Making the Connection between Police Information and Knowledge Use, Organizational Culture, and Information Use Outcomes

Douglas Edward Abrahamson, MBA (RRU)

Faculty of Arts
Charles Sturt University
Australian Graduate School of Policing and Security

Dissertation Portfolio Submitted in Partial Fulfilment
of the Requirements for the Degree of
Doctor of Public Policy

March 2013
Table of Contents

Certificate of Authorship ........................................................................................................... x
Acknowledgments ....................................................................................................................... xi
Human Research Ethics Approval ............................................................................................... xii
Statement of Contribution to Jointly Authored Papers .............................................................. xiii
Abstract ..................................................................................................................................... 1

PREFACE ..................................................................................................................................... 3

Preliminary Chapters .................................................................................................................... 3
Journal Articles Submitted For Peer Review ............................................................................... 4
The Role of Exegesis and Narrative ............................................................................................ 5

CHAPTER ONE ............................................................................................................................ 7

Knowledge Management in Contemporary North American Policing Models ....................... 7
The Research Context: Overview of Contemporary Policing Challenges ............................... 7
Evolution of North American Police Policy and Practice in the Past 20 Years ....................... 11
  Community-oriented policing ..................................................................................................... 11
  Problem-oriented policing ......................................................................................................... 12
  Compstat .................................................................................................................................. 14
  Intelligence-led policing .......................................................................................................... 15
  Evidence-based policing .......................................................................................................... 16
Paradigm Shift in North American Policing ............................................................................... 20
  New competencies and values ................................................................................................. 20
  The relationship between police and academe ..................................................................... 21
Summary of Propositions in Contemporary North American Policing .................................... 27
Overview ..................................................................................................................................... 29
Definitions of Data, Information, and Knowledge .................................................................... 29
CHAPTER THREE

Method

Research Aims

Research Design

Study One

Independent variables

Information management
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information behaviours and values</td>
<td>66</td>
</tr>
<tr>
<td>Dependent Variables</td>
<td>67</td>
</tr>
<tr>
<td>Research Hypotheses</td>
<td>70</td>
</tr>
<tr>
<td>Study One (Chapter Four)</td>
<td>70</td>
</tr>
<tr>
<td>Study Two (Chapter Five)</td>
<td>71</td>
</tr>
<tr>
<td>Materials and Procedures</td>
<td>71</td>
</tr>
<tr>
<td>Demographic information</td>
<td>71</td>
</tr>
<tr>
<td>Information management, integrity, sharing, proactiveness, informality and transparency</td>
<td>71</td>
</tr>
<tr>
<td>Sampling Procedures and Recruitment</td>
<td>73</td>
</tr>
<tr>
<td>Procedure</td>
<td>74</td>
</tr>
<tr>
<td>Sample Size</td>
<td>76</td>
</tr>
<tr>
<td>Data Management and Screening</td>
<td>76</td>
</tr>
<tr>
<td>Participants</td>
<td>78</td>
</tr>
<tr>
<td>Policing organizations</td>
<td>78</td>
</tr>
<tr>
<td><strong>CHAPTER FOUR</strong></td>
<td>79</td>
</tr>
<tr>
<td><strong>Study One</strong></td>
<td>79</td>
</tr>
<tr>
<td><strong>Introduction</strong></td>
<td>80</td>
</tr>
<tr>
<td>Organizational Behaviours and Values</td>
<td>82</td>
</tr>
<tr>
<td>Organizational Goals and Outcomes</td>
<td>84</td>
</tr>
<tr>
<td>Information Management</td>
<td>86</td>
</tr>
<tr>
<td>Information Culture</td>
<td>86</td>
</tr>
<tr>
<td>Information Use Outcomes</td>
<td>87</td>
</tr>
<tr>
<td>Research Aims</td>
<td>88</td>
</tr>
<tr>
<td><strong>Methods</strong></td>
<td>89</td>
</tr>
<tr>
<td>Materials</td>
<td>89</td>
</tr>
<tr>
<td>Independent Measures</td>
<td>90</td>
</tr>
<tr>
<td>Dependent Measures</td>
<td>90</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Sampling Procedures</td>
<td>91</td>
</tr>
<tr>
<td>Participants</td>
<td>92</td>
</tr>
<tr>
<td>Analysis</td>
<td>93</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td>93</td>
</tr>
<tr>
<td><strong>Discussion</strong></td>
<td>100</td>
</tr>
<tr>
<td>Contributions and Limitations</td>
<td>106</td>
</tr>
<tr>
<td>Implications for Future Research</td>
<td>107</td>
</tr>
<tr>
<td>Implications for Policy and Practice</td>
<td>109</td>
</tr>
<tr>
<td><strong>CHAPTER FIVE</strong></td>
<td>110</td>
</tr>
<tr>
<td><strong>Study Two</strong></td>
<td>110</td>
</tr>
<tr>
<td>Knowledge Management</td>
<td>112</td>
</tr>
<tr>
<td>Knowledge Management Infrastructures</td>
<td>115</td>
</tr>
<tr>
<td>Technical Infrastructure</td>
<td>117</td>
</tr>
<tr>
<td>Organizational Culture</td>
<td>118</td>
</tr>
<tr>
<td>Information Sharing and Use</td>
<td>120</td>
</tr>
<tr>
<td>Making Sense of Change in Policing</td>
<td>121</td>
</tr>
<tr>
<td>Creating New Knowledge for Innovation in Policing</td>
<td>122</td>
</tr>
<tr>
<td><strong>Method</strong></td>
<td>123</td>
</tr>
<tr>
<td>Materials</td>
<td>123</td>
</tr>
<tr>
<td>Participants</td>
<td>123</td>
</tr>
<tr>
<td>Qualitative Analysis</td>
<td>124</td>
</tr>
<tr>
<td>Inter-rater reliability</td>
<td>125</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td>126</td>
</tr>
<tr>
<td>Connecting Impediments to Knowledge Management Infrastructures</td>
<td>135</td>
</tr>
<tr>
<td><strong>Discussion</strong></td>
<td>136</td>
</tr>
<tr>
<td>Organizational Context and Impact on Information Behaviour</td>
<td>137</td>
</tr>
</tbody>
</table>
Limitations of the Study .................................................................................................................. 138
Policy and Practice Implications ..................................................................................................... 139

Conclusions .................................................................................................................................. 143

CHAPTER SIX ............................................................................................................................... 145

Conclusion and Recommendations ............................................................................................... 145

Exegesis ....................................................................................................................................... 145
Research Questions ......................................................................................................................... 146
Limitations of the Research ............................................................................................................ 150
The Contribution of these Findings to Policing Research, Practice and Policy ......................... 150
The Need for Well-Informed Police Policy and Practice ............................................................... 151
Role of Rank and File Officers in Police Reform ............................................................................ 152
Contribution of the Research to Police Policy and Practice ......................................................... 153
Innovative Features of the Research Program ............................................................................... 154
Recommendations for Future Research ......................................................................................... 154
Recommendations for Police Policy and Practice .......................................................................... 156
Final Comment ............................................................................................................................... 157

References ..................................................................................................................................... 158

Appendix A .................................................................................................................................... 207
Charles Sturt University “Progress, Supervision and Assessment Regulations: Theses and Other Examinable Research Works” Criteria: Excerpts ................................................................. 207

Appendix C .................................................................................................................................... 210
Survey: Plain Text Copy ................................................................................................................... 210

Appendix D .................................................................................................................................... 222
Royal Canadian Mounted Police Research Approval ..................................................................... 222

Appendix E .................................................................................................................................... 223
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Information Sheet: English</td>
<td>223</td>
</tr>
<tr>
<td>Appendix F</td>
<td>224</td>
</tr>
<tr>
<td>Research Information Sheet: French</td>
<td>224</td>
</tr>
<tr>
<td>Appendix G</td>
<td>225</td>
</tr>
<tr>
<td>Survey Monkey Website Survey Configuration</td>
<td>225</td>
</tr>
</tbody>
</table>
List of Tables

Table 1-1. Comparison of Policing Models, Culture, Technology, Structure, and Information Use Outcomes ................................................................. 22

Table 2-1. Information Use and Outcome Constructs, Definitions, and Survey Item ...... 68

Table 4-1. Variable Means and Standard Deviations by Organization Type ............... 94

Table 4-2. Bivariate Correlations Among Organization Type and Information Behaviours and Values ......................................................................................... 95

Table 4-3. Univariate Generalised Linear Models of Information Use Outcome on the Basis of Information Behaviours and Law Enforcement Category (Model 1) and Information Behaviours, Law Enforcement Category and Their Interaction (Model 2) .................................................................................. 96

Table 4-4. Factor Analysis of Five Information ........................................................... 98

Table 4-5. Univariate Generalised Linear Model of Information Use Outcome on the Basis of the Two Factors Extracted from Factor Analysis .................................... 99

Table 5-1. Categories Distinguishing Perceived Impediments to Information Sharing ... 126

Table 5-2. Information Sharing Impediments in Policing versus Private Sector Organizations ........................................................................................................ 137

Table 5-3. Practical Implications of Impediments to Sharing ...................................... 141

---

1 The number of the chapter in which the table appears is listed first followed by the number of the table within that chapter.
List of Figures\textsuperscript{2}

Figure 2-1. Data, Information, Knowledge, Wisdom Pyramid (adapted from Ackoff, 1989)..........................................................................................................................30

Figure 4-1. Conceptual and Influential Information Behaviour Elements that Impact Organizational Performance..................................................................................88

Figure 4-2. Proposed Conceptual Framework for Future Police Organization Analysis.................................................................................................................108

Figure 5-1. Perceived Impediments to Information and Knowledge Sharing.................127

Figure 5-2. Perceived Impediments to Information Sharing by Police Agency.............128

Figure 5-3. Relationship Between Information Impediments and Organizational Infrastructure Within Three Policing Organizations.............................................136

Figure 6-1. Proposed Conceptual Framework for Future Police Information Behaviour and Value Analysis..........................................................................................156

\textsuperscript{2} The number of the chapter in which the figure appears is listed first followed by the number of the figure within that chapter.
Certificate of Authorship

I hereby declare that this submission is my own work and that, to the best of my
knowledge and belief, it contains no material previously published or written by another
person nor material which to a substantial extent has been accepted for the award of any
other degree or diploma at Charles Sturt University or any other educational institution,
except where due acknowledgment is made in the dissertation. Any contribution made to
the research by colleagues with whom I have worked at Charles Sturt University or
elsewhere during my candidature is fully acknowledged. I agree that this thesis be
accessible for the purpose of study and research in accordance with the normal conditions
established by the Executive Director, Library Services or nominee, for the care, loan and
reproduction of theses.

Signed:  

Douglas Edward Abrahamson

Date: March 25, 2013
Acknowledgments

To the anonymous referees who have taken the time to review, consider, and make constructive comments so that this dissertation could be that much better, I would like to say thank you.

I need to send a heartfelt thank you to my doctoral supervisor, Dr. Jane Goodman-Delahunty, who gave generously of her time, support, and guidance from the beginning of the research right down to the submission date. I would also like to say thank you to Dr. Paula Saunders and Dr. Nigel Balmer for their guidance and support in the analysis of the data.

To my parents, I want to say thank you for teaching me the value of education and knowledge and for providing me with your continued love and support.

Lastly, and most importantly, I cannot say thank you enough to my wife Wendy who has persevered throughout this journey. It was your wisdom, understanding of my needs, and support that started this journey and allowed it to unfold the way it was supposed to. Thank you for the untold number of days that have been sacrificed to make this happen.

Thank you for this gift.
Human Research Ethics Approval

This research was conducted in accordance with the Charles Sturt University Human Research Ethics Committee (HREC) guidelines: Research Approval Number: #2007/134. See Appendix A.
Statement of Contribution to Jointly Authored Papers


As a candidate for the degree of Doctor of Public Policy at Charles Sturt University, Australian Graduate School of Policing and Security, the primary author developed the research design; conducted literature reviews for both manuscripts; designed the web-based survey that was used to collect data for both research projects; recruited participants; collected the data; prepared the data for analysis; conducted both quantitative and qualitative statistical analyses; wrote both journal manuscripts; and submitted both papers to editors for peer reviewed journal article submissions. The primary author was given supervision and guidance throughout the process by his primary supervisor, who is listed as the second author within both journal manuscripts. The second author also provided intellectual and academic guidance and input in the form of: meetings; discussions; written material review, feedback, and editorial assistance; guidance on publication process; and suggestions for possible target journals.

