and not the concurrency of moderation. According to Barron and Kenny, “whereas moderator variables specify when certain effects will hold, mediators speak to how or why such effects occur” (1986, 1176). In other words, were formula [5] to prove insignificant, we would need to explore how the middle variable serves as a moderating variable and not a mediation variable.

Formula [6] adds the third variable and creates the mediation triangle described in Figure 6 above. The mediation triangle with statistical notations from regression formulas [5] is presented below using the variables from this study in figure 8:

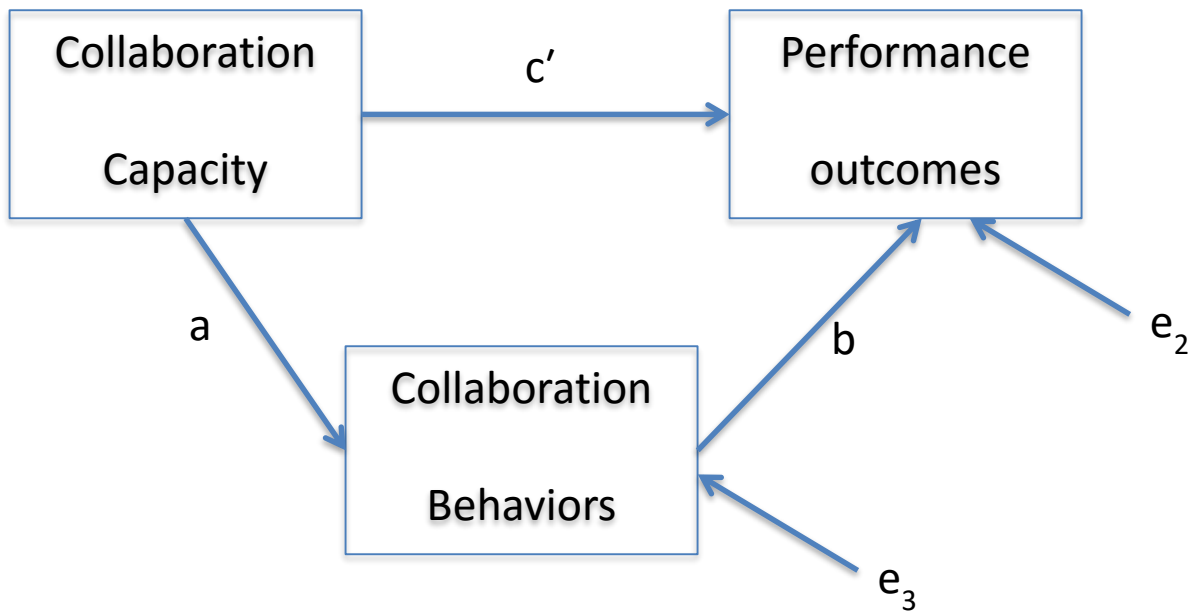


Figure 8: Second Model with statistical notation and collaboration variables

The i_x terms in the formulas above refer to the intercepts and do not figure into the discussion about mediation. However, the important elements of all three equations are the paths of “a”, “b”, “c”, and “c’”. The coefficient for the DV-to-IV relationship (represented by path c) in the first formula becomes c prime (represented by path “c’”) in the mediated model and indicates

that the path from the IV to the dependent variable is now adjusted for the inclusion of the mediation variable. The “c” now denotes that the path from the IV to the DV is now indirect, and according to Baron and Kenny, should reduce the size of the basic relationship between the IV and DV. Thus, researchers using these regression models for mediation refer to the original IV-DV relationship, indicated by path c, as the total effect. With the introduction of the MV into the path of that relationship, the IV to MV coefficient is annotated “a” and the MV to DV coefficient is named “b”. The product of “a” and “b” is considered the mediated (or “indirect”) effect and provides the size of the mediated effect. Additionally, the path of “c” changes as demonstrated by the path “c’” coefficient, which indicates a new IV to DV relationship after removing the indirect effect that goes through the mediation variable. Thus c’ is termed as the direct effect-i.e. the direct effect between the IV and the DV.

By applying Baron and Kenny’s regression formulas to the data this study uses provides the following general mediation formulas for collaboration behavior’s (CB) mediated effects of collaboration capacity (CC) on Crimes Cleared by Arrest (CCA):

Equation 7: 1st Collaboration Mediation Regression Formula

$$[7] CCA = i_1 + cCC + e_1;$$

Equation 8: 2nd Collaboration Mediation Regression Formula

$$[8] CB = i_2 + aCC + e_2; \text{ and}$$

Equation 9: 3rd Collaboration Mediation Regression Formula

$$[9] CCA = i_3 + c'CC + bCB + e_3.$$

Given that CC and CB represent latent variables derived from confirmatory factor analysis as described above, the full statistical notation for each formula, to include control variables is presented as such:

Equation 10: 1st Collaboration Mediation Regression Formula with Latent Variables

$$[10] Y_{dv} = i_1 + c\bar{\xi}_{iv} + \beta_1 CV + e_1;$$

Equation 11: 2nd Collaboration Mediation Regression Formula with Latent Variables

$$[11] \xi_{mv} = i_2 + a\bar{\xi}_{iv} + \beta_2 CV + e_2; \text{ and}$$

Equation 12: 3rd Collaboration Mediation Regression Formula with Latent Variables

$$[12] Y_{dv} = i_3 + c'\bar{\xi}_{iv} + b\xi_{mv} + \beta_3 CV + e_3$$

In the formulas above, the dependent variable is designated with Y with the subscript of dv to distinguish it as the outcome variable. The independent variable and mediation variable, since they are transformed into the factor scores from the CFA process are labeled with the latent variables of Ksi (ξ) and denoted with the subscripts of iv and mv respectively. CV represents the control variables described earlier in this chapter.

By adhering to the Baron and Kenny's propositions, and completing the regression, I can discern the direct effect of collaboration capacity on collaboration performance measurements as mediated by collaboration behavior. Further, I should have the basic facts necessary to test the mediational hypothesis to by using the coefficients and standard errors of the regression models presented above to discern the indirect, or mediated effect that collaborative practices provide between capacity and performance outcomes.

To begin testing for the mediated effects, I will follow the steps recommended by Jose (2013). I first confirm the first two propositions, namely, that the independent variable, collaboration capacity, is significantly associated with the dependent variable, collaboration performance outcomes, and that collaboration capacity is significantly associated with the mediation variable, collaboration practices. To test for this, I follow Jose's (2013) advice to generate a Pearson Correlation matrix involving these three variables to verify that the first two conditions are met. I will confirm the last condition by executing the regression formulas to find the coefficients and standard errors necessary to calculate the mediation effect. Once I complete that step, I will be able to observe if the relationship between collaboration capacity and collaboration performance is reduced when collaboration practice is introduced.

According to Jose (2013), I will have a few more steps to conduct before being able to claim that mediation occurred or it did not. To say that this reduction was significantly large enough to qualify as a statistically significant reduction, I will need to apply the Sobel's significance test. Jose (2013) contends that Barron and Kenny intended that the true test of mediation, as derived from these regression calculations, would be the demonstration that the effect of the IV on the DV lessened in the equation [6] compared to equation [4] above. However, noting that this simple "less than" rule was unconvincing in and of itself, Baron and Kenny cite Sobel's (1982) significance test to verify if this reduction is statistically significant or not.

To implement Sobel's significance test per Baron and Kenny's prescription, Jose refers to Kris Preacher's website: <http://www.quantpsy.org/sobel/sobel.htm>, which describes the Sobel test in the following formula (2013, 31):

[13] Equation 13: Sobel's Significance Test for Mediation

$$\text{Z-value} = \frac{a \cdot b}{\text{SQRT}(b^2 s_a^2 + a^2 s_b^2 + s_a^2 s_b^2)}$$

In Sobel's formula above, the "a" and "b" refer to the unstandardized regression coefficients (the β 's) of paths between the IV and the MV (the "a") and the MV and the DV (the "b") respectively. The numerator in formula [7] is the mediated effect. The denominator in the formula is the standard error of the mediated effect. The s_a and s_b refer to the corresponding standard errors from the first and third regression formulas. The "a" and the " s_a " are obtained from the first regression equation, while the "b" and " s_b " are obtained from the third regression equation. Taken together in the form described, and by the calculated terms in the denominator of the above formula, they become the standard error of the mediated effect. To test if the size of the reduction between equations is significant, one multiplies the mediated effect (the unstandardized regression coefficients of paths a and b) and divides that by the standard error of the mediated effect. The standard error is the square root of the sum of three terms: the square of the "b" coefficient multiplied by the square of the standard error of the third equation (s_b); plus the square of the "a" coefficient multiplied by the square of the standard error of the first equation (s_a); plus the product of both the square of first and third standard errors. Essentially, dividing the mediated effect by the standard error of the mediated effect provides Sobel's z-score. One then can look up the resultant z-score in a z-score table to determine if the reduction was significantly large enough. Or as Jose (2013, 31) recommends, use a Web-based applet (e.g. http://wise.cgu.edu/p_z/p_z.html) to obtain the significance level of the obtained z-score.

Another way to obtain the standard error of the mediated effect that may be more accurate, according to MacKinnon (2008) is the formula below:

[14] Equation 14: MacKinnon's SE formula for Mediation

$$SE = \frac{a * b \text{ SQRT}[(t\text{-score of } a)^2 + (t\text{-score of } b)^2]}{(t\text{-score of } a) * (t\text{-score of } b)}$$

The above formula is based on t-scores found in the regression output of most statistical packages such as SPSS or Stata. Jose concurs with MacKinnon that it is more accurate because it does not involve squaring very small numbers (Jose 2013, 54). According to Jose, the ability to compute the significance of the mediating effect was a great innovation and is considered to be necessary to support or reject a mediation hypothesis (Jose 2013, 30).

However, the Sobel procedure does not complete all of the sufficient post-test necessary to understand the nature of the mediation effect. Both MacKinnon and Jose recommend testing the indirect, or mediated effect, for its statistical significance as well. Computing the confidence interval in addition to using Sobel's formula allows us to do this. The first step in determining the statistical significance of the indirect effect, is to insert the values of the size of the estimate of the indirect effect and the standard error of the mediated effect into the following lower and upper confidence interval equations, and determining whether the range includes the value of zero or not:

[15] Equation 15: Confidence Level Formula to test mediation statistical significance

$$\text{Lower Confidence Limit (LCL)} = \text{mediated effect} - Z_{\text{Type 1 error}} (S_{\hat{a}b})$$

$$\text{Lower Confidence Limit (LCL)} = \text{mediated effect} - Z_{\text{Type 1 error}} (S_{\hat{a}b})$$

In the equations above, the mediated effect again is simply the product of the “a” and “b” coefficients from the regression models. The $Z_{\text{Type 1 error}}$ is the value of the z (or t) statistic required for the confidence level. If the range does not contain zero, then it is estimated that the mediated effect is statistically significant.

The value of the Z statistic may be derived in one of three ways. The first way is for one simply to apply the standard 1.95 for a 95% confidence limit for large sample sizes (MacKinnon 2008, 60) to the equation above. However, both Jose and MacKinnon indicate that way is not always accurate because the product of the "a" coefficient and "b" coefficient may not always follow a normal distribution. This may occur when the estimation of the indirect effect in mediation is performed with multiple regressions using OLS (ordinary least squares) algorithm. According to MacKinnon et al. (2004), Preacher & Hayes (2004; 2007; 2008), and Shrout & Bolger (2002) in cases of small sample sizes, the OLS approach appears to provide biased estimates. They all indicate that the main problem is that when using OLS, even if the raw variables are normally distributed, the product of these variables normally returns parameters that are non-normally distributed (Jose 2013).

Thus, in cases where the distribution of the product of the “a” and “b” is not normal both Mackinnon (2008) and Jose (2013) recommend using one of two other methods, the distribution of the product method or one of the resampling methods, such as bootstrapping. These methods will return asymmetrical confidence levels that more accurately describe the upper and lower confidence levels of the non-normal distribution of “a”*”b”. The second method, the distribution of the product method, is described in depth in Chapter four of Mackinnon’s book and includes

the use of the FORTRAN based program PROCLIN. Since I did not have access to this program, I used the third method, bootstrapping to estimate the confidence intervals of the mediated effect.

Mackinnon (2008) contends that in some data sets the mediated effect is not always distributed normally, the first method to test the confidence levels discussed above may return invalid results. According to MacKinnon, using computer-based methods may provide more accurate measures than traditional methods discussed above. Such methods as bootstrapping use repeated samples from the original sample to acquire an empirical version of a sampling distribution of a statistic (Efron and Tibshirani 1994; Manly 2006; Mooney, Duval, and Duval 1993; Noreen 1989). This empirical distribution based on resampling from the original data set then provides a more accurate way to determine the significance of the mediated effect and to construct confidence intervals. The bootstrap method (Efron and Tibshirani 1994) requires computer-intensive tests based on algorithms. Since I had access to a Stata mediation program that used bootstrapping in its function, PARAMED, I chose to use the bootstrapping method to develop my confidence level. According to a comparison conducted by MacKinnon, Lockwood, and Williams (2004) the bootstrapping method of resampling provided the most accurate confidence levels in comparison to single sample methods. Even more compelling, several other resampling methods, such as permutation (Edgington and Onghena 2007), randomization (Edgington and Onghena 2007, Edgington 1995), and jackknife (Mosteller and Tukey 1977) used in their comparison study did not differ substantially in their results from single sample methods.

The end objective of conducting all of the above post-test analysis is to confirm and allow for the explanation of the mediational analysis results. Principally those results will consist of the total effect, the direct effect, the indirect effect, and the ratio of the indirect effect to the total effect. Thus, the total effect is described by the relationship between two components: direct and indirect effects. The direct effect is the regression coefficient after inclusion of the mediation variable. The indirect effect is the total effect minus the direct effect (or the product of the “a” and “b” coefficients). Finally, the indirect/total ratio is computed simply by dividing the indirect effect by the total effect. This ratio will fall between 0 to 1 and will describe how indirect effect explains much of the original basic relationship (Jose 2013, 60). After all of the statistical calculations discussed above, the statistical output should tell us if the introduction of a mediation variable significantly reduces the basic relationship between the independent variable and dependent variable. If the relationship between the DV and the IV is reduced to zero and statistically insignificant after controlling for the mediation variable, that according to Baron and Kenney (1986), perfect mediation is observed. However, if the absolute value of the IV coefficient is reduced to a number greater than zero, but the relationship goes from significant to insignificant, then complete mediation is observed (MacKinnon 2008). If the value of the IV coefficient reduces, but not to zero, and it maintains a statistically significant relationship with the DV after controlling for the MV, then a partial mediation is observed (Jose 2013).

The ratio between the indirect effect and the total effect should tell how much of the relationship between the IV and DV is accounted for the MV. The R^2 estimate of the indirect effect should tell how much of this relationship was explained by the indirect effect (Jose 2013, 61). This all demonstrates, according to Jose, that researchers can use mediation analysis to

interpret the character of the “operating mechanism” that exists among the three variables. The relevance of this interpretation is to explain if the relationship between the mediation variable is in any way statistically significant in explaining the relationship between the independent variable and the dependent variable (Jose 2013, 62).

It is important to note that the above formulas conduct contemporaneous mediation analysis, that is, they use data drawn from a single time period. This is necessary to consider because mediation analysis assumes a causal and ordered direction of the variables. In other words, the IV comes first, then the MV, and then the outcome. Potential problems in being able to claim accurately predictive direction arise when drawing the DV, IV, and MV from the same time period. One of the problems in using solely contemporaneous data is a concern that multicollinearity will arise between the independent and dependent variables (Baron and Kenny 1986). This may demonstrate itself primarily in the third regression equation that Baron and Kenny use when testing to see if the IV and the MV jointly predict the DV. Per the preconditions prescribed by Baron and Kenny, the independent and mediation variables must be significantly correlated; however, when a multiple regression with correlated predictors is computed, the ability to accurately estimate the coefficients may be lowered. This danger may occur if the independent and mediation variable are too highly correlated. Jose (2013, 32) notes that if correlations fall in ranges above .70, then a problem may arise. For example, if a correlation above .90 is obtained, then it is quite likely that both variables are measuring essentially the same thing.

Another issue with using contemporaneous data is that questions of causal direction may arise. Baron and Kenny are clear that the underlying premise of mediation is that the independent variable and mediation variable come first and cause the dependent variable and not the other

way around. Throughout Baron and Kenny's article, they allude to exogenous and endogenous variables, making one assume that they mean clear-cut x and y variables. However, in situations where all one has is contemporaneous data, the possibility that the dependent variable may in fact causally affect the mediation variable may exist. For example, for the data in this study, the assumption is that collaboration capacity and collaboration behavior lead to the outcome of crimes cleared by arrest. However, one could envision an example where crimes cleared by arrest leads to calls for more collaboration. If this happens, then the researcher may not be able to identify a clear mediation pattern. It is inherently difficult to obtain variables in the social sciences that offer researchers opportunities to observe clear, step-like causal chains because individuals and organizations are complex organisms and structures that operate in very complicated ways out a variety of reasons.

For all of the reasons indicated above, the use of contemporaneous data, where the IV, MV, and DV are gathered at one point in time, is quite controversial (Jose 2013, 32). This is because Baron and Kenny were never specific about the required nature of the data needed for mediation analyses. As a point of fact, the Baron and Kenny article only imply that researchers are aided by using a temporal sequence of variables. They never explicitly call for researchers to use longitudinal data. Thus, according to Jose, several researchers conveniently use concurrent data because Barron and Kenny did not explicitly discuss the use of concurrent data, or rather explicitly warn against its use. However, Baron and Kenny do point out that mediation is a causal path process and that the assumption of the researcher should be that the independent variable causes the mediation variable, which in turn causes the dependent variable.

This controversy led to Cole and Maxwell (2003) arguing the need to test mediation with longitudinal data. Their main contention is that due to the problems, such as those discussed

above with contemporaneous data, it may be impossible to demonstrate that mediation has occurred convincingly. David Kenny (2007) concurs with this assessment stating, “Note that a mediational model is a causal model. For example, the mediator is presumed to cause the outcome and not vice versa.” Even Kenny (2007) later hints at the benefits of longitudinal data versus concurrent data in this text: “Design considerations may also weaken the plausibility of reverse causation. Ideally, the mediator should be measured temporally before the outcome variable.”

Cole and Maxwell present a stark reality regarding the need to use longitudinal data to researchers who obtain a significant mediational result solely with concurrent data and assume that their findings generalize reasonably well to longitudinal data. They caution that “In reality, testing mediational hypotheses with cross-sectional data will be accurate only under fairly restrictive conditions...When these conditions do not pertain, cross-sectional studies provide biased and potentially very misleading estimates of mediational processes” (Cole and Maxwell 2003, 560).

So if it is better to use longitudinal data, and a researcher is so lucky as to have it available to them, how does one go about doing mediation analysis with longitudinal data? Cole and Maxwell (2003) contend that the only way to do is with sophisticated computer programs using SEM processes. However, both Jose (2013) and MacKinnon (2008) offer that basic longitudinal mediation analysis is feasible via known regression methods. The next section will explain Mackinnon’s and Jose’s application of normal regression methods and how I use them to test the effect of time in the time waves from the data sets I use.

BASIC LONGITUDINAL MEDIATION ANALYSIS

Several sources discuss the use of longitudinal data for mediation analysis through the use of regression formulas (Bijleveld et al. 1998; Jose 2013; Little, Schnabel, and Baumert 2000; MacKinnon 2008; Singer and Willett 2003). Due to their ease in explaining the complicated process of analyzing mediation effects in longitudinal analysis, I primarily draw from the text of Jose (2013) and MacKinnon (MacKinnon 2008) to construct the models and formulas that my longitudinal analysis uses to identify indirect effects over time.

As described earlier, one of the main reasons to use mediation analysis is to establish causality. However, this is both a strength and a weakness of mediation analysis. Jose claims that it is a weakness when using just concurrent, or cross-sectional, data because the relationship between the variables in concurrent data are just correlational relationships, and “correlation is not causality” (2013, 125). Jose (2013) contends that what cross-sectional mediation analysis indicates is the amount of shared and unique variance among the independent, mediation, and dependent variables. Thus, results from the cross-sectional mediation analysis may hint at, but will not be specific enough to demonstrate that a causal relationship may or may not present in the observed correlations.

Jose makes this claim by drawing on the discussion of mediation through time as addressed by Cole and Maxwell (2003; 2007). Their papers examine mediation with longitudinal data and make several key points. One of their primary assertions is that due to stationarity, one must assume that the causes of the mediation parameters will remain constant for all time intervals of equal duration and stability. In effect, it must be assumed that the nature of each variable would not change over time. However, results from cross-sectional mediation under this assumption are unlikely to provide good estimates of mediation across time. The

reason for this is because it is not easy in social science to assume that we can know for certain which exogenous variables will effect mediation, or that there will be no endogenous reasons for change to occur, especially when one considers the incredible versatility and adaptability of human nature. Thus Cole and Maxwell can easily claim that cross-sectional mediation results will either be overestimations or underestimation of the longitudinal path coefficients (2003).

Timing is another issue drawn from Cole and Maxwell's work. Cole and Maxwell claim that researchers need to synchronize the times that the measurements are taking. If the measurements happen too quickly, then slow developing mediation effects will be missed. On the other hand, if the measurements are taken too far apart in time, the researcher may miss a briefer relationship. Since cross-sectional mediation analysis does not capture the effects across time, rather slowly developing relationships or transient relationships, Cole and Maxwell (2003) argue that it is ill-suited to capture mediation across time, even if making assumptions of generalizations.

Regardless of Cole and Maxwell's claims against the use of concurrent mediation analysis, cross-sectional mediation analysis is still useful to researchers because it allows for the exploration of patterns of shared and unique variance among Cross-sectional variables (Jose 2013). This initial legwork may be worth it before investing in time and financial resources of gathering longitudinal data. Thus, if concurrent mediation analysis proves fruitful at suggesting a causal mediation relationship exists, for example it demonstrates that at least a portion of the basic relationship between the independent and dependent variables is explained by examining the indirect path that travels through the mediation variable, then it may be worth the attempt to gather the longitudinal data to explore the effect over time.

Mackinnon (2008) points out several benefits of longitudinal mediation analysis. One benefit is that longitudinal data can provide more information about the temporal precedence of the independent, mediation, and dependent variables. Thus, unlike cross-sectional data, longitudinal data allows the researcher to observe if changes in the mediation variable are more likely to precede changes in the dependent variable. As discussed earlier, this assures the researcher of the causality direction going from independent variable through the mediation variable, to the dependent variable. Mackinnon assures us that three or more waves (time intervals) of data provides a more accurate representation of the temporal order of change over time, which will lead to more accurate conclusions about the mediation effect (2008, 201).

A second benefit that Mackinnon (2008) describes for using longitudinal data is that both changes within individuals and cross-sectional relations can be investigated. For example, for the three waves present for this study, cross-sectional data can be examined at each wave, as well as changes between the three waves. This might allow the researcher to observe changes that occur within an individual observation that will not be observed among individual observations. For example, the predictors of why one police station has a higher rate of crimes cleared by arrest than others at one time may be quite different from the predictors of why the change in the crimes cleared by arrest for one police station was greater than that for the others.

The third benefit that MacKinnon (2013) points out is, and had already been hinted at in this paper, is that the longitudinal data may address some alternative explanations of cross-sectional mediated effects. For example, Mackinnon points out that one alternative explanation in an observed cross-sectional relationship is the existence of an omitted variable explanation that may explain that relationship, but is not observed or accounted for by the model. Longitudinal data can help remove some of these potential alternatives of yet unseen or unused

variables because the individual scores of each observation may control for some extraneous explanation. Or as MacKinnon puts it, “Change within an individual removes alternative explanations of effects that are due to static differences among individuals because each individual serves as a control for himself or herself. For example, biological factors such as genetics are unlikely explanations for longitudinal relations because these variables are not likely to have changed across waves of measurement” (MacKinnon 2008, 194). An example from an organizational level of analysis, such as this study, may be the size of the police department over short waves since they may not change that drastically over several waves of data due to the financial constraints of the local government. Then again, it might depend on the length of the wave. Whereas two to three years might not demonstrate such a change, depending on the community, an 8-year gap between waves might.

Both MacKinnon and Jose propose that for data with three or more time waves, SEM is the appropriate technique. However, they both offer that regular regression analysis is possible with time waves of two periods. Since I have three time periods and do not use an SEM approach, I examine longitudinal effects over three consecutive sets of time waves, Time 1 to Time 2, Time 2 to Time 3, and Time 1 to Time 3. Thus, the longitudinal model I use is displayed in the figure below:

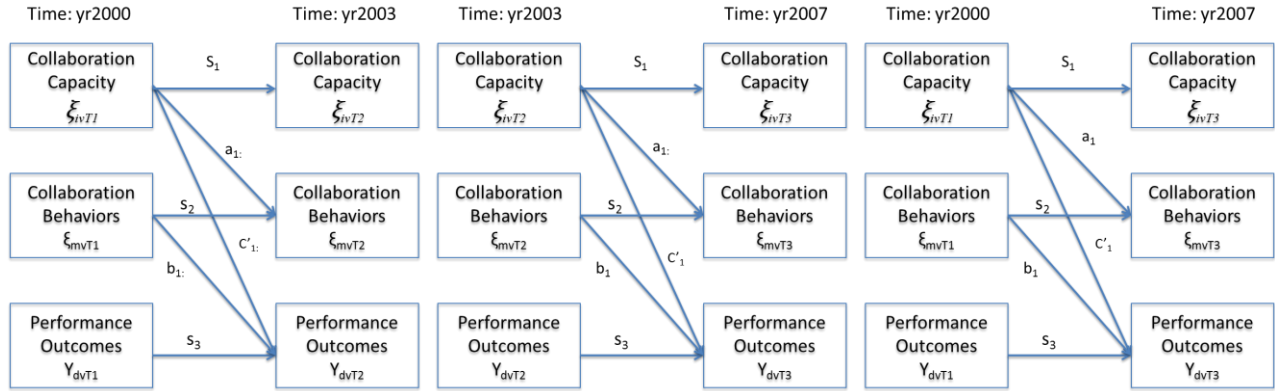


Figure 9: Three Series of Two-Wave Longitudinal Models

The equations that describe this model, as modified from MacKinnon (2008) and Jose (2013) are:

Equation 16: Two Wave Longitudinal Mediation Regression Formulas:

Time Wave 1 (T1-T2):

$$\xi_{mvT2} = a_1 \xi_{ivT1} + s_2 \xi_{mvT1} + e_1$$

$$Y_{dvT2} = c'1 \xi_{ivT1} + b_1 \xi_{mvT1} + s_1 Y_{dvT1} + e_2;$$

Time Wave 2 (T2-T3):

$$\xi_{mvT3} = a_1 \xi_{ivT2} + s_2 \xi_{mvT2} + e_1$$

$$Y_{dvT3} = c'1 \xi_{ivT2} + b_1 \xi_{mvT2} + s_1 Y_{dvT2} + e_2;$$

Time Wave 3 (T1-T3):

$$\xi_{mvT3} = a_1 \bar{\xi}_{ivT1} + s_2 \xi_{mvT1} + e_1$$

$$Y_{dvT3} = c'_1 \bar{\xi}_{ivT1} + b_1 \xi_{mvT1} + s_1 Y_{dvT1} + e_2;$$

In general, each of the above formulas is translated as below using the present variables of this study:

1. Collaborative behavior at time 2 is predicted by Collaborative Capacity at Time 1 and Crimes Cleared by Arrest at Time 1.
2. Crimes cleared by arrest at Time 2 is predicted by collaborative capacity, collaborative behavior, and crimes cleared by arrest at Time 1.

Similar to the concurrent mediation analysis, I will observe the indirect effect from the year 2000 to the year 2003 by examining the product of a_1 and b_1 from above. The indirect or mediation effect can be found for the year 2003 to the year 2007 by examining the product of a_2 and b_2 . Finally, the mediation effect over the entire time from the year 2000 until the year 2007 can be found by examining the product from a_1 and b_2 (Jose 2013, 132-133). The significance and confidence levels can be determined similarly to the concurrent model methods by calculating the Sobel formulas as previously described in the cross-sectional mediation analysis steps above.