Signed: 

Douglas Edward Abrahamson
Abstract
North American policing has evolved from the traditional reactive professional model towards models that are ever-increasingly information and knowledge-intensive and skill dependent. Yet information and knowledge sharing within and across police agencies remains problematic, as demonstrated by high profile police investigative failures attributed to poor information sharing by police, ineffective police structures, restrictive technologies, and maladaptive information behaviours, values, and cultures. Two empirical studies of sworn officers from three Canadian municipal police agencies extended an information behaviour and outcome framework previously used in private sector organizations to policing. A total of 134 officers completed a web-based questionnaire about individual and agency organizational information culture and its impact on information use in policing. Study One applied generalised linear modelling regression analysis to examine information management and information behaviours and values within these agencies and discerned which of five behaviour and value factors contributed most to key information use outcomes in policing, namely information proactiveness and information management. Principal component factor analysis uncovered two new information behaviour and value factors that collectively accounted for 71% of the common variance in achievement of these outcomes: information quality control (38%) and proactive collaboration (33%). Significant interactions revealed that the three agencies were distinguished by their information management and sharing behaviours. Increases in information management augmented information use outcomes in a large independent agency and yielded significantly greater information use outcomes in a medium-sized independent agency. The Royal Canadian Mounted Police (RCMP) achieved larger information use outcomes for each unit of information sharing than both independent municipal police agencies. Seven discrete impediments to information
sharing were identified in Study Two by applying inductive qualitative analyses of officers’ responses to an open-ended question about perceived impediments to information sharing and use within their agency. Ranking of the impediments was consistent across the three agencies, with organizational structure and organizational culture rated as the top two major sources of impairment. Findings established the relationship between perceived impediments to information and knowledge sharing and the agencies’ structural, technical, and cultural knowledge management capabilities infrastructures. Together, these studies confirmed that Canadian police agencies differed in their information management, information behaviours and values, and/or the achievement of the three key information use outcomes: problem solving, creating work that is beneficial, and information sharing, components that form the foundation of all contemporary North American policing models. The findings contributed to an evidence-based understanding of the dynamics of information behaviours and values within policing, and identified opportunities to improve police policy and practice in a context typified by reduced budgets, limited resources, and increased workloads. Accordingly, police agencies were advised to manage and take a proactive and collaborative stance regarding information behaviours and values within their agencies.
PREFACE

Overview of Dissertation Portfolio

The research presented in this dissertation portfolio was conducted in the period November 2010 to February 2011 and reports on the findings of that research within the context of three municipal police agencies in Canada. The dissertation portfolio consists of an exegesis and two journal manuscripts that have been submitted for peer review and publication within the field of policing, and related appendices. This material is presented in six chapters and represents the successful conclusion and reporting of that research program.

Preliminary Chapters

Chapter One introduces the larger social, political, and economic historical and contemporary contexts in which the research was conceptualized, and introduces the information use and information use outcome issues, which are of current concern within policing in North America, and which comprised the research problem addressed by this dissertation. Chapter One explores the evolution of policing over the last 20 years from Community-oriented Policing to Evidence-based Policing in order to provide a context for the literature review and subsequent empirical studies presented in this portfolio.

Chapter Two provides a critical review of the empirical literature on the evolution of North American policing and the increased use of information and knowledge within that context, and situates the practical research problem identified in Chapter One within that literature. The review expands upon the literature pertinent to each of the studies reported in the two journal manuscripts submitted for publication (Chapters Four and Five). The literature review is recognized as a critical component of the research process as it provides the foundation for gaining an understanding of the broader subject area; the distillation of primary themes; ascertaining what has already been done in relation to the
subject area; understanding what methods have been employed to explore the subject of interest; what key issues have been identified; what gaps there are within the research and associated literature; and the development of research questions (Hart, 1998; Punch, 2000; Rowley & Slack, 2004). This chapter introduces the conceptual foundations for this research as shaped by the historical and contemporary North American contexts.

Chapter Three outlines the research materials and quantitative and qualitative analytical methods used in the collection, analysis, and presentation of the research findings.

**Journal Articles Submitted For Peer Review**

Two empirical research manuscripts were prepared and submitted for peer review and publication within scholarly academic journals that focus on the field of policing. Each manuscript described a separate study and is presented in a separate chapter.

Chapter Four presents the first study, which was quantitative in nature, and examined the impact of organizational information management and information behaviours and values (culture) on the achievement of the information use outcomes of problem solving, creating beneficial work, and information sharing, within the context of three Canadian municipal police agencies.

Chapter Five presents the second study, which utilized inductive qualitative methods to analyse and identify the perceived impediments to information and knowledge sharing within the same three Canadian police agencies. The findings of this study were analysed and reported within a knowledge management infrastructure framework, which included organizational structure, technology, and culture.

**Concluding Discussion and Recommendations**

Chapter Six presents a consolidated view of the research findings and discusses how the research questions were addressed, how the exegesis integrated the research
findings within a historical and contemporary perspective, the originality of the research, and the contributions this research has made to police practice, policy, and knowledge. Lastly, Chapter Six provides recommendations for future research into the issues presented by incorporating the candidate’s (police practitioner) insights and understandings of the issues and examinable criteria.

**The Role of Exegesis and Narrative**

The role of exegesis within this dissertation was to integrate “the research or investigation within the profession while demonstrating academic and professional development over the course of study” (CSU, 2012, p. 3). The Merriam-Webster dictionary defines “exegesis” as an: “exposition, explanation; especially: an explanation or critical interpretation of a text” (Merriam-Webster Dictionary, 2012). The exegesis reflects a dynamic and reflective process that incorporates the practitioner’s insights and understandings of the issues and cultural contexts in which the artefacts are bound. In his personal manifesto on “reflection in and on action,” as it related to creative-production doctoral projects, Scrivener outlined the importance of reflective practice for professional development and learning within professional doctorate programs:

According to Schön (1983) reflection is central both to the practitioner’s ability to successfully complete projects and to their professional development. However, such reflection is unremarkable to and unmarked by the practitioner. Hence, the importance of such events or how they have changed the practitioner may not be consciously registered. As noted earlier, Schön sees reflection as the primary cognitive mechanism for dealing with the unexpected and, through the resolution of the unexpected, for learning. There is, then, an argument for suggesting that the practitioner could benefit if reflection was recorded and then reported more systematically. (Scrivener, 2000, p. 1)

Thus, the role and importance of narrative within this dissertation is introduced and placed into the context of personal and professional development. With respect to this dissertation, critical personal and professional reflexivity has been incorporated and brought to light through personal academic and professional reflection in and on the
research, the development and creation of the portfolio, and by placing this research into the broader theoretical and contextual frameworks in which it resides.

The exegesis process and content is woven throughout the dissertation, however, the primary examples are emphasized in Chapter Two and the connection of these thoughts, understandings, and insights to the Conclusions and Recommendations presented in Chapter Six. These illustrations of critical personal and professional reflection have demonstrated how this research made an original contribution to professional police practice, and fulfilled the five portfolio examination criteria: (a) the candidate's understanding of the field of study; (b) the originality of the work embodied in the thesis or portfolio; (c) the significance of the portfolio as a contribution to knowledge in the field of study; (d) the adequacy of the research methodology (e.g., the construction of hypotheses, the analysis of data, the arguments advanced to support conclusions); and (e) the worthiness of the portfolio for publication (CSU, 2012, pp. 10-11, Appendix B).

Excerpts of the March 4, 2013 Charles Sturt University Higher Degree by Research: Examinable Works and Examination Regulation (CSU, 2012) with respect to the nature of Research Professional Doctorates, dissertation type (portfolio), portfolio examination criteria, and industry-based portfolio examiner criteria are provided for reference in Appendix B.
CHAPTER ONE

Knowledge Management in Contemporary North American Policing Models

This chapter provides an overview of the evolution of North American policing over the past 20 years in terms of policing models applied, and places police information and knowledge sharing needs, competencies, skills, and values, and information use outcome issues within that context.

The Research Context: Overview of Contemporary Policing Challenges

Many operational and administrative issues and challenges have confronted police leaders and agencies within Canada and the United States for the last 20 years and continue to do so today. These include increased police environment volatility, reductions to police budgets and resources, and demands for higher levels of accountability, effectiveness, and efficiency.

Increased environmental volatility. For the last 20 years North American police leaders and organizations have struggled to adapt to the convergence of a variety of internal and external social, cultural, economic, political, legal, and technological forces. These same forces have shaped and continue to shape policing roles, structures, responsibilities, priorities, and culture within both Canada and the United States (Banting, Hoberg, & Simeon, 1997; Bayley & Shearing, 2001; Millie & Das, 2008). These forces of change are highlighted by diminishing societal, geographical, political, and cultural boundaries due to globalization and increased immigration (Custred, 2003; Held, McGrew, Goldblatt, & Perraton, 1999); the pluralisation of policing (Johnston, 2007; Jones & Newburn, 2006); post-911 security concerns (Harris, 2006; Murphy, 2007); increased demand for accountability and effectiveness in police policy and practice (Canadian Association for Civilian Oversight of Law Enforcement, 2010; Jones, 2009; Plecas, Haarhoff, Cohen, & Burk, 2012; Plumptre, 1997); increased pressure from the
media for greater transparency (Mawby, 1999); increased demand for collaboration within and across organizations (MacRae, Paetsch, Bertrand, & Hornick, 2005; Stewart, 2011); increasing application of and response to technological advances (Police Executive Research Forum, 2012; Rosenbaum, 2007); changing and mounting legal pressures (Cooley, 2005); increasingly complex and time consuming police investigations (Malm et al., 2005); and increased budget constraints (McNichol, Oliff, & Johnson, 2012; Murphy, 1998).

**Increased policing costs.** Contemporaneously, North American cities and communities have faced and continue to face economic hardships as they attempt to cope with record high levels of policing costs (Bayley & Nixon, 2010; Federation of Canadian Municipalities, 2012; Murphy, 2002). In response, a large number of these communities have made or will need to make dramatic cuts to police resources, police infrastructures, police training, and/or development (Public Safety Canada, 2013; Community Oriented Policing Services, 2011).

**Increased police scrutiny.** North American police organizations have faced unprecedented levels of media, community, legal, government, and stakeholder scrutiny while not asked to do more with less. In addition, they have been asked to find innovative ways to increase the effectiveness and efficiency of their organizations’ policies and practices within an ever changing landscape (Braga & Weisburd, 2007; Haberfeld, Clarke, & Sheehan, 2011; Weisburd & Eck, 2004).

**Increased police/community risk.** Collectively, the demands in North America for increased police policy and practice accountability, police agency needs to do more with less, along with increasingly complex and time consuming police investigations has created what may be best described as the “perfect storm” for weaknesses within police organizations to surface in a very public way if left unchecked. The organizational impact
of this storm is well documented, particularly in the United States, where the economic downturn has had the greatest impact, and was highlighted by increased agency workloads, shedding of services, diminishing officer and agency absorptive capacity (Police Executive Research Forum, 2010), and the increased risk of improper, incomplete, or otherwise ineffective police investigations being conducted (Community Oriented Policing Services, 2011; National Criminal Justice Institute, 2012; Parlow, 2012).

Unfortunately, many of the demands for improved police policy and practice, as well as improved information and knowledge interoperability within and across agencies, were ex post facto responses to high profile police investigations that had failed on a number of fronts. The resulting investigations, commissions, and/or reports into these police policy and practice reviews often contained scathing critiques of police policy and practice within both the United States and Canada. In the United States, for example, a recent review of the 9/11 terrorist attacks by Best Jr. (2011) outlined how risk management, the paradox of sharing secret information, organizational cultures, technology, and disparate organizational policies veiled the various law enforcement and intelligence agencies’ abilities to “connect the dots” (p.ii).

Some recent Canadian examples of critical examinations of police policy and practice include, but are not limited to the following three inquiries:

1. Bernardo Investigation Review in Ontario, Canada (Campbell, 1996). Findings indicated that police rivalry, lack of appropriate police structures and systems, and a systemic failure of police to communicate and cooperate across multi-jurisdictional areas impeded the earlier detection and apprehension of serial rapist and murderer Paul Bernardo.