While MacKinnon (2008) and Jose (2013) recommend using OLS for the mediation regression formulas in this basic longitudinal mediation analysis, I decided to the negative binomial methods from the generalized linear family of models instead. This is done to compensate and reduce as much statistical bias as possible since SEM approaches are not used. The second reason for using GLM regression formulas is due to the observable kurtosis in the data. According to Hilbe (2011, 223), data with a non-normal dispersion and a variance that is

larger than the means demonstrates more of a Poisson distribution, rather than a normal distribution, and thus should be analyzed with negative binomial models from the general linear family of models. The count data used as the dependent variable measurement exhibits such a condition. In the summary description of my data, all of the variables display an overdispersion. See [figure 5](#) above. Additionally, the variance of each variable is larger than their means. See [table 5](#) below.

Table 5: Means Vs. Variance

Variable	Means	Variance
Crimes Cleared by Arrest	2302.19	20,900,000
Collaboration Capacity: Policy	.012	.247
Collaboration Capacity: Training	.015	.331
Collaboration Capacity: Screening	-.012	.139
Collaboration Capacity: Resources	-.018	.167
Collaboration Practices	-.028	.409

Based on this display of overdispersion, I assume, per Wooldridge (2007), that ordinary least squares will prove less reliable for the longitudinal survey portion of the quantitative analysis. Therefore, I decided to use a regression model from the family of generalized linear models. Specifically, and based on the fact that the variance was larger than the means for my variables, per Hilbe's (2011) recommendation I chose to use the negative binomial method of regression for the longitudinal regression mediation analysis.

Methods utilizing mediation analysis should be very alluring for social science researchers. Mediation analysis supports the search for causation, such as the search for what causes good performance. In collaboration research, adding a third variable to the equation of

how collaboration affects performance draws out the complexities of the collaboration by showing that in situations that are complex more than one factor may be required. Employing methods of mediation analysis serves to simplify those complexities and provide an understanding of the complex relationship that evolves from collaboration and outcomes. To illuminate the complexities of collaboration's effect on police performance in community policing, I demonstrate in chapter four the results of cross-sectional and longitudinal mediation analysis methods to analyze the relationship between collaboration capacity as the independent variable, collaboration behavior as the mediation variable, and crimes cleared by arrest as the outcome variable. However, to expand upon these findings, I implement a qualitative method which I describe below.

Qualitative Methodology Used

To conduct the qualitative portion of this research, I follow a phenomenological approach to understand the phenomenon of collaboration in the context of community policing. This approach takes the perspective of the actors that are involved in community police activities. In accordance with Taylor and Bogdan's (1998) *Introduction to Qualitative Research Methods*, I draw on the participants' perspectives to describe the elements of collaboration and search for the meaning of these elements. Thus, the qualitative section of this study attempts to analyze collaboration's effect on performance outcomes through the experience of the subjects. It also assumes that the important reality of this phenomenon is what the participants perceive it to be.

Since the method is primarily descriptive, it attempts to detail the content and structure of the subjects' thoughts regarding collaboration, to grasp the qualitative diversity of their experiences. According to Giorgi (2008), developing a rich description through this process

allows for the greater understanding of the elementary meanings of the object or objects under study. Following this approach then, I attempt to understand from the participants' experiences and descriptions of those experiences the various ways in which collaboration capacity and their collaboration behavior, as elements of collaboration, affect the outcomes of the collaborative effort altogether. This goal shaped my approach to using semi-structured interviews.

According to Kvale (1996), the researcher as an interviewer can assume one of two metaphorical archetypes. The interviewer either acts as a traveler or as a miner. If following the traveler metaphor, the researcher approaches the subjects of her study from an open perspective using methodologies based on grounded theory. The interviews are open-ended and not tied to any theoretical underpinnings. The interviewer collects data as though traveling on an exploratory expedition. On the other hand, if the interviewer exemplifies the miner metaphor, she approaches her participants with a semi-structured interview that is constructed with the theory already in mind. The interview thus becomes a tool that the researcher uses to dig for nuggets of valuable data to help explain the main elements of the theory she is investigating.

Description of Qualitative Data and Method

The qualitative data sample consisted of forty-three interviews. I collected thirty of the interviews from police officers and thirteen interviews came from community partners. Of the police, three were police chiefs; nine were intermediate leaders in the rank of corporal to captain, and the rest were patrol officers that served as community police officers who served as school resource officers or community police officers. The thirteen interviews from the community partners consisted of a mix of other government agencies, school groups, private business

groups, advocacy groups, and neighborhood associations. The ratio of female to male interviewees was 16 to 27 (37% and 67% respectively).

Given that I was attempting further to describe the elements of the theory of collaboration that my quantitative section does not I approached the interview process as a miner using semi-structured interview questions like a pick ax to draw out and elucidate the hidden characteristics of collaboration capacity, collaboration behavior, and collaboration outcomes. I did this by interviewing the police chiefs, the patrol commanders (or department specific equivalents), line supervisors (or department specific equivalents), line officers. Additionally, I interviewed the community partners involved with community policing, such as advocacy groups, business group, faith-based organizations, other government organizations, other law enforcement agencies, neighborhood associations, senior citizens groups, school groups, or youth service groups, as applicable to each police department in my data.

According to Kvale (1996), issues of reliability and validity are always raised in qualitative research. He indicates that while there is no one standard method accepted in the qualitative field to solve issues of validity and that researchers need to maintain a goal of producing claims of knowledge that are powerful and convincing enough that they demonstrate reliability and validity in their own right. Therefore, I established reliability by developing the questions for the interview through an incremental process. After constructing the questions based on the initial results of the quantitative portion of my research, I conducted three trial interviews. The test interviewees consisted of two graduate students, and one faculty member, all of which had previous practitioner experience as a law enforcement officer in community policing. After each of these trial interviews, I made refinements to the interview questions and estimated the instrument's consistency in measuring the type of information based on the

question I was asking. Confirmation of this reliability estimate was conducted in post-interviews with the test subjects about the final questions list.

In order to establish validity, that the resulting information from the qualitative instrument is true, I included in my interview list other community partners of the police departments selected as a sample for the qualitative portion of this research. The goal was not to try to find discrepancies in the answers that the police subjects provided but to confirm their phenomenological descriptions about the elements of collaboration present in community policing from their perspective. Thus, I was able to provide a more holistic picture of collaboration in community policing by interviewing the community partners of the selected police departments. This allowed me to make an assessment of the accuracy of the picture of collaboration as painted by the interviewees' contextual descriptions of community policing.

I conducted the interviews face-to-face as a first option; however, a couple of times I followed up by email and telephone interviews. On one occasion it was necessary to use a previously recorded video interview of one police chief that was published by his police department, wherein he answered similar questions to my interview protocol. Although this interview was posted to the internet by the police department's public affairs office, I do not identify the name of the police department in order to maintain the condition of anonymity of my participants, as agreed upon in order for me to conduct the necessary interviews.

The questions covered the interviewees' perceptions of the role of collaboration in community policing in general but specifically focused on collaboration capacity development, collaboration behavior decisions, and the effect of those decisions on police performance. Although the quantitative sections used narrow indicators of latent factors representing the independent and mediation variable, and the dependent variable was a specific count data, (i.e.

crimes cleared by arrest), I did not narrow the scope of the factors in the interview questions. In fact, while the semi-structured nature of the interview questions served to focus on the topics of collaboration capacity, collaboration behavior, and performance, it allowed the interviewees to expand the scope of indicators for these three factors. For example, when discussing performance, the interviewees were able, and in all cases did, discuss collaboration's effect on police performance in a broader sense than in just the context of crimes cleared. Thus, the results of the qualitative section not only serve to expand the quantitative findings, but as a platform to launch future research.

Below are the questions I used from the interview protocol broken down by issue: general questions about collaboration and community policing, developing collaboration capacity, collaborative behavior, and lastly, collaboration capacity and collaboration effect on performance:

General questions about collaboration and community policing

1. Can you explain how the collaboration activities your department (organization) conducts in community policing work?
2. Can you explain the specific role collaboration has in these activities?
3. What are the positive aspects of collaboration in community policing?
4. What are the negative aspects of collaboration in community policing?

Collaboration Capacity Questions

5. Can you collaborate in the absence of trust? If yes, how?
6. How important is leadership to collaboration in community policing?
7. How does your department/organization develop collaboration capacity for community policing?

Collaboration Behavior Questions

8. Describe the quality (e.g. nature and strength or weakness) of the relationships between your agency/organization and its partners in the collaboration activities of community policing.

Questions about the impact of Collaboration on performance

9. How does collaboration contribute to the ability of police to accomplish their job in community policing?
10. What else can you elaborate on regarding collaboration, collaboration capacity development, collaboration activities, or the impact of collaboration on organizational performance in community policing?

I provided the above list of questions to each interviewee ahead of the interview. While this presents the list of semi-structured interview questions developed for the interview protocol in order of issue (i.e. capacity, behavior, performance), the interviews did not all follow the order of this script. The “structured” portion of the questions provided the scope of the interview, but the “semi” portion of the interview allowed the interviewer and interviewee follow the discussion where the descriptions of the phenomena provided by the interviewees led. In some instances, depending on what the interviewee responded within opening questions, data for behavioral decisions were elicited before getting to the behavior question of the protocol. Thus, while I constructed the interview protocol as a “semi-structured” interview, I conducted the interview in a facilitated manner using the protocol as a metaphorical hand rail.

Once I collected the data, I analyzed it using Atlas.Ti, a computer-based qualitative data analysis software package. I coded the interviews directly in Atlas.Ti, which has a utility that allows for the direct analysis of audio files. I only made transcripts of excerpts from each

interview that I chose for inclusion in the qualitative results chapter. I developed five families of codes to conduct the analysis. From these families of codes, I used general descriptive codes to identify demographic information from the subject such as race, gender, rank, position, and type of organization. The other four families of codes were based on the four question types presented above that asked general questions about collaboration, collaboration capacity, collaboration behavior, and performance results related to collaboration. I refined and used the last three family codes (*collaboration capacity*, *collaboration behavior*, *collaboration performance outcomes*) to complete the bulk of my qualitative analysis. I conducted several coding attempts, an initial, second coding, and final coding procedure in accordance with the standard qualitative coding practices to narrow down the codes to a level where I could analyze the results (Friese 2014; Saldana 2012). The complete listing of qualitative codes is provided in Appendix B. It is from these coded interviews that I gather the data necessary to explain the observations from the quantitative findings. These family of codes is explained below.

Based on my quantitative research into the theory that the effect of capacity on performance is mediated by behavior, I used a family series of qualitative codes to label each of the pertinent responses to the interview questions. These families of codes were derived from the literature review conducted in chapter two (Fitzgerald 1994; Foster-Fishman et al. 2001; Gazley 2010; Goodman et al. 1998; Getha-Taylor 2008; Lusthaus, Adrien, and Perstinger 1999; Weber, Lovrich, and Gaffney 2007). For example, the code collaboration capacity served as a label for one family of codes depicting capacity development as derived from Bardach's (1998) and Huxham's (1996a) definition of collaboration capacity, which is the potential and inherent ability of organizations to collaborate with other organizations. Subsequent codes that fall into the category of collaboration capacity were modified from Foster-Fishman et al.' (2001) sub-

categories of collaboration capacity in community coalitions: member capacity, organizational capacity, programmatic capacity, and relational capacity. Member capacity included indications of core skills and knowledge, experience, and individual attitude. The organizational capacity code consisted of indicators from the interviews that represented “processes and procedures that clarify staff and member roles and responsibilities and provide clear guidelines for all of the processes involved in collaborative work” (Foster-Fishman et al. 2001, 254). Programmatic capacity consists of policies that provide the capacity to guide the design and implementation of collaboration programs that have real, meaningful impact on their communities (Foster-Fishman et al. 2001, 256). Relational capacity included indicators from the interviews that indicated the development of “the social relationships needed to achieve desired goals” (Foster-Fishman et al. 2001, 251). While each of this code’s categories was represented in the collaboration capacity factors used in the quantitative portion of this research, the semi-structured nature of the qualitative portion of this research allowed for an expanded exploration of collaboration capacity through these sub-categories.

The code family of collaboration behavior consisted of Agranoff and McGuire’s (2001) taxonomy of network management behaviors (activation, framing, mobilization, and synthesizing) modified to the context of collaboration between community partners and police to identify descriptions of collaboration behavior. I coded indicators of the activation categorization of collaborative behavior for interview descriptions that represented the “set of behaviors employed for identifying and incorporating the persons and resources needed to achieve program goals” (McGuire and Silvia 2009a, 39). This set of collaboration behaviors was indicative of environmental framing, activities conducted to understand, explain, and frame the context of the problem environment, and stakeholder identification, the activities associated with

including and excluding relevant parties to the collaboration process. The collaboration behavior of framing, which is “the behaviors used to arrange and integrate a network structure by facilitating agreement on participants’ roles, operating rules, and network values” (McGuire and Silvia 2009a, 39). This behavior consisted of indications from the interview descriptions in which community partners conducted activities to frame the problem in accordance with their perspectives and organizational functions, thus assigning responsibilities to each member for part of the solution. The collaborative behavior of mobilizing consisted of behaviors “used to develop support for network processes from network participants and external stakeholders” (McGuire and Silvia 2009a, 39). Influencing activities typified this type of behavior wherein collaborative parties would attempt to influence each other or their external stakeholders to contribute or affect the collaboration in some manner. I used synthesizing as the final collaborative behavior code. Interview descriptions of this type of collaborative behavior consisted of activity “behaviors intended to create an environment and to enhance the conditions for favorable, productive interactions among network participants” (McGuire and Silvia 2009a, 40). In essence, these were behaviors indicative of active problem-solving through the negotiations of the conditions and parameters in which the collaborative activity took place.

The final code family, relevant to the research question, consisted of collaboration performance outcomes. To label indications of collaboration performance effects, I use a modified version of Imperial’s (2005) categorization of collaboration performance to capture descriptions from the interviews about the effect of capacity and behavior on performance outcomes. Under this family of codes, the following codes were used to label descriptions provided by the interviewees regarding collaboration: outcomes/effectiveness, outputs, efficiency, productivity, service/citizen satisfaction (Imperial 2005, 396). I used the code

“outcomes/effectiveness” to label interview descriptions that indicated the extent of which interviews described how the combination of collaboration capacity and associated behaviors led to goal attainment and achievement of the desired effect, or not. I used the code “outputs” to label indications of the work performed or service provided by the police in the community policing activities. Efficiency coded onto interview descriptions that indicated a monetary expense for community police activities that related to collaboration. The productivity code labeled interview descriptions that indicated combined dimensions of efficiency and effectiveness as a single indicator of collaborations effect in community policing. Lastly, service/citizen satisfaction indicated the extent to which citizen / community partners felt that their needs were met/ or that the collaboration effort enhanced the quality of service provided by the police in some manner.

Once the coding of indicators from the interviews was complete, the analysis consisted of using the networking view procedure in Atlas.Ti to view the associated terms, subjects, or interviews that displayed a connection from the capacity to behavior, and from their behavior to performance outcomes. I present the results of this analysis in chapter five.

In this chapter, I have outlined the data used for my investigation. I have also described the explanatory sequential mixed methods approach used to analyze that data. The results of the quantitative analysis will follow in chapter four. The results of the qualitative analysis will follow in chapter five. I will present a combined interpretation of both sets of analyses in chapter six.

Chapter 4: Results of the Quantitative Analysis

Chapters one, two, and three told the what, the why, and the how of this study respectfully.

These three chapters demonstrate that the study of collaboration's effect on performance is important to practitioners as well as academics. They illustrate that collaboration is a resource intense endeavor that under some circumstances leads to lower performance and the failure to achieve performance outcome goals. According to the literature, scholars have primarily studied its elements incrementally and seldom in a holistic fashion that accounts for all of the elements together, exposing a lacuna in the research to study each element thoroughly together empirically. This gap often leaves one element of collaboration or the other in a black box. This study applies mediation analysis using multiple regression methods to implement that analysis by hypothesizing the effect of collaboration capacity, a pre-condition element, as mediated through collaboration behavior, the process element, on performance, the outcome element to study the impact of collaboration on performance and the resultant outcomes.

This chapter provides the results of that quantitative analysis in three sections. It begins with a description of the results from basic cross-sectional mediation analysis of the time periods 2000, 2003, and 2007. It determines in the data set used if the basic conditions, as spelled out by Baron and Kenny (1986), are met to conclude that mediation occurred. Namely, it observes to see if a statistically significant relationship exists between the independent variable and the dependent variable (i.e. the total effect) during each time period. Then it observes to see if a statistical relationship between the mediation variable and the independent variable exist. Then it observes to see if the statistical relationship between the independent and dependent variables is reduced when introducing the mediation variable into the analysis through an indirect effect (i.e. mediation effect). Lastly, the analysis determines the size of the reduction due to the

mediation effect, the strength of the reduction, and if the reduction is statistically significant or not for each year in the data set. After this description, this chapter interprets of the results using the extant knowledge in the literature about the effect of collaboration, collaboration capacity, and the practice of collaboration on performance.

In the second section, I review results from the quantitative analysis from the longitudinal mediation analysis. I interpret collaborative behavior's mediation effect on the relationship between collaboration capacity and performance outcomes over time. The third and last section of the chapter discusses questions left unanswered by the quantitative analysis and sets the context for the qualitative portion of the study in chapter five.

Cross-sectional Mediation Analysis

The first step in the basic cross-sectional mediation analysis is to determine if the pre-conditions as described by Baron and Kenny (1986) are met. This procedure requires confirming if there is a statistically significant relationship between the independent variable and the dependent variable, known as the total effect. Then it requires determining if the coefficient between the independent variable and the mediation variable is statistically significant. Lastly, it requires determining if the mediation variable has a statistically significant relationship with the dependent variable when included as the independent variable, or if the relationship observed in the total effect between the independent and dependent variables reduces in size and significance. I determine the first two conditions by conducting a Pearson correlation matrix which demonstrates the zero-ordered correlations and the statistical significance between all three sets of variables, in accordance with MacKinnon's (2008) and Jose' (2013) recommendations. Tables 6 and 7 below show the results of the zero ordered correlations for the

independent variable (X), mediation variable (MV), and dependent variable (Y) from all three time periods. The first set of tables demonstrates the results using the count data from the dependent variable. This table provides confirmation for the first step in the process of the longitudinal mediation analysis in this study that I conduct later in this study. The second set of tables demonstrates the results using the transformation of the dependent variable via the Box-Cox log transformation method and completes the first step for the cross-sectional mediation analysis discussed in the next section.

Table 6: Zero- ordered Pearson Correlation table using Count Data

Zero-Order Correlations of IV, MV, DV (Count) for 2000 Cross-sectional Mediation				
	Crimes Clrd by Arrest	Collaboration Capacity	Collaboration Practice	
Crimes Clrd by Arrest				
Pearson Correlation	1	0.1867***	0.2180***	
Sign. (two-tailed)		0.0000	0.0000	
N	665	665	665	
Collaboration Capacity				
Pearson Correlation	0.1867***	1	0.4395***	
Sign. (two-tailed)	0.0000		0.000	
N	665	665	665	
Collaboration Practice				
Pearson Correlation	0.2180***	0.4395***	1	
Sign. (two-tailed)	0.0000	0.000		
N	665	665	665	
Zero-Order Correlations of IV, MV, DV (Count) for 2003 Cross-sectional Mediation				
	Crimes Clrd by Arrest	Collaboration Capacity	Collaboration Practice	
Crimes Clrd by Arrest				
Pearson Correlation	1	0.10**	0.22***	
Sign. (two-tailed)		0.009	0.0000	
N	665	665	665	
Collaboration Capacity				
Pearson Correlation	0.10**	1	0.47***	
Sign. (two-tailed)	0.009		0.000	
N	665	665	665	
Collaboration Practice				
Pearson Correlation	0.22***	0.47***	1	
Sign. (two-tailed)	0.0000	0.000		
Zero-Order Correlations of IV, MV, DV (Count) for 2007 Cross-sectional Mediation				
	Crimes Clrd by Arrest	Collaboration Capacity	Collaboration Practice	
Crimes Clrd by Arrest				
Pearson Correlation	1	0.19***	0.24***	
Sign. (two-tailed)		0.0000	0.0000	
N	665	665	665	
Collaboration Capacity				
Pearson Correlation	0.19***	1	.51***	
Sign. (two-tailed)	0.0000		0.000	
N	665	665	665	
Collaboration Practice				
Pearson Correlation	0.24***	.51***	1	
Sign. (two-tailed)	0.0000	0.000		
N	665	665	665	

Correlation level: *.05, **.01, ***.001

Table 7: Zero- ordered Pearson Correlation table using Transformed Data

Zero-Order Correlations of IV, MV, DV (bc1Log) for 2000 Cross-sectional Mediation			
	Crimes Cld by Arrest	Collaboration Capacity	Collaboration Behavior
Crimes Cld by Arrest			
Pearson Correlation	1	0.1441***	0.3698***
Sign. (two-tailed)		0.0000	0.0000
N	665	665	665
Collaboration Capacity			
Pearson Correlation	0.1441***	1	0.4395***
Sign. (two-tailed)	0.0000		0.000
N	665	665	665
Collaboration Behavior			
Pearson Correlation	0.3698***	0.4395***	1
Sign. (two-tailed)	0.0000	0.000	
N	665	665	665
Zero-Order Correlations of IV, MV, DV (bc1Log) for 2003 Cross-sectional Mediation			
	Crimes Cld by Arrest	Collaboration Capacity	Collaboration Behavior
Crimes Cld by Arrest			
Pearson Correlation	1	0.1948***	0.3643***
Sign. (two-tailed)		0.0000	0.0000
N	665	665	665
Collaboration Capacity			
Pearson Correlation	0.1948***	1	0.4672***
Sign. (two-tailed)	0.0000		0.000
N	665	665	665
Collaboration Behavior			
Pearson Correlation	0.3643***	0.4672***	1
Sign. (two-tailed)	0.0000	0.000	
N	665	665	665
Zero-Order Correlations of IV, MV, DV (bc1Log) for 2007 Cross-sectional Mediation			
	Crimes Cld by Arrest	Collaboration Capacity	Collaboration Behavior
Crimes Cld by Arrest			
Pearson Correlation	1	0.2652***	0.3454***
Sign. (two-tailed)		0.0000	0.0000
N	665	665	665
Collaboration Capacity			
Pearson Correlation	0.2652***	1	0.5104***
Sign. (two-tailed)	0.0000		0.000
N	665	665	665
Collaboration Behavior			
Pearson Correlation	0.3454***	0.5104***	1
Sign. (two-tailed)	0.0000	0.000	
N	665	665	665

Correlation level: *.05, **.01, ***.001

The tables above demonstrate that all three correlations are statistically significant at less than the .001 level for both the count and Box-Cox log transformed dependent variable variations.

This finding confirms that the data at hand meets first two conditions for simple mediation analysis. The finding of a statistically significant relationship between collaboration capacity and the performance outcome in this study, represented by crimes cleared by arrest, potentially demonstrates that the additive model I used in my previous research, which resulted in finding no statistical relationship between capacity and performance, may have been misspecified. Alternatively, it could point to the hypothesized condition that, in fact, a mediation relationship exists. Nonetheless, the presence of the significant correlation pattern alone does not provide a causal explanation for how collaboration capacity translates its effect to performance. Nor does it confirm if collaboration behavior mediates the relationship between collaboration capacity and performance outcomes. To determine if what we observe in the data is in fact a mediation effect, we must follow Barron and Kenny's definition of mediation, which states in essence that a variable demonstrates mediation of the total effect if it reduces the size and statistical significance of the basic relationship between the independent and dependent variables. To determine the mediation effect, one needs to conduct two regressions. The first requires that the dependent variable, crimes cleared by arrest, is regressed on the independent variable, collaboration capacity. The second formula includes the simultaneous regression in which the independent variable, collaboration capacity, and the mediation variable, collaboration practice, are both included in the regression model as predictors of crimes cleared by arrest. If the results determine that the size of the coefficient for the collaboration capacity reduce in size due to the inclusion of collaboration behavior, mediation is predicted.

Once complete with these two regressions, I need to test the observed reduction to see if it is large enough to qualify as a statistically significant reduction. To determine this, I apply the Sobel test to verify whether the observed reduction is statistically significant or not.

Additionally, I analyze the overall significance of the mediation by determining if the confidence interval, based on the size of the reduction, includes zero. The mediation effect is determined to be statistically significant if the CI does not include zero, and non-significant if it includes zero (Jose 2013; MacKinnon 2008; Preacher and Kelley 2011).

Once the statistical significance of mediation is determined, my interpretation of the results will be further assisted if we can describe the strength of the indirect effect. In other words, knowing the effect size, or how strong the mediation effect is, will help in understanding the qualitative nature of the mediation relationship. As stated earlier, Baron and Kenny (1986) propose that perfect mediation is obtained if the size of the total effect relationship is reduced to zero. Other researchers claim that this type of mediation is only perfect if the size reduces to zero, and the relationship is no longer significant between the independent variable and dependent variable, given the inclusion of the mediation variable (Mathieu and Taylor 2006). If the size of the relationship does not reduce to zero but remains insignificant, then this represents complete mediation. If however, the relationship reduces to a number above zero and remains significant at a lower level than the total effect, this represents a partial mediation. If the size does not reduce, or the significance does not reduce, then mediation may be ruled out, and moderating hypotheses may be explored (Mathieu and Taylor 2006; Preacher and Kelley 2011).

Since many researchers posit that perfect mediation is rarely if ever found in social science research (Preacher and Kelley 2011), I will describe the results in terms of complete mediation or partial mediation. Complete mediation indicates that the independent variable coefficient is reduced to a non-zero level and insignificant relationship between the X to Y variables occurs after controlling for mediation variable. Partial mediation indicates that an independent variable's coefficient reduces to non-zero size and changes of significance level that

remains statistical significance but at a lower significance level. No mediation indicates that no reduction and no change in the statistical significance of the direct effect relationship between the independent and dependent variables occurred.

I will also use the descriptions of effect size via ratio and proportion and R^2 as recommended by Mackinnon (2008). Recall from chapter three that ratio and proportion measure the differences between indirect, direct, and total effects. Also recall that the R^2 measures compute the amount of variance in the dependent variable as explained by independent variable alone and by the independent variable and mediation variable together. Given that the use of count data requires GLM methods of analysis, thus negating the ability to capture variance data, the rest of my descriptions for the later longitudinal mediation analysis will rely on count version of the dependent variable and negative binomial regression analysis of the pertinent variables for the data sets. The rest of this section will describe the basic cross-sectional mediation results individually for each time period, 2000, 2003, and 2007.

The below diagram, combining a table of results and a figure of the total, direct, and indirect effect, describes the results of the cross-sectional mediation analysis from the year 2000-time period.

2000 OLS Results of Cross-Section Mediation; Box-Cox Log Transformation of the DV

Number of observations = 665					
Mediation Path Results	Coefficient	Std Error	t- Score	P>t-score	95% CI
a coefficient =	1.080	.0939	11.50	0.000	.8953 to 1.264
b coefficient =	4.072	.5354	7.61	0.000	3.021 to 5.124
c coefficient =	7.862	1.343	5.85	0.000	5.224 to 10.499
c' coefficient =	3.465	1.412	2.45	0.014	.6922 to 6.238
Sobel-Goodman	Coefficient	Std Error	Z-Score	P> Z	95% CI (p) (Bootstrap, 10k Replications)
Mediation Test	4.396	.6931	6.344	0.000	2.918 to 5.875
Bootstrap of mediation with 10,000 replications and bias corrected CI reported.					
	Coefficient	Bias	BS Std Error	95% CI(bc)	
Indirect effect =	4.397	-.2329	.7542	3.121 to 6.107	
Direct Effect =	3.465	-.0442	1.328	.9148 to 6.100	
Total effect =	7.862	-.2771	1.362	5.430 to 10.746	
$P_M = .56$; $P_{IE/DE} = 1.26$; $P_{TE/DE} = 2.27$			Effect Size: $R^2 = .06$; $R^2_{Proportion} = .06$		

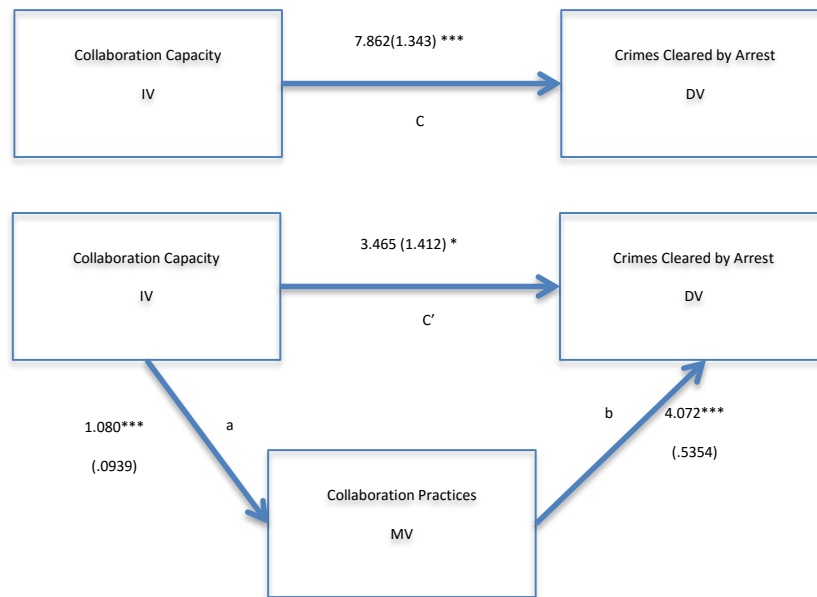


Diagram 1: 2000 Cross-Sectional Mediation Results

To understand the year 2000 cross-sectional mediation results, start by looking at the results of the first regression calculation which determine the significance of the total effect relationship between collaboration capacity and the crimes cleared by arrest. This relationship is illustrated in the top box and line figure, in the middle of the diagram. The “c”, or total effect, relationship demonstrates a 7.862 coefficient that is significant at less than the .001 level. Compared to the results of the second regression formula, the c’, or direct effect, is reduced in size from 7.862 to

3.465 and registers a lower statistically significant relationship that is less than the .05 level, when controlling for collaboration behaviors. Since we observe a reduction in the size of the independent variables coefficient, while all of Baron and Kenney's requirements are met, we determine that collaborative behavior only partially mediates collaboration capacity's effect on crimes cleared by arrest during this time period. That is to say, that even when including the mediation variable, collaboration behavior, collaboration capacity, even though reduced, still retains a statically significant relationship with the performance outcome, crimes cleared by arrest. The question remains, is the reduction significantly large enough to qualify as a statistically significant reduction? I apply the Sobel test to answer this question.

The application of Sobel test reveals that the size of the reduction is statistically significant at less than the .001 level, with a 95% confidence interval of 2.9 to 5.9 determined through bootstrap methods after 10,000 replications. An additional bias-corrected bootstrap procedure confirms the statistical significance of the partial mediation with a 95% confidence interval between 3.1 and 6.1 after 10,000 replications. Based on these calculations, I can claim that the partial mediation effect is statistically significant and thus worthy of further analysis, such as determining the strength of the reduction, or mediated effect.

I determined the strength of the indirect effect by observing that the proportion of the total effect (i.e. the relationship between collaboration capacity and crimes cleared by arrest) is .56. In other words, the indirect effect mediates 56% of the relationship between collaboration capacity and crimes cleared in the general pattern of the relationship observed, or in other words the collaboration behavior explains 56% of the effect capacity has on the performance outcome. 56% seems like a lot; however, the observation of the variance explained by the inclusion of collaboration behavior provides a different perspective.

Two variance measures were observed to measure the variance explained by the mediation effect. The first is the R^2 that explains the localized amount of variance in crimes cleared by arrest explained by collaboration behavior specific to the mediated effect. In other words, it is the variance in crimes cleared by arrest that is common to both collaboration capacity and collaboration behaviors, but that cannot be attributed to either variable alone. From this formula, $R^2 = .06$. The second R^2 measurement is the proportion of variance in crimes cleared by arrest together explained by collaboration capacity and collaboration behavior. From this formula, the R^2 proportion also equals .06. While the difference between 56% and 6% as measurements of effect size seems dramatic, one must remember that the 56% represents the amount of the mediated effect explained between in the total effect, while the 6% represents the amount of variance explained by the total effect is composed of the mediated effect. In conclusion, the cross-sectional data from the 2000-time period reveals that collaboration behavior has a partial mediation effect on the relationship between collaboration capacity and collaboration performance, represented by crimes cleared by arrest. Although only partial mediation is demonstrated, the mediation result is statistically significant and explains 56% of the partial mediation, while 6% of the variance in the total effect between collaboration capacity and crimes cleared by arrest is composed of the indirect/mediated effect.

In turning to the time period of the year 2003, the diagram below describes the cross-sectional mediation analysis results from that time period.

2003 OLS Results of Cross-Section Mediation; Box-Cox Log Transformation of the DV

Number of observations = 665					
Mediation Path Results	Coefficient	Std Error	t- Score	P>t-score	95% CI
a coefficient =	1.303	.1022	12.75	0.000	1.102 to 1.504
b coefficient =	4.599	.5502	8.36	0.000	3.518 to 5.679
c coefficient =	7.002	1.515	4.62	0.000	4.028 to 9.976
c' coefficient =	1.009	1.610	0.63	0.531	-2.151 to 4.170
Sobel-Goodman	Coefficient	Std Error	Z-Score	P> Z	95% CI (p) (Bootstrap, 10k Replications)
Mediation Test	5.993	.8572	6.991	0.000	4.046 to 7.940
Bootstrap of mediation with 10,000 replications and bias corrected CI reported.					
	Coefficient	Bias	BS Std Error	95% CI(bc)	
Indirect effect =	5.993	-.3369	.9934	4.406 to 8.324	
Direct Effect =	1.009	.1467	1.587	-2.003 to 4.221	
Total effect =	7.002	-.1902	1.469	4.288 to 10.120	
$P_M = .86$; $P_{IE/DE} = 5.94$; $P_{DE/TE} = 6.94$			Effect Size: $R^2 = .04$; $R^2_{Proportion} = .10$		

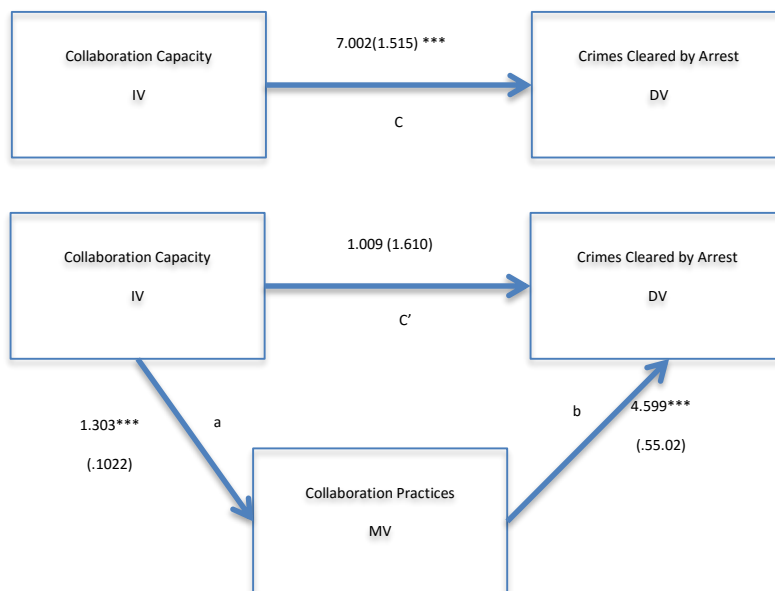


Diagram 2: 2003 Cross-sectional mediation results

In comparison to the year 2000, 2003 demonstrates a complete, if not perfect mediation result. The results demonstrate that the size of the total effect reduces from a 7.0 coefficient, significant at the .001 level, to 1.0 and is no longer statistically significant from zero. The Sobel test demonstrates a statistically significant mediation effect at the .001 level, within the 95% CI of

4.4 to 7.9 after 10k bootstrap replications. The bias-corrected bootstrap calculations after 10k replications further confirm the 95% CI of 4.4 to 8.3, confirming the statistical significance of the observed mediation result. Further, the bias-corrected bootstrap calculations for the direct effect demonstrate that the 95% CI contains a zero, further confirming the observation of collaboration behaviors complete mediation of the results of is complete in that the direct effect's statistical significance is reduced to a level that is no different from that of chance. The finding of a complete mediation effect by collaboration capacity, which renders the effect of collaboration capacity statistically insignificant, conforms with the findings from my original research where collaboration capacity proved insignificant when collaboration activities (i.e. behaviors) were controlled. Further, it provides more evidence leading to a further investigation of a mediation relationship vice a moderation relationship between capacity and behavior, specified by adding an interaction term, as recommended by some earlier reviewers of my research.

The strength of the indirect effect observed in the year 2003 also indicates that collaboration behavior explains 86% of the proportion of the total effect mediated. Further, the variance explained by collaboration capacity alone is now .04; however, the R^2 proportion, the variance explained by both capacity and behavior is now .10. So it appears that the combination of collaboration and capacity and collaboration behavior explains more of the variance in the year 2003 than in 2000, while the model specified for collaboration capacity is able to explain even less in 2003 than in 2000, perhaps further confirming the result finding of complete mediation.

Given the finding from 2000 and 2003, I further expect to find a similar result for the 2007-time period. One that not only conforms to the findings in my original research but that

actually confirms and further explains my original research findings. The diagram below describes the cross-sectional mediational results from that the year 2007:

2007 OLS Results of Cross-Section Mediation; Box-Cox Log Transformation of the DV

Number of observations = 665					
Mediation Path Results	Coefficient	Std Error	t- Score	P>t-score	95% CI
a coefficient =	1.393	.1001	13.91	0.000	1.196 to 1.590
b coefficient =	4.009	.5984	6.70	0.000	2.834 to 5.184
c coefficient =	10.104	1.586	6.37	0.000	6.989 to 13.219
c' coefficient =	4.520	1.747	2.59	0.010	1.089 to 7.952
Sobel-Goodman Mediation Test	Coefficient	Std Error	Z-Score	P> Z	95% CI (p) (Bootstrap, 10k Replications)
	5.584	.9251	6.036	0.000	3.333 to 7.835
Bootstrap of mediation with 10,000 replications and bias corrected CI reported.					
	Coefficient	Bias	BS Std Error	95% CI(bc)	
Indirect effect =	5.584	-.4249	1.148	3.698 to 8.080	
Direct Effect =	4.520	-.2878	1.699	1.406 to 8.106	
Total effect =	10.104	-.7127	1.867	6.899 to 13.99	
$P_M = .55$; $P_{IE/DE} = 1.24$; $P_{TE/DE} = 2.24$			Effect Size: $R^2 = .06$; $R^2_{Proportion} = .09$		

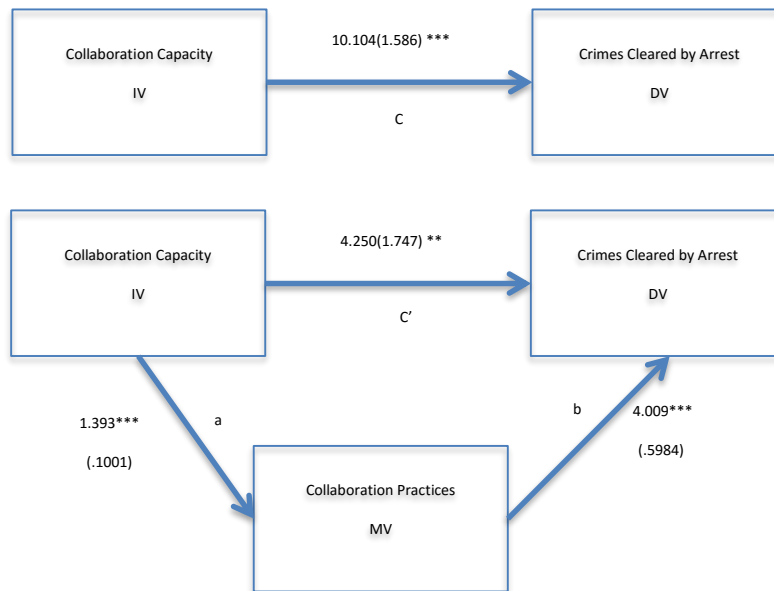


Diagram 3: 2007 Cross-sectional mediation results

Contrary to confirming my results from the last time period and my first research, the results from Year 2007 demonstrate a return to a partial mediation effect similar as during the year

2000. This finding indicates that collaboration capacity retains statistical significance and provides an explanation for the variance of crimes cleared by arrest that it does not in the year 2003. During this year the size of the total effect reduces from a 10.1 coefficient, significant at the .001 level, to 4.25 but remains significant at the .01 level. The Sobel test still demonstrates a statistically significant mediation effect at the .001 level, within the 95% CI of 3.3 to 7.8 after 10k bootstrap replications. The bias-corrected bootstrap calculations after 10k replications further confirm the 95% CI of 3.7 to 8.0. The bias-corrected bootstrap calculations of the direct effect confirm the partial mediation observed since the 95% CI contains no zero.

Just as the results revert to a partial mediation finding as found in the year 2000, the percent of the mediation effect explained by collaboration behaviors also reverts to 55%. Further, the R^2 variance of crime cleared by arrest that collaboration capacity explains is now back at .06. Interestingly, though, the R^2 proportion, the variance explained by both capacity and behavior is still closer to the 2003 level of .10 by registering at .09.

Assuming that my models are correctly specified each year, this raises the possibility again of a moderation effect vice a mediation effect, similar to what reviewers of my previous research in this study suggested. This possibility means that there may be a possible interaction between the independent variable, collaboration capacity, and mediation variable, collaboration behavior. In other words, instead of just an additive effect of collaboration capacity and collaboration behavior, they may jointly have an effect on performance. However, one important assumption in mediation is that the effects of the variables in the formula are additive and not interactive (MacKinnon 2008, 54).

Therefore, to rule out an interaction effect, from the mixed findings in the cross-sectional mediation analysis, I investigate to see if an interaction effect occurs in the model. To determine

if the interaction is present and a factor, I need to observe to see if including an interaction term returns a statistically significant finding. If the interaction term is statistically significant, then the independent and mediation variables will not only have an additive effect on the dependent variable, but they will jointly have a predictive effect on the dependent variable. In terms of this study, if the interaction term of collaboration capacity and collaboration behavior is statistically significant, then the causal path mechanism that operates between collaboration capacity and collaboration behavior to predict crimes cleared by arrest will be in question. Instead, a significant interaction term will indicate that collaboration capacity and collaboration behavior jointly predict crimes cleared by arrest. If the interaction is detected then the Baron and Kenny posit that this is more indicative of a moderated relationship than a mediation relationship (Jose 2013, 23), and recommend that researchers explore the source of this moderation.

Table 5 below, provides a side-by-side comparison of the results of each cross-sectional analysis with and without an interaction term included.

Table 8: Comparative results with and without interaction term

2000 OLS Results of Cross-Section Mediation; Box-Cox Log Transformation of the DV					
Number of observations = 665					
Mediation Path Results	Coefficient	Std Error	t- Score	P>t-score	95% CI
a coefficient =	1.080	.0939	11.50	0.000	.8953 to 1.264
b coefficient =	4.072	.5354	7.61	0.000	3.021 to 5.124
c coefficient =	7.862	1.343	5.85	0.000	5.224 to 10.499
c' coefficient =	3.465	1.412	2.45	0.014	.6922 to 6.238
Sobel-Goodman	Coefficient	Std Error	Z-Score	P> Z	95% CI (p)
Mediation Test	4.396	.6931	6.344	0.000	2.918 to 5.875
Bootstrap of mediation with 10,000 replications and bias corrected CI reported.					
	Coefficient	Bias	BS Std Error	95% CI(bc)	
Indirect effect =	4.397	-.2329	.7542	3.121 to 6.107	
Direct Effect =	3.465	-.0442	1.328	.9148 to 6.100	
Total effect =	7.862	-.2771	1.362	5.430 to 10.746	
P _M = .56; P _{DE} = 1.26; P _{TE} = 2.27 Effect Size: R ² = .06; R ² Proportion = .06					
2003 OLS Results of Cross-Section Mediation; Box-Cox Log Transformation of the DV					
Number of observations = 665					
Mediation Path Results	Coefficient	Std Error	t- Score	P>t-score	95% CI
a coefficient =	1.303	.1022	12.75	0.000	1.102 to 1.504
b coefficient =	4.599	.5502	8.36	0.000	3.518 to 5.679
c coefficient =	7.002	1.515	4.62	0.000	4.028 to 9.976
c' coefficient =	1.009	1.610	0.63	0.531	-.2151 to 4.170
Sobel-Goodman	Coefficient	Std Error	Z-Score	P> Z	95% CI (p)
Mediation Test	5.993	.8572	6.991	0.000	4.046 to 7.940
Bootstrap of mediation with 10,000 replications and bias corrected CI reported.					
	Coefficient	Bias	BS Std Error	95% CI(bc)	
Indirect effect =	5.993	-.3369	.9934	4.406 to 8.324	
Direct Effect =	1.009	.1467	1.587	-.2003 to 4.221	
Total effect =	7.002	-.1902	1.469	4.288 to 10.120	
P _M = .86; P _{DE} = 5.94; P _{TE} = 6.94 Effect Size: R ² = .04; R ² Proportion = .10					
2007 OLS Results of Cross-Section Mediation; Box-Cox Log Transformation of the DV					
Number of observations = 665					
Mediation Path Results	Coefficient	Std Error	t- Score	P>t-score	95% CI
a coefficient =	1.393	.1001	13.91	0.000	1.196 to 1.590
b coefficient =	4.009	.5984	6.70	0.000	2.834 to 5.184
c coefficient =	10.104	1.586	6.37	0.000	6.989 to 13.219
c' coefficient =	4.520	1.747	2.59	0.010	1.089 to 7.952
Sobel-Goodman	Coefficient	Std Error	Z-Score	P> Z	95% CI (p)
Mediation Test	5.584	.9251	6.036	0.000	3.333 to 7.835
Bootstrap of mediation with 10,000 replications and bias corrected CI reported.					
	Coefficient	Bias	BS Std Error	95% CI(bc)	
Indirect effect =	5.584	-.4249	1.148	3.698 to 8.080	
Direct Effect =	4.520	-.2878	1.699	1.406 to 8.106	
Total effect =	10.104	-.7127	1.867	6.899 to 13.99	
P _M = .55; P _{DE} = 1.24; P _{TE} = 2.24 Effect Size: R ² = .06; R ² Proportion = .09					

2000 PARAMED. OLS Results of Cross-Section Mediation; BCllog DV; w/ interaction b1 IV & MV					
Number of observations = 665					
Mediation Path Results	Coefficient	Std Error	z- Score	P>t-score	95% CI
a coefficient =	1.080	.0939	11.50	0.000	.8953 to 1.264
b coefficient =	3.928	.5386	7.29	0.000	2.871 to 4.985
c coefficient =	7.862	1.343	5.85	0.000	5.224 to 10.499
c' coefficient =	3.367	1.409	2.39	0.017	.6005 to 6.135
Interaction =	-4.174	2.005	-2.08	0.038	-8.111 to -2.361
Sobel-Goodman	Coefficient	Std Error	P> Z	95% CI	
Mediation Test	-2.653	2.313	0.909	-4.799 to 4.268	
Residual resampling bootstrap of mediation with 10,000 replications and bias corrected CI reported.					
	Coefficient	Bias	Bootstrap Std Error	95% CI (bc)	
Controlled Direct effect =	-.8062	-.0232	2.214	-5.194 to 3.539	
Natural Direct Effect =	3.353	-.0416	1.330	.7915 to 5.994	
Natural Indirect Effect =	-2.653	-.1532	2.152	-4.383 to 4.086	
Total effect =	3.087	-.1949	2.379	-1.356 to 7.937	
Mediation Effect Significance test after Residual Re-sampling Bootstrap:				Upper:	4.086
				Lower:	-4.383
P _M = .085; P _{DE} = .079; P _{TE} = .92 Effect Size: R ² = .04; R ² Proportion = .10					
2003 PARAMED. OLS Results of Cross-Section Mediation; BCllog DV; w/ interaction b1 IV & MV					
Number of observations = 665					
Mediation Path Results	Coefficient	Std Error	t- Score	P>t-score	95% CI
a coefficient =	1.303	.1021	12.75	0.000	1.103 to 1.504
b coefficient =	4.570	.5526	8.27	0.000	3.485 to 5.655
c coefficient =	7.002	1.515	4.62	0.000	4.028 to 9.976
c' coefficient =	1.092	1.617	0.68	0.499	-.2081 to 4.267
Interaction =	-1.377	2.329	-0.59	0.555	-5.950 to 3.196
Sobel-Goodman	Coefficient	Std Error	P> Z	95% CI	
Mediation Test	4.161	3.197	0.193	-2.106 to 10.42	
Residual resampling bootstrap of mediation with 10,000 replications and bias corrected CI reported.					
	Coefficient	Bias	Bootstrap Std Error	95% CI (bc)	
Controlled Direct effect =	-.2842	.0798	2.692	-5.892 to 4.863	
Natural Direct Effect =	1.107	.1458	1.605	-.2128 to 4.143	
Natural Indirect Effect =	4.161	-.4326	3.013	-1.255 to 10.68	
Total effect =	5.267	-.2867	3.185	-7.667 to 11.70	
Mediation Effect Significance test after Residual Re-sampling Bootstrap:				Upper:	10.68
				Lower:	-1.255
P _M = .79; P _{DE} = 14.6; P _{TE} = 4.476 Effect Size: R ² = .04; R ² Proportion = .10					
2007 PARAMED. OLS Results of Cross-Section Mediation; BCllog DV; w/ interaction b1 IV & MV					
Number of observations = 665					
Mediation Path Results	Coefficient	Std Error	z- Score	P>t-score	95% CI
a coefficient =	1.391	.1001	13.91	0.000	1.196 to 1.590
b coefficient =	3.808	.6053	6.29	0.000	2.619 to 4.996
c coefficient =	10.104	1.586	6.37	0.000	6.989 to 13.219
c' coefficient =	4.646	1.745	2.66	0.008	1.220 to 8.072
Interaction =	-4.645	2.310	-2.01	0.045	-9.180 to -.1088
Sobel-Goodman	Coefficient	Std Error	P> Z	95% CI	
Mediation Test	-1.166	3.459	0.736	-7.946 to 5.615	
Residual resampling bootstrap of mediation with 10,000 replications and bias corrected CI reported.					
	Coefficient	Bias	Bootstrap Std Error	95% CI (bc)	
Controlled Direct effect =	.0018	-.5697	2.775	-4.690 to 6.086	
Natural Direct Effect =	4.686	-.2805	1.707	1.713 to 8.389	
Natural Indirect Effect =	-1.166	-.7682	3.327	-6.937 to 5.934	
Total effect =	3.520	-1.049	3.664	-2.615 to 11.37	
Mediation Effect Significance test after Residual Re-sampling Bootstrap:				Upper:	5.934
				Lower:	-6.937
P _M = .33; P _{DE} = .24; P _{TE} = 1955.56 Effect Size: R ² = .06; R ² Proportion = .09					

The left side of Table 5 presents the results when including the interaction term. The interaction term is significant for the years of 2000 and 2007, at .038 and .045 respectively. However, this significance level is just barely significant, residing below the .05 significance level but not by much. Still, it may indicate a moderation-mediation-moderation pattern instead of a partial-complete-partial mediation relationship. If it is the former, then I will have to significant new theoretical work to determine what explains that pattern. However, since I have the data for all three-factor variables over all three time periods, I can further try rule out a moderation effect by re-doing the cross-sectional analysis with the variables drawn in order from all three time periods. That is, I can set up a quasi-experimental model that looks for both mediation (no interaction term, and moderation (with interaction term) to bolster or refute my hypothesis of a mediation effect.

Quasi-experimental Analysis

By selecting data collected at different points in time (i.e. the independent variable at T1, the mediation variable at T2, and the outcome variable at T3) the order of the variables is constrained to a time sequence order and removes the potentiality of endogeneity that the variables may have if observed only in the cross-sectional analysis. By adding an interaction term in the experiment, I can further identify what may explain the pattern observed in the initial cross-sectional mediation results. If the interaction term is statistically significant, then I will need to explore the phenome from a moderation perspective. If it is not, then the findings will align with the literature on statistical mediation that indicates that mediation inherently assumes a time ordered relationship between the three variables in which the independent variable precedes the mediation variable, and both precede the outcome variable (Baron and Kenny

1986; Cole and Maxwell 2003; Jose 2013; MacKinnon 2008; Maxwell and Cole 2007; Selig and Preacher 2009).

Using the same two regressions from the basic mediation analysis procedures as in cross-sectional mediation analysis and the same product method to derive the indirect effect results in a semi- or quasi-experimental analysis of the data, in which the temporal order of the variables allows for unambiguous analysis of a causal path between the three variables. Further, all of the same test for statistical significance, size, and strength of the mediation effect all still apply (Jose 2013).

The diagram below presents the results from a quasi-experimental temporal ordered placement of the variables, with no interaction term. The analysis took the independent variable from T1 (Year 2000), the mediation variable from T2 (Year 2003), and the dependent variable from T3 (Year 2007).

Results of Quasi-Experimental Mediation; PARAMED. OLS Results of Cross-Section Mediation; bcLog DV; w/no interaction b/t IV & MV

Number of observations = 665

Mediation Path Results	Coefficient	Std Error	z- Score	P>z-score	95% CI
a coefficient =	1.091	.0951	11.48	0.000	.9046 to 1.278
b coefficient =	4.445	.5713	7.78	0.000	3.323 to 5.567
c coefficient =	7.887	1.454	5.42	0.000	5.031 to 10.742
c' coefficient =	3.036	1.526	1.99	0.047	.0399 to 6.032
Sobel-Goodman	Coefficient	Std Error	P> Z	95% CI	
Mediation Test	4.851	.7533	0.000	3.374 to 6.327	
Residual resampling bootstrap of mediation with 10,000 replications and bias corrected CI reported.					
	Coefficient	Bias	Bootstrap Error	95% CI	
Controlled Direct effect =	3.0359	-.0682	1.528	.0347 to 6.075	
Natural Indirect Effect =	4.851	-.3214	.8704	3.478 to 7.026	
Total effect =	7.887	-.3897	1.575	5.075 to 11.09	
Mediation Effect Significance test after Residual Re-sampling Bootstrap:		Upper:	7.026		
		Lower:	3.478		
$P_M = .62$; $P_{IE/DE} = 1.60$; $P_{DE/TE} = 2.59$			Effect Size: $R^2 = .02$; $R^2_{Proportion} = .03$		

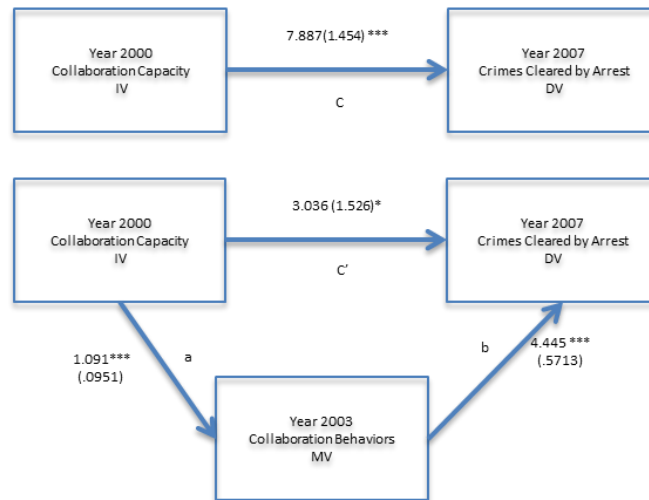


Diagram 4: Quasi-Experimental results w/ no interaction

The pattern presented in the above results again demonstrates a partial mediation effect. By including collaboration behavior as observed in the year 2003, in the path between collaboration capacity, observed in Year 2000, and crimes cleared by arrest, collected in Year 2007, demonstrate a partial mediation effect. This time, collaboration behavior explains 62% of the total effect that collaboration has on crimes cleared by arrest. By including collaboration behavior, the size of the total effect reduces from a 7.9 coefficient, significant at the .001 level, to

a 3.0 coefficient observed in the direct effect capacity has on crimes cleared by arrest, and it is barely significant at the .05 level. The Sobel test still demonstrates a statistically significant mediation effect at the .001 level, within the 95% CI of 3.4 to 7.0 after 10K bootstrap replications. The bias-corrected bootstrap calculations after 10k replications further confirm the 95% CI of 3.7 to 8.0. The bias-corrected bootstrap calculations of the direct effect confirm the partial mediation observed in that the 95% CI contains no zero. While the strength of the indirect effect observed in the quasi-experimental data, indicates that the proportion of the total effect mediated by including collaboration behavior is 62%, the variance explained by collaboration capacity is now .02, and the R^2 proportion, the variance explained by both capacity and behavior is not much larger at .03.