2. Commission of Inquiry into the Investigation of the Bombing of Air India Flight 182 in Canada (Government of Canada, 2010). A lack of cooperation in interdepartmental
information and knowledge sharing along with deficiencies in supporting systems and structures were obstacles to the effective investigation and prosecution of the terrorist attack on and deaths of 280 Canadian citizens.

3. Missing Women Commission of Inquiry in British Columbia, Canada (Oppal, 2012). Results of this inquiry revealed that police values, biases, and organizational structures impeded the sharing of information and knowledge of the serial murders of dozens of sex trade workers in the Vancouver, British Columbia region over a 20 year period.

These issues were and continue to be highlighted by a demand for improved police policy and practice, increased accountability, increased effectiveness, the rationalization of police services, budget constraints and cutbacks (Government of Canada, 2013; Quan, 2012) within an increasingly complex and volatile and global environment (Goudge, 2013; Robertson, 2012; Weisburd, Hakimi, Perry, Feucht, & Mock, 2009). This drive for improved accountability, efficiency, and effectiveness of policy and practice within policing has shaped the way police organizations perceive and use information and knowledge in the achievement of desired goals and outcomes. Similarly, these changes in police policy and practice have transformed the way that law enforcement and crime prevention has been conceptualized and operationalized at the municipal, regional, and national levels within North America. These trends are reflected in the evolution of policing models over that same period of time (Hodgson & Orban, 2005; Oliver, 2000; Skogan & Frydl, 2004).

At the core of contemporary police reforms and the evolution of policing models from the traditional professional model to the knowledge-intensive models applied today, is the manner in which police organizations use information and knowledge to: (1) “create an identity and a shared context for action; (2) develop new knowledge and new
capabilities; (3) make decisions that commit resources and capabilities to purposeful action” (Choo, 2006, p. 1).

**Evolution of North American Police Policy and Practice in the Past 20 Years**

**Community-oriented policing.** Modern forms of Community Policing evolved from the recognition that traditional paramilitary and reactive forms of “law enforcement” and “crime fighting” of the 1960’s and 1970’s were no longer effective and represented the “first substantive reform in the American police institution since it embraced the professional model nearly a century ago” (Kappeler & Gaines, 2012, p. 3). Though the Community Policing model began to surface in the 1970’s it did not achieve broad recognition and implementation until the 1980’s. The Community Policing model not only broadened what previously had been a very narrow crime fighting conception of police work but incorporated notions of: community; community identity; active police-community partnerships and collaboration; police-community problem solving; and active police-community information sharing (Palmiotto, 2011).

As Greene (2000) pointed out, at the core of the Community Policing model was a desire to “break down the barriers separating the police from the public while inculcating police officers with a broader set of community service ideals” (p. 301) to create a policing environment where:

…new values of policing emerge in the management and tactics of the police…community policing must overcome resistance from the subculture of the police, a subculture that is focused on danger, authority, and efficiency (Skolnick 1966): the values of more traditional policing (Greene, 2000, p. 302).

Despite longevity within the field of policing, and its incorporation into contemporary police models, such as Problem-oriented Policing, the effectiveness of this model beyond rhetoric has been questioned (Gianakis & Davis, 1998). Further questions were raised about the degree to which the concept was
philosophically framed and implemented within policing and the community in terms of changes in police organization, structures, service delivery, information flow, values, and effectiveness (Chappell, 2009; Correia, 2000; Ellison, 2006; Maguire & Katz, 2002; Novak, Alarid, & Lucas, 2003; Rosenbaum, 1994; Vito, Walsh, & Kunselman, 2005; Zhao, Lovrich, & Robinson, 2001).

Further, for many police organizations the adoption and implementation of Community-oriented Policing has been a difficult task as it challenged and continues to challenge traditional North American paramilitary policing philosophies, structures, and culture, which are exemplified by: paramilitary bureaucracies; formal channels of communication; expertise; centralized command; hierarchical structures; resistance to outside input and criticism; and reactive responses to crime (Sklansky, 2011; Wells & Falcone, 2005).

**Problem-oriented policing.** Primarily based on the Community-oriented Policing model, many North American police organizations in the 1990’s adopted a Problem-oriented Policing (Goldstein, 1995) approach to policing that required police to gather information about crime occurrences, research the problem, document the problem, develop appropriate responses, and assess how well the intervention(s) worked. The Royal Canadian Mounted Police (RCMP), for example, had adopted and currently ascribes to a Community Policing problem solving model, which is based on their “CAPRA” model, which stands for: “C = Clients, A = Acquire/Analyse information, P = Partnerships, R = Response, A = Assessment of Action taken” (Royal Canadian Mounted Police, 2012).

Whether based on the model proposed by Goldstein, which uses the “SARA” model of “Scanning, Analysis, Response, Assessment” (Eck & Spelman, 1987) or that implemented by the RCMP, each Problem-oriented Policing model is knowledge and
learning intensive in that the process requires a combination of information seeking, fact finding, analysis, assessment, and information sharing skills on behalf of the officer(s) implementing the crime prevention strategy. Despite its status as what Weisburd, Telep, Hinkle, and Eck (2008) described as “one of the most important and widely implemented police innovations of the last two decades” (p.33) evaluations of the Problem-oriented Policing crime reduction strategy have revealed small effect sizes. Effect size is an important measure as it provides program developers, users, and leaders with an indication of how well particular “treatment” effects, positively or negatively, impact the problem at hand. With respect to the Problem-oriented Policing program evaluations the small effect findings have been largely attributed to ineffective program implementation, not to deficiencies in the program or model itself (Telep & Weisburd, 2012).

Ineffective implementation issues within Problem-oriented Policing have been attributed to three important barriers: (a) despite a 20 year history, police still do not understand the core elements of the program, or how these elements can be integrated into the more traditional conceptions of policing; (b) police either do not possess, or have access to, the appropriate skills or knowledge bases; and (c) police lack incentives to put the appropriate resources into place (Scott, 2003, p. 55). Herman Goldstein (2003), in his reflection on the application of the Problem-oriented Policing model within policing over the last 20 years, explained the concept, as originally conceived, in the follow way:

As originally conceived, problem-oriented policing is an approach to policing in which each discrete piece of police business that the public expects the police to handle (referred to as a “problem”) is subject to careful, in-depth study in hopes that what is learned about each problem will lead to discovering a new and more effective strategy for dealing with it. The concept places a high value on developing, within that strategy, new responses that are preventive in nature, that are not dependent on the use of the criminal justice system, and that draw on the potential contributions of other public agencies, the community, and the private sector. The concept carries a commitment to implementing the new strategy, rigorously evaluating its effectiveness, and subsequently reporting the results in ways that will benefit other police agencies and that will
contribute to building a body of knowledge that supports good practice and ultimately, thereby, will also contribute toward the further professionalization of the police. (p. 14)

Within this original conceptualization a number of information use and information use outcomes used within this dissertation were identified: (a) creating work and outcomes that are beneficial to the community; (b) problem-solving; (c) information sharing; (d) proactiveness; and (e) collaboration.

Goldstein (2003) also identified potential causes and concerns for ineffective program implementation, which he attributed to five primary sources: (a) police leaders lacked commitment to strengthen policing capabilities, capacity, police practice, and the institution of policing; (b) police practitioners lacked core analytical capabilities and the scope and quality of work provided by police planning and research units were described as “uneven”; (c) lack of academic research on police “problems,” lack of practitioner – researcher collaborations, and the need for university level trained problem analysts; (d) lack of “informed” stakeholder pressure to make police organizations use “new knowledge” to inform better policy and practice; and (e) police lacked the financial capacity.

In recent times, the merging of Problem-oriented Policing and its “data-driven” decision-making, the increased proliferation of research into crime and the development of empirically proven responses, the increased analytical capabilities created through readily available technologies, and the growing amenability of police leaders to outside “management” advice in the early 1990’s led to the advent of one of the next major changes in policing during this era: Compstat (Weisburd, Mastrofski, McNally, Greenspan, & Willis, 2003).

**Compstat.** The Compstat policing model, whose acronym stands for “computerized statistics,” was initially developed and employed by the New York Police
Department in the early 1990’s under the leadership of then Commissioner Bill Bratton. The emphasis of this police management model was “accurate and timely intelligence, rapid deployment, effective tactics, relentless follow-up and assessment” (Bratton & Knobler, 1998, p. 224). Additionally, the Compstat strategy held police managers accountable for the success or failure of crime reduction in the areas under their control through the application of strict performance measurement practices. Bratton and Malinowski (2008) underscored the importance of “performance management” in their successful reduction of crime within both New York city starting in 1994 and within the Los Angeles Police Department starting in 2003 and described the process as:

...an on-going process to establish and maintain a high performance culture, focused on aligning individual objectives with the overall goals of the organization. Performance Management is characterized by inclusion and agreement on goal setting, establishing standards of measurement and immediate and on-going collaboration and feedback. (p.260)

In addition to obtaining accurate measures of crime within the community the Compstat model was used to “manage for improved outcomes…by focusing on and prioritizing the desired outcomes” (Bratton & Malinowski, 2008, p. 261).

Despite critiques and issues related to varied successes in the implementation of the Compstat policing model in reducing crime (Bratton & Malinowski, 2008; Walsh, 2001; Willis, Mastrofski, & Weisburd, 2003) the development and application of analytical crime analysis processes in the 1990’s led to the next major shift in policing models and missions in North America.

**Intelligence-led policing.** The merging of crime analysis and criminal intelligence resulted in the development of the “Intelligence-led” Policing model, which essentially combined the “what is happening?” to the “why is it happening?” elements of crime reduction and prevention strategies (Ratcliffe, 2007). The Intelligence-led Policing model has been widely adopted within North American policing in a large part due to the
September 2011 (9/11) terrorist attacks in New York city, which highlighted the need to gather, analyse, and share information and knowledge relating to criminal activities locally, regionally, nationally, and internationally (Maguire & King, 2004; Marks & Sun, 2007). In his explanation of the meaning of intelligence Ratcliffe (2008b) provided the following:

To build on and extend the ideas of Davenport (1997), intelligence is the end result of a process that starts with data, becomes information, that itself can become knowledge, and - if employed to have an impact on decisions affecting the criminal environment - becomes intelligence. (p. 267)

In this definition, the need for information sharing and knowledge creation within the Intelligence-led Policing model process is highlighted.

Concomitantly, within this epoch of data-driven policing innovations, the academic and policing communities realized that not only was it desirable, but imperative that independent empirically based crime prevention research and findings be put into practice in lieu of ineffective past practices, urban myths, personal bias, or subjective judgment (Laycock, 2001; Sherman, 1998; Tilley & Laycock, 2002; Welsh & Farrington, 2005). Thus, the foundation for Evidence-based Policing was laid.

**Evidence-based policing.** Philosophically, evidence-based management, whether applied within the fields of clinical medicine (Sackett, Rosenberg, Muir-Gray, Haynes, & Richardson, 1996), education (Slavin, 2002), business (Pfeffer & Sutton, 2006), crime prevention (Fahey, 2008; Homel, 2009; Layton & Jennett, 2008), or the public service (Kisby, 2011; Wren, 2002) placing into policy and practice (Nutley, Walter, & Davies, 2009) the best available research evidence of “what works” within a specific sector or environment versus “what doesn’t.”

In its original form, evidence-based practice was developed within the medical community, which Sackett, Rosenberg, Gray, Haynes and Richardson defined as:
Evidence-based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available clinical evidence from systematic research. (1996, p. 71)

The application of this “conscientious, explicit, and judicious use of current best evidence” (Sackett et al., 1996, p.71) has, in more recent times, been held as a goal within both the public and private sectors in North America, as was noted within the burgeoning evidence-based management practices and within the goals of government (Aarons, Hurlburt, & Horwitz, 2011; Baron & Haskins, 2011; Comings, 2003).