The results from the quasi-experimental result are presented below:

Results of Quasi-Experimental Mediation; PARAMED. OLS Results of Cross-Section Mediation; bcLog DV; w/ interaction b/t IV & MV

Number of observations = 665					
Mediation Path Results	Coefficient	Std Error	z- Score	P>t-score	95% CI
a coefficient =	1.091	.0951	11.48	0.000	.9046 to 1.278
b coefficient =	4.322	.5748	7.52	0.000	3.193 to 5.450
c coefficient =	7.887	1.454	5.42	0.000	5.031 to 10.742
c' coefficient =	2.999	1.524	1.97	0.049	.0077 to 5.990
Interaction =	-3.765	2.146	-1.75	0.080	-7.980 to .4496
Sobel-Goodman					
	Coefficient	Std Error	P> ZI	95% CI	
Mediation Test	.6077	2.498	0.048	-4.289 to 5.504	
Case resampling bootstrap of mediation with 10,000 replications and bias corrected CI reported.					
	Coefficient	Bias	Bootstrap Std Error	95% CI (bc)	
Controlled Direct effect =	-7.656	-.2361	2.465	-5.482 to 4.210	
Natural Direct Effect =	3.015	-.0676	1.535	-.0398 to 6.027	
Natural Indirect Effect =	.6077	-.4832	2.404	-3.596 to 5.959	
Total effect =	3.622	-.5508	2.722	-1.286 to 9.231	
Mediation Effect Significance test after Residual Re-sampling Bootstrap:		Upper:	5.959		
		Lower:	-3.596		
$P_M = .83$; $P_{IE/DE} = .20$; $P_{TE/DE} = 1.20$			Effect Size: $R^2 = .02$; $R^2_{Proportion} = .03$		

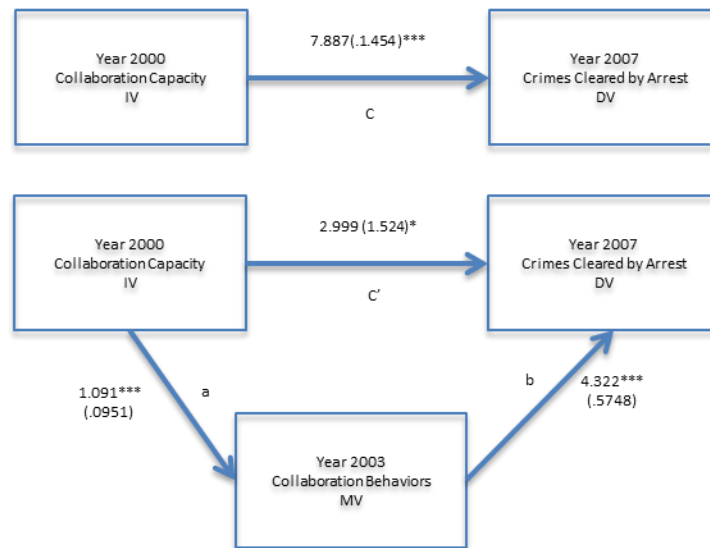


Diagram 5: Quasi-Experimental Results with interaction

Again the pattern of a partial mediation effect is observed. The results are very close to the results observed in the quasi-experimental model with no interaction. The inclusion of collaboration behavior reduces the size of the total effect from a 7.9 coefficient, significant at the

.001 level, to a 3.0 coefficient observed in capacity's direct effect on clearance, and it is again barely significant at the .05 level (i.e. .047).

The largest difference in these results is that the Sobel test no longer demonstrates a statistically significant mediation effect. While the Sobel Z is significant at .048, the confidence interval contains a zero, thus indicating non-significant mediation effect. The bias-corrected bootstrap calculations after 10k replications further confirm the 95% CI of -3.7 to 6.0. Nonetheless, the results indicate that not only is an interaction term not significant, but that by adding it to the model, disrupts the pattern of a statistically significant mediation effect at all. Therefore, this demonstrates that adding an interaction term, and looking for a moderation effect between collaboration capacity and collaboration behavior toward crimes cleared by arrest is not a viable hypothesis.

Based on these results, I would posit that an interaction effect is not involved in the recursive pattern of partial to complete to partial mediation findings. Given that the interaction term is just barely statistically significant in two of the time periods, and not significant in the middle time period of the cross-sectional mediation analysis, and given that the interaction term is not a significant factor in the quasi-experimental model, I would conclude that the effect observed is not due to a moderation. Rather that it is still a mediation effect. Further, I would conclude that the pattern observed is more indicative of a time effect on mediation and that time clearly plays a role in how that mediation effect is presented.

Further, I draw the factor variables that compose collaboration capacity and collaboration behavior indicators from variables at mixed levels. The variables that compose the factor for capacity reside more at the organizational level (i.e. organizational training and recruiting activities) while the behavior factors are composed of individual level variables, such as the

individual officers' active problem-solving initiatives and the officers' ability to incorporate feedback from collaborative partners. Thus, while organizational level activities observed in this data set attempt to build collaboration capacity, individual traits may or may not be affected by those organizational attempts to build capacity. That is to say, individual preferences and willingness may vary and thus collaborative behaviors effect on performance will vary regardless of the organization's attempts to increase the collaboration capacity of the individuals within the organization. This inference, taken together with the varying significance/non-significance levels across the three time periods, leads me to interpret that there is not strong evidence for an interaction effect and push me further to investigate the mediation effect across time.

Taking all of the cross-sectional mediation analyses results together, demonstrates a potential cyclical finding of mediation over time, partial-complete-partial. Therefore, by finding a partial mediation for the time periods of 2000, complete mediation effect for 2003, and again a partial mediation effect during 2007, I am now able to argue that my hypothesis of collaboration behavior's mediation effect in the relationship between collaboration capacity and crimes cleared by arrest is not only supported but supports further time-series investigation. The revolving cross-sectional findings may indicate that while organizations attempt to build collaboration capacity within their personnel, by developing the skills to collaborate or hiring personnel with the requisite skills, the actual use and ways in which those skills are used also matters to the eventual outcomes that the organization expects. Nonetheless, the fact that collaboration capacity demonstrates a positive and statistically significant effect on performance during two of the three time periods observed indicates that public managers still may get a return on investing in either developing or screening for the skills require to build collaborative capacity within their

organizations. How to manage this process in a predictable and efficient manner remains in question.

Additionally, we must remember that the results from the cross-sectional mediation and quasi-experimental analysis presented above are based on strict assumptions about the temporal causal paths of the independent variable leading to the mediation variable and then to the dependent variable. Both the cross-sectional and quasi-experimental models used in this study are prone to omitted variable errors since both models are highly susceptible to alternative explanations not accounted for in the research design. Further, the quasi-experimental model, wherein the manipulation of the independent variable is not done by true experiment, but rather was observed at an earlier point in time than the mediation and dependent variables does not allow for the model to account for the auto-regressive potentiality of each variable, where each variable is regressed on itself as observed in the previous period. Therefore, to rely less on the causal path assumptions necessary in cross-sectional analysis, to account the autoregressive nature of the variables over time, reduce the potential for errors from omitted variables, and based on the results showing variation of the size of the mediation effect at each time period, I look to longitudinal mediation analysis to confirm the pattern of mediation and the hypothesis that time is a factor in the mediation results presented.

Simple Longitudinal Mediation Analysis

As mentioned in the last section and Chapter 3, using concurrent data for cross-sectional mediation analysis, while widely used in the extant literature, suffers from several shortcomings. First, cross-sectional results taken at one point in time require assumptions about causation since all three variables are observed at the same time in equal duration. Secondly, the analysis

requires rigorous assumptions regarding the stability of each variable's mean averages over time, and that the similarity of patterns of variance and covariance will remain in equilibrium over time (Maxwell and Cole 2007). Therefore, identifying shared and unique variances among concurrent variables provides value in identifying mediation effects as long as the results are not exaggerated to imply that they exist in longitudinal applications (Jose 2013). However, given that we observe partial mediation at T1 and T3, and full mediation at T2, and partial mediation using a quasi-experimental set-up that samples temporal draws of each variable suggests that a longitudinal mediation relationship may be present that may be more definitive in terms of causality over time.

As described earlier in chapter three, there are two ways to assess longitudinal data for mediation. One way is by regression methods; the second is by structural equation methods. Given that the data used for this data was opportunistic data (i.e. survey data collected for general purpose analysis), and not collected specifically from a designed study to the mediation analysis, I use the regression means to confirm the presence of the longitudinal relationship. Further, given the discussion on potential bias results in chapter three from using OLS methods for count data in the longitudinal analysis, I switch my method to utilize a GLM method. I plan to use the results to develop a more rigorous structural equation model design in future research. Therefore, I use the regression method used to analyze the longitudinal mediation relationship between collaboration capacity, collaboration practice, and crimes cleared by arrest as describe by Jose (2013, 129) and the Mackinnon's (2008, 199–200) described by figure 9 in chapter 3. Additionally, since I am applying the regression method of the autoregressive longitudinal mediation model, I will analyze the potential mediation relationship over three series of two time periods each composed of T1 to T2, T2 to T3, and finally T1 to T3. The result GLM analysis for

each series of each time span is presented in the tables below. The first time period presented is T1-T2 (2000 to 2003) a three-year time span:

Table 9: 2000-2003 Longitudinal Results

Computation of Effect Sizes for 2000 to 2003 in Three-Wave Longitudinal Mediation Model; Count of DV					
Number of observations = 655					
Mediation Path Results	Coefficient	Std Error	z- Score	P>z-score	95% CI
S ₁ coefficient =	.0002	.00002	10.06	0.000	.0002 to .0002
a ₁ coefficient =	.3474	.0744	4.67	0.000	.2013 to .4936
S ₂ coefficient =	.7166	.0285	25.18	0.000	.6607 to .7725
b ₁ coefficient =	.4927	.0965	5.10	0.000	.3034 to .6819
C ₁ coefficient =	1.088	.2574	4.23	0.000	.5831 to 1.592
C' ₁ coefficient =	.4312	.2416	1.78	0.074	-.0423 to .9047
Sobel-Goodman	Coefficient	Std Error	Z-Score	P> Z	95% CI
Mediation Test	.1712	.0500	3.44	0.000	.0738 to .2686
	Coefficient	Std Error	Z- Score	P>Z-score	95% CI
Indirect effect =	.1712	.0500	3.44	0.000	.0738 to .2686
Direct Effect =	.4312	.2416	1.78	0.074	-.0423 to .9047
Total effect =	1.088	.2574	4.23	0.000	.5831 to 1.592
Proportion of total effect that is mediated (Indirect/Total) =		.16	R ² effect-size of the Indirect Effect= N/A		

For this three-year time span, the results support the hypothesis of longitudinal mediation by demonstrating a complete mediation effect. During this time span the size of the total effect reduces from a 1.088 coefficient .4312 coefficient, and the significance level raises to .074 losing its statistical significance. The Sobel test for the mediated effect demonstrates a statistically significant mediation effect at the .001 level, and the 95% CI falls between .0738 to .2686 and does not include zero in either CI. Finally, collaborative behavior explains for 16% of the total effect observed.

The second time period analyzed is T2-T3 (2003 to 2007) a four-year time span:

Table 10: 2003-2007 Longitudinal mediation results

Computation of Effect Sizes for 2003 to 2007 separately in Three-Wave Longitudinal Mediation Model; Count of DV
Number of observations = 655

Mediation Path Results	Coefficient	Std Error	z- Score	P>z-score	95% CI
S ₁ coefficient =	.0002	.00002	11.98	0.000	.0002 to .0003
a ₁ coefficient =	.2361	.0849	2.78	0.006	.0696 to .4028
S ₂ coefficient =	.7053	.0290	24.32	0.000	.6484 to .7623
b ₁ coefficient =	.3539	.0948	3.73	0.000	.1680 to .5399
C ₁ coefficient =	.9059	.2493	3.63	0.000	.4172 to 1.395
C' ₁ coefficient =	.1395	.2521	0.58	0.560	-.3546 to .6337
Sobel-Goodman	Coefficient	Std Error	Z-Score	P> Z	95% CI
Mediation Test	.0836	.0382	2.23	0.025	.0100 to .1571
	Coefficient	Std Error	Z- Score	P>Z-score	95% CI
Indirect effect =	.0836	.0382	2.23	0.025	.0100 to .1571
Direct Effect =	.1395	.2521	0.58	0.560	-.3546 to .6337
Total effect =	.9059	.2493	3.63	0.000	.4172 to 1.395
Proportion of total effect that is mediated =	.09		R ² effect-size of the Indirect Effect= N/A		

Again the results returned demonstrate a collaborative behaviors complete mediation of collaboration capacity's effect on crimes cleared by arrest over a four-year time span. During this time span the size of the total effect reduces from a .9059 coefficient to a .1395 coefficient, and the significance level raises to statistically non-significant level of .560. The Sobel test for the mediated effect demonstrates a statistically significant mediation effect below the .05 level, and within the 95% CI of .0126 to .1621 with no zero included. This time, however, collaborative behavior only explains 9% of the mediation effect on crimes cleared by arrest, the performance outcome.

What is interesting from these results is that the strength of the mediation effect that collaboration behavior has on the relationship between collaboration capacity and performance outcomes during a four-year time span appears to lower, as compared to a three-year time span.

In fact, the proportion of the mediation effect demonstrates a 44% reduction from T1 to T3. So while, the results support the hypothesis of longitudinal mediation by including collaboration behavior in the model, extending the time span by one year demonstrates that collaboration behavior explains a less proportion total effect on crimes cleared by arrest. Another, way to state this finding is that collaborative behavior explains more of the mediation effect in the shorter time span than in longer time spans.

The third time period analyzed is T1-T3 (2000 to 2007) a seven-year time span:

Table 11: 2000-2007 Longitudinal mediation results

Computation of Effect Sizes for 2000 to 2007 separately in Three-Wave Longitudinal Mediation Model; Count of DV					
Number of observations = 655					
Mediation Path Results	Coefficient	Std Error	z- Score	P>z-score	95% CI
S ₁ coefficient =	.0002	.00002	9.83	0.000	.0001 to .0002
a ₁ coefficient =	.3959	.0697	5.68	0.000	.2590 to .5327
S ₂ coefficient =	.7379	.0267	27.62	0.000	.6855 to .7904
b ₁ coefficient =	.4457	.0932	4.78	0.000	.2630 to .6284
C ₁ coefficient =	1.005	.2455	4.09	0.000	.5236 to 1.486
C' ₁ coefficient =	.4992	.2341	2.13	.033	.0405 to .9580
Sobel-Goodman Mediation Test	Coefficient	Std Error	Z-Score	P> Z	95% CI
	.1357	.0446	3.05	0.002	.0484 to .2231
	Coefficient	Std Error	Z- Score	P>Z-score	95% CI
Indirect effect =	.1357	.0446	3.05	0.002	.0484 to .2231
Direct Effect =	.4992	.2341	2.13	.033	.0405 to .9580
Total effect =	1.005	.2455	4.09	0.000	.5236 to 1.486
Proportion of total effect that is mediated =	.18		R ² effect-size of the Indirect Effect= N/A		

For this seven-year time span, the results continue to support the hypothesis of a longitudinal mediation effect. However, the mediation effect is now a partial mediation. During this time span the size of the total effect reduces from a 1.005 coefficient, significant below the .001 level, to a .4992 coefficient with significant Z-score of .033, less than the .05 level. Additionally, the size of the mediation effect for the seven-year time span now explains for 18% of the proportion

of the total effect. The Sobel test demonstrates a statistically significant z-score of .002 with the CI levels falling between .0484 and .2231 with no zero present, confirming the statistical significance of the partial mediation effect observed. Recall, methodological scholars argue that since outlier variables can significantly deflate or inflate statistical significance test based on P-values alone, one should rely more on the confidence interval over the significance level test of P-values alone when determining the statistical significance of the mediation effects (Preacher and Kelley 2011, 108). Thus, as long as zero does not fall within the CI, mediation is determined to be statistically significant (Jose 2013; MacKinnon 2008; Preacher and Kelley 2011).

Therefore, over a seven-year time span, we now observe a partial longitudinal mediation effect of collaboration behavior on the relationship between collaborative capacity and performance outcomes. So the pattern observed from the longitudinal analysis demonstrated complete mediation at a three & four-year time span, but only a partial mediation at the longer time span of 7 years. Further, the proportion of the mediation effect reduces from the three & four-year time span but expands back to the three-year level during the seven-year time span.

Discussion of Quantitative Findings

Taking into account the totality of the results from the longitudinal analysis of all three series of time spans, I am now more confident in asserting that the results support my proposition. My findings show that there is a mediation effect from collaboration behavior over time on the relationship between collaboration capacity and expected directions of collaboration outcomes as indicated by crimes cleared by arrest. Further, by analyzing several different lengths of time in each time span observed, I can more confidently assert that that mediation effect varies based on length of time span, and thus confirm Gollob's and Reichardt's (1991) contention that size of the

effect depends on the length of the time span. As such, by demonstrating complete mediation in shorter time periods, essentially reducing effect size in mid-range time frames and returning partial mediation in longer time spans, I am able to infer that organizational attempts to develop the capacity of organizational members to collaborate relies heavily on the collaborative behaviors of those members in shorter time spans. Nonetheless, other factors may come into play during longer periods of time. Over longer time spans, seven or more years, for example, other factors besides collaborative behavior of individual, organizational members may come into play that explain how the capacity to collaborate translates into expected performance outcomes. The complete mediation effect observed in shorter time spans could indicate that individual police collaborative behavior translates collaboration capacity into performance outcomes as a result of management's attempts to build organizational capacity in shorter time spans. However, over longer periods of time, other factors may come into play that connects capacity to performance.

Those other factors may have more to do with institutional variables than performance seeking variables. For example, Crank and Langworthy (1992) observed that police organizations are not driven solely by their orientation on performance goals. They posit that "a police department's organization structure and organizational strategies have a great deal to do with the institutional values in its environment and very little to do with production economies or technical capabilities" (1992, 342). Initially, police administrators may adopt organizational strategies that require a short-term application of capacity development that lead to the positive collaboration behaviors of the individual police members. However, to sustain the stability of their core functions while meeting the requirements for external change, such as adopting community policing as a strategy, may require institutional changes that seek to gain long-term

legitimacy and eventual organizational stability. The initial production and performance oriented administrative decisions to build the capacity to collaborate, and thus make community policing successful, combined with the collaborative behaviors of the individual police officers, may be what leads to the pattern of complete mediation in the shorter time span samples. However, the reason why we can observe the patterns of partial mediation over the long run, may be due to more of an institutional explanation such as culture, organization practices, or norms, and thus less of a reliance on individual police behavior.

In summary, we can observe a pattern of partial, then complete, and then partial mediation from the cross-sectional results. This cross-sectional analysis of concurrent data simply confirms the hypothesis of collaborative behavior providing mediation effect that accounts for collaboration capacity's effect on performance outcomes, i.e. crimes cleared by arrest, but further calls for and justifies the investigation of longitudinal mediation effects. Following longitudinal analysis, we observe a pattern of complete mediation of collaborative behavior on the relationship between capacity and performance, during three and four-year time spans, but a partial mediation effect on longer time spans such as seven years. This pattern could potentially mean the collaborative behavior of individual police matters more to transmitting the capacity effects to performance in shorter time periods, than in longer time periods. Further, for longer time periods other mediating factors, such as institutional factors, may be what continues to explain the causal pattern of collaborative behaviors partial mediation of capacity's effect on performance. That is to say, while capacity may provide a collaborative advantage to police departments, as described by Huxham (1996a), that advantage is only realized by the types of collaborative behaviors implemented by the police individually and during shorter time spans rather than longer time spans. For capacity to provide a return as a collaborative advantage over

longer periods of time, institutional factors, such as culture, norms, or rules, may carry more explanatory power than just individual behavior. To confirm this proposition, future longitudinal analysis using structural equation modeling should include institutional factors as well as individual factors. Additionally, to explore how to try to operationalize institutional factors for that future study requires a qualitative approach. Qualitative research of police organizations can provide “a rich detail of institutional dynamics”, whereas quantitative studies, while providing generalizable findings, may fail to “capture the nuance and complexities of institutional processes” (Maguire 1997, 74).

The Qualitative Analysis Requirement

While the quantitative assessment provides evidence of the causal effect of collaboration capacity and collaboration behaviors on the ability of police to perform their expected function to clear crimes by arrest, the quantitative models analyzed do not tell the complete story. In the cross-sectional analysis, the R^2 demonstrates covariance, but at a very low rate. Also, in the longer seven-year time span, partial mediation results indicate that other factors besides just collaborative behavior help explain collaboration capacity’s effect on performance. These observations indicate that while collaborative behavior explains in part collaboration capacity’s effect on performance, there are other possible variables that could also explain the returns on crimes cleared by arrest from collaboration efforts in concurrent data and longitudinal data sets. These other factors may, in fact, be more institutional type variables that the quantitative design of this study not have analyzed. Therefore, my next chapter adopts a qualitative approach to pull out the nuances of the individual behavior factors that demonstrate a mediation effect in the short

term and parse them from the institutional factors that may compose the additional missing mediators from the longer longitudinal time spans.

While this chapter demonstrated that collaboration capacity and collaboration behavior matter to the expected outcomes of performance empirically, it also demonstrates that more information is required to understand how that process works, and what other factors, perhaps like leadership or trust, or other institutional factors, may play a role in that process. This qualitative approach will allow a deeper dive into the cave of the data to unearth the explanations that the numbers in a quantitative research may leave uncovered.

Chapter 5: Qualitative Results

The previous chapter sought to answer the primary research question of this study, does collaboration affect performance. More specifically it explored if the elements of collaboration provide a causal mechanism to enhance or impede performance, and if so, by what mechanism? The results of the quantitative analysis affirmed the hypothesis that indeed, collaboration capacity's effect is mediated through the collaborative behaviors of police and transmitted to the expected performance outcomes, specifically in shorter time spans than in longer time spans. Even though the results supported the initial research question, the findings raise a great deal more questions than they answer. In particular, for the short time spans, it leaves open questions of how exactly do the causal mechanism of collaboration capacity and collaboration behavior working together to transmit collaboration capacity's effect to performance? Clearly, as found in the quantitative results, collaboration capacity leads to collaborative behavior, but what aspects of organizational collaboration capacity development are better at setting the conditions for individual collaborative behavior to mediate its effect toward performance? Moreover, specifically for longer time spans, if individual collaborative behavior only partially mediates capacity's effect, then what other causal mechanisms may be at play?

To provide a descriptive understanding of how collaboration affects police performance in community policing, this chapter explores several of the components quantitatively more in depth. For example, it studies the following components: the general descriptive impact of collaboration on performance, the difference in organizational capacity development through either screening of or training recruits, the role of technology, and the role of time. To broaden the mediated collaboration theory developed in the previous chapters, I also qualitatively explore three additional factors not analyzed in the quantitative section of this study: trust, leadership,

and structure. By exploring these factors qualitatively, I expect to draw out further propositions that my future research may test to answer the question to what else besides collaborative behavior helps to mediate the effect of capacity toward performance outcomes.

As discussed in chapter three, I employed an explanatory sequential mixed methods approach because I had an initial theory in mind driven by the literature review and previous quantitative analysis. However, the data used in the quantitative analysis utilized an opportunity sample that was not structured to answer all of the questions this study specifically explores, nor did it contain data on some topics that the literature review indicated as relevant to understanding collaboration's effect on performance. The raw data present in the sample extracted from the LEMAS survey instrument does not provide enough to help describe the difference between training and screening aspects of capacity development, for example. The data on technology used for community policing is dichotomous, and if left untransformed provides little explanation of how exactly it contributes to enhancing the organizational capacity of police departments to collaborate in community policing activities. All though I was able to establish a longitudinal pattern from the data set used, it lacks a description of how time influences that model. Further, other factors that the literature review indicated as important, leadership, trust, and structure were completely absent from the quantitative data sample and analysis.

Part of the reason leadership and trust are missing from the quantitative data may be that both are hard to quantify. The the survey tool used to develop the dataset, the LEMAS survey, was not focused on measuring those factors but instead was scoped to capture a wide variety of data of interest to several groups of researchers (Hickman 2014). Nonetheless, these missing variables may be better explored through qualitative analysis to discern how they might impact the causal patterns observed in the quantitative data if added to future model specifications.

Given that I identified particular components of interest to explore further qualitatively, I used a semi-structured interview protocol for my qualitative method. Utilizing semi-structured interviews allowed me to conduct an investigation following the general theme of the theory that elements of collaboration demonstrate a mediation relationship to effect performance and provide additional descriptive and explanatory information needed to support and expand my theory for future research. I expect that the results of this qualitative analysis will better explain the partial and complete mediation effects seen in the quantitative analysis and lead to propositions to better predict how and when multiple collaboration factors affect organizational performance over time.

Collaboration's General Impact on Community Policing

To get the interviewees talking in generalities about collaboration and to open up about how they see it affecting the performance of their department, I started the interviews with a general question about how collaboration affects community policing, and asked the participants to describe the positive and negative aspects of collaboration in community policing. I used the secondary question of the positive and negative aspects of collaboration to have the interviewees think of collaboration in terms of its cost and benefit to their practice, and thus hopefully to frame the discussion through the interviews regarding what works and what does not and why. According to Feldman, using this ethnomethodological approach allows researchers to focus on the processes for which people make sense of their situation. By having the interviewees start by explaining the pros and cons of their general perceptions of the phenomena of collaboration in community policing, I predicted that I would be able to illicit descriptions throughout the interview on how the participants perceived the norms for capacity development. I further

assumed that this interview approach would illicit observations on how police sustained or changed their collaborative behavior with and between community based on their relationships to one another.

According to the research specific to community policing, collaboration has had a significant impact on all police officer activities (Nicholl 1999; Reisig and Kane 2014; Rosenbaum 1994). Collaboration with communities is changing how police officers view their role, from reactive to proactive, and how they go about enforcing the law, from passive community participation to active community participation. Generally, departments that implement community policing use collaboration to improve or enhance their operations based on citizen feedback on their departments' effectiveness in solving the problems that concern the community. A tangible example of collaboration's general impact on police is the increased accessibility citizens have to regular patrol officers. This increased access and the pursuant collaboration with citizens that occurs seem to "fully mediate the adverse effects of [organizational] structural disadvantage" (Reisig 2010, 38) in community policing. This finding has led researchers to conclude that "police should work to address crime and disorder by establishing mutual levels of trust, building working relationships with citizens, and strengthening both informal and formal social controls" (Reisig and Parks 2004, 163–164). Despite these findings of the beneficial collaboration effects, researchers still need to investigate the "effectiveness of community collaboration practices—such as increasing foot patrol, establishing community partnerships, and encouraging citizen involvement" to connect these findings to performance measurements such as reduction or prevention of crime (Ekstrand and Kingsbury 2005, 71).

Responses from individuals interviewed in this study confirmed the literature's assessment that collaboration in community policing is making dramatic impacts on the activities of police. Their responses provide more insight into how and why collaboration has this impact. Several interviewees attributed collaboration's positive or negative impact on their organization's performance to either political or departmental leadership. For example, one interviewee reported that increased political concern about racial profiling led to the city council mandating the implementation of Civilian Advisory Boards. This action required an increase of collaboration between community leaders and the police to evaluate issues of perceived racial profiling. Another interviewee stated that the "*command*" emphasis of re-connecting with the community resulted in the heightened use of collaboration by patrol officers. Another effect of collaboration reported by many of the interviewees, congruent with the literature, was the use of collaboration to alleviate resource constraints due to budget decreases. Accordingly, one police chief said that among his neighboring police departments (to include his own), "*those departments that buy into the philosophy of collaboration*" invest more into seemingly wasteful collaborative programs, like DARE, instead of cutting them.

Counter to the literature's contention that there is a lack of evidence that collaborative partnership is effective on crime reduction or preventions, several interviewees reported that collaboration had a huge effect on crime reduction in their communities and districts. For example, one officer reported,

We used all of the community and other government law enforcement agencies to collaborate on criminal activities in various hot spots [around the city], for about 7 days, and this resulted in vast holes of no criminal activity, about 60 days of no criminal activity, afterwards

because criminals were so afraid to do anything, because so many resources were put into that area for so long that it created a vacuum.