Unfortunately, the primary methods for deriving “what works” in policy and practice have been predominantly privileged within the realms of random controlled trial evaluations and the meta-analysis of quantitatively derived research. Social sciences literature, however, is replete with debates against the dominancy and application of purely quantitatively derived solutions to many of the socially constructed problems present within contemporary society (Davies & Nutley, 2001; Hammersley, 2005; Layton & Jennett, 2005; Marston & Watts, 2003; Pawson, 2006; Tilley, 2001). In addition, academics and scholars have suggested that the term “evidence-based” should be modified to “evidence-informed” (Young, Ashby, Boaz, & Grayson, 2002) or “evidence influenced” to reflect the true nature of the policy decision making process, which is not linear, not always based on rational choice, and is “inherently political” (Nutley, Davies, & Walter, 2002, p. 1). Additionally, Sawyer (2000) posited that a “realist” perspective be taken on this issue wherein social change was “neither nomothetic (that is law-seeking) nor ideographic (concerned with documenting the unique)” (p. 3). Thus, the realist synthesis was much more “sympathetic to the usage of a multi-method, multidisciplinary evidence base” when dealing with policy issues (Pawson, Greenhalgh, Harvey, & Walshe, 2004, p. iii).
Notwithstanding this loosening of the definition of research “evidence” and the utilization of multiple research methods within the academic and larger policy and practice arenas, significant gaps remain between putting research into policy and practice and within our knowledge as to what mechanisms and contexts certain practices and/or interventions positively impact policy and practice (Davies, Nutley, & Smith, 2001; Kerr, Small, & Wood, 2005; Laycock, 2001; Rosenbaum, 2010). Fyfe and Wilson (2012) spoke to these issues directly by stating that for police, knowing “what works” was insufficient in itself and that police had “broader” knowledge needs. These included:

**Knowledge about why action was required.** This required exploration of the relationships between values, beliefs and assumptions and future policy priorities.

**Knowledge about problems.** This knowledge about the nature of the inter-relationships between, for example, crime, anti-social behaviour and socio-economic contexts would increase understanding by practitioners.

**Knowledge about what works.** This knowledge would facilitate understanding of police policies, strategies or interventions that bring about desired outcomes at acceptable costs and with limited unwanted consequences.

**Knowledge about how to put into practice.** Knowledge about “what works” in terms of police interventions needed to be coupled with knowledge about effective programme implementation if the benefits of such interventions were to be realised.

**Knowledge about who to involve.** Knowing who to involve in developing solutions to problems of crime and disorder and how to build effective alliances between them are important requirements for contemporary policing (2012, p. 308). This knowledge would be based on working partnerships with a range of groups from the public, private and voluntary sectors.
Even though this list of knowledge needs may appear obvious to persons involved in program development and implementation, these issues have been identified many times over, along with lack of resources, as key factors in contemporary police policy, program, and practice implementation failure (e.g., Community-oriented Policing, Problem-oriented Policing, Compstat, and Intelligence-led Policing).

The effectiveness of practice imperatives within North American policing, however, has shed some light on the need for law enforcement leaders and practitioners to change their focus from traditional short-term crime prevention and law enforcement responses to one that is based on a larger understanding of the underlying theories, contexts, issues, causes, and potential solutions to the policy and practice issues facing their communities, organizations, and the larger field of policing (Einstadter & Henry, 2006; Wilson, 2010). Bullock and Tilley (2012), in speaking to the need for more effective police policy and practice beyond the traditional professional policing model, stated that:

Problem-oriented policing calls for the ethical and accountable policing stressed in the professional model. It also want officers if anything more closely to resemble professional people by adopting an informed and analytic approach to defining problems and working out what to do about them. (p.3)

Such calls for accountability, professionalism within the field of policing, and adoption of “informed and analytic” approaches to policing represented a significant shift from more traditional models of policing and therefore required corresponding shifts in how police thought about “policing” and “law enforcement,” what these new roles might look like, and how they were to be implemented effectively.
Paradigm Shift in North American Policing

A number of practitioners and scholars have suggested that this same data and empirical evidence driven change in policing policy and practice represented a significant paradigm shift within North American policing (Walsh, 2001; Weisburd & Neyroud, 2011). Support for this paradigm shift was illustrated by: (1) changes in police organization’s preferred avenues and methods of inquiry; (2) changes in police policy and practice question formulation; (3) changes in police assessment and definition of “evidence” value and relevance; (4) changes in the manner in which police practitioners and organizations construct meaning, create knowledge, and make decisions; and (5) changes in the processes by which individuals and organizations within policing permit evaluation and criticism.

This paradigm shift within policing, not unlike that occurring in other organizations within the public and private sectors, has had and continues to have a significant impact on policing at the individual police practitioner and at the organizational level due to attendant changes in how information and knowledge is used to: create a new organizational identity; create a “shared context” within the organization; create new knowledge and capabilities; and put this knowledge into action (Choo, 2006). Further, in order to fully and effectively implement these changes this paradigm shift demanded that organizations appropriately change their structures, cultural norms, routines, behaviours and values (Davies et al., 2001; Haberfeld et al., 2011; Reynolds & Holwell, 2010). A comparison of differences between the cultural values, technology, structure, and information use outcomes endorsed by different models of policing is displayed in Table 1-1.

**New competencies and values.** The shift in policing practice towards increased use of data, information, knowledge, and research evidence, whether required within the
problem-solving process or through evidence-based inquiry, has presented an inextricable
demand for accompanying skills, competencies, and proficiencies within policing as it
relates to critical thinking and evaluation (Geller, 1997; Marenin, 2004; Vickers, 2000);
problem-solving (Birzer & Tannehill, 2001; Boba, 2003; Toch & Grant, 2005);
information and research literacy (Brown & Brudney, 2003; Kilic, 2010; Mitchell &
Jennett, 2008; Walsh, 2001); and reflective practice (Copely, 2011; Fyfe & Wilson, 2012;
Lyons, 2009).

The relationship between police and academe. In an attempt to seek out
independent analysis and solutions to policy, practice, and performance problems, police
leaders and organizations have more recently sought the assistance of academics (Bradley
& Nixon, 2009; Guillaume, Sidebottom, & Tilley, 2012; McEwen, 1999). Unfortunately,
the result of many of police organization and academic interactions ended with
disconnects between practitioners and academics, the problem and the solution, as well as
failures to put the research into practice. Reasons for the disconnect between police
practitioners and academics at the output level have often been attributed to (a) different
end goals; (b) provision of academic or otherwise theoretical solutions to pragmatic
problems; (c) out-dated research; issues with implementation; (d) results that make police
more accountable and politically vulnerable; and (e) different frames of reference (Engel
& Whalen, 2010; Locock & Boaz, 2004; Rynes, Bartunek, & Daft, 2001).
<table>
<thead>
<tr>
<th>Policing model</th>
<th>Culture</th>
<th>Technologies</th>
<th>Structures</th>
<th>Information use outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Policing</td>
<td>Values community needs; accountability; transparency; proactive policing; systematic analysis of crime issues; risk taking; police-community collaborations; problem solving; information sharing inside and outside of organization</td>
<td>Information and crime analysis intensive. Requires: effective (internal and external) communication systems; access to timely, relevant, accurate data and information</td>
<td>Officers assigned to specific geographic areas; decentralized command and decision-making; team approach; police-community collaborations and partnerships; policies, procedures, and processes aligned to policing model; informal communication networks developed and supported; police need requisite training and skills</td>
<td>Development of sustainable community relations and partnerships; reduction of fear of crime; crime prevention; effective police-community problem-solving; open and on-going information sharing; reduced calls for service</td>
</tr>
<tr>
<td>Problem-oriented Policing (Boba, 2003; Braga, 2008; Bullock &amp; Tilley, 2012; Cordner &amp; Biebel, 2003; Goldstein, 1990)</td>
<td>Values: community issues and needs; accountability; transparency; proactive policing; systematic analysis of crime issues; risk taking; police-community collaborations and partnerships; problem solving; information sharing inside and outside of organization; and requires personnel to be culturally aligned</td>
<td>Information and crime analysis intensive. Requires: effective (internal and external) communication systems; access to accurate data and information; access to program evaluations; access to previous research on the problem being analysed; may incorporate need for creation of victimization surveys, crime audits, and structured interviews</td>
<td>Action-research model. Requires supportive &quot;Scanning&quot;, &quot;Analysis&quot;, &quot;Response&quot;, &quot;Assessment&quot; infrastructures; crime analysis capabilities; decentralized command; front line police officer focus; police need requisite critical thinking, analysis, and evaluation training and skills</td>
<td>Identifying and resolving the underlying conditions associated with community problems; reduction of fear of crime; reduction of criminal opportunities and rewards; effective problem-solving; sharing of information inside and outside of the organization</td>
</tr>
<tr>
<td>Policing model</td>
<td>Culture</td>
<td>Technologies</td>
<td>Structures</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Intelligence-led Policing (Peterson, 2005; Ratcliffe, 2007; Marks &amp; Sun, 2007)</td>
<td>Values: timely, relevant and actionable information; police to police and police to community collaborations (re: information on targets, vulnerable people and places); problem solving; information sharing inside and outside of organization; and requires personnel to be culturally aligned</td>
<td>Information and crime analysis intensive. Requires: effective (internal and external) communication systems; access to timely and accurate data/information; ability to analyse and share data and information</td>
<td>Requires: strong police-police and police-community partnerships; integrated information sharing policies, practices, and processes (internal and external); fully integrated supports: information technology, personnel, skills, and training</td>
<td>Information use outcomes</td>
</tr>
</tbody>
</table>

<p>| Compstat (Bratton &amp; Knobler, 1998; Bratton &amp; Malinowski, 2008; Walsh, 2001) | Values: managerial accountability; &quot;relentless follow-up and assessment&quot;; high performance culture; goal setting; risk taking; problem-solving; information sharing inside and outside of organization; and requires personnel to be culturally aligned | Information and crime analysis intensive. Requires: effective (internal and external) communication systems; access to timely and accurate data/information; ability to analyse and share data and information | Bottom-up information flow. Incident driven, data driven; managerial oversight of operations and results; performance management. Requires: strong police-police and police-community partnerships; integrated information sharing policies, practices, and processes (internal and external); fully integrated supports: information technology, personnel, skills, and training | Controlling of crime, disorder, and fear within the community; improved organizational performance; development of effective crime and problem solving strategies; development of police and community partnerships; reduction of crime and fear within community |</p>
<table>
<thead>
<tr>
<th>Policing model</th>
<th>Culture</th>
<th>Technologies</th>
<th>Structures</th>
<th>Information use outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence-based Policing</td>
<td>Values: rationality; evidence of &quot;what works&quot; within law enforcement;</td>
<td>Facilitates the search, storage, retrieval, and dissemination of available</td>
<td>Managerial; researcher centred; relies upon relationships between</td>
<td>Effective public policy and practice; reduce ineffective or harmful interventions;</td>
</tr>
<tr>
<td>(Homel, 2009; Sherman,</td>
<td>application of &quot;best evidence&quot; over past practice or personal opinion;</td>
<td>research findings, evaluations, and reviews</td>
<td>police, science, and researchers; Requires: strong police-academia</td>
<td>puts research into practice; retain public support; knowledge of theory and evidence for effective</td>
</tr>
<tr>
<td>Farrington, Welsh &amp;</td>
<td>critical analysis and evaluation of information and knowledge;</td>
<td></td>
<td>partnerships; integrated information sharing policies, practices, and</td>
<td>practice</td>
</tr>
<tr>
<td>McKenzie 2002;</td>
<td>practitioner-researcher collaborations</td>
<td></td>
<td>processes (internal and external); fully integrated supports: information</td>
<td></td>
</tr>
<tr>
<td>Weisburd &amp; Neyroud,</td>
<td></td>
<td></td>
<td>technology, personnel, skills, and training</td>
<td></td>
</tr>
<tr>
<td>2011)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Despite these apparent disconnects, from pragmatic knowledge needs and lack of research utilization grew the recognition within both the academic and police practitioner communities that police practitioners, at the individual officer level, could and should collaborate directly with academic institutions (Engel & Whalen, 2010; Wuestewald & Steinheider, 2010a). The purpose of this collaboration would be not only to develop internal organization research skills and provide shorter research turn-around times, but to provide research findings that better addressed the day-to-day organizational performance, accountability, and policy and practice issues of policing at the organizational level through applied research methodologies.