In addition to directly connecting collaboration as a cause of increased effectiveness in crime reduction, albeit a temporary effect, the vast majority of interviewees reported that the real general effect of collaboration was its additive effects of helping them do their job better. Many reported that they if they never collaborated with the community, they could still accomplish the goals of their jobs; however, they all confirmed that they would not have been able to accomplish those goals as easily or to the level of performance as they did by using collaboration. This finding aligns with Huxham's (1996a) research regarding the benefits of collaborative advantage. Many of the participants I interviewed cited this advantage as one of the top benefits of collaboration. It further confirms that the capacity to collaborate is viewed as important for police administrators and seen as valuable to developing as part of the community policing organizational strategy.

When asked, all of the interviewees responded with similar descriptions of the benefits and negative aspects of conducting collaboration as discussed in the literature. Each listed the positive benefits as resource sharing, task sharing, and communication facilitation. While the community policing literature indicates that police-to-community collaboration is exceedingly difficult in "high-crime, minority neighborhoods where informal social controls are deteriorating, and trust among neighbors is lacking" (Reisig 2010, 31), several officers and their community partners reported that an additional benefit derived from collaboration was that it resulted in the community having a positive perception of the police and enhanced community relations. Both police and community partners indicated that this "synergistic propaganda" effect made it easier

to find additional community partners from citizens who would have been less inclined to work with the police or volunteer in community organizations. This synergy facilitated both police officers and community partners to activate and mobilize members of the community for police departments. One police officer described this effect in this manner:

To me, the benefits definitely are the community relations building because it allows for networking between us and the business people of the community. Because at the end of the day, all those apartment complexes, or businesses, in my district probably house the majority of the people in my area. It's a large population per capita, and they are going to have daily contact with those people, so it helps me with networking in those communities.

A community activist that participated in the interviews confirmed the synergistic view described by the interview above. She described how in her community the outreach conducted by the police department, such as a six-week summer youth camp implemented by police, greatly contributed to building a relationship with the minority population and convinced other community members to participate more.

In another area, the benefits of this community relationship building provided more social capital when the police were involved in controversial issues, which in other cities have led to mass protests. One senior police official said that due to the community relations his department built over the years, they were able to work through two incidents that occurred within a span of 30 days. On two separate occasions, police were involved in high-speed pursuits of suspected

criminals, and both pursuits resulted in the death of a 65-year old lady in one incident and a 9-year old girl in the other incident. According to the police officer,

Because of the relationship we had built with the community, the community didn't lash out; they kind of took the sit-back-approach because they trusted us and kind of said 'we're going to see how they handle it' ...so I think it allowed us to build the kind of trust where the community doesn't rush to judgment and think 'Oh my God, the police department is off the chain...you know, they're doing things they shouldn't be doing.' And when the Police Chief, at the time, met with the community and told them that she would suspend traffic pursuits until the department could work out procedures to prevent it in the future, that worked, and the community went along with her plan, so it's been a huge benefit to the PD.

In other words, collaboration activities also have a synergistic effect that breeds more collaboration opportunity and provides legitimacy to the relationships that police develop over time. They also indicate that while police administration may focus on developing the capacity of their personnel to carry out such collaborative partnerships, the legitimacy snowballing effect, described above as the synergistic propaganda effect, may demonstrate that once the collaborative relationship gets started, they may continue on in the future, on their own weight. In other words, they create a sense of legitimacy of the police organizations for the citizens and community groups, and vice versa. This legitimacy possibly can take on an institutionalized form of a relationship that, relies less on the personal characteristics of the actors, and leads to a

continuation of the collaborative relationship that transcends the first personal one-to-one relationship initiated by individual police and community members.

The interviewees also described many of the negative aspects of collaboration that matched the extant literature. They described it resource intensive with regards to manpower and time, difficult to agree on a solution, legal or organizational constraints exist that may prevent collaboration, issues with power, authority to decide, and status are present and may impede organizational or individual capacity to collaborate. However, one interesting finding was that positive collaboration outcomes resulted in more work and higher expectations for continued results from the community toward the police. The police viewed this as a negative result because it created an unrealistic expectation that once establishing the collaborative relationship it would be continued indefinitely into the future and for other issues that the police may not be willing to collaborate. The police science literature discusses this issue of increased community expectation stemming from initial community collaboration efforts. According to one report, this expectation may end up taxing the police departments beyond their capability to sustain it due to constraints such as funding or politics (Schneider 2003). One police officer I interviewed described this issue this way:

Our approach was a little too much, and we were doing too much for the citizen, trying to help them if it was law enforcement or not a little too much social work type work. I had one lady who consistently called me to report that a screen door was hanging off the hinge on one of the houses in her neighborhood...and yet she couldn't tell me who owned it, it was occupied, but she expected me to come fix it, and so to me, that goes too far.

Another police officer describes this issue in this manner:

One negative aspect was that community policing got so big, that the department could not utilize community policing. The police department had to readjust based on the community groups; it had to refocus its divisions on larger community groups, and it went from covering three divisions to four divisions, but with the same amount of personnel in the community policing unit and because community policing was so popular with the community, and the patrol divisions couldn't grow, now almost every call has to be assisted by a community police officer so because we grew, CPOs became jack of all trades and masters of none, so we've weakened our capacity.

In this last interview, the police officer went on to state that the police chief tried to make up for the lack of personnel to meet the heightened demand for services by applying for a grant to pay for more personnel. With the hiring of new officers, the department expanded their community policing services; however, as the size of the personnel grew, the community expectations grew proportionally. Then the problem only got worse because after the new personnel was hired the grant ran out and the police department had no way to continue paying their salaries. Not only did the police have to reduce their personnel, but they also had a wider gap in the expected services then they had before hiring the new officers.

The interviews indicate that the heightened expectations of collaboration efforts by citizens from police have a negative impact on performance in that the expectations eventually outstrip

the capacity of the police themselves to respond. This response could further indicate that one performance failure of police administrators is their failure to anticipate and thus plan for a continuation, or the institutionalization, of the collaborative community partnership that their officers' initial actions start. Thus, the collaborative relationship becomes burdensome and appears to fall outside the core function of the police from the individual officers' perspectives. This could lead to a hesitancy on the officers and administrators to continue or develop and nurture that relationship, as the pull back to take stock of their available resources and their perceived police function requirements

These general responses regarding the positive and negative aspects of collaboration in community policing strategies would seem to indicate that based on organizational capacity, there is a point of diminishing returns for the positive benefits of police to community collaborations in community policing and that police administrators need to account for how to manage the growth of expectations. This response points to the way in which collaboration or the emphasis to meet collaboration requirements by developing capacity through the expansion of resources could lead to less capacity if operational maintenance of that capacity is not also focused on by police administration. This response might also indicate that police administrators need to focus not just on the short-term changes expected by adopting grand strategic changes such as community policing, but also on institutional innovations that will capture and sustain the benefits over the long term. Some of those institutional factors could include aspects of trust, leadership, or structure. I will address those factors following a more in-depth exploration of the approaches to collaboration capacity development through screening, training, technology and time.

Developing Collaboration Capacity: To Screen or Train?

The interviews with the police administrators from the three cities demonstrate that all three departments value the need for capacity development within their organizations. To gain a better description of this, I asked interviewees to describe further the ways their organization developed collaboration capacity. This question is an important secondary research question because the collaboration literature indicates that it is incorrect to assume people come to an organization fully capable and willing to collaborate (Smithey, Greene, and Giacomazzi 2000). Therefore, organizations may need to focus more on how the individuals they recruit are developed and assigned to collaborative worked (Mitchell, O’Leary, and Gerard 2015). The question was also important because it helped to illuminate other factors that may serve to transmit collaboration capacity’s effect to performance outcomes.

One of the primary ways organizations, particularly police organizations, develop their personnel is through training. Each of the police chiefs interviewed reported that their departments conducted training as a primary means to develop the collaborative capacity of their police forces for community policing. As the Smallville police chief reported, “*our quality and quantity of recruits are down, so we have to use training to mold good cops.*” A Captain in the Westville Police Department described how his department used training to develop the collaborative capacity in their officers in this manner:

Once we went city wide [with community policing] and recognized that we wanted to invest in this, we started training all the way back in the Academy; we even got officers who were already part of the department back in and re-trained them, and after we had decided this was the direction we wanted to go, then we as an

organization began to embrace it fully by pushing hard and investing a lot of time and energy into training for it.

Despite these interview responses, some police science research indicates that training may not be as effective as thought. For example, Smithey et al.'s (2000) research on the effect of police training on collaboration in dealing with domestic violence indicates that training does not have the hypothesized effect on attitudinal change deemed necessary to develop a desired collaborative domestic violence police unit. Smithey-et-al (2000) claim that this finding is counter-intuitive. Training should have an effect on attitudinal change and should contribute to the change by instilling in trainees the hard to train soft skills that an organization is seeking to instill in its culture. Other research indicates that it may be the type of training that police receives that matters. An example is problem-based training in police training, which proved effective in developing decision-making, problem-solving, and collaboration skills in police trainees (Werth 2009).

Nonetheless, budgetary constraints may prevent some police departments from providing realistic problem-based training. In those cases, police departments may rely on programmatic capacity development techniques such as screening through the hiring process. One major from the Smallville Police Department, who was in charge of hiring for his department, described it this way:

This is what makes [Smallville] pretty, unique, and it is the hiring process. The hiring process is important. The vetting process is pretty significant. In a lot of police departments, you have certain criteria, and then do a background check, but we comb through lie

detector tests, and one of the qualifying requirements is that you can't have any issues or blemishes in character, so you hope to recruit the person with the sound character, 95% of the time.

The Smallville Police Chief reinforced this by indicating that training was only effective at providing the technical aspects of policing, and not the attitudinal change required. His department relied on programmatic capacity development techniques such as screening for values and ethics to account for this required attitudinal change. He explained it as such:

Values and ethics are the most important. I can't train you to be ethical...you are either ethical or you're not...I can train you to do everything else, but morality is in here [pointing to his heart].

The community partners that police organizations collaborate with also rely on screening to develop their capacity to collaborate. One local government employee that often conducts interagency collaboration with the Smallville police department indicated that the reason they city hired her was due to her background in community relationship development and interagency collaboration:

It was made very clear when I interviewed for the position here, that that would be one of my primary goals, to rebuild the relationships and open the doors [with the police department].

When I asked the Centerville Police Chief if his department provided training for collaboration, he said the following:

Most of our training centers on through the process that you go through of how to get a tear a building down, how to start a neighborhood group, how to tag a vehicle, or get it towed we don't actually train our officers on the interpersonal skills, diversity training, or other communication skills as such...but we do have a formal curricula for our officers that get into community policing...It did seem to make a distinction between the patrol officers and the community police officers further contributing to the failure to push the community policing philosophy throughout the department we did apply for a grant to hire an additional two CP officers per district to train regular patrol officers to conduct community policing, but due the mandate to keep our patrol staffing requirements on par with our CP unit ranks as they rose, we had to cancel the grant request.

These quotes lend evidence to the assumption the organizations use screening as a programmatic capacity development tool by either screening for character (i.e. attitude) or skill to provide the right caliber of collaboration in their organizations. So should organizations invest in training to develop their collaboration capacity or screening to develop their collaboration capacity?

The answer to the question above is that it depends, and in some cases, it may be better to do both. For police organizations, in particular, there are several resource constraints to both approaches. Low budgets or structural rule requirements may constrain the ability to train; for example, in addition to Centerville's description of the Union mandate on equity of staffing levels above, each department expressed budget constraints that affected the type of training they

were able to accomplish and meet their goals. In situations where budgetary constraints present obstacles to training, screening through the hiring process may seem the appropriate mitigation unless seniority rules prevent that. Additionally, the organizational structure of the police departments may also present obstacles to screening. For example, in Centerville, the police Chief indicated that because they were union organized all administrative personnel actions were based on seniority and longevity and not merit. Accordingly, he reported, “*We can’t control who we get in the CP unit.*” The discussions from the interviews regarding the role of a structure affecting how a police department develops capacity point to yet another factor that may determine how the effect of collaboration capacity transmits to the performance outcomes.

Regardless, building capacity, either through screening or training, is not easy. Many factors go into whether one approach or the other will provide the desired results that administrators set out to accomplish. It requires a clear commitment from the organizational leadership to resource the development of capacity that demonstrates a wider commitment to support collaborative efforts, than just having individual officers put forth the effort. It requires institutional efforts to support a change to culture, structured resourcing mechanisms, and leader emphasis. In Westville, total commitment to applying both screening and training appeared to work for that police department. Smallville appeared committed to training and screening but relied more on screening. In comparison, Centerville appears to rely on training of individual officers once admitted to the community police unit. However, Centerville police administration has no control over the selection of their community police officer positions. While this study was not designed to evaluate the collaborative effectiveness of the three police departments interviewed, the interview results indicate that capacity development is enhanced or impeded by many external and internal environmental factors that administrators must contend with as they

go about developing the capacity of their organizations to collaborate. More specifically, while developing collaboration capacity may have two simple approaches, the simplicity of selecting one, or both, will be complicated by the organizational and institutional factors present in the police departments' environment. Drawing on this interview theme of facilitating the development of capacity allowed me to investigate other aspects that the literature describes as important to collaboration capacity development, such as the role of technology.

The Role of Technology

From my interviews with the participants in this study, it is clear that technology plays a significant role in both the capacity to collaborate and how that capacity translates to performance outcomes. While questioning participants about other capacity factors, I gained a better description of how the police departments view the role that technology plays in collaboration. Organizational theorists have long proposed that technology changes lead to the way organizations are structured and operate as they search for an appropriate "fit" between technology and organizational structure (Maguire 1997; Woodward 1981). Accordingly, organizations are using information technology as an integrative means to share information and to gain interoperability between organizations in ways that support a greater emphasis on collaboration (Pardo, Gill-Garcia, and Luna-Reyes 2010; O'Leary, Choi, and Gerard 2012).

According to Janet Chan and her colleagues (Chan et al. 2001), police invest in information technology primarily for three reasons. The first is to improve the effectiveness and efficiency of their organizations. The second is to meet the requirements of new forms of management and accountability. Lastly, they invest in information technology to satisfy external demands for information. However, in regards to meeting external demands for information, the

police literature also notes that technology may also cause a greater separation between the community and the police if police become over-reliant on technology for their primary source of information (U.S. Department of Justice, Bureau of Justice Assistance 1994). The technology in the typical squad car today is often laden with in-car computers where officers can enter reports electronically. They monitor cell phones for tips and communication with other agencies and officers. They also simultaneously monitor an array of speed enforcement technology and automated license plate readers. According to Steve Dye, the Assistant Chief of Police, Garland, Texas, the normal patrol officer's task is no longer "as simple as responding to calls over the radio, completing simple handwritten reports, and looking out the window for suspicious activity or circumstances" (Dye 2009). Toward this point, one of the officers I interviewed said that the officers in his department were so dependent on the technology in their cars at one point, that the Native American community started calling them "heads riding in cars" due to their lack of getting out of their cars to interact with the public.

In my interviews with the police departments, I found evidence supporting all three reasons cited by Chan and her colleagues, but with some interesting variations. For example, each of the police departments I interviewed all used some form of information & database sharing technology with interagency partners to be more effective in dealing with crime in their cities. These technologies were similar to the famous CITISTAT program implemented in New York City as described by the NYC Police commissioner, William Bratton (Bratton and Tumin 2012). Both The Smallville and Westville police departments cited the use of information technology as supporting their ability to participate in a statewide task force that brought down a major Auto theft ring.

With the advent of social media, each of the police departments indicated that they were using technology to develop better their community policing techniques. Social media allowed them to not only share information with the community but also as a source to better engage with the community. For example, the Westville police chief stated that they were using Facebook to engage with their citizens and that their officers were also using Twitter ride along feeds. He stated in his interview that his department would continue to invest in technology so they could continue to engage with the citizens in the community. To explain this, he stated:

If you had an opportunity to go to our Facebook, we put a lot of information on our Facebook, we do a lot of Tweeting because it's a way of communicating with our citizens because everyone is into technology there's not a one of us that doesn't have a smartphone and so the more we can do to build those relationships, it's a win-win for everyone.

The Police Chief of Centerville police department indicated that technology was also important because of the need to connect to the younger generation of citizens.

One challenge we have is that older people like getting together to meet at social events to interact, like at our community meeting last night, they had coffee and cake, and we sat around and talked younger people not so much so we have to engage the younger people who use social media because younger people don't like coming to meetings, and we've seen our attendance at neighborhood meetings drop recently, and we don't know which

way the baby-boomers will go once they start to retire. Will they like the social interaction of face-to-face meetings, or will they also rely on social media? So it's a challenge to know where to invest in right now.

Several of the police officers I interviewed also indicated that information technology was serving as a source of transparency to build trust with the community. For example, the use of body cameras was originally purchased as a safety device for the police, but the Smallville police soon learned that it was also a tool that could be used to build trust. As one Smallville police officer stated, *"It was purchased for safety, but I think it's a tool that can be used to build trust with the community because they know that we are recording what is going on, and it provides a source of transparency."* Therefore, in this sense, the information technology is serving as a source of information that allows the community to build trust and confidence in the actions of the police. However, as recent incidents in Chicago and New York City have shown, the use of body cameras and dashboard cameras can also serve as a source of distrust if they record actions that the police try to prevent from being publicized and then later reveal police misconduct. So depending on how police use it, technology can either facilitate or constrain collaboration in community policing. As one police captain I interviewed stated:

We had a city Facebook, but then we found that it was better if we broke it down to neighborhoods to deal with the issues that the citizens related to...we even thought about breaking it down as far as beats, but we found that the issues were broader than just the beats, so we found that keeping it at the neighborhood level was

just right, and Facebook has been good for that...but that's just the first connection and then after that, that's when you make phone calls and start to engage because, again, it's all about the relationship...so as far as technology goes, it's just this jumping off point again it comes back to face-to-face meetings and being able to have that personal conversation so you can have a give and take and really talk things through.

By this account, social media as a source of information technology serves as a bridge to connect the police with the community, but then the same interpersonal skills that make collaboration work are still required. In other words, the presence of information technology may not so much build capacity to collaborate as it may provide an enhancing effect on the ability of organizations to collaborate.

Given the potential for collaboration to further separate the police from the community, as cited earlier, as well as to allow for closer integration, the question about the role of technology further raises the question if the presence of information technology, may actually provide a moderating effect, rather than a treatment effect as assumed by this study's model. Additionally, it leaves open the question if the components of technology used in the quantitative formula for this study might not yield better explanatory power if they were extrapolated from the mediation model as part of the latent component of collaboration capacity and specified as a moderating variable. While studying the role of technology as a moderator goes beyond the current scope of this study, the qualitative results of this study seem to indicate that the institutional factors such as culture and emphasis on using technology for enforcement (i.e.

monitoring speeding systems), or on using technology for engagement (i.e. monitoring Facebook and Twitter to communicate with citizens) helps to enhance the theoretical understanding of how the technology components of collaboration affect performance. It also re-enforces the need to look at technology as a potential moderating variable in future research as part of a mediation-moderation model of collaborative performance because technology may enhance or impede the ability of institutional factors to mediate the capacity of an organization's capacity to collaborate toward its performance.

The Role of Trust

As a component of collaboration capacity, the literature indicates that trust is an internal part of the collaborative dynamics that drive the collaborative process (Emerson and Nabatchi 2015). It is key to the organizing phase of any collaboration effort and to that effort's eventual success (Mitchell, O'Leary, and Gerard 2015). In fact, research on the impact of trust in collaboration indicates that the more trust there is, the more the members of a collaborative effort perceive the effort to be successful in terms of outcomes and outputs (Varda and Retrum 2015). Nonetheless, trust is one of those variables that serve both as an independent variable, dependent variable, and potentially a mediating or moderating variable. Since the quantitative data did not contain information on trust, I rely on the qualitative approach to discerning the role trust has in collaboration as observed in community policing.

Even in community policing research, trust is asserted to be the fundamental component underlying the achievement of success by police in any community or problem-oriented strategy. The literature shows that without trust effective policing is impossible (U.S. Department of Justice, Bureau of Justice Assistance 1994). According to Reisig:

Conventional wisdom states that police-community collaboration is exceedingly difficult to nurture and sustain in high-crime, minority neighborhoods where informal social controls are deteriorating, and trust among neighbors is lacking. Police are viewed negatively, and social institutions are weak. Some might conclude that adopting a community policing approach that relies on citizen input to identify neighborhood problems and citizen involvement in crime reduction and prevention strategies will be doomed to failure (Reisig 2010, 31).

Despite the expected importance of trust, some research seems to indicate that trust may not be as fundamental to collaboration as originally thought. For example, in some communities with racial conflict existing between the community and the police, some community partners were still willing to collaborate with police on community police initiatives even if they did not trust them (Bond et al. 2010; Bond and Gebo 2014).

To better understand this paradoxical finding in the literature, I addressed the question of trust in my interviews from the perspective of “can one collaborate without trust, and if so how?” In response to this question, over half of the interviewees emphatically responded that collaboration requires trust regardless of the circumstances. However, three interviewees responded that they could collaborate without trust, but added caveats indicating that the collaboration would prove useless, or would only work for simple problems but not complex problems. Two of the three interviewees who responded this way said they could collaborate without trust, but that that collaboration would not lead to expected performance outcomes. For example, one police officer stated:

I think you can collaborate in the absence of trust, but I don't think it is effective...we could sit here all day and work on how to solve a problem, but if there is no trust, I think it is going to be ineffective.

Another community activist provided another perspective based on a lack of trust in the system rather than the people:

I think we've done that [referring to collaborating without trust], but I don't think it's useful...take for example the gang graffiti committee task force we had all of the right police, government, and community organizations together...but when you talk about trust. some of us walked into the meeting knowing that we weren't going to get anything accomplished basically. Not because we didn't trust the people, but we didn't trust the system because the last police chief and mayor worked through their assistants to work with us, and we knew they couldn't accomplish what needed to be done so we worked together a lot, but we didn't accomplish much.

What is interesting from this last response, is the distinction made between trusting the people and trusting the system, which is composed of people. In essence, the perspective of the community activist interviewed here indicated that individual trust seems to matter less than the systematic, or institutional factors, which make up the system he is referring to in his response. This response raises the prospect that trust is complex and involves different levels, both the individual, organizational, and perhaps institutional. Given this response, future research will

need to go beyond just the individual factors of interpersonal trust and explore the organizational and institutional factors of trust that set the conditions in the environment where collaboration needs to occur.

In addition to these types of comments, I received responses from less than half of the interviewees indicating that they could continue to work in partnership regardless of the level of trust. These responses represented similar attitudes toward trust as Bond and Gebo (2014) found in their research studying the collaborative efforts of community partners and police in dealing with gangs. In this research, Bond and Gebo discovered that even if the minorities of the community did not trust the police or the other community activist organizations, some community partners would nonetheless continue to collaborate on projects (2014, 384). Bond and Gebo attributed their finding to the history that the local actors had in working with each other.

Many of my interviewees indicated they could collaborate without trust based on the heightened exigency of the situation, the reputation of the organizations, or the implementation of some sort of risk mitigation mechanism. For example, one community business partner indicated that she would still work with the police regardless because her business needed to collaborate more than it needed to have a certain level of trust. When asked if she could work with the police if she knew they were corrupt, she responded that she would probably still work with them. She indicated that she could because the demographics of her apartment complex (which houses approximately more than 1,000 persons in a low economic/high crime area) presented a more pressing need that required her to work with police on strategies to keep the crime down than her concern about having to trust the police. In other words, she decided that

the risk of working with the police outweighed the risk from potential crime in her community presented to her business if she did not collaborate with the police.

A school administrator in Smallville indicated that without trust, the collaboration between him and the school resource officer (SRO) assigned to his school would decrease. However, for crisis response incidences, he would work with the SRO to respond to the situation even if he did not trust the SRO. Nonetheless, he indicated that if he did not trust the police officer assigned to his school, then outside of crisis situations he would have to limit the things he could communicate with the SRO, and before doing any collaboration would conduct a deliberate risk assessment. The school's SRO confirmed this opinion, indicating that he thought his school's cooperation with him might have been purely utilitarian. The SRO stated, "*because of the nature of our work; there are times where they may think 'I may hate the police, but there are times when I will need them...so I better work with them.'*"

Community partners for the Smallville police department indicated in their interviews that while they may not explicitly trust the police department enough to collaborate with them outright, the organizational reputation of the police department was enough for them to work with them nonetheless. One business community partner of this police department indicated that she had worked with the Smallville police department for over ten years and that their organizational reputation provided the basis for trust even if the personnel and leadership at the department changed over time. When I asked the police chief about this, he described the reason for this in this way:

Historically, the [Smallville] Police Department is thought of very highly in this town, throughout the metropolitan area, and we have a good reputation throughout the United States, so we are able to

accomplish a lot of things based on the respect that we have built on from the past...[in the same sense] if we are working with someone or an organization we have never worked with before, I'll ask them, 'have you ever done this with another police department, and if they say yes, then I'll call that police department and ask about the reputation of the organization.

What is interesting about this finding is it indicates that trust over the long term may rely more on the organizational reputation than on the individual relationships or behaviors of the officers. The Smallville police department turnover rate is similar to the national average of 14% (Orrick 2005), and several of the police I talked to indicated that the turnover rate among their community partners was extremely high. So it begs the question, with so much turnover how can the community organizations continue to trust the police if they may not know them personally. If the organizational reputation and the history of the police department are the answer as proposed by Bond and Gebo, then this points to another institutional characteristic that may explain the continued ability of organizational capacity to effect performance in long time spans when the individual behavior of officers does not fully explain it. The time to develop a history of the relationship between community partners and police may have more to do with the culture and organizational reputation of the police than the individual members. I will explore this proposition in the future research that I will conduct in this line of inquiry.

Another SRO in a different community indicated that collaboration could occur without trust because that was the expected function of both organizations...the school district expected the Principals to work with the police, and the Police administrators expected the SROs to work

with the school. The SRO cited an example of a new principal that came from a school district that did not have a relationship with the police department. She stated that “*given her role as the principle, and my role as the SRO, she just worked with me...and it was one of those things where you work together until you figure out each other’s personalities.*” A community police officer, from Westville, described it this way:

Well, we all have a job to do out here so we [referring to other government agencies] all know that there doesn’t have to be a trust factor to say, ‘you know I have this problem’ ...because we know that each person [agency] has a job to do, and we know eventually, we all have to help get that job done.

The police chief from Centerville, described working without trust, particularly when working with other government agencies in this manner:

I think that when you talk about other law enforcement agencies or other government agencies, you may not know somebody, but you may think ‘hey, the call sounds right’ ...and you just go ahead and do it.

With regard to building trust in the community, the Centerville police chief stated:

You know, that is the more difficult part when you are talking about building trust with the community where you may not have had it, or where they don’t trust you, but you have to start the collaboration, you have to start working together first to build the trust.

Similar to those who responded affirmatively to being able to collaborate without trust emphatically, those who provided conditions based responses to this question also added the caveat that some sort of risk assessment, or risk mitigation mechanism was required for collaboration to work without trust. The police chief from Smallville, described the risk assessment of his department by asking:

You know, if we enter into the collaboration [regarding a community anti-graffiti task force] what is the worst that could happen...absolutely nothing...there is nothing that we could predict that would be bad about this deal, so we did it..."

Another senior-ranking officer from Smallville indicated that the collaboration without trust could occur based on the situation and individual police judgment, for example, he stated:

You probably could [collaborate without trust], I guess based on like soldiers' experience in Iraq, you could do so, yes, depending on the conditions and situations...but probably more based on the individuals than organizational reasons...because police officers have the experience of working with individuals and knowing if they are lying or not...people lie in predictable ways so for instance, if we're working with informants, or a network of informants, we don't implicitly trust them, but we have 'if-then clauses that we rely on when working them..."

An officer from Westville answered the question in this way,

“I think I would answer that question with, if there is no trust there, you have to begin working together to build the trust, you have to start, meaning if you tell a citizen you are going to do something, you better darn do it...and I think a lot depends on how we talk to citizens and how we communicate to them about their issue...and that’s how you start that trust so can you collaborate without trust? Yes, but you have to start doing it, you have to start building it, you have to up the communication to do it...”

Implicit in this quote is the use of additional communication to manage both the citizen expectation and the concern as a form of a risk mitigation mechanism. Further, while the previous quotes indicated that organization and institutional levels of trust could sustain a collaborative relationship over time that may transcend personal relationships, these last few quotes indicate it takes individuals to initiate that trust.

Another senior level police officer from Centerville indicated that collaboration could occur without trust, but would not be very effective in the long run. He elaborated further about how to develop that trust and the necessary steps eventually needed to make that collaboration successful:

I think it would be very difficult; trust is the foundation; it is essential to have any positive outcomes...before you can have trust you have to have communication, before you have communication, you have to have outreach. Before the outreach you have to identify the need and recognize that that need is necessary to what

you are trying to accomplish...it would be very difficult to have a positive collaboration without trust...but it is still possible, because if one is looking at the end result and what the goal is, even if I don't trust you to work with you one-on-one, I can still work with you by leveraging my resources within my venue, while you work your resources from your venue, and as long as we are working toward the same goal together...it is possible to collaborate without trust, just not the most effective way.

This quote contains all the same elements as the other quotes, the need for increased communication, and the implementation of a risk analysis/mitigation to offset the requirements of trust, the importance of organizational reputation; however, he goes further by including the need to not only begin the collaborative work but to begin it based on the mutual interests of the community and police. This quote raises questions about risk, communication, values, interests, and how these issues interact to contribute to positive collaborative outcomes at the individual level and how that transitions to the organizational and institutional level where definitions of trust, collaboration and performance may not be monolithic.

Essentially, the qualitative results about the question of trust demonstrate that trust, via reputation, or some other risk mitigation mechanism, serves to bolster the capacity organizations have to work together over longer periods of time. They further demonstrate that this occurs even when personnel with each organization change over, even if there is no basis for trust, to begin with. It demonstrates that in one sense, the organizational reputation may serve to solidify that relationship; even when the individuals inside the organization change over and no personal

relationships are pre-established. In another sense, even if that reputation is demonstrably lacking, collaborative behavior can still exist, but other risk mitigation mechanisms are implemented to replace the assurances that reputation provides. These qualitative findings appear to match theoretical expectations of how trust is exhibited institutionally through social capital and how that social capital affects the performance of democratic institutions (Rothstein and Stolle 2008).

However, at least one empirical study on the impact of social capital on police performance seems to contradict the above qualitative finding and theoretical expectation from the literature. Robinson (2003) found no statistical relationship between social capital and the police performance in community policing. However, when one looks at Robinson's methodology, one can observe that her sample draws from cross-sectional data covering the summer months from 1996 to 1997. Her findings beg the question of the role that time has in the development of the institutional factor of social capital in building the trust or establishing the organizational reputation that allows for individuals to interact even when there may be no individual confirmation of trustworthiness.

Given the quantitative findings from chapter four of this study, and the qualitative findings above about the impact of trust and reputation to build social capital, it may be plausible that social capital, as an institutional form of trust, may have an impact on community police performance over a longer period. It may turn out that somehow that social capital either builds off of the synergy gained if trust exists, or may even uphold the relationship, if trust is absent. The assumption here, though, is that once operationalized in a longitudinally specified model, researchers could observe an impact from trust assuming that model specifies a latent factor of social capital with indicators of trust and reputation.

The role of Leadership

Leadership was another factor that was absent from the data set analyzed in chapter four. Like trust, leadership is both an independent and dependent variable. Moreover, like trust, this study proposes that leadership may perform either a moderating or mediation effect in its role for collaboration. During the interviews, issues of leadership and capacity development and maintenance of that capacity arose from the discussion on trust in collaboration. According to all the interviewees, leadership is a very important factor to collaboration and lead me to explore its role helping transmit the effect of organizational capacity on to performance.

According to the police science literature, community police officers require leaders, “who understand and support the nature of their assignment and have been trained (or selected) for the capacity to supervise in a manner less rigid than the style of supervision that historically may have been used by the department” (Fridell and Wycoff 2004, 18). According to many of the police, I interviewed for this study; leadership provides vision, prioritization, and facilitation support of community policing activities. They also indicated that leadership provides the authority and legitimacy to the collaborative process.

The police chief from Smallville said that when he first joined the police force, he was not offered leadership training. He never underwent leadership training until his leaders assigned him to an actual leadership role. However, as police chief, intent on making community policing systemic throughout his entire department, he implemented a policy that if an officer stays on after a year, then the department offered the officer leadership training. That leadership training includes facilitation skills, communication skills, and community development skills to support the community policing philosophy. The Smallville police chief describes the reason for his policy below:

Everybody is a community police officer, and everybody is a leader, I don't care if you are a sergeant or patrol officer, take the rank away, every one of my officers is a community leader...and then we give them the discretion to do their job and then we expect them to correct other officers if they are doing something incorrectly in the field the thin blue line of brotherhood is gone we can't operate that way here.

Smallville officers who came to that department after working at other police departments indicated they could sense the emphasis that the administrative leadership of Smallville police department placed on partnering with the community. They could see it in their leaders' efforts to develop collaboration capacity within all of the officers. One officer stated the result of this emphasis in this manner:

I think I really developed my collaboration skills here because of all of the training they give you here...which is completely different from my last police department back in [deleted to maintain anonymity], because I never even met with a manager...I think the difference was in how leadership plays a big role in developing the morale and capacity to do what we need to do.

A Sergeant from Centerville, described why leadership training was so critical in his department:

Leadership is critical...its right up there with trust. The officers have to be independent in thought, knowledge, and ability on their

own. They have to be able to be the chief of police on the street on their own they cannot come with that skill because in their patrol divisions they are treated like the infantry and don't have the discretion to make decision as with here in the community policing unit they have to be trained and the first thing we train them on is where are their resources so they can do what they need to do this is a very macro managed unit, not a micro-managed unit.

These responses affirm findings from the police science literature that leadership is important to the ability for police departments to implement community policing strategies. They also indicate that the role of leadership expands beyond just providing oversight for subordinate officers. The statements emphasize how leadership also provides the vision and prioritization to collaboration activities, and that police administrators infuse leadership in each of the individual officers. To describe the effect of leadership vision, one Sergeant from the Smallville police department described it as a leader philosophy:

I think a leader's philosophy has something to do with it. Chief Harold, who is now the interim Chief of Police for the city of Dodge,³ had one philosophy to treat the public with respect, but there wasn't a lot of emphasis on being proactive, whereas when Chief Watson took over, he was like, 'look, you need to get out in

³ Harold, Watson, and Dodge are both pseudonyms that I use to maintain the anonymity of my interview subjects.

the community and make contact with the people” ...His philosophy was a very aggressive and proactive style.

One of the community business partners to Smallville describe the importance of leader vision to collaboration capacity in terms of setting expectations for performance. She stated, “*Leadership is important for providing the performance expectations and providing the education to everyone on how to meet those performance expectations.*”

Providing the education to the organizational and community partners about how to meet performance expectations is one way of leadership facilitating the collaborative process in community policing. To describe this facilitation, one officer from Centerville described leader facilitation in the police organization as such:

Leadership facilitates the problem-solving process because it breaks down organizational barriers that prevent communication and collaboration...within the community organizations themselves, leadership is also extremely important there was one example of where the leadership of one of the community organization had deteriorated, one gal left and another took over, and the organization almost became a click with the new leader controlling membership and organizational activities

Another police officer from Smallville described it this way:

I think that Leadership plays a key role. From a department standpoint, the leadership supports the ideas of the personnel. Leadership among community partners is also very important,

because if you have a manager who is proactive, that type of leadership sets a standard in the community, but if you have a manager who is not, then that type of leadership won't let the collaboration go anywhere.

A community activist from Westville described leadership facilitation from a grassroots activist perspective. He described one particular organization that worked extensively with the police and other community organizations to work on a project called safe streets.

Safe Streets is a project from [another neighboring town], and they gather hundreds of people together monthly to solve community problems with the police in this project. The key to their success is that they have this guy...I'll call him Barry who could start organizing the 200 some odd groups to form committees to begin working on the problem and that's what you need you need someone that is going to get the first two hundred people organized into committees to solve the problem they are working on and that someone for Safe Streets was Barry, and I always say that down here we don't have that many Barry's to provide the facilitation of process to solve the problems, or we don't have a Barry...so we're always looking for a Barry in our leaders."

Other interviewees indicated that beyond process facilitation, leadership facilitates collaboration by providing either real or symbolic legitimization of the process. A Police Sergeant from Smallville described this issue in this manner:

Leadership is as important as the trust factor, you can't have it work unless the leadership gets behind it...I'll give you an example, in another agency I worked at had a huge gang problem, but the leadership ignored the problem and didn't support any task force work with other agencies or community activist groups...until a threat came in on a police officer from a local gang and then the leadership was like 'what? How did we get this huge gang problem all of a sudden?'

The responses above indicate that not only does leadership facilitate collaboration by emphasizing and describing the need to collaborate, but it also facilitates collaboration by ensuring that the organization's attention stays focused on the problem and by providing top-cover for the officers to conduct the collaboration they need to do to make the effort successful. Further, it is self-replicating, not only in the police organization but also to the community organizations that collaborate with the police. Expanding the leadership capabilities of the individual police and the leadership in the organizations helps to facilitate the effect that collaboration has on performance by all parties to a collaborative effort.

Sometimes police administrators emphasize the importance of leadership in very symbolic ways. For example, the Smallville police chief said in his interview that even though his entire police department operated under a community police philosophy in their various divisions, he still put a Sergeant in charge of their community police program. He did so to make a point to the citizens that someone of significance would work with them and address their concerns. He stated,

The problem we were having was that some of the apartment complexes weren't taking our community policing program seriously, until I put a Sargent in charge, someone with rank and authority to go and talk with their leadership.

This emphasis in Smallville appeared to be working. According to one business manager, I interviewed, the Sergeant put in charge of the program made a world of difference because “*the Sergeant really showed that he cares, and I can tell that he has the authority and is really commanding over his officers, so I can trust things will get done.*”

This element of leadership status also worked to the police's advantage within the structures of their community partners. For example, an SRO indicated that:

When working with the Principal on certain issues, like how to handle students with mental health who are cutters, we have found that sometimes we get more action if we elevate it to the principles boss at the district level and to my boss, a major, and get them talking to each other.

This particular SRO's supervisor confirmed this legitimizing function that the SRO described...but in more symbolic terms...

From my standpoint I tell my officers, 'I support all of your initiatives, you take the ball and run with it'...but what I didn't realize, and this is unfortunate, is that many of the people in the community when dealing with issues with our SROs, don't look at the authority of the police officer as a police officer, unfortunately

too many of them just look at this [indicating the rank on his collar] versus the person who is the police officer...so he invites me to this presentation and all I did was show up and doing nothing more than be a mannequin, if you will, and that opened some many doors for Officer Roy to be able to work so many initiatives with the schools he works with and the district, like how to go forward with our lockdown drills which are a pretty contentious issue believe it or not because the school district sees us as encroaching on their turf..."

Another take away from the description of the role of leadership in the collaboration activities that occur in community policing is that the leadership style observed most in the collaborations that occur is supportive in nature. That seems to be the observation for both the leadership within the police and within the community partner organizations. If the leadership of the police or the community partner do not provide a supportive environment to foster the collaborative relationship, the chances of collaboration capacity to lead to better performance seems to lessen. This finding confirms the leadership style recommended by Fridell and Wycoff above. More than that, though, it points to a type of strategic leadership, as described by Boal and Hooijberg (2000) wherein leaders make strategic decisions for organization stability or change. Where they create and communicate a vision of what the results of that decision will entail, develop the key competencies and capabilities within the personnel of their organizations to implement those strategic level decisions, manage multiple constituencies, select and develop the next generations of leaders to sustain the strategic decisions or make new ones, sustain an

effective organizational culture, and infuse an ethical value system into the organization's culture (2000, 516).

This type of leadership relates to the development of an institutional framework for organizations that extends its impact beyond the near time horizons. As Brent Nevers (2007) argues, given that public managers face a daunting task in trying to manage the networks involved in collaboration, one way to manage this task is to take on an institutional perspective that acknowledges formal rules and informal norms of the social interaction created by the collaborations (2007, 244). If this is so, then leadership development as a norm within the organizations that collaborate could matter strategically over the long run via an institutional perspective. If this proposition is correct, the question then becomes could strategic leadership behaviors account for collaboration capacity's continued effect on the partial mediation findings from chapter four? If so, does it serve as a moderating or mediating variable? Again, this presents another possible direction for future research on this topic. Despite the need for further research on the role of leadership and trust as related to collaboration, both variables contribute to the structure of the police and community organizations involved collaborating with community policing efforts. This finding leads to the next topic qualitatively explored the role of structure.

The Role of Structure

The police literature on community policing indicates that structure matters if collaboration in community policing is to be effective (Maguire 1997; Maguire 2014). From the interviews conducted, I observed two aspects of structure that matter to community policing in the police departments I observed: the internal structure of the police department and the external structure

of the collaborative relationship with community partners. Internal structure matters for how the police department coordinates tasks to accomplish the goals of community policing; whether the department has a specialized unit that has the primary responsibility to conduct community police tasks, or if the tasks made inherent to the core tasks of each officer throughout the organization (i.e. the department has a flat organizational structure regarding community policing). Externally, the structure of the relationship between the police department and its community partners shapes the outcomes of the collaborative efforts; the employ informal or formal structural relationships in an attempt to achieve various outcomes at various stages of the collaborative relationship. For example, many of the interviewees stated that early on, a formal written agreement helped to set the conditions for the collaboration; however, as time went on, the relationship took on a more informal aspect because the formality was too constraining.

The majority of the police science literature on community policing recommends that police departments make community policing a core function for every officer in the department and that they do not establish specialized units to conduct community policing (Reisig 2010, 6). However, what I observed in my interviews is that several environmental factors such as politics, unions, budget constraints, and community interactions affect how each of the police departments structured themselves to handle community policing. Each of the police departments that I interviewed organized for community policing in slightly different ways that had profound effects on their ability to use the element of collaboration capacity to affect performance in community policing efforts.

While all three police departments were union organized, the rules under which their personnel policies operated differed, thus allowing for varying implementation of each departments' collaboration philosophy. For example, Smallville's collaborative philosophy was

extended to everyone in the department. Every officer was considered to be a community-policing officer. However, Smallville managed it through a matrix process where they assigned a Sergeant to be responsible for assigning all officers community-policing tasks, monitoring their progress, and reporting on the community policing performance, while the officers all still reported to their patrol leader or shift leader for their other police tasks. In essence, Smallville police department maintained a regular division hierarchical structure, but it charged all of its police officers with community-policing tasks and assigned oversight for managing those tasks to one police Sergeant.

In Westville, the philosophy of community policing, and thus collaboration, is also pervasive to the core functions of all police officers. The principles of community policing and collaborating with the community are inculcated in all Westville police officers from the start of a police recruit's time in the Westville police academy. Nonetheless, Westville still organized its precincts by specialized community police units and regular patrol units. However, laterally transferring patrol officers into the community police unit is controlled by merit-based selection. Patrol officers have to demonstrate their ability to be successful community collaborators before applying for an open position in the community police unit. Police leadership gives patrol officers the flexibility and authority to implement community police projects on their beats and use those projects as demonstrable examples of their skill in community policing when interviewing to gain access to the community police units of each precinct to accommodate this requirement.

As mentioned earlier by the Westville police captain, the collaborative spirit of community policing is so pervasive in the Westville police department that recruits receive training on community policing in the Westville police academy. Even seasoned community

police officers are brought back to the academy to coach new recruits through real-world problem-solving exercises. These exercises are a mandatory part of the Westville Police Academy graduation requirement.

Contrary to both Smallville and Westville, Centerville Police Department has a highly specialized community police unit. It also has different processes for accession into the community-policing unit. Not only is the community police unit completely specialized, but also the philosophy of community policing resides only within that unit. This means that several cases that required intra- and interagency collaboration are often deferred to the community police unit because normal patrol officers view those types of issues as a community police unit problem. This further leads to overwhelming the capacity of the community police unit to handle all such cases.

This structural design of the Centerville police department community police unit also affects training within the department. The Centerville police chief indicated that all officers have access to training; however, union rules restrict training for community policing to senior police officers, which impacts the personnel policies of the community-policing unit. Due to the strictness of the union seniority rules, only senior patrol officers are afforded the opportunity to assess into the community police unit.

According to the Centerville Police Chief, one result of the specialized structure of the community police unit is that it created an opportunity for the community police officers to contravene department attempts to make policy changes that would have made community policing more pervasive in both the police force of Centerville and in its community. For example, when the new police chief of Centerville wanted to expand the philosophy of community police to all police officers and to change the hours of community police from 8-5 to

2-10 (a time span where he assumed community police would have the most opportunity to interact with citizens), the community police officers thwarted his attempts. They did this by using their close collaborative relationships with their community partners to bring pressure on city political leaders who in turn brought political pressure on the police chief to stop the implementation of the planned policy changes. This example displays the power of collaboration capacity to affect performance in both negative and positive ways and indicates an example of how the elements of collaboration can stymie the positive effects expected due to collaboration (Huxham 2003; Huxham 1996a; Huxham and Vangen 2000a).

From the interviews in which police discussed the role of structure, it is evident that how police departments structure their organizations affects how collaboration capacity transmits its effect through the behavior of its officers to performance outcomes, although it is not clear if in all cases that effect will be positive or negative. In the case of the Smallville and Westville police departments, their open and collaborative structures allowed for the positive effects of collaboration capacity built up in their police force to transmit to their performance outcome expectations. If one expands the performance level to adaptation as Emerson and Nabatchi (2015) do, then the case of Centerville, where its structure allowed the “street-level” officers to prevent attempted policy changes, demonstrates that it is possible that the capacity organizational leaders develop in their personnel may actually lead to negative impacts on performance. Therefore, the internal structure presents another variable that may provide the additional explanation for what else accounts for capacity’s effect on performance as observed by the partial mediation results observed in chapter four.

Additionally, one other effect the internal structure of the police departments had was on the external structure of the collaborative partnerships they developed with community

organizations they collaborated with. The literature indicates that the formality or informality of the collaborative partnerships can also impact the effectiveness of the collaborative outcomes (Lowndes and Skelcher 1998; Powell, Koput, and Smith-Doerr 1996; Ring and van de Ven 1994; Smith, Carroll, and Ashford 1995). Some who have researched this posit that formal collaborative relationships, governed by rules and regulations, evolve over time into informal, in which the rules and regulations are no longer necessary (Ring and van de Ven 1994). This would seem to make sense, in cases where there is no trust, or the issue is complex. A formalized relationship, as expressed in a contract or the agreement of rules and procedures, serves to provide that mechanism of trust necessary for collaboration to exist. However, the interviewees who discussed the formal and informal collaborative relationships that their organizations engaged in indicated that a formal relationship was more desirable in some cases, and in some cases an informal relationship was more desirable, and one form or the other does not necessarily occur in any type precedence.

The nature of community policing, in which police engage with both organized and unorganized groups of citizens may start off as an informal relationship at first to build the initial confidence between the community partners and the police. One police officer from Westville described it this way:

I find that the more informal the relationship is with them; it is a little easier. And it seems like that allows us to build the trust when they start to see the police as real people.

A community activist representing one of the community partners to the Centerville Police indicated that while the formality help set the structure of the relationship, when to meet, what to discuss when meeting, how to proceed in solving a community problem, the informal type of

relationship was also important in order to allow the police and citizens to interact together on complex problem-solving issues without the rules becoming an obstacle.

A police captain from Centerville indicated that his officers assisted the community groups in developing formal rules to run their meetings and how to interact with the police and how they come together to solve problems. However, he expected his officers to maintain an informal aspect to their relationships with the people. His description of the reason for doing so is below:

The groups have to feel some kind of bond with the officer; that there is some kind of shared interest. And they need some kind of informal way to do that, so they can come together and work on problems jointly. If they don't have that, the relationship will deteriorate.

The take away from the interview results in this section is that the formal and informal relationships structures between the police and their community partners are both equally important as described by the interviewees. The formality of the relationships can serve to set the boundaries of interactions, and provide the initial basis of trust. However, the repetitive interaction and problem-solving activities conducted in the collaboration may be better served if the relationship takes on an informal nature. This is because formalization, while it may make interaction between the police and the community more conducive, may not guarantee that relationship will be meaningful, productive, and flexible enough to allow the collaborative partnership to develop innovative solutions to the vexing problems prevalent in the community police environments. Future research will have to account for the qualitative nature of the types of collaborative relationships, and this research indicates that all future research will require

multiple methods fully to capture the results from the research questions. The last aspect more fully explored qualitatively was the role of time. It is to that issue that I now turn.

The Role of Time

As indicated by the results of the quantitative analysis discussed in Chapter 4, time plays an important factor in how collaboration affects performance. The collaboration literature is rife with propositions that relationships take time to develop (Huxham and Vangen 2005). In particular, the collaboration literature speaks a lot to the time it takes to develop the trust essential to collaborative relationships (Vangen and Huxham 2003). The public management literature adds to this that managers need to be aware of the time it takes to manage the tensions developed in partnerships over time (Lowndes and Skelcher 1998). Further, if police managers are using training as a means to develop their organization's capacity to collaborate, they should recognize that it will take time for that training to take effect. As Smithey et al. (2000, 96) point out, “the effects of training [in police departments] may ‘lag’ depending on the level of resistance toward policy and practice changes.”

While chapter four results confirm that the effects of collaboration capacity as mediated by behavior affect performance over time, I used the qualitative interviews to investigate more into how time matters. Several of the police officers and their community partners provided descriptions of this time effect in terms of time to build relationships, the time it takes to build manpower, and time it takes for training effects to build the necessary skills in new officers.

With regard to building the relationship, the interviewees indicated that the development of the collaborative relationship might have more to do with time to develop the experience of the collaborative partners than on the time to develop trust. For example, one high school

administrator stated that “*at the beginning, there was some trust, because of the respect factor, but definitely not to the level it is now.*” To describe this experiential based relationship development requirement, that school’s SRO indicated that the experience of the principals mattered....

Half of the schools are great collaboration partners the principals have been at those schools for several years, so they know what to expect from us and what we can do for them and what they can do with us...the other two are fairly new principals, so it’s been more difficult working with them on building that relationship...it took a little bit longer. The two newer ones are still less likely to call and collaborate with me, but I think it is still primarily due to their lack of experience...they are new, and they don’t want to mess up in front of the superintendent, and most people don’t feel comfortable working with the police anyway, and so these newer principals don’t want to bring us in even though the parents know us and like having us in the school.

Another aspect of time in relationship building is the effect of generational understandings. For example, the police chief from Centerville describe how his department was trying to establish relationship with the youth today so they can have their trust in the future:

When we first started community policing in 1994 the community didn’t trust the intentions of the police department, they were very suspicious. We started with the community leaders, but when we

talk about building trust with people it is better to start when they are young, so we have our SRO's meet with the youth once a week to try to build the relationships, and have ambassadors for the PD in the community. Now we have a stronger relationship with the community based on a longer-term relationship.

Another aspect of time that affects the ability of collaboration to impact performance is when leadership changes over time. While police department leadership changes, for example, the average rate for chief of police changeover is 5.1 years (Rainguet and Dodge 2001), the type of leadership change that may affect collaborative efforts in community police may come more from community leadership changes. When community partners change over time, it causes police to lose the initial relationship built with individual leaders. Since time is required for relationships to build, the turnover rate among some community partners, such as the business partners, contributes to the lag effect of partnership building that the police try to establish in community policing.

It's been a pretty good relationship, but it's been difficult to sustain cause it seems like you build the trust up and you are used to dealing with one person, and they do a good job, then they get sent to a new complex, or they leave or change jobs...so it seems like there is quite a bit of turnover in that area, so sometimes when you get things working good it seems like a lot of times that people leave, or there a few places where they get whole new management, and they don't really know the program and

understand it, so they are hesitant to be a part of it and share information...

This issue may have a huge impact then on the core mission of police departments. In essence, as they wrestle with the dilemma of focusing on developing their internal organizational capacity to collaborate, the police may also take on the mission of community developers to develop the capacity of the citizens they serve to produce those outcomes from their collaborative efforts.

Another time aspect that affects how collaboration may impact performance is the lag in training, as discussed in the literature earlier. While training does have an impact on the skills of the officers, a few of the officers I interviewed made a distinction between what types of training would have an immediate impact on their behavior and which would take longer. For example, one officer said,

I think, at least in my case, the training has to be developed with experience...I mean the physical skills training is immediate, like how to ground fight, but the cognitive skills training takes time to developed...I know in my case I need to go through a trial and error period...

Another said,

I guess... it would be easier if everyone came to the table with that skill set developed, but I think that often it develops over time, based upon your experiences your background, just the things you have had to do with your life, so I think those things do develop over time.

One other officer said,

I think that you do benefit from training immediately, but then cumulatively too, in my personal opinion, experience is the best teacher. You can have all of the best training in the world, but it's not going to mean a whole lot if you don't actually practice when you get out there. But you do go through training, you do acquire some knowledge, and then you go to work, and you put it into practice, and you continue that education and training, and then you keep on putting it to work I know that I'm miles away from where I need to be...

Given the literature's claim of potential results of the problem-based learning, if the training allows for early trial and error, that lag time may be reduced in police training if it is experiential based training. In the end; however, most of the officers I interviewed indicated that it the effect of training or screening came down to individual attitudes and that over time turnover of individual officers in community police units come down to individual fit within the organization and individual acceptance of the philosophy of collaboration within community policing. For example, one officer said:

So we have had people have come in who aren't good at it, who have been able to develop that skill, or at least faked that skill to be able to talk to people, and carry on conversations with people or to build rapport with someone, or we have had people who

couldn't develop that skill, and they don't usually stay around very long....

The take away from the interview responses on time is that over time experience has an opportunity to become the best teacher for the individual officers. While training may have an immediate impact on the attitudinal change of the officers, convincing them that adopting collaborative strategies are useful, they nonetheless should develop the skills to collaborate. However, another takeaway is that since people change out over time, whether it is the police administration leadership or the community organization leadership, something else needs to account for the effect capacity has on performance in the long run.

Conclusion

This chapter expanded upon the quantitative findings of how the elements of collaboration, such as organizational collaboration capacity and individual collaboration behavior relate to performance in of police in the field of community policing. It did this in two ways. First, it provided further description of some of the most pertinent collaboration elements analyzed quantitatively in chapter four, such as capacity development, technology, trust, and leadership. It did this to go beyond the initial research question of collaboration causality for performance outcome, and to answer the secondary research question of how this occurs. This chapter provided descriptive qualitative results on capacity development through exploring training or screening, use of technology, and how the role of time to answer this secondary question. It also elaborated on certain collaboration issues that were not available in the quantitative data set such as trust and leadership. The second way this chapter expands the findings from the quantitative analysis is by using the qualitative results to build propositions that may provide explanations of

what other factors may explain how individual collaborative behaviors only partially mediate the effect of collaboration capacity on performance over longer time spans.

With regards to providing a more in-depth qualitative description of the phenomena of collaboration from the perspective of the participants, the interviews with police and their community partners reveal that collaboration significantly impacts the police officer activities and shapes their performance outcomes based on several qualitative factors. The largest general level impact is the additive effect that collaboration provides police. Police can accomplish their core missions without the need to collaborate, but their performance in community policing would not be at the level it could be by utilizing collaboration. Further, even though the empirical evidence from the literature may not support contention that collaboration activities predict performance, such as indicators of reduced crime, the officers interviewed for this study held a prevalent view that it did. In fact, some believed that it led to a reduction of crime in their areas, even if it was only a temporary reduction. As for providing propositions for other casual mechanism that transmit collaboration capacity's effect to performance in the long term, all of qualitative interviews indicate a number of institutional factors that could sustain the long-term transmittal effect of organizational collaborative capacity (i.e. social capital, strategic leadership, or institutional factors (i.e. the rules, norms, and culture).

Chapter 6: Summary, Discussion, and Conclusion

Summary

Chapter 1 of this study introduced the problem of collaboration through the lens of community policing. Collaboration is a resource intensive endeavor for which practitioners and academics alike want to know that the investment is worth the cost in terms of time, money, and human resources expended. Thus, the purpose of this study was to discern how the elements of collaboration collectively affect performance. Those elements, derived from the literature on collaboration, are composed of the capacity to collaborate, the behavior observed during collaboration and the expected performance outcomes of collaboration. In other words, I empirically studied the combination of the antecedents, the processes, and outcomes of collaboration holistically in a manner that attempted to fill in the black box of collaboration analysis that has viewed each element separately or only two elements in tandem, but never collectively as a whole model of collaboration. Essentially, the capacity to collaborate and collaborative behaviors of the individuals involved should be significant to the expected performance outcomes. However, during my initial research into this question, using cross-sectional data from the 2007 LEMAS and UCR surveys of police departments, I found that collaboration capacity was not significant to the expected performance outcome of crimes cleared by arrest.