**Collaborations between police practitioners and academe.** The marriage between police practitioners and academic institutions, however, has not been without conflict, communication barriers, or disagreement between the parties on the development, timing, understanding, and/or application of the research findings (Bradley & Nixon, 2009; Bratton, 2006; Wuestewald & Steinheider, 2010b). While outlining the challenges to advancing Problem-oriented policing and utilizing practitioner-researcher collaborations, at the organizational or individual officer level, Scott (2000) suggested that “some police officials are impatient with extensive research, preferring to work on smaller-scale problems with rudimentary research than to wait for more sophisticated research to shed new light on larger problems” (p.119). On the academic researcher side, some traditionally trained academics and/or institutions, whose focus has rested primarily within the theoretical or empirically based realms of research, have had greater difficulty acclimatizing to the needs of “hands on” applied research environments, such as those envisioned within policing (Engel & Whalen, 2010).

Putting these research issues into perspective, the nature, purpose, and value of various methods of academic enquiry have been much debated within the scientific and
academic literature for decades and these debates have primarily centred on the paradigmatic differences between positivism, post-positivism, critical theories, and constructivism among others. On each extreme of the paradigm scale we have the quantitative purists at one end and we have the qualitative purists at the other end of the scale, each with their own stance as to the purpose of knowledge, the relationship of researcher to subject, and preferred method(s) of analysis. As an example, the following dichotomies between positivism and constructivism are provided: seeking knowledge for the sake of knowledge versus solving “real world” problems, researcher as observer versus researcher as practitioner, and quantitative data versus qualitative data (Marston & Watts, 2003; Maxwell, 2007; Pawson et al., 2004; Robson, 2002). In more recent times, there has been an evolutionary shift wherein a middle ground has been forged between the strictly positivist and constructivist positions. Within this space there has been greater acceptance and recognition that there are many ways to see the world, create understanding, and conduct research that includes mixed method research designs where quantitative and qualitative methods augment the limitations of the other within the context of social science research (Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 2010; Teddlie & Tashakkori, 2012).

In addition to the growing realization that mixed methods research has a place within the current milieu there has been a call from academics across many fields of practice, including public safety, for practitioners to become involved in “real-world” research problem solving, thereby creating a cadre of what have been termed “researcher-practitioners” or “scientist-practitioners” (Burton & Bartlett, 2005; Campbell & Gilroy, 2004; Mitchell & Casey, 2007). One recent study that looked at the prevalence of police practitioner and researcher partnerships within the United States reported that, though limited by potential response bias, approximately one third of the 871 responding police
agencies reported engaging in “some form of partnership over the past 5 years” (Rojek, Smith, & Alpert, 2012, p. 15). Further, Rojek et al. (2012) reiterated that the purpose of integrating the police practitioner and researchers was to “improve the functioning of agencies and the response to community problems” (p. 17).

Improvements to policy and practice do not happen in a vacuum and require self-conscious and systematic reflection on the part of police leaders, at all levels within the organization. Supporting this proposition, Davies, Nutley and Smith (2001) suggested that: “Practitioners do not merely implement policy decisions that have been decided elsewhere. Policy is influenced from the bottom up (Lipsky, 1976, 1979) as well as practice being influenced from the top down” (p. 15). Further support for this statement was provided by Wood, Fleming and Marks (2008) who suggested that:

> Police should not simply be viewed, or view themselves, as simply enlightening researchers about the realities of policing. Rather, their knowledge and that of the researcher should provide a foundation on which to build a collaborative generation of new, actionable knowledge for policing that can be validated and diffused. It is important to support the identity of police members-regardless of rank-as agents of change and to assist them in enhancing their capacity as knowledge workers and ideas generators. (p. 77)

These varied calls for police reforms, improved policies and practices, the need for the development and use of practitioner-researchers within policing, and the overall goal to increase critical thinking and analytic capacity and capabilities within policing organizations served to fuel and support this doctoral candidate’s academic goals and professional aspirations.

**Summary of Propositions in Contemporary North American Policing**

The foregoing description and analysis of policing models and trends in contemporary North American policing can be summarized in the following five succinct propositions that established the background and context for the current research:
1. Contemporary police organizations are required to “do more with less” due to multi-level governmental budget constraints, therefore, police organizations must work more efficiently and effectively.

2. Over the last 20 years policing models have become increasingly “knowledge-intensive” and focused on the need for problem-solving, information/knowledge sharing within and across organizations, and the need for outcomes that are beneficial to the community.

3. Information and knowledge sharing within and across policing remains problematic due to organizational structures, culture(s), and technologies.

4. Police organizations have faced and will continue to face increased levels of public scrutiny and risk from ineffective policies and practices, misalignment of organizational information behaviours and values, and inability to achieve mutually (community/police) desired outcomes.

5. Demands for police reforms centre on the need for increased accountability, effectiveness, understanding of the theoretical underpinnings of contemporary crime prevention and law enforcement policies and practices, and the application of policies and practices that have been shown to work through academic research and evaluation.

Relevant empirical literature as it relates to information and knowledge and its use in creating a shared context for action, creating a shared identity, creating knowledge, and making decisions (Choo, 2006) is reviewed in Chapter Two.
CHAPTER TWO

Organizational Information Behaviours: A Review of the Literature

Overview

The context for the literature review within this exegesis is the individual within knowledge-intensive organizations and the environmental factors that positively and/or negatively impact information and knowledge sharing and the achievement of organizational information use outcomes. This chapter elaborated upon the literature reviews presented within the two journal manuscripts (Chapters Four and Five) and identified gaps in our knowledge, and within the relevant literature that justified the need for further research within these areas.

In order to elucidate the dynamics of information behaviours within police organizations, this literature review explored the current ideas and concepts related to six aspects of organizational information behaviours: (a) data, information, and knowledge within organizations; (b) the tacit to explicit knowledge conversion processes; (c) information and knowledge use within organizations; (d) knowledge management infrastructures; (e) organizational behaviours, values and norms (culture); (f) and barriers and enablers to information and knowledge sharing within organizations.

Definitions of Data, Information, and Knowledge

Within the literature on information science (Frické, 2009; Kebede, 2010; Knox, 2007; Muller & Maasdorp, 2011), knowledge management (Faucher, Everett, & Lawson, 2008; Girard, 2006; Wallace, 2007), and business management (Addy, 2012; Hillard, 2010; Mahdi, Almsafir, & Yao, 2011; Rowley, 2007) reference is commonly made to the hierarchical and linear linkages, or derivations thereof, between data, information, knowledge, understanding, and wisdom as conceptualised by Zeleny and von Hayek
(1987) and Ackoff (1989). Ackoff’s conceptions of the data–to-information–to-understanding-to knowledge-to-wisdom connections placed data at the base of a pyramid, followed by information, understanding, knowledge, and topped off by wisdom. Most current adaptations of this model have eliminated the “understanding” level, as it was subsumed within the models processes, as depicted in Figure 2-1.

![Figure 2-1. Data, Information, Knowledge, Wisdom Pyramid (adapted from Ackoff, 1989).](image)

Within this hierarchical structure, Ackoff essentially defined data as “symbols” that were of no value until utilised; information was “inferred” from the data and answered the questions “who, what, where, when, and why?;” knowledge was viewed as “know how;” and “wisdom” was a value-added proposition (1989).

This apparently intuitive and easy to understand “DIKW” data-to-wisdom hierarchy, however, generated copious epistemological debates. Various authors and academics within the fields of information sciences, knowledge management, and cognitive science continued to wrestle with the “nature of knowledge,” the definition of “information,” and the relationships between data, information, and knowledge in particular (Bates, 2005; Braman, 1989; Rowley & Slack, 2004; Wilson, 2006a). For example, Buckland (1991) explored the definition of information and suggested that the term should be considered in relation to three information use types: “process,”
“knowledge,” and as a “thing” (p.351). Tuomi (1999) literally turned the DIKW concept on its head by suggesting that the pyramid should be reversed, thus making wisdom the base, not data. Taking a more philosophical perspective, Floridi (2004) examined “information” in terms of six existentialist perspectives on information “as reality or about reality” (p.560), along with nature, values, semantics, and information dynamics.

Despite such debates and due consideration, consensus on the definition of “information” within the information science, knowledge management, and cognitive science literature has yet to be achieved. Similarly, the debate over the “nature of the processes that convert data into information, and information into knowledge” (p.174) has yet to be settled. Many commentators and academics continue to place information and knowledge together in one basket, or use the terms interchangeably (Rowley, 2007).

Davenport and Prusak (2000), however, not only suggested that the terms information and knowledge were not interchangeable but stated that the delineation between these terms had important consequences for organizations as they needed to know “which of them you need, which you have, and what you can and can’t do with each” (p.1). In their “working” definitions of data, information, and knowledge, Davenport and Prusak (2000) defined each as follows: data “is a set of discrete, objective facts about events” (p.2); information was likened to a “message, usually in the form of a document or an audible or visible communication…meant to change the way the receiver perceives something, to have an impact on his/her judgment and behaviour” (p.3); and knowledge was defined as:

A fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the mind of the knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms. (p.6)
Subsequently, Choo (2006), in his explanation of how data were “transformed” into information, and information into knowledge, through the dynamics of (a) “structuring”, which identified pattern(s) and order within each of the elements and (b) a “human ‘acting’ on data and information that attributes sense and salience” (p.132), also made a clear distinction between data, information, and knowledge. Within Choo’s framework, data were defined as “facts and messages observed by an individual or a group” (p.132), information was defined as the cognitive structuring of data, where the person receiving the facts and messages assigned meaning, relevance, and significance in order to “frame, categorize, and contextualize the data” (p.133), and information became knowledge when a person formed “justified, true beliefs about the world (belief structuring)” (p.133).

Despite differences in the two articulations of the data-to-information-to-knowledge definitions and processes provided by Davenport and Prusak (2000) and Choo (2006), these are not completely incompatible. Both recognized and described data as generally consisting of facts and/or messages, that information was data that had been perceived and been given meaning and context by the observer, while knowledge existed in the mind of the knower and this knowledge included the values, beliefs, and behaviours accorded to information.

**Tacit versus explicit knowledge.** Conceptually, knowledge has been considered to take two forms that are inextricably interconnected: explicit knowledge and tacit knowledge (Nonaka & Takeuchi, 1995; Polanyi, 1966). Knowledge that is explicit in nature was described as knowledge that can be easily articulated, codified (abstracted and stored), understood, and shared outside the mind of the knower (Nonaka, 1994). Examples of explicit knowledge can be observed in organizational documents, policies, operations manuals, intranets, and practices. In contrast, knowledge that is tacit in nature was described as existing within the mind of the knower, was personal, contextual,
subjective, and consisted of knowledge that was acquired through practical experience (know how) and required socialization processes (e.g., team meetings, conversations), shared understandings, and trust to facilitate the transfer of that knowledge from one person to another (Lam, 2000). In their description of tacit knowledge beyond personal knowledge Nonaka, Reimöller, and Senoo (1998) suggested that tacit knowledge included “bodily skills or mental models, is deeply rooted in individual’s action and experience as well as in the ideals or values he or she embraces” (1998, pp. 673-674).

In order to illustrate how tacit knowledge is transformed into explicit knowledge through the processes of socialization, externalization, combination, and internalization, as initially suggested by Nonaka (1995), these four processes are described in more detail.

**Knowledge conversion via socialization.** The first of the four knowledge conversion processes is socialization. As the name implies, this portion of the process requires social interaction of the individual with others within the community or workplace, and involves a tacit-to-tacit knowledge transfer facilitated through observation, imitation, mentorship, and practice. Through this process, individuals make sense of the world around them through direct experience, by “empathizing with others,” and by interacting with others in a “face-to-face” environment (Nonaka, 1994). Of importance to organizations is that this socialization process is a component of and impacted by the culture of the organization.

**Knowledge conversion via externalization.** Within Nonaka’s (1994) second knowledge transfer process, individual tacit knowledge is made explicit through the externalization process. This externalization process requires that individual’s tacit knowledge be made explicit by “articulating” that knowledge and allowing it to be “crystallised” and shared with others within the group, organization, and larger environment. Conceptually, the externalization process is not only an active process, but a
process that involves reflection on the part of individuals and group. New knowledge and capabilities are generated through “sorting, adding, re-categorizing, and re-contextualizing” explicit group knowledge process (p.19).