This non-finding led me to investigate further in this study how time and the role of behavior play in the model of collaboration that I was investigating. Based on further literature review, I developed the hypothesis that if collaboration capacity was not demonstrating a statistically significant result, then the reason lay with either collaboration behavior contributing to this result or there was not enough time in the analysis for the capacity to build up an

observable. Therefore, I expanded my initial model of collaboration performance from a linear additive model, where I was simply regressing both the variables of collaboration capacity and variables of collaborative behavior on to crimes cleared by arrest, to a mediation model. In this new model, I hypothesized that collaborative behaviors serve to transmit the effect of collaboration capacity toward performance outcomes. I also hypothesized that this mediation effect would play out over time, thus presenting a pattern where we could observe a mediated effect over time. To further explore the immediate results of this quantitatively based mediation analysis, I developed a qualitatively based interview protocol that would allow me to expand upon my initial findings descriptively and would contribute to investigating this analysis further.

Expanding on the unit of analysis from my initial research, I continued studying police departments' community policing activities and drew from the time periods of the LEMAS survey where all of the variables I used to compose latent factors of collaboration capacity, the independent variable, and collaborative behavior, the mediation variable, were provided. While the FBI conducted LEMAS survey between 1990 until 2007, the survey asked different questions for different aspects of community policing every year, so combining different time periods for the longitudinal analysis proved possible for only a few time periods, and only after matching and transforming the codes from each period used. The years 2000, 2003, and 2007 provided the same data for the variables that composed the factors of collaboration capacity and behavior that I used for my research. I also drew the dependent variable, crimes cleared by arrest, from the corresponding years of the UCR. Altogether, these data provided me a convenience sample of three time periods from which to conduct the quantitative and longitudinal analysis required.

I drew the qualitative data chosen for the follow-on investigation as part of my mixed methods approach from police stations that participated the LEMAS surveys and which in the

2013 COPS Hiring Recovery Program (CHRP) categorized them according to an applicant rankings conducted by the Department of Justice's Office of Community Oriented Policing Services (COPS). This report rank orders police department applicants for community policing grants based on a cumulative index of reported crimes, planned community policing efforts, and financial need. After breaking the list down into quartiles, I selected departments from each of the quartiles to conduct semi-structured interviews with their police officers and community partners. I initially asked the public affairs offices of five major police stations represented in the applicant listing, two of which were major metropolitan cities that previously participated in public studies of community policing. Of the five, two departments declined to participate in the interviews. The three departments agreed to the interview protocol came from different quartiles of the CHRP index report.

Given that my research questions revolved around how and why the collaboration elements affect organizational performance, I employed an explanatory sequential mixed method that analyzed the quantitative data first, then the qualitative data. For the quantitative portion, I employed both cross-sectional and longitudinal mediation analysis to test the hypothesis that collaboration capacity's effect transmits through the mediation of collaborative behavior toward performance outcomes, operationalized as crimes cleared by arrest. Given the results of my previous research and the literature review, I employed a semi-structured interview protocol in the qualitative portion to go deeper into the explanation of the expected quantitative results. I estimated that regardless if my quantitative results were negative or positive, or mixed, I could use the results from the interview to learn why the quantitative results presented the way they did. My findings from the quantitative analysis proved my hypothesis but only partially for the majority of the time periods analyzed.

The major findings from the quantitative portion of the study confirmed the hypothesis that the effect from collaboration capacity is transmitted to performance outcomes as mediated by collaborative behavior. However, in the cross-sectional analysis collaborative behavior only completely mediated collaboration capacities effect during the 2003-time period. In other words, when I introduced factors of collaborative behavior into the model, it rendered the effect of capacity statistically insignificant. Factors of collaborative behavior only partially mediated collaboration capacity's effect on the performance outcomes during the 2000 and 2007 time periods, indicating that other factors may also be at play in transmitting the effect of collaboration capacity during other time periods. This finding also indicated that a longitudinal pattern of mediation possibly existed. Further mediation analysis utilizing longitudinal lags of three, four and seven-year time spans revealed a pattern of complete longitudinal mediation in the shorter time periods, but only a partial mediation in the longer time periods. I infer from this finding that individual collaborative behavior accounts for the transmission of capacity's effect toward performance during shorter time periods, but other factors may explain how the transmission of collaboration's effect occurs over longer time periods. To explore why the quantitative results presented such as they did and what other factors may contribute to the causal model of collaboration capacity's effect on performance I relied on the qualitative results from the semi-structured interviews that I conducted at the three participating police stations.

The results of the qualitative interviews confirmed the quantitative findings but also provided insight into other factors that may explain how and why collaboration capacity may or may not transmit its effect to performance outcomes. For example, while many of the interviewees saw collaborative behavior as necessary, it was not seen as a sufficient factor to lead to expected performance. Most of the interviewees indicated that collaboration merely helped

them do what they already did better and that given the nature of their jobs, they would still find ways to accomplish their goals. Further, regardless of decisions by police administrators on how to develop the required capacity within their personnel to collaborate, most officers indicated that experience in collaborating over time was what allowed them to learn how to use their collaborative skills that they either came with when hired, or developed as a result of training. Thus, the ability to interact with the organizational environment and learn through a trial and error process was beneficial to the officers in knowing how to use collaboration to perform their community policing activities better. Additionally, the capacity aspect of technology, or information technology more specifically, did not contribute to the development of the capacity to collaborate, so much as it served to moderate positively or negatively, the ability of the police and community partners to collaborate.

As expected, trust and leadership were viewed as important to the officers interviewed. However, the responses to the semi-structured interview questions returned results that indicated how both leadership and trust provide the culture-cognitive, normative, and regulatory, institutional factors necessary to convey the effect of capacity over time. Leadership was seen to be critical to providing not only vision and direction but support for officers to conduct the non-traditional types of police work that community police activities require. Depending on the leadership style of the police chief, the officers understood what their normative collaboration requirements were. For example, they interpreted the unstated leadership philosophy of their police chief as to whether they should be proactive or reactive in their collaborations with the community.

Trust on the other hand, while seen is important, was reported as not being totally necessary for collaboration to occur, at least in the operational setting in which police work

occurs. Given the exigent nature of police work, some officers indicated that they could collaborate without trust, but that they would apply some method of risk analysis and mitigation to make up for the lack of trust. Even some of the community partners indicated that they could collaborate with the police, albeit on a limited basis, given the situation, or if they did not know the police officer personally but trusted the reputation of the police department. This form of institutionalized trust indicated that the capacity conveying ability of trust transcends individuals that make up the organizations and gets conveyed through the cultural-cognitive element of institutional structures. While this institutional structure was important, leadership and trust also affected the organizational structures of the police departments and how the internal structures of the departments and external collaborative arrangements played a part in how collaboration elements relating together to affect performance.

In all three qualitative samples, the organizational structure of the police departments affected how they developed, implemented, and benefited or did not benefit from collaboration. Westville's and Smallville's diffusion of the community policing philosophy to all officers, and their merit-based hiring rules for community police officers, provided more latitude for their officers to use collaboration when engaging with their community partners. Whereas the highly structured organizational formation of the Centerville police department, with its seniority-based union rules for hiring and training of community police officers, seemed to impede Centerville police leadership's ability to control the transfer of capacity in their individual officers to organizational performance objectives. In fact, in some instances Centerville's structural arrangement gave the community police officers leverage to obstruct administrative decision on how to implement community police activities. In some instances, the officers were able to use their relationships with their community partners to thwart administrative leadership decisions.

This finding does not indicate that Centerville police performed community police activities less than Westville and Smallville, but rather that the street level officer had more input in defining what the organizational performance objectives were and how their individual collaboration capacity was used to achieve those objectives.

Discussion of Inferences from the Quantitative and Qualitative Findings

The exciting aspect of studying collaboration is that it offers a middle range theory building nexus, or a connecting hub, to several different facets of social science that are important to researchers of public administration and public management. Related to but not as grand a theory as Habermas' theory of communicative rationality (1985), which connects social outcomes with social interaction and communicative practices, theory development on collaboration offers to both practitioners and theorists a concept that spans Robert Merton's (2012) assortment of middle range theories concerning the day to day aspect of the profession we study and practice. It is toward this effort that my dissertation makes its greatest contribution along theoretical, empirical, and normative lines. It contributes toward the theory building of the concept of collaboration and its impact on performance by opening the black box of collaboration and explaining what happens when the internal gears of the collaborative process turn in either direction to positively or negatively affect performance outcomes. It provides empirical contributions by offering the combination of quantitative and qualitative approaches that look at the phenomena of collaboration from a non-linear perspective and at multiple levels. Lastly, it offers normative contributions by posing a compelling institutional perspective that practitioners should account for in their daily practice and academics should consider as they design future research on collaboration.

Theoretical Implications. The main theoretical contribution this study offers is a way to describe the contingent nature of collaboration and how it affects outcomes. As indicated in earlier chapters, the theory of collaboration is much studied; however, while there are robust studies that explore the elements of collaboration in terms of antecedents (Fitzgerald 1994; Foster-Fishman et al. 2001; Goodman et al. 1998; Healey 1998; Hocevar, Thomas, and Jansen 1994; Weber, Lovrich, and Gaffney 2007), or its processes (Chen 2008; Chen 2010; Cheong, Mackinnon, and Khoo 2003; Chua et al. 2012; Ring and van de Ven 1994; Thomson and Perry 2006), or its outcomes (Bond et al. 2010; Connick and Innes 2003; Cooper, Bryer, and Meek 2008; Kelman, Hong, and Turbitt 2013; Koontz and Thomas 2006; R. Lawrence and Lawrence 2011; Mandarano 2008; Paulraj, Lado, and Chen 2008; E. Rogers and Weber 2010; Thomson, Perry, and Miller 2008; Ulibarri 2015; Webb 1993), some of which link two of the three together (Gazley 2010; Hou, Moynihan, and Ingraham 2003; Mandell and Keast 2007; Thomson, Perry, and Miller 2008; Webb 1993), relatively little research explores that theoretical nature of collaboration from a holistic perspective. Thus, this research fills in the gap in the literature that fails to demonstrate how the collaborative capacity, the potential for capacity, transmits through and is transformed by the act of collaboration, and how that kinetic process of collaboration, in turn, affects outcomes. This research reveals the contingent nature of collaboration to be highly reliant not only on how organizations develop collaboration capacity, such as through HR policies of training or screening to develop or acquire collaboration capacity, but also over time on other institutional elements that can sustain a performance effect over long periods of time. As Scott and Thomas (2015) point out, collaborative efforts often proceed without careful consideration of the institutional environment leading to ambiguity in the performance outcome that they endeavor to accomplish.

The potential for institutional factors to affect the collaboration process comports with other research findings in the collaboration literature and the broader public management literature. For example, it complements the development of the collaboration model conducted by Ansell and Gash (2008), regarding their proposition for the role of institutional design, and the propositions of institutional effects in the collaborative governance regime as articulated by Emersion and Nabatchi (2015). It further contributes to that work by providing a means to observe empirically and evaluate the institutionalization of collaboration via a longitudinal mediation analysis approach. It also contributes to the expansion of our theoretical knowledge of leader development, particularly collaborative leadership development. As Getha-Taylor et al. (2015) discovered the longer duration from skills in leadership training, the less this training was seen to have an effect as assessed by self-assessments of conceptual leadership, but that interpersonal skills leadership effects were persistent. Getha-Taylor's follow on qualitative interviews revealed that the impact of interpersonal leadership skills training might have continued due to two of the three institutional pillars: the normative pillar through the adoption of improved communication and the cultural-cognitive pillar of identification of quality of work and performance through a feedback mechanism between leaders and employees. Thus, findings in this dissertation that there may be institutional factors that sustain the initial capacity development from training or acquisition of collaborative talent over time aligns with and expands other research indicating institutional effects. Additionally, this study adds to the construction of other studies on collaboration and performance indicating that it is important for public managers to attend to not only the individual and organizational level inputs for collaboration, by also showing how institutional factors may shape the sustainability of

collaborative efforts, regardless of in what environmental setting, community policing or otherwise, that effort occurs.

While the literature on collaboration and institutional development indicates that collaboration elements lead to flexible and resilient institutions over the long run, my research provides additional quantitative empirical evidence that indicates institutional development may provide adaptive and resilient mediation effects. These effects not only help organizations transmit collaboration capacity effects over the long term but also may help predict when the capacity to collaborate does not always lead to successful performance. Thus, rather than collaborative capacity alone contributing to performance achievement, institution development and maintenance also provides sustainability or impediments to the collaboration's ability to affect performance.

Additionally, while the literature also indicates that collaborative processes lead to institutional learning, restructuring and programmatic effectiveness (Mandarano 2008; E. Rogers and Weber 2010), my research provides qualitative data indicating how those institutional factors such as leader development through experiential learning and organizational structure may, in fact, lead to the ability of organizations to transmit their capacity to cooperate through collaborative process to affect performance. Furthermore, the quantitative and qualitative results from my research provide empirical measurements, and a means to test propositions from the management literature on institutional fields and inter-organizational collaboration that propose how those two subjects are interdependent. In other words, it helps to explain how the elements of collaboration provide the context for the ongoing processes of institutional structuration that sustains the institutional fields. This context consists of collaborative organizations working together, while institutional fields provide the institutional factors, (rules, norms, and cognitive-

culture identity) upon which those organizations construct their collaborative processes (Phillips, Lawrence, and Hardy 2000; T. B. Lawrence, Hardy, and Phillips 2002). This research does this by demonstrating the mechanism (a mediation process) through which institutional fields sustain the organizational capacity to collaborate over time.

Empirical Contributions. There are three main empirical contributions this dissertation offers. First, it uses of mixed methods using both quantitative and qualitative data in new ways in which qualitative analysis follows quantitative analysis to contribute to theory building. The second is the use of an estimation process that both combines concurrent/cross-sectional data with time series/longitudinal data to account for the mediation effects that the elements of collaboration have at multiple levels and in multiple dimensions. The third contribution is the use of a non-linear approach that better models the causation mechanism presented by the elements of collaboration toward performance. While the majority of collaboration research bases the preponderance of theory building for collaboration and performance on qualitative data such as case studies and historical accounts, newly designed studies are articulating quantitative variables to test propositions derived from those earlier qualitative studies. Therefore, whereas the growth of quantitative studies stems from dependent variables based on perceptions of impact or self-reported increases of collaboration efforts, this dissertation contributes to that growing literature by directly testing the assumption of collaborations impact on performance and then providing further qualitative and evaluative evidence based on objective testing methodologies. In other words, it reverses the common approach of qualitative to quantitative research and relies less on self-reported variables to further develop our understanding of collaboration and its impact.

The combined use of mediational cross-sectional and longitudinal analysis techniques provides an additional contribution to empirical methods used in public administration research. Most quantitative research relies on linear models that must use narrowly defined dependent variables and thereby sacrifice generalizability. However, I can demonstrate how to use a quantitative dependent variable, like crimes cleared by arrest regardless of its limited and normative derivation from the literature, and employ mediation analysis using both concurrent and time series data to return statistically significant results both concurrently and across time. Additionally, the non-linear aspect of the mediation models I use allow me to show the causal mechanism that transforms collaboration capacity through behavior to performance, thus allowing for a greater generalizability of the finding toward theory building.

Normative contributions. In addition to the theoretical and empirical contributions this dissertation offers, it also makes several normative contributions. These normative assertions contribute to community policing in general, but also specifically to locations where recent failures in community policing are apparent like Ferguson, Baltimore, and Chicago. Further, these normative assertions contribute to the long-term study of collaboration and its impact on performance relevant to researchers and practitioners. With regards to community policing, in general, the findings of this dissertation inform how collaboration should be viewed and understood in community policing, especially since this strategy is enormously reliant on collaborative capacity and behaviors of the police and community. To realize the full collaborative potential from community policing strategies, police administrators need to attend to not only how they recruit and develop that capacity within their departments, but also how they institutionalize the practice of collaboration throughout their department and into the community they serve.

The findings in this dissertation indicate that current police administrative processes that do not incentivize a climate where doing anything other than law enforcement (i.e. reactive policing) are seriously valued, may at best only provide window dressing that appears to be the adoption of collaborative behavior. In other words, it will not affect required changes to the core purpose that police believe is their imperative function. At worst, the short-term emphasis on individual police officer collaborative behavior will not continue to contribute to police departments' performance over longer periods of time. The positive effects of collaborative capacity will not transcend to longer periods when the individual members of the organization no longer are present. The findings of this research indicate that perhaps one mechanism to engender a culture that values collaboration enough for the collaboration capacity to translate into the actual positive collaborative behavior over time is for police leaders to not only implement individual policies to train or develop their personnel to inhabit the capacity of skills, but for police, government, and local community leaders to embody those collaborative attributes as they exercise their roles as leaders. Further, they should develop mechanisms that institutionalize norms for police to build trust with the citizens in their communities, and make structural changes to their organizations that elicit the required cognitive-cultural identity of a collaborative police force willing to work with and through the citizens in their community.

Some of the ways to create an institutional culture of collaboration may be to make collaboration pervasive as an institutional or departmental core value throughout the organization by modeling, encouraging, and rewarding positive results from collaborative behaviors. To energize the collaborative capacity in their departments, police administrators should actively role model the collaborative behaviors and emphasize the requirement for collaborative ability and propensity in their officers as well. By establishing a culture that shows the value of

collaboration by evaluating the results from collaboration, police departments could change how they energize collaboration capacity institutionally. The research demonstrates that using an officer's collaborative ability as a marker of performance will enhance the propensity for officers to see collaboration as important and to do more collaboration (Daley 2009). However, as this research demonstrates, having the ability or propensity to collaborate is not the same as collaborating effectively. To better accomplish this, police administrators should continually develop and reevaluate their officers' collaborative abilities based on the effectiveness of performance from that collaboration, not just on their ability to collaborate.

This dissertation also provides normative contributions specifically for examples such as cases in Chicago, Baltimore, and Ferguson. At one point, the Chicago police department, through its Chicago Alternative Police Strategy, provided the model for how community policing is done right (Skogan 1997). However, the report of the incident in which Laquan McDonald was shot and killed by a Chicago police officer demonstrates an interesting change in the Chicago police. After being the exemplar for community police over the previous 19, Chicago's current strategy for implementing community policing turned out to be a prime example of how not to implement it. (Police Accountability Task Force 2016).

Even though one of the findings from Chicago's Police Accountability Task Force report, was that the individual actions of police officers linked to racism (2016, 6–7), individual officer behavior does not alone explain how the effect of collaborative behavior fails to match expected performance outcomes over time in police institutions across the nation. For example, the mugshots of the Baltimore officers charged in the death of Freddie Gray (Baltimore Sun 2015) appear to be the picture of cultural, racial diversity, and yet the turmoil that that incident caused was indicative of a lack of community relations and institutionalization of community policing as

a core philosophy. This finding indicates that given the fact that community policing is so reliant on the collaborative capacity and behavior of its officers to success, that same commitment should apply to institutionalizing collaboration throughout the structure and organization of police departments across the nation.

Specifically regarding the incident in Ferguson, this dissertation provides a normative contribution by indicating the importance of organizational collaboration capacity, individual collaboration behavior, and institutionalization of collaborative practices to sustain positive results over time in community policing. According to the Ferguson after-action report, one of the major findings was that the police department did not have a sustained relationship with the community; therefore, the department was completely unaware of the underlying tensions brewing under the surface in the community before Officer Darren Wilson shooting and killing Michael Brown. This incident was only the spark that ignited the conflict that followed. The report makes clear that the main focus of the Ferguson police department up to that point was primarily law enforcement and reactionary. This behavior comports with the Ferguson mission statement, which still reads today on their public website as to “provide protection of life and property in Ferguson through the enforcement of laws and ordinances and assistance with emergency medical services” (Ferguson Police Department 2016).

The report asserts that protest in Ferguson demonstrate this gap and therefore recommends that law enforcement agencies engaged in dedicated and proactive efforts to understand the communities they serve and to build trust in law enforcement. By their official mission statement, the Ferguson police are to accomplish their mission by depending “upon a partnership among citizens, elected officials, and city employees” (Ferguson Police Department 2011). If, as the findings of this dissertation seem to indicate, that institutionalization of the

collaborative capacity and behavior are necessary to sustain the impacts of collaboration, then artifacts of that institutionalization such as mission statements, perhaps provide a starting point to begin that institutional change. If Ferguson's mission statement were to emphasize the partnership and relationship between the community and its mission more, perhaps it would begin a transformational process that the After Action report calls for in its recommendations.

Lastly, the research this dissertation provides speaks to a much broader normative contribution to the study of collaboration in general. The results from this dissertation demonstrating that collaboration are contingent indicates that researchers should account for this nature of contingency in their models and estimations of collaboration. Questions about collaboration should not just focus on the fact that the presence of collaboration will always be a good thing. Instead, research designs should be built to account for as many moderating or mediating variables as possible to provide the most accurate assessment of what drives collaboration to provide its positive or negative benefits. Further, the study of collaboration should not be limited to the just an evaluation of a public organization management strategy. The potentiality of several institutional factors influencing collaboration's overall and long term effect identified by the results of this dissertation, point to the fact that future research needs to progress along non-linear approaches to better study the institutional effects of collaboration.

While the compilation of qualitative and quantitative results point to new directions for the study of inter-organizational collaboration and institutional field development, this present study falls short of providing the perfect research and analysis of the subject. As with the development of any new approaches to testing well-founded propositions and theories, this study contains several limitations. I now turn to address these limitations, before discussing how to move forward in future research attempts.

Limitations

There are several limitations this research must account for in this section. The age of the quantitative data used, the selected dependent variable, the design limitations, limitation in the model specification, the limited demographics of the qualitative data, and the limits of the description provided by the qualitative data are some of the issues that this place limits on the findings presented in this dissertation. In this section, I will further describe the limitation's listed above, reflect on their impact on this study, and then provide a way forward for how my future research will build toward overcoming these limiting aspects.

As stated earlier, a major limitation of the quantitative data is the fact that portions of it range from nine to sixteen years of age. The problem this presents is that it raises the concern that with the data as old as it is, it may be in jeopardy of being irrelevant to the context of my study and therefore provide misleading conclusions and recommendations. This dissertation makes use of the most recent primary sources of qualitative data, collected in a manner that approximated the survey questions used to collect the quantitative data to deal with this limitation. This mixed method approach provided validity to the assumption that the context of the quantitative data, even though old, was still relevant to the current state of law enforcement, thus providing a sophisticated and complex approach to making up for this particular limitation. Nonetheless, as mentioned in chapter three this data further serves as a model set that will inform my data collection method for future research into the phenomena of collaboration within the community police setting.

Also, as addressed in chapter three, the selected dependent variable used in the quantitative analysis portion of this study presents a limitation.

Another limitation of this research is the study's design limitation in exploring the mediation effect of the collaborative elements via regression methods (both OLS and GLM) instead of using a more sophisticated approach of structural equation modeling. The reason I used the simpler of the two approaches in this study was twofold: the quantitative data used was convenience data not collected in a manner to support structural equation modeling; and two, the resource intensive nature of developing a data collection instrument specifically designed to use structural equation modeling approaches and the need for learning new techniques on new computer programs that support SEM analysis. The reason to use structural equation modeling is to "explain the variation and co-variation in a set of observed variables in terms of a set of unobserved factors" (Long 1983, 22). While I used a variation of SEM, via Mplus, to conduct the factor analysis of the independent and mediation variables to operationalize these variables for my larger model, I did not complete the causal analysis via an SEM application of mediation analysis. Instead, I followed prescriptions for mediation analysis using linear regression methods as described by Jose and MacKinnon without using SEM techniques. However, according to MacKinnon, using structural equation modeling combines a measurement structure from the factor analysis (the CFA I conducted to operationalize my independent and mediation latent variables) with the path analytical framework so that it specifies latent concepts formed by separating true and error variance in observed measures. By doing this, the covariance structure models differentiate "between the measurement model for observed measures of a construct and the structural model for the relations among the constructs" and provide a more accurate measurement of mediated effects (MacKinnon 2008, 18). Using regression techniques via GLM methods is a starter method for researchers who have not expanded their skills to the next level of SEM methods (Kline 2015, 13).

The third limitation of this study also relates to the model specification that I used for the quantitative analysis. Previous reviewers of my earlier research commented that the dependent variable used for this mediated collaboration model, crimes cleared by arrest, was a weak variable. I acknowledge this criticism regarding the limited scope of the dependent variable used in chapter three and do not repeat the arguments for maintaining this variable in this present study. I will only add, from the community policing literature, that regardless of how one evaluates performance in the police sciences, invariably, researchers must establish that police can effectively perform the basic functions of policing, and controlling crime through the function of clearing crimes by arrest is a fundamental function of police (Eck and Rosenbaum 1994, 6–7). Nonetheless, given the confirmation of the research question, future research in community policing should establish a broader connection to the impact collaboration has on the overall effectiveness, efficiency, and equity through the development of a factor model for these variables as a dependent variable.

The fourth limitation this study had included the limited demographics of the qualitative sample. Even though I attempted to select police departments from across a representative sample of departments from varying quartiles of community police efforts and need, the samples were drawn from the mid-region of the United States and did not include any major metropolitan cities (i.e. the size of New York City). Nonetheless, the samples were varied enough to allow for cross comparisons of the variables discussed in the interview protocol. Additionally, the validity of responses was established by including the community partner organizations of the police departments visited.

Finally, this study does not capture the effect that the style of policing, legalistic or service, may have on the collaboration capacity, activities, and outcomes in the observations. In

legalistic departments, police are more likely to take a law enforcement stance (J. Q. Wilson 1968), which may make it negatively related to community policing and thus collaboration. On the other hand, service oriented police agencies may be more open to collaboration because of the perceived benefits of collaboration with citizens-police relations. Accounting for this characteristic would allow future research to depict the impact of institutional impacts on collaboration especially since my finding point to the importance of such institutional factors.

Direction for Future Research

Drawing from both major findings and limitation of this study provides a ready road map for a direction to take this study toward in future research. First, and foremost my future research of this issue needs to account for institutional factors of trust, leadership, and structure in an updated model that specifies not only organizational factors (collaboration capacity) and individual factors (collaborative behavior) but also institutional factors (e.g. structuration (Powell and DiMaggio 1991). Additionally, given that the initial attempt at this approach proved fruitful in providing confirmation of a mediated effect for transmitting capacity to outcomes, future research designs will be worth the effort to incorporate structural equations models to explore that mediation effect more accurately.

Tied to the direction for re-specifying the model of mediated collaborative performance in future research, I also need to rethink how I approach the operationalization of the independent, mediation and dependent variables for future studies. This approach will consist of first designing a survey tool that assists in the specification of structural equation models and methods. Secondly, based on the qualitative results that indicated technology serves more of a moderating role than a treatment role (as was specified in this study), I need to explore expanding

my mediation model to incorporate a moderation variable that consists of technology factors. Since mediation variable serves primarily to establish causation, and moderation variables serve primarily as a regulator, it makes theoretical sense to analysis the use of technology in terms of its moderating effect on collaboration in future research.

The last, but not final, potential direction for future research on the topic this research studies would include addressing the fundamental and interdependent relationships between collaboration and the institutional field of police and their collaborative partners (i.e. other government agencies, community organizations, and unorganized citizens). While I conducted this research using an explanatory sequential mixed method, future research may best proceed from an exploratory sequential mixed method (Creswell 2013)that can more fully develop the theoretical components of the institutional factors. Once I complete this quantitatively, applying quantitative methods to both transform those indicators into latent variables and operationalize them into a moderation-mediation model of collaboration should allow for a more complete research picture.

Concluding remarks

In conclusion, researching collaboration's effect on organizational performance outcomes is important to the study of public administration and understanding what contributes to public management success (Smith, Carroll, and Ashford 1995). Beer et al. (1990) claim that it is important to determine if collaboration is necessary for innovation and competitive success among organizations. Thomas's (1998) review of conflict literature demonstrates multiple claims that collaboration among organizations is related to effective organizational performance and outcome expectations. Yet, Koontz and Thomas (2006) lament that while current research

has clarified the process of collaboration, the study of organizational collaboration requires more focus on confirming if it truly leads to enhanced performance and expected outcomes. In other words, if public managers are going to invest the time, money, and personnel into the development of collaboration capacity and the conduct of collaboration activities, scholars should study if the investment is worth the cost. Further, because the literature is rife with examples of competition rather than collaboration among public agencies (Huxham 1996b; C. W. Thomas 2003), it is important to understand why collaboration occurs when it does, and why efforts of collaboration either fail or are successful in producing the expected outcomes.