**Knowledge conversion via combination.** Within Nonaka’s SECI model, the third knowledge conversion process is “combination.” It is at this point in the knowledge conversion process that explicit knowledge is turned into “more complex and systematic sets of explicit knowledge... collected from inside and outside the organization and then combined, edited, or processed to form new knowledge” (Nonaka, Toyama, & Konno, 2000, pp. 9-10). Examples of the combination process include reports that combine various forms of information and knowledge. These reports generate new knowledge, and this knowledge is combined with existing knowledge.

**Knowledge conversion via internalization.** The last of the four processes, transformation, where explicit knowledge from the group and organizational level is internalized or embodied by individuals into the tacit form, completes the tacit–to-tacit, tacit-to-explicit, explicit-to-explicit, and explicit-to-tacit knowledge transformation cycle outlined by Nonaka (1994). Newly internalized tacit knowledge helps to shape new shared mental models of the organization, of the work, and creates the technical “know how” at the individual level.

In summary, the outcome of this SECI knowledge conversion process is that “personal subjective knowledge is validated, connected to and synthesized with others’ knowledge” (Nonaka & Takeuchi, 1995).

Though well-known authors and/or academics have supported the view that tacit knowledge can be “transformed” or otherwise “converted” to an explicit knowledge form (Davenport & Prusak, 1998; Nonaka, 1994; Spender & Grant, 1996) other scholars have disagreed. For instance it was suggested that tacit knowledge underlies all explicit
knowledge, therefore is “two sides of the same coin” (Tsoukas, 2002, p. 15); that tacit knowledge has not been truly operationalized thus far (Ambrosini & Bowman, 2001), or that certain aspects of what has been called tacit knowledge are better explained in terms of dynamic systems and/or unconscious motor skills (Gourlay, 2002). Such debates, however, have not diminished the consensus that social interaction is an integral part of knowledge and knowledge transfer (Chua, 2002; Connelly & Kelloway, 2003; Gherardi & Nicolini, 2000; Pontecorvo, 1993; von Krogh, Ichijo, & Nonaka, 2000).

**Knowledge Classifications**

Gottschalk (2007a) bypassed the foregoing tacit-explicit and conceptual versus instrumental knowledge classification and conversion issues by choosing to follow De Long and Fahey’s (2000) human, social, and structured knowledge classifications. These three human, social, and structured knowledge classifications served to simplify and incorporate the complex and often debated knowledge concepts of tacit and explicit knowledge into a “practical, organizational context” (DeLong & Fahey, 2000, p. 114). Within this human, social, and structured knowledge classification scheme, Gottschalk (2007a) defined “human knowledge” as the “know-what, know-how, and know-why of individuals…usually combines explicit and tacit knowledge” (p. 117). “Social knowledge” was described as existing “only in relationships between individual or within groups” and that this “collective knowledge that is more than the sum of the individual knowledge of the team’s members” (p.117). Lastly, “structured knowledge” was described as “embedded in an organization’s systems, processes, tools, routines, and practices” (p.117).

In this dissertation the epistemological and ontological data–to-information-to-knowledge debates are acknowledged. However, the need to apply a “working” definition to a practical policy and practice issue within the knowledge-intensive field of policing,
led the author to ascribe to the broadened and pragmatic classifications of human, social, and structured knowledge noted above. For the purpose of this dissertation, this dynamic knowledge classification scheme was deemed more appropriate and to have more utility for three salient reasons: (1) the human, social, and structured knowledge scheme presents an easy to understand and relatable picture as to how knowledge fits within the practitioner’s personal and organizational setting(s); (2) the three types of knowledge presented within this scheme clearly articulate that knowledge exists at the individual, group (socially embedded), and organizational structure levels; and (3) this knowledge classification scheme fits well with the knowledge management and organizational capabilities perspective (Gold, Malhotra, & Segars, 2001), which is discussed later in the literature review in the Knowledge Management Infrastructures section.

**Organizational Learning Context**

All knowledge is socially constructed (Berger & Luckman, 1967; Easterby-Smith & Lyles, 2011; Nicolini & Meznar, 1995; Teece, Rumelt, Dosi, & Winter, 1994). Within organizations, knowledge exists not only in the minds (tacit knowledge) of individuals but is also socially embedded in the structures, “coordination mechanisms, and organizational routines” of the organization (Lam, 2000). Organizations, each with their own unique social, political, and economic contexts, develop and implement structures, information/knowledge coordination mechanisms, and routines to coordinate activities in order to accomplish specific goals.

Within policing, these goals obviously include broad or gross goals, such as crime reduction, crime prevention, and the apprehension of criminals. However, they also include other sub-goals including, but not limited to, community issue(s) problem-solving, information sharing, and creating work that benefits the community (internal and external to the department). These coordination mechanisms, within the policing context,
serve to “enhance knowledge exchange across disciplinary and hierarchical boundaries” (p.1000), and include organizational practices such as the creation of task forces, job rotations, and “non-routine and reciprocal information processing” (Jansen, Van Den Bosch, & Volberda, 2005, p. 1001). Routines, once again viewed within a policing context, allow organizations to coordinate activity, provide a form of “stability,”” limit the taxing of cognitive resources, and “bind knowledge” within the organization (Becker, 2004, p. 622). These routines take the form of rules, policies, standard operating procedures, or other directives. It is important to consider that these forms of knowledge are a repository for all past organizational learning and are a representation of the organizational memory--good and/or bad. Notably, there is a danger in relying too much on existing rules, policies, or directives for organizational competence as new or otherwise novel problems or opportunities may be missed (Dougherty, 1992; Dougherty & Dunne, 2011; Kim, 1993).

Key within these organizational structures, coordination mechanisms, and routines is a socialization process that not only enhances the “connectedness” of people within the organization but assists in knowledge transfer and creation. Seely-Brown and Duguid (2001) make the connection between organizational context and knowledge transfer and practice simply yet eloquently in the statement “what individuals learn always and inevitably reflects the social context in which they learn it and in which they put it into practice” (p.201).

**Individual knowledge and organizational knowledge.** Social learning theory, as it relates to organizational settings, dictates that humans are social beings who derive meaning from the world around them through interaction, participation, and practice within the social and cultural context in which the organization resides (Easterby-Smith & Lyles, 2011). In order to facilitate learning and develop communities of practice, this
framework views learning as a continual process, and only the organizational structures and contexts in which workers reside can be controlled, to varying degrees (Thompson, 2005). From a theoretical perspective, social learning theory, in contrast to individual learning theory, suggests that individuals both “produce” and are “products of” their environments (Bandura, 1977; Brandi & Elkjaer, 2011; Manz, Jr. & Sims, 1980). In theory and in practice, social learning theory addresses a key criticism of individual learning theory, where learning is relegated to a simple knowledge and skill acquisition process that occurs solely in the mind of the individual and does not consider the influence or impact that context has on learning. Therefore, individual learning theory ontologically neglects the “coming to be” learning process by making a “separation of body and mind, emotion and cognition as well as learner and context” (Brandi & Elkjaer, 2011, p. 24).

If it is important for knowledge-intensive organizations to provide the proper context for the knowledge sharing and creation processes, it is also important that organizations understand the roles that the individual plays within this knowledge transfer and creation process for the following five reasons: (1) individuals “justify” the truthfulness of their knowledge, beliefs, and values based on their personal experiences and social interactions with the outside world (DeLong & Fahey, 2000; Nonaka, 1994; Nonaka & Krogh, 2009); (2) individuals “are continually committed to recreating the world in accordance with their own perspective” (Nonaka, 1994, p. 17); (3) individuals actively make sense of their world through intention to enact their environment for further information and by the “approach” they have constructed, based on the context in which they work (Ibarra & Andrews, 1993); (4) individuals require sense of purpose, as provided by context, and the autonomy to “absorb knowledge” (Nonaka, 1994, p. 18); and (5) changes or “fluctuations” within the environmental context effect knowledge creation (Dyck, Starke, Mischke, & Mauws, 2005) and disrupt prior knowledge, beliefs,
perspectives, and values that force individuals to “generate new patterns of interaction between individuals and their environment” (Nonaka, 1994, p. 18). Each of these five points is addressed in more detail below.

1. **Individual “justification.”** The first point deals with the way individuals within the organization “justify” how they see and act within the organization based on their beliefs and values. As a number of commentators have noted, “people’s attitudes and perceptions do not develop in a vacuum” (Dirks & Ferrin, 2001; Ibarra & Andrews, 1993, p. 299; Salancik & Pfeffer, 1978). Organizational context and the associated mediating factors such as power, politics, social influence, and trust impact not only a person’s attitudes towards the workplace but influence how a person rationalizes or otherwise “justifies” their behaviours, beliefs, and values within the organization. Of importance is that within this “justification” process, individuals also judge, screen, and determine what new information and knowledge is of “value” and thereby contribute to setting “standards” for the organization. As Nonaka (1994) pointed out, however, the role for setting these standards within a knowledge-intensive organization belongs to top and middle managers.

2. **Individual subjective perspectives and values.** If individuals within organizations choose to view the world only through the lens of their own personal perspective, beliefs, and values, these may not be aligned with the current realities of the world or with the organization in which they work. Outdated conceptions of “know how” (practical knowledge of how to perform certain tasks) and “know why” (using insight to conceptualize and articulate understanding) may not fit the contemporary context in which they are utilized, and may not be in keeping with the needs, goals, and strategies of the organization in which they work. At issue is the fallacy of centrality (Weick, 1995; Westrum, 1982), which is premised on the idea that some individuals place too much stock in their personal views, expertise, and belief that they are already fully informed,
which discourages “curiosity” about the world around them. Just as important, such beliefs may cause that individual to exclude or diminish the relevance of new information, knowledge, problems or issues that are critical to the success or failure of organizational goals.

3. Individual identity and sense-making. Individuals within organizations choose to interpret or make sense of change within the world around them (sense-making), label and categorize new information, and take action, Weick, Sutcliffe, and Obstfeld (2005) suggested that the sense-making approach used by individuals within organizations is highly context dependent, due to the following:

From the perspective of sense-making, who we think we are (identity) as organizational actors shapes what we enact and how we interpret, which affects what outsiders think we are (image) and how they treat us, which stabilizes or destabilizes our identity. Who we are lies importantly in the hands of others, which means our categories for sense-making lie in their hands. (p. 416)

This issue of organizational identity, beyond how we are perceived within and outside the organization, is also important to how individuals within the organization “justify,” screen, and value information and knowledge, as per the first point noted above. Additionally, individual information and knowledge sharing and use within the organization are also impacted by changes to the internal and external working environment.

4. Individual motivation and autonomy. Individuals require a sense of purpose and the autonomy to “absorb knowledge” within the organization (Nonaka, 1994, p. 18). This point essentially covers two issues: motivation and need to absorb knowledge. The first issue, the need to associate a sense of purpose with knowledge transfer and creation within the organization is addressed from the leadership perspective (Bierly III, Kessler, & Christensen, 2000). This “sense of purpose” as it relates to individual knowledge transfer and creation within the organization is associated not only with the overall culture and
sense of mission within the organization (Santoro & Gopalakrishnan, 2000), the
“knowledge-vision” as articulated by management (von Krogh et al., 2000), but with
intrinsic and extrinsic motivational factors as well (Ipe, 2003).

The second issue within this point, is that individuals need autonomy to absorb
knowledge. The issue of information absorptive capacity, or the ability to recognize,
assimilate, and apply new knowledge, is well documented within the information science,
management science, and cognitive science arenas (Cohen & Levinthal, 1990; Jansen et
al., 2005; March, 1991; Zahra & George, 2002). Unfortunately, the majority of this
literature focuses on the organizational unit level of analysis and not on the individual as is
required in this instance. Therefore, the perspective of individual cognitive limitations and
individual learning will be briefly discussed. Firstly, when individuals within
organizations receive new information they need time to overcome personal cognitive
constraints, which include: mental ability, attitudes, and “difficulty organizing,
summarizing, and using information to form inferences about causal connections” (March
& Heath, 1994, p. 10). Additionally, individuals need time to assimilate, integrate, and
redefine this information because it may challenge past learning, personal beliefs, and
values (Nonaka et al., 2000).

5. Dynamic changes in the work environment. Dynamic changes within the
working environment context effects knowledge creation and generates new patterns of
interaction, must be considered in terms of conditions and environments that facilitate this
new knowledge creation and patterns of interaction. Organizational knowledge creation,
innovation, and interaction need both organizational enabling conditions and a “space” for
this to occur. Nonaka, von Krogh, and Voelpel (2006) conceptualised and described this
space using the Japanese concept of “ba,” which roughly translates to “space” in English.
This concept of needing a “place” for human cognition and action to occur is not unique to
Eastern philosophy and is also found in the Western philosophy as described by Aristotle’s “topos” or Plato’s “chora” (Nonaka, Toyama, & Hirata, 2008). In describing how this space is used, Nonaka et al. (2006) provided the following:

*Ba is a shared space for emerging relationships.* It can be a physical, virtual or mental space, but all three have knowledge embedded in *ba* in common, where it is acquired through individual experiences, or reflections on others’ experience. For example, members of a product development project share ideas and viewpoints on their product design in a *ba* that allows a common interpretation of the technical data, evolving rules of thumb, an emerging sense of product quality, effective communication of hunches or concerns, and so on. To participate in *ba* means to become engaged in knowledge creation, dialogue, adapt to and shape practices, and simultaneously transcend one’s own limited perspective or boundaries. (p.1185)

Nonaka et al. (2008) suggested that the shared time and space in which knowledge is shared, created, and used within the organization requires the following elements to be effective: (1) intention on the behalf of individuals and work units guided by organizational objectives; (2) *shared sense of purpose* guided by “subjective tacit knowledge and values” (p. 37); (3) “synthesis of subjective viewpoints, and is enriched by the diversity of contexts and perspectives” and a process “for the sharing of views and contexts based on pre-established shared objectives” thereby creating new knowledge (p.37); (4) *time and space boundaries* while yet remaining “permeable” to the dynamic nature of knowledge and interactions; and lastly, (5) *commitment* on the part of all participants to the shared objectives and process built on the foundations of “mutual understanding, trust, and respect, as well as shared perceptions and active empathy” (p.38).

These five shared time and space knowledge elements within the organization serve to not only support the *ba* but serve the need for organizations to reflect on what this new knowledge has provided and remain connected to the world outside of the organization. In order to support these knowledge elements,
organizations must provide the appropriate structures to support knowledge creation, codification, sharing, and using within the organization.

**Knowledge Management**

Within the knowledge management literature there is an abundance of references to the need for private and public sector organizations alike to manage and/or control their knowledge assets in order to adapt, learn, and innovate to improve practice and competitiveness in dynamic social, economic, and technological environments (Bergeron, 2003; Jennex, 2007; Liebowitz, 2006; McElroy, 2003; Smith, Mills, & Dion, 2010; Teece, 1998; Wiig, 2002). Within this same literature, it is also common to see authors counter the proposition that knowledge within organizations can be in fact be “managed” or “controlled” by asserting that knowledge is too subjective, socially constructed, and dynamic nature of knowledge to control. These same authors suggest that instead of attempting to control the knowledge creation process in a positivistic or mechanistic manner, organizations can only influence the process by providing supports to the context in which the knowledge creation and sharing is situated (Alvesson & Kärreman, 2001; Bonifacio, Bouquet, & Traverso, 2002; DeLong & Seemann, 2000; Huysman & de Wit, 2004; McDermott, 1999; von Krogh et al., 2000; Wiig, 2004). Ward and Peppard (2002) provided further support for these ideas by suggesting that although technology can be used to support organizational knowledge management initiatives, the first and foremost consideration should be the examination of the human and social elements.

Before exploring these issues further information management and knowledge management must be distinguished as these two terms are often confused or misused within the literature (Bouthillier & Shearer, 2002; Schlögl, 2005; Wilson, 2002) and by police practitioners (personal observation). Detlor (2010) defined and suggested that the goal of information management was:
...the management of the processes and systems that create, acquire, store, distribute, and use information. The goal of information management is to help people and organizations access, process and use information efficiently and effectively. Doing so helps organizations operate more competitively and strategically, and helps people better accomplish their tasks and become better informed. (p.103)

Within the realm of Canadian policing, information management systems include, but are not limited to individual agency information and records management systems, provincial, or federally managed information and management systems such as: Canadian Police Information Centre; Police Reporting and Occurrence System; Criminal Records Information Management Services; Canadian Police Services Information Centre; Criminal Record Analysis Services; Automated Fingerprint Identification System; and Police Records Information Management Environment. Each of these systems fulfils the information management mandate, as they allow people and organizations to access, process, and use the information stored within their respective systems.

The term “knowledge management,” on the other hand, has been commonly defined by many within the knowledge management, information sciences, and business management literature simply as the capturing, codification, creation, and sharing of knowledge within the organization. In order to provide a more detailed definition and context for knowledge management within the organization, a definition by Gupta, Sharma, and Hsu (2008) is offered:

Knowledge management is an emerging, interdisciplinary business model dealing with all aspects of knowledge within the context of the firm, including knowledge creation, codification, sharing, and using these activities to promote learning and innovation. It encompasses both technological tools and organizational routines of which there are a number of components. These include generating new knowledge, acquiring valuable knowledge from outside sources, using this knowledge in decision making, embedding knowledge in processes, products, and/or services, coding information into documents, databases, and software, facilitating knowledge growth, transferring knowledge to other parts of the
organization, and measuring the value of knowledge assets and/or the impact of knowledge management. (p. 2-3)

As can be seen within this definition, knowledge management is an important and complex organizational process. A metaphor to describe the depth and breadth of the importance of information and knowledge to knowledge-intensive police organizations, information and knowledge is that of DNA for both crime prevention and law enforcement policies and practices, as they are the building blocks that support or advance all policing decisions, actions, and outcomes, whether they be administrative, strategic, operational, or tactical in nature.

Additionally, it must be kept in mind that knowledge is not only embedded in the minds of individuals within the organization but in the organization’s culture (Alavi, Kayworth, & Leidner, 2005), social networks (Marouf, 2007; Phelps, Heidl, & Wadhwa, 2012), systems, routines, policies, and practices (Huber, 1991; Lee & Choi, 2003; Nelson & Winter, 1982; Pan & Leidner, 2003; Zheng, Yang, & McLean, 2010). Because of the personal and embedded nature of tacit knowledge, knowledge may or may not be shared or used within the organization depending on factors such as individual choice; social networks; organization structure(s), routines, and policies; and/or organizational culture (Choo, 2001a; Correia & Wilson, 2001; White, Varadarajan, & Dacin, 2003).

Knowledge Management Infrastructures

The management of knowledge within organizations was once considered simply a matter of applying technological solutions to the capturing, storing, and transferring knowledge that was freely available within the organization. This practice and perspective, however, has been extensively criticised from epistemological and ontological perspectives, as it is now well understood that the creation, transfer, conversion, and use of knowledge within organizations must also consider the social (Bhatt, 2001; Marouf, 2007; Seely-Brown & Duguid, 2001; von Krogh, 1998), cultural
(Alavi et al., 2005; DeLong & Fahey, 2000; Leidner, Alavi, & Kayworth, 2006), and contextual (Detlor et al., 2005; Marchand, Kettinger, & Rollins, 2000; Nonaka et al., 2000) elements in addition to the supporting technologies and communication systems (Birkinshaw, 2001; Currie & Kerrin, 2004; Gottschalk, 2007a; Malhotra, 2004; Mårtensson, 2000).

Support for this holistic approach to knowledge management came from Gold et al. (2001) who suggested that an organization’s knowledge management capabilities rely on “three key infrastructures, technical, structural, and cultural” (p.187). The technical infrastructure is viewed as an enabler in the knowledge storing and transfer processes, as well as the creation and supporting of knowledge networks (Alavi & Leidner, 2001; Marwick, 2001). Organizational structures, which include policies, processes, and flexible formal and informal information and knowledge exchange processes, are viewed as supporting increased knowledge creation capabilities within the organization (Kim & Lee, 2006; Sanchez & Mahoney, 1996; Willem & Buelens, 2009). And lastly, the cultural infrastructure of the organization has been identified as one of the greatest impediments and/or enablers to knowledge creation, transfer, and management (Alavi et al., 2005; Argyris & Schôn, 1999; Janz & Prasarnphanich, 2003).

By taking each of these critical infrastructures into consideration, a link can be seen to exist between each of the technical, structural, and cultural infrastructures: human information behaviours.

**Information Behaviours**

The literature on “information behaviour” within organizations has evolved from a predominantly technical user-centred system and resource approach, common in the 1970’s, to one that now includes and focuses on the personal, socially constructed, and contextually influenced dimensions of information behaviours (Pettigrew, Fidel, & Bruce,
2001; Wilson, 2000a). This paradigm change has particular relevance to police organizations since organizational socialization and normative context, whether viewed, for example, from the perspective of “breaking in” of a new recruit (Chappell & Lanza-Kaduce, 2010; Van Maanen, 1973), the sharing or not sharing of information (Glomseth, Gottschalk, & Hole, 2011), or the maintenance of a particular organizational culture (Paoline, 2003), has been and continues to be a dominant feature within police organizations.

Within the information behaviour literature, it is generally accepted that the information seeking/searching and information use behaviours are subsumed under the larger information behaviour umbrella (Pettigrew et al., 2001). For the purpose of providing a framework for understanding the relationship of each of these subtopics to the larger concept of information behaviours, the following definitions are pertinent. The term information behaviour was defined as:

…the totality of human behaviour in relation to sources and channels of information, including both active and passive information seeking and use. Thus, it includes face-to-face communication with others, as well as the passive reception of information as in, for example, watching TV advertisements, without any intention to act on the information given. (Wilson, 2000b, p. 49)

From a policing perspective, examples of such information flows, sources, and channels are observed in sources that are official/formal (e.g., policies and memos) and/or unofficial/informal (e.g., personal one-to-one conversations) and information channels that may be described as formal (e.g., Chief), informal (e.g., colleague), vertical (e.g., supervisor to line personnel), horizontal (e.g., colleague to colleague), oral or written, and/or cross channel (e.g., between units, sections, agencies) in nature.

**Information seeking.** The core drivers for information seeking, within the context of police organizations, can be limited to two of the three human
information seeking needs suggested by Wilson (2006b), namely affective (e.g., psychological or emotional needs) and/or cognitive needs (e.g., need to problem-solve, plan, complete a task, or learn a new skill). Wilson (1997a), in his review of cognitive needs information seeking from an interdisciplinary perspective, highlighted “the need to elucidate beliefs and values held, and need to confirm beliefs and values held” (p.553). The third human information seeking need, the physiological need for food, water, and shelter, though inter-related to the other two human needs was not considered relevant to the context of this dissertation.

This need and ability to seek information is influenced by the individual’s work role, organizational social and cultural factors, as well as the larger physical environment in which the organization resides. Examples of these factors include layers of personal preferences (e.g., like or dislike), knowledge/epistemic values (e.g., truthfulness, accuracy, quality, worthiness, significance), and value judgements (e.g., right, wrong, good, bad). Whether used to satisfy affective or cognitive needs, Wilson (2000b) defined the physical act of human information seeking as:

...the purposive seeking for information as a consequence of a need to satisfy some goal. In the course of seeking, the individual may interact with manual information systems (such as a newspaper or a library), or with computer-based systems (such as the World Wide Web). (p.49)

Though the concept of purposive information seeking (as noted by Wilson above) within formal institutions (such as libraries) had dominated the information literature for many years, it was realized approximately two to three decades ago that this narrow focus and lack of individual information seeking contextualization was of limited value in a society that was now accessing other forms of information and using more informal information channels (Spink & Cole, 2005). Accordingly, the information sciences literature shifted
attention towards an information seeking conceptual framework that has been in place for many years, and is still often used today: the problem-solving approach. Within the information seeking “problem-solving” approach, information seeking is seen as a “goal-directed behaviour, with the resolution of the problem or the presentation of the solution as that goal” (Spink & Cole, 2005, p. 26; Wilson, 1997a). A review of the current information science literature revealed a move towards the development of a more generalised information seeking model that focuses on “everyday life information seeking…and on forms of information behaviour that do not involve active or purposeful information seeking on the part of the individual” (McKenzie, 2003, p. 19). Since then, Spink and Cole (2006) updated the everyday-life information seeking model by proposing a normative model that contained “a combination of non-purposive and purposive information behaviour” (p.31). This “every-day life” information seeking approach has yet to be formalised. Accordingly, it is not examined or discussed further within this dissertation.