Therefore, this dissertation contributes to the study of collaboration in two important ways. First, it provides evidence through innovative means of quantitative analysis for the confirmation or disconfirmation of the assumption that collaboration matters. To my knowledge, no longitudinal mediation analysis has ever been conducted on the data sources that this study uses. Secondly, it expands previously employed research methods described in the literature to test collaboration theory through a mixed method process to provide a deeper understanding of how and why collaboration capacity and actions either contribute to or lower performance. This research should contribute to the study of collaboration by assessing the value for public managers of investing in developing collaboration capacity and implementing collaboration activities through understanding how the role of both individual behavior and institutional factors contribute to the success or failure of collaboration's effect on performance in the near and long term.

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Appendix A STATA.Do File for Regression Formulas

STATA.Do File

```
*****Do file for Lira Dissertation: Quantitative Portion*****
*Cross-Sectional, quasi-experimental, and longitudinal mediation analysis- edit for Mac or Windows as appropriate by removing
*the before start log and use commands in lines 46-54 below
*variables
*   DVs:
*       dv= Total Crimes Cleared by Arrest
*       lndv= log transformation of DV
*       lnsdv= Zero skewness transformation of DV
*       bcdv= Box-Cox log transformation of DV (bcskew0 bcmprg = mpg+1, level (95))
*       dv1= Ratio of Total Crimes Cleared by Arrest/ Total Crimes
*   IVs: (Composed from factor scores created in MPlus; Mean taken from all for to form new VAR= x_yr)
*       ccp_ = Collaboration Capacity enabling policies
*       cc4_ = CREATED A FORMAL, WRITTEN COMMUNITY POLICING PLAN
*       cc5_ = AGENCY INCLUDED COLLABORATIVE PROBLEM-SOLVING PROJECTS IN THE
*             EVALUATION CRI
*       cscr_ = Collaboration Capacity Screening
*       cc8_ = SCREENING TECHNIQUES USED IN SELECTING NEW OFFICER RECRUITS -
*             PERSONALITY INV
*       cc9_ = SCREENING TECHNIQUES USED IN SELECTING NEW OFFICER RECRUITS - WRITTEN
*             APTITUDE
*       cctng_ = Collaboration Capacity Training
*       cc1_ = PROPORTION new PERSONNEL RECEIVED AT LEAST 8 HOURS OF community policing TNG
*       cc2_ = PROPORTION OF current PERSONNEL RECEIVED AT LEAST EIGHT HOURS OF CP TNG
*       ccr_ = Collaboration Capacity Resources (Manpower and Technology)
*       cc12_ = MAINTAINED A COMMUNITY POLICING UNIT WITH FULL-TIME PERSONNEL
*       cc15_ = AGENCY UPGRADED TECHNOLOGY TO SUPPORT THE ANALYSIS OF COMMUNITY
*             PROBLEMS
*       xcc_ = Mean centered latent variable for collaboration capacity
*   MV:(Composed from factor scores created in MPlus)
*       CB_ = Collaboration Behavior
*       ca1_ = Percentage of PATROL OFFICERS WHO WERE ENGAGED problem-solving proj.s
*       ca2_ = PATROL OFFICERS RESPONSIBLE FOR SPECIFIC GEOGRAPHIC AREAs
*       ca3_ = OFFICER PARTNERED WITH CITIZEN GROUPS AND INCLUDED THEIR FEEDBACK IN
*             DEVELOPMENT
*       ca7_ = Collaboration Partner Number
*   CVs:
*       cv1_ = Population
*       cv19_ = Population Density
*       cv6_ = Total Police
*       cv9_ = Budget per police
*       cv11per_ = Black percentage compared to total police force
*       cv18per_ = Female percentage compared to total police force
*****
*Due to multiple IVs, Variables for Collaboration capacity are mean centered from periods 2000, 2003, and 2007 are generated,
per Iacobucci (2008, 19_).
*gen CC_ = (ccp_+ccscr_+cctng_+ccr_)/4
*****
*set up
```

```

set more off

*start log for Windows version and use data on Windows version
*log using "C:\Users\Leonard\Dropbox\KU\Lira Dissertation-Collaborative PM\Data\Quantitative Data\Analytical Data
Sets\CSMedWinlonglog.log", replace

*use "C:\Users\Leonard\Dropbox\KU\Lira Dissertation-Collaborative PM\Data\Quantitative Data\Analytical Data
Sets\CollCP_long4.dta", clear

*start log for Windows version and use data on Windows version
*log using "/Users/lenlira/Dropbox/KU/Lira Dissertation-Collaborative PM/Data/Quantitative Data/Analytical Data
Sets/CSMedMaclog.log", replace

*use "/Users/lenlira/Dropbox/KU/Lira Dissertation-Collaborative PM/Data/Quantitative Data/Analytical Data
Sets/CollCP_long4.dta", clear

*****Due to multiple IVs, Variables for Collaboration capacity are mean centered from periods 2000, 2003, and 2007 are
generated, per (Iacobucci 2008, 19).

**Descriptive analysis from long data set
* describe data
describe dv bc1dv y ccp_ ccsr_ cctng_ ccr_ CC_ CB_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_
*Summarize all variables
sum dv bc1dv y ccp_ ccsr_ cctng_ ccr_ CC_ CB_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_
*Summarize with details
sum dv bc1dv y ccp_ ccsr_ cctng_ ccr_ CC_ CB_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_, detail

** Descriptive statistics of data:
*Add indicator variables from the IV (mean SD MX/MN and Percentage used).

*IV indicators-ccp_ ccsr_ cctng_ ccr_
describe cc4_ cc5_ cc8_ cc9_ cc1_ cc2_ cc12_ cc15_

*Summarize all variables
sum cc4_ cc5_ cc8_ cc9_ cc1_ cc2_ cc12_ cc15_

*Proportion
proportion cc4_ cc5_ cc8_ cc9_ cc1_ cc2_ cc12_ cc15_

*summarize indicator variables from the MV - ca_
describe ca1_ ca2_ ca3_ ca7_

*Summarize
sum ca1_ ca2_ ca3_ ca7_

* proportion
proportion ca1_ ca2_ ca3_ ca7_

*****HISTOGRAMS*****

*histogram dv, freq

*graph save Graph "C:\Users\Leonard\Dropbox\KU\Lira Dissertation-Collaborative PM\Data\Quantitative Data\Analytical Data
Sets\histogramDV.gph", replace
*graph save Graph ""/Users/lenlira/Dropbox/KU/Lira Dissertation-Collaborative PM/Data/Quantitative Data/Analytical Data
Sets/histogramDV.gph", replace

```

*histogram bcdv, freq

*graph save Graph "C:\Users\Leonard\Dropbox\KU\Lira Dissertation-Collaborative PM\Data\Quantitative Data\Analytical Data Sets\histogrambcdv.gph", replace
graph save Graph "/Users/lenlira/Dropbox/KU/Lira Dissertation-Collaborative PM/Data/Quantitative Data/Analytical Data Sets/histogrambcdv.gph", replace

histogram bc1dv, freq

*****Cross-sectional mediation analysis for Time Periods 2000, 2003, 2007 and Quasi-experimental data with Box-Cox transformed DVs;

*conduct basic contemporaneous mediation with sgmediation *

*syntax

*Article Syntax

*sgmediation depvar [if exp] [in range] , mv(mediator) iv(indvar) [cv(covarlist) bootstrap reps(# reps) level(#)]

*****Step 1 and 2 confirming significant relationship between DV, IV, and MV each individually through zero-ordered correlations*****

corr dv CC_CB_cv1_cv19_cv6_cv9_cv11per_cv18per_
pworth dv CC_CB_cv1_cv19_cv6_cv9_cv11per_cv18per_, obs sig st(.01)
pcorr dv CC_CB_cv1_cv19_cv6_cv9_cv11per_cv18per_

corr bc1dv CC_CB_cv1_cv19_cv6_cv9_cv11per_cv18per_
pworth bc1dv CC_CB_cv1_cv19_cv6_cv9_cv11per_cv18per_, obs sig st(.01)
pcorr bc1dv CC_CB_cv1_cv19_cv6_cv9_cv11per_cv18per_

*2000

corr dv CC_2000 CB_2000 cv1_cv19_cv6_cv9_cv11per_cv18per_
pworth dv CC_2000 CB_2000 cv1_cv19_cv6_cv9_cv11per_cv18per_, obs sig st(.01)
pcorr dv CC_2000 CB_2000 cv1_cv19_cv6_cv9_cv11per_cv18per_

corr bc1dv CC_2000 CB_2000 cv1_cv19_cv6_cv9_cv11per_cv18per_
pworth bc1dv CC_2000 CB_2000 cv1_cv19_cv6_cv9_cv11per_cv18per_, obs sig st(.01)
pcorr bc1dv CC_2000 CB_2000 cv1_cv19_cv6_cv9_cv11per_cv18per_

*2003

corr dv CC_2003 CB_2003 cv1_cv19_cv6_cv9_cv11per_cv18per_
pworth dv CC_2003 CB_2003 cv1_cv19_cv6_cv9_cv11per_cv18per_, obs sig st(.01)
pcorr dv CC_2003 CB_2003 cv1_cv19_cv6_cv9_cv11per_cv18per_

corr bc1dv CC_2003 CB_2003 cv1_cv19_cv6_cv9_cv11per_cv18per_
pworth bc1dv CC_2003 CB_2003 cv1_cv19_cv6_cv9_cv11per_cv18per_, obs sig st(.01)
pcorr bc1dv CC_2003 CB_2003 cv1_cv19_cv6_cv9_cv11per_cv18per_

*2007

corr dv CC_2007 CB_2007 cv1_cv19_cv6_cv9_cv11per_cv18per_
pworth dv CC_2007 CB_2007 cv1_cv19_cv6_cv9_cv11per_cv18per_, obs sig st(.01)
pcorr dv CC_2007 CB_2007 cv1_cv19_cv6_cv9_cv11per_cv18per_

corr bc1dv CC_2007 CB_2007 cv1_cv19_cv6_cv9_cv11per_cv18per_
pworth bc1dv CC_2007 CB_2007 cv1_cv19_cv6_cv9_cv11per_cv18per_, obs sig st(.01)
pcorr bc1dv CC_2007 CB_2007 cv1_cv19_cv6_cv9_cv11per_cv18per_

*Quasi-experimental

corr dv2007 I7CC_CB_2007 cv1_cv19_cv6_cv9_cv11per_cv18per_
pworth dv I7CC_CB_2007 cv1_cv19_cv6_cv9_cv11per_cv18per_, obs sig st(.01)

```

pcorr dv I7CC_CB_2007 cv1_cv19_cv6_cv9_cv11per_cv18per_

corr bc1dv I7CC_I4CB_cv1_cv19_cv6_cv9_cv11per_cv18per_
pwcrr bc1dv I7CC_I4CB_cv1_cv19_cv6_cv9_cv11per_cv18per_, obs sig st(.01)
pcorr bc1dv I7CC_I4CB_cv1_cv19_cv6_cv9_cv11per_cv18per_

*corr dv2000 dv2003 dv2007
*corr x_2000 x_2003 x_2007
*corr ca_2000 ca_2003 ca_2007

*pwcrr dv2000 dv2003 dv2007, obs sig st(.01)
*pwcrr x_2000 x_2003 x_2007, obs sig st(.01)
*pwcrr ca_2000 ca_2003 ca_2007, obs sig st(.01)

*pcorr dv2000 dv2003 dv2007
*pcorr x_2000 x_2003 x_2007
*pcorr ca_2000 ca_2003 ca_2007

****Classic mediation approaches using OLS via sgmediation and advanced mediation using negBREG via PARAMED for
2000/2003/2007 and quasi-cross-section mediation analysis****

**bcLog Classical Mediation & advanced mediation for bcLog & count DV via paramed with no interaction & then with
interaction

**2000 bcLog Classical Mediation & advanced mediation for bcLog & count DV via paramed with no interaction & then with
interaction

sgmediation bc1dv, mv(CB_2000) iv(CC_2000) cv(cv1_cv19_cv6_cv9_cv11per_cv18per_)
bootstrap r(ind_eff) r(dir_eff) r(tot_eff), reps(10000): sgmediation bc1dv, mv(CB_2000) iv(CC_2000) cv(cv1_cv19_cv6_cv9_
cv11per_cv18per_)
estat bootstrap, percentile bc

paramed bc1dv, avar(CC_2000) mvar(CB_2000) cvars(cv1_cv19_cv6_cv9_cv11per_cv18per_) a0(0) a1(1) m(1) yreg(linear)
mreg(linear) nointer boot reps(10000) seed(1234)

paramed bc1dv, avar(CC_2000) mvar(CB_2000) cvars(cv1_cv19_cv6_cv9_cv11per_cv18per_) a0(0) a1(1) m(1) yreg(linear)
mreg(linear) boot reps(10000) seed(1234)

paramed dv, avar(CC_2000) mvar(CB_2000) cvars(cv1_cv19_cv6_cv9_cv11per_cv18per_) a0(0) a1(1) m(1) yreg(negbin)
mreg(linear) nointer boot reps(10000) seed(1234)

paramed dv, avar(CC_2000) mvar(CB_2000) cvars(cv1_cv19_cv6_cv9_cv11per_cv18per_) a0(0) a1(1) m(1) yreg(negbin)
mreg(linear) boot reps(10000) seed(1234)

**2003 bcLog Classical Mediation & advanced mediation for bcLog & count DV via paramed with no interaction & then with
interaction

sgmediation bc1dv, mv(CB_2003) iv(CC_2003) cv(cv1_cv19_cv6_cv9_cv11per_cv18per_)
bootstrap r(ind_eff) r(dir_eff) r(tot_eff), reps(10000): sgmediation bc1dv2003, mv(CB_2003) iv(CC_2003) cv(cv1_cv19_cv6_
cv9_cv11per_cv18per_)
estat bootstrap, percentile bc

paramed bc1dv, avar(CC_2003) mvar(CB_2003) cvars(cv1_cv19_cv6_cv9_cv11per_cv18per_) a0(0) a1(1) m(1) yreg(linear)
mreg(linear) nointer boot reps(10000) seed(1234)

paramed bc1dv, avar(CC_2003) mvar(CB_2003) cvars(cv1_cv19_cv6_cv9_cv11per_cv18per_) a0(0) a1(1) m(1) yreg(linear)
mreg(linear) boot reps(10000) seed(1234)

paramed dv, avar(CC_2003) mvar(CB_2003) cvars(cv1_cv19_cv6_cv9_cv11per_cv18per_) a0(0) a1(1) m(1) yreg(negbin)
mreg(linear) nointer boot reps(10000) seed(1234)

```

```
paramed dv, avar(CC_2003) mvar(CB_2003) cvars(cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_) a0(0) a1(1) m(1) yreg(negbin)
mreg(linear) boot reps(10000) seed(1234)
```

**2007 bcLog Classical Mediation & advanced mediation for bcLog & count DV via paramed with no interaction & then with interaction

```
sgmediation bc1dv, mv(CB_2007) iv(CC_2007) cv(cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_)
bootstrap r(ind_eff) r(dir_eff) r(tot_eff), reps(10000): sgmediation bc1dv2007, mv(CB_2007) iv(CC_2007) cv(cv1_ cv19_ cv6_
cv9_ cv11per_ cv18per_)
estat bootstrap, percentile bc
```

```
paramed bc1dv, avar(CC_2007) mvar(CB_2007) cvars(cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_) a0(0) a1(1) m(1) yreg(linear)
mreg(linear) nointer boot reps(10000) seed(1234)
```

```
paramed bc1dv, avar(CC_2007) mvar(CB_2007) cvars(cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_) a0(0) a1(1) m(1) yreg(linear)
mreg(linear) boot reps(10000) seed(1234)
```

```
paramed dv, avar(CC_2007) mvar(CB_2007) cvars(cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_) a0(0) a1(1) m(1) yreg(negbin)
mreg(linear) nointer boot reps(10000) seed(1234)
```

```
paramed dv, avar(CC_2007) mvar(CB_2007) cvars(cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_) a0(0) a1(1) m(1) yreg(negbin)
mreg(linear) boot reps(10000) seed(1234)
```

**Quasi-experimental bcLog Classical Mediation & advanced mediation for bcLog & count DV via paramed with no interaction & then with interaction

```
sgmediation bc1dv2007, mv(l4CB_) iv(l7CC_) cv(cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_)
bootstrap r(ind_eff) r(dir_eff) r(tot_eff), reps(10000): sgmediation bc1dv2007, mv(l4CB_) iv(l7CC_) cv(cv1_ cv19_ cv6_ cv9_
cv11per_ cv18per_)
estat bootstrap, percentile bc
```

```
paramed bc1dv2007, avar(l7CC_) mvar(l4CB_) cvars(cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_) a0(0) a1(1) m(1) yreg(linear)
mreg(linear) nointer boot reps(10000) seed(1234)
```

```
paramed bc1dv2007, avar(l7CC_) mvar(l4CB_) cvars(cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_) a0(0) a1(1) m(1) yreg(linear)
mreg(linear) boot reps(10000) seed(1234)
```

```
paramed dv2007, avar(l7CC_) mvar(l4CB_) cvars(cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_) a0(0) a1(1) m(1) yreg(negbin)
mreg(linear) nointer boot reps(10000) seed(1234)
```

```
paramed dv2007, avar(l7CC_) mvar(l4CB_) cvars(cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_) a0(0) a1(1) m(1) yreg(negbin)
mreg(linear) boot reps(10000) seed(1234)
```

*****Longitudinal mediation analysis using regressions 2000-2007*****

*Modified from Jose's three-wave autoregressive model, and from which to conduct the longitudinal mediation analysis with multiple regression is essentially composed of three series of Two-Wave analyses: 2000-2003; 2003-2007; 2000-2007 (Jose 2013, 133).

*Longitudinal analysis with Box-Cox transformed DV data

*T1-T2 = 2000 to 2003

* using regression for Jose's two wave method: two-year gap

*c1 total effect

```
reg bc1dv2003 l3CC_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_, level (95)
```

reg, beta

*c1' direct effect, b1, and S1 calculation

reg bc1dv2003 l3CC_ l3CB_ l3bc1dv cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_, level (95)
reg, beta
*a1 and S2 calculation
reg CB_2003 l3CC_ l3CB_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_, level (95)
reg, beta

*T2-T3 = 2003 to 2007

*c1 total effect
reg bc1dv2007 l4CC_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_, level (95)
reg, beta
*c1' direct effect, b1, and S1 calculation
reg bc1dv2007 l4CC_ l4CB_ l4bc1dv cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_, level (95)
reg, beta
*a1 and S2 calculation
reg CB_2007 l4CC_ l4CB_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_, level (95)
reg, beta

*T1-T3= 2000 to 2007

* using regression for Jose's two wave method: seven-year gap
*c1 total effect
reg bc1dv2007 l7CC_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_, level (95)
reg, beta
*c1' direct effect, b1, and S1 calculation
reg bc1dv2007 l7CC_ l7CB_ l7bc1dv cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_, level (95)
reg, beta
*a1 and S2 calculation
reg CB_2007 l7CC_ l7CB_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_, level (95)
reg, beta

*Longitudinal analysis with Count data

*T1-T2 = 2000 to 2003

* using regression for Jose's two wave method: two-year gap
nbreg dv2003 l3CC_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_
*c1' direct effect, b1, and S1 calculation
nbreg dv2003 l3CC_ l3CB_ l3dv cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_
*a1 and S2 calculation
reg CB_2003 l3CC_ l3CB_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_

*T1-T2 = 2000 to 2003

* using regression for MacKinnon's two wave covariance method: two-year gap
nbreg dv2003 l3CC_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_
*c1' direct effect, b1, b2, and S1 calculation
nbreg dv2003 l3CC_ CC_2003 l3CB_ CB_2003 l3dv cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_
*a1, a2 and S2 calculation
reg CB_2003 l3CC_ CC_2003 l3CB_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_

*T2-T3 = 2003 to 2007

*using regression for Jose's two wave method: four-year gap
*c1 total effect
nbreg dv2007 l4CC_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_
*c1' direct effect, b1, and S1 calculation
nbreg dv2007 l4CC_ l4CB_ l4dv cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_
*a1 and S2 calculation
reg CB_2007 l4CC_ l4CB_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_

*T1-T3= 2000 to 2007

* using regression for Jose's two wave method: seven-year gap

```
*c1 total effect
nbreg dv2007 I7CC_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_
*c1' direct effect, b1, and S1 calculation
nbreg dv2007 I7CC_ I7CB_ I7dv cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_
*a1 and S2 calculation
reg CB_2007 I7CC_ I7CB_ cv1_ cv19_ cv6_ cv9_ cv11per_ cv18per_

log close

clear
```


Appendix B Interview Protocol

Name of the Study:

Evaluating Collaboration in Public Management: what effect do collaboration capacity and collaboration activities have on performance in community policing?

INTRODUCTION

The School of Public Affairs and Administration at the University of Kansas supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You may refuse to sign this form and not participate in this study. You should be aware that even if you agree to participate, you are free to withdraw at any time. If you do withdraw from this study, it will not affect your relationship with this unit, the services it may provide to you, or the University of Kansas.

PURPOSE OF THE STUDY

The purpose of this research is to study the effect of collaboration among organizations involved with community policing on the organizational performance of the police. The study will attempt to describe and explain how collaboration capacity development and collaboration activities influence the organizational performance of police who use collaboration in community policing or other law enforcement activities.

PROCEDURES

I will collect qualitative data by conducting semi-structured interviews with patrol commanders (or department specific equivalents), line supervisors (or department specific equivalents), line officers, and police community partners involved with community policing, such as Advocacy groups, business group, faith-based organizations, other government organizations, other law enforcement agencies, neighborhood associations, senior citizens

groups, school groups, or youth service groups, as applicable to each police department. I will conduct the interviews face-to-face as a first option; however, if necessary I will conduct telephonic interviews. The questions will cover community policing in general, but specifically focus on collaboration capacity development and collaboration activity decisions made by police organizations and the effect of those decisions on police organizational performance. Up to four meetings may occur to initiate, interview, and conduct follow-up interviews. I estimate that each main interview session will last 45 minutes to an hour, and follow up meetings will be 15 to 20 minutes. The interview will be recorded audibly. Participants will have the option to stop recording at any time. Participants will be asked to provide their initials at the end of this form to signify that they do or do not consent specifically for the audio and/or video recording. The audio recordings will not be transcribed, but instead will be uploaded qualitative analysis software. Only the evaluator and the evaluator's faculty advisor will have access to the audio recordings. I expect the interview to take from 45 minutes to one hour, depending on the amount of information the respondent provides. Please see the interview protocol at the end of this document for a description of the questions used in the interview.

RISKS

There is no expected physical risk associated with this research. However, the social risk may include police respondent fear of reprisals from political or organizational leaders, or community partner fear of reprisals from police. Anonymity will be provided by assigning a pseudonym to interview participants and data on date, time, location, of activities discussed will not be asked for or recorded. Participants should not divulge any information that they fear they will risk reprisals for providing. Participants should provide only enough contextual information necessary to convey an adequate description without providing any descriptions that could lead to identity. Interviewees will be afforded the opportunity to review their recordings to confirm they feel safe in providing the information that they have provided.

BENEFITS

The potential benefits of this study are to provide better communication between police departments and their collaboration partners in community policing. This will further provide police managers an alternative means of qualitatively assessing the performance of their department's community policing activities. Additional benefits of participation include each department receiving a copy of the final study, which they can use to assess their community policing performance based on the general feedback from their line officers and their collaboration partners.

PAYMENT TO PARTICIPANTS

Participants will not receive compensation for their participation.

PARTICIPANT CONFIDENTIALITY

Participants' name will not be associated with any publication or presentation of the information collected about you or with the research findings from this study. Instead, the researcher(s) will use a randomly assigned study number or a pseudonym rather than your name. I will not share your identifiable information unless (a) it is required by law or university policy, or (b) you give me written permission.

Permission granted on this date to use and disclose your information remains in effect indefinitely. By signing this form, you give permission for the use and disclosure of your information for purposes of this study at any time in the future.

REFUSAL TO SIGN CONSENT AND AUTHORIZATION

You are not required to sign this Consent and Authorization form, and you may refuse to do so without affecting your right to any services you are receiving or may receive from the University of Kansas or to participate in any programs or events of the University of Kansas. However, if you refuse to sign, you will not be asked to participate in this study.

CANCELLING THIS CONSENT AND AUTHORIZATION

Be sure to consider the length of time the data will be collected and include whether you will use information that was collected prior to the participant's cancellation of permission. For example: You may withdraw your consent to participate in this study at any time. You also have the right to cancel your permission to use and disclose further information collected about you, in writing, at any time, by sending your written request to: Leonard L. Lira, at lenlira@ku.edu; 4060 Wescoe, Hall, 1445 Jayhawk Blvd., Lawrence, KS 66045-3177

If you cancel permission to use your information, the researchers will stop collecting additional information about you. However, the research team may use and disclose information that was gathered before they received your cancellation, as described above.

QUESTIONS ABOUT PARTICIPATION

Direct questions about the interview procedures to the researcher listed at the end of this consent form.

Please go to the next page to sign the consent form.

PARTICIPANT CERTIFICATION:

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study. I understand that if I have any additional questions about my rights as a research participant, I may call (785) 864-7429 or (785) 864-7385, write the Human Subjects Committee Lawrence Campus (HSCL), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, or email irb@ku.edu.

I agree to take part in this study as a research participant. By my signature, I affirm that I am at least 18 years old and that I have received a copy of this Consent and Authorization form.

I do ___ / do not ___ further give permission for this interview to be recorded with audiovisual / audio recorders.

Type/Print Participant's Name **Date**

Participant's Signature

Researcher Contact Information

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Rosemary O’Leary

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Faculty Supervisor

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785 864 3527

Interview instructions and questions:

This is a semi-structured interview, which means that while there are some specific questions, participants are not limited in their response to these questions. Participants are free to expand, elaborate, or add in topics and matters, as they feel necessary. These questions will be asked to patrol commanders (or department specific equivalents), line supervisors (or department specific equivalents), and line officers. However, to get a fuller appreciation for various views of performance, I will ask some of these questions from the community collaborative partners.

This research defines collaborations as follows:

Hand a copy of the interview questions to the participant and begin recording/ or transcribing (in the case permission to record audio is not given).

State Date the date of the interview and state the pseudonym of the interview participant

Factual Basic Background/ Demographic questions:

A. Date of the interview:

B. Pseudonym of the Participant:

- C. Male/Female:**
- D. Race/ethnicity:**
- E. Position/Rank:**
- F. Total Years of Service in the Police Force (or employment if a collaboration partner):**
- G. Police Department's name (or generic community organization type):**
- H. Year that community policing started in your department:**

Collaboration is the process of facilitating and operating in multi-organizational arrangements to solve problems that single organizations cannot easily solve alone (Agranoff and McGuire 2003).

General Questions about Collaboration and Community Policing

- 1. Can you explain how the collaboration activities your department (organization) conducts in community policing work?**

- 2. Can you explain the specific role collaboration has in these activities?**

- 3. What are the positive aspects of collaboration in community policing?**

- 4. What are the negative aspects of collaboration in community policing?**

Collaboration Capacity is the potential and inherent ability of organizations to collaborate with other organizations (modified from Bardach 1998, Huxham 1996).

Collaboration Capacity Questions

- 5. Can you collaborate in the absence of trust? If yes, how?**

- 6. How important is leadership to collaboration in community policing?**

7. How does your department/organization develop collaboration capacity for community policing?

Collaboration Activity is the process that transforms the capacity into outcomes (modified from Roberts and King 1996; Straus and Layton 2002).

Collaboration Activity Questions

8. Describe the quality (e.g. nature and strength or weakness) of the relationships between your agency/organization and its partners in the collaboration activities of community policing.

Performance refers to the accomplishment of a valued action, or the achievement of a valued state of affairs (modified from Whitaker et al., 1982).

Questions about the impact of Collaboration on performance

9. How does collaboration contribute to the ability of police to accomplish their job in community policing?

10. What else can you elaborate on regarding collaboration, collaboration capacity development, collaboration activities, or the impact of collaboration on organizational performance in community policing?