In sum, the long standing “purposive” and “goal-directed problem-solving” information seeking behaviour model was utilized in this dissertation as there is a demonstrated need for reform in police information seeking and sharing, and all contemporary policing models focus intensively on the “problem-solving” approach. Purposive and goal-directed information seeking is but one link in the information and knowledge chain, and information and knowledge has to be used in some manner, in thought and/or in action, to be of value.

**Information use.** A review of the information studies, management science, and cognitive science literature disclosed that references were often made to the term “information use,” but alongside these references a number of critical commentaries by Kari (2010), Larsen (1980), and Savolainen (2008) were aimed at researchers who failed
to clearly conceptualize, operationalize, or explicate the term. Though Taylor (1991, p. 230) provided a set of eight information use classifications to conceptualize and operationalize how people use information (enlightenment; problem understanding; instrumental; factual; conformational; projective; motivational; and personal/political) these conceptions proved too detailed for practical understanding and application within the policing environment. Therefore, this dissertation used the three information use conceptualizations offered by Choo (2001b; 2006): (1) sense-making; (2) knowledge creating; and (3) decision-making.

**Sense-making.** The term “sense-making” was briefly introduced earlier in this chapter in the section on “Individual knowledge and organizational knowledge,” where it was touched upon in relation to an individual’s approach to sense-making and organizational identity. However, sense-making, when examined specifically from the information use perspective, is often based on the gap-bridging metaphor developed by Dervin (Dervin, 1998; Savolainen, 2006). Within this sense-making metaphor, individuals are seen to be moving through time, space, and context while constantly facing new problem situations that challenge existing knowledge and create cognitive and/or affective angst. In this context, individuals seek to interpret their environment and beliefs by applying the three inter-related processes of enactment, selection, and retention (Choo, 2001b). Choo (2001b) defined the term enactment as the manner in which individuals “actively construct the environments which they attend to by bracketing, rearranging, and labelling portions of their experience” (p.197). Selection was defined as the manner in which individuals “choose meanings that can be imposed on the equivocal data by overlaying past interpretations as templates to current experience” (p.197). Retention was defined as the manner in which individuals and organizations “stores the products of successful sense-making” (p.197). Simply phrased, when individuals are presented with
new information or situations that challenge their current understanding of the world, individuals must “make sense” of this situation by reflecting upon, relating to, and evaluating previous sense-making activities in terms of their relevance to the current problem-situation in order to create meaning, create new mental models of the problem situation, and guide choice and action.

Whether purposively sought or merely encountered during the sense-making process, information inputs such as knowledge or “information, documents, database systems, media, sources such as peers” (Souto, Dervin, & Savolainen, 2008, p. 8) are considered and evaluated based on the individual’s personal information values, criteria, and attributes. This does not mean to say, however, that all options or information sources will be truly considered or utilised within this sense-making process, as human rationality is bounded by, ambiguity, complexity, politics, preferences, values, and motivation. Moreover, decision-making within organizations often involves “satisficing” or making choices and decisions that are not optimal but “good enough” (March, 1991; McKenna & Martin-Smith, 2005; Simon, 1978).

**Knowledge creation.** The subject of knowledge and knowledge creation was also touched upon previously within this chapter in the section on “tacit and explicit” knowledge but is briefly explored as it relates to information use. As a natural extension of the sense-making information use process, new knowledge within organizations is created by the continuous dialogue and interaction of tacit and explicit knowledge within individuals and by “amplifying” that knowledge by sharing it with others within the organization (Nonaka, 1994; Nonaka et al., 2006; von Krogh et al., 2000). Through the knowledge sharing process, individuals not only overcome personal “boundaries and constraints imposed by information and past learning” (Nonaka et al., 2006, p. 1182) but allow others and the organization to do the same. Therefore, knowledge creation within
organizations involves the processes of both learning and un-learning (Coopey, 2000; Easterby-Smith & Lyles, 2011; Fiol & Lyles, 1985; Huber, 1991). Choo (2001b; 2006) suggested that knowledge building capability within organizations included four activities, namely “shared problem-solving, experimenting and prototyping, implementing new processes and tools, and importing knowledge” (p.199).

These four knowledge building activities are of specific relevance to North American policing because (a) shared problem-solving, the application of new or novel approaches to difficult community issues is often required; (b) new processes and technologies (e.g. evidence-informed research, planning and research, crime analysis and intelligence software) are constantly being explored and implemented; and (c) information sharing within and across organizational boundaries is critical to the success of contemporary policing. In summary, organizational knowledge building involves the creation, sharing, testing, and justification of new concepts so that new understandings and capabilities within the organization can be put into practice.

When viewing the knowledge creation process from the context of policing, new knowledge is essential for all aspects of policing as the larger social, economic, political, and technological environment is constantly changing, and the policies and practices of old hold little sway in a world where accountability, effectiveness, and efficiency are of paramount importance. With respect to information use and within the context of policing, the role of police leaders today is to integrate new knowledge into all of the processes, policies, and practices and coordinate the efforts of individual officers so that effective problem-solving and decision making can take place (Choo, 2006).

**Decision making.** Decision making and associated information and knowledge use within organizations has been explored from many perspectives within the organization behaviour, information science, and business management literature. Examples of these
perspectives include managerial decision making (Bazerman & Moore, 2008), strategic decision making (Dean & Sharfman, 1996; Eisenhardt & Zbaracki, 2007; Schwenk, 2007), ethical decision making (Dose, 2011; Neubert, Carlson, Kacmar, Roberts, & Chonko, 2009; Trevino, 1986), and sense-making (Choo, 2006; Dervin & Naumer, 2009; Savolainen, 2006) to name but a few. Decision making within organizations, whether at the line or senior management level, represents on-going opportunities for success or failure within the organization. The reasoning behind this statement is that each and every decision made within an organization represents a commitment, a choice, and a preference based on personal values and beliefs of the decision maker that will have an impact, positive or negative, on the organization’s ability to achieve desired/stated goals or outcomes.

Within policing, there has been a call by stakeholders from all levels of society for police to make more informed and rational decisions so as to improve organizational accountability, effectiveness, and efficiency. A search of the term “rational decision making” via the Internet will provide the searcher with numerous examples of normative, prescriptive, and/or linear decision making models for consideration. These decision making models, however, are often criticised in the literature for failing to consider these factors: human decision making is not always rational (Bell, Raiffa, & Tversky, 1988; March, 1978; Simon, 1978); not all information or knowledge that is available and/or collected by the decision maker will be used in the decision making process (Berryman, 2006); social pressure and politics play a role within decision making (McKenna & Martin-Smith, 2005); decisions involve personal choices, preferences, and values (Obstfeld, Sutcliffe, & Weick, 2005); and decision making often involves the need to address multi-faceted and sometimes paradoxical situations (Amason, 1996; Stone, 2001).
Each of these decision making factors have direct and/or indirect impacts on organizational information use outcomes.

Information Use Outcome

In addressing the move from the overall concept of information use, which considered information used when a person processed, filtered, and otherwise changed their knowledge structures based on the consideration of new information, the term “information use outcome” was defined by Kari (2007) as “anything that ensues from the individual's assimilation of a message, as that which 'comes out of' becoming informed…An outcome may be either a process or an end state” (p.1).

Information and knowledge use outcomes, whether viewed as a process or as an end state, have obvious implications for police administration, policy, and practice. Police leaders have continued to face on-going calls for more accountable, efficient, and effective police organizations, policy, and practice. The on-line Merriam-Webster dictionary simply defines accountable as “capable of being accounted for,” efficient as “being productive without waste,” and effective as “producing a decided, decisive, or desired effect” (Merriam-Webster Dictionary, 2013). It is critical that police leaders understand and appreciate the connection between individual information behaviours and values, organizational information behaviours, values and norms, and the achievement of information use outcomes.

Information and knowledge use outcomes, within the policing context, include a wide range of organizational administrative, strategic, and operational goals, such as: effective training of police personnel, which is assisted through formal and informal information and knowledge management, and information sharing practices; increasing police personnel’s adherence to policies, practices, and procedures, which is supported by information management systems and organizational transparency; reducing
administrative and operational risk to the organization through proactive and transparent actions; effective analysis of police/community problems, supported by transparent, proactive, formal and informal, policies and practices as well as the appropriate information and knowledge management systems and supports.

The preceding information use outcomes are but a few examples derived from the policing context. Each of these information use outcomes, however, must also be considered in relation to the organization culture, which has been shown in the literature to be one of the predominant barriers to the implementation of change, policy, and practice (Balthazard, Cooke, & Potter, 2006; Chatman & Barsade, 1995). As Chatman and Cha (2003) suggested, strategies and goals are one thing, but “culture is all about execution” (p. 21).

**Organizational Culture**

The prevailing culture(s) within an organization impacts the organization’s ability to make sense of change within and outside of the organization, to adapt to these changes, to be creative and innovative, and to take effective and appropriate action (Gregory, Harris, Armenakis, & Shook, 2009; Weick, 2012). The use of the plural for culture is intentional since research has shown that organizations can consist of a number of sub-cultures (Alavi, Kayworth, & Leidner, 2006), such as professional, administrative, and customer interface subcultures (Hofstede, 2002), and the engineering, operator, and executive cultures (Schein, 1996). It is therefore important to note that organizational culture(s) are not as homogeneous as some would suggest, as differences in power and politics, discontinuity, and conflict shape the organizational landscape (Chuang, Church, & Zikic, 2004; Greenberg & Baron, 2008).
Members of the organization and all of its sub-units or sections become acculturated to the set(s) of organizational beliefs, values, norms, and expectations found within the organization through direct observation, practice, modelling, and personal experiences (Filstad, 2004). This organizational acculturation helps to shape and guide how individuals make sense of new information and knowledge, new policies and practices, and how they make decisions and behave. According to Schwartz and Bilsky (1987) values are “…concepts or beliefs, about desirable end states or behaviours, that transcend specific situations, guide selection or evaluation of behaviour and events, and are ordered by relative importance” (p. 551). These socially constructed unwritten standards are powerful organizational influences, since humans have a tendency to gravitate towards normative orientations (Rokeach, 2000). Taken within the context of policing organizations, which have powerful normative effects, police leaders must pay close attention to the values, beliefs, and behaviours being modelled, as they may or may not be congruent with organizational goals and desired outcomes.

**Summary of Propositions Distilled from the Literature Review**

From the foregoing literature review, the following ten key propositions were distilled about knowledge management in policing.

1. The shift towards knowledge-intensive and evidence-informed police policy and practice represents a major paradigm shift for policing.

2. The shift towards knowledge-intensive policies and practices within policing demands new awareness, understandings, skills, and competencies on the part of individual police officers and the organization as a whole.

3. The desire and need for increased levels of police-academic research collaboration aims to better integrate theory and applications so that crime prevention and law
enforcement operations research can effectively improve both police policy and practice.

4. Information and knowledge sharing and conversion within organizations are social processes, which are impacted by organizational context and culture, which includes policies, practices, routines, and values.

5. Within organizations, information and knowledge is used to construct meaning, create new knowledge and understandings, and make decisions.

6. Knowledge is not only embedded in the minds of individuals but in the organization’s culture, social networks, routines, policies and practices.

7. Individuals within organizations constantly “justify” the truthfulness of their knowledge, beliefs and values based on their personal experiences and social interactions.

8. Police policy and practice is not only influenced from the top down but from the bottom up, therefore, rank and file members play key roles in the achievement of strategic goals and outcomes.

9. How individuals learn, behave, and what they put into police practice is a reflection of the social context in which they work.

10. Organizational information management, behaviours, and values positively and/or negatively impact the achievement of information use outcomes.

**Research Problem**

Examination of the evolution of public policing in North America since the 1980’s, as described in Chapter One, revealed the dominance of primarily reactive policing and early forms of Community Policing strategies. By comparison, policing today is described as increasingly innovative, data/evidence-driven, and uses focused
methodologies (Braga & Weisburd, 2007; Stone & Travis, 2011). This evolution of policing policy and practice was borne out of necessity.

When viewed from the perspective of organizational information seeking, creating, and use, the core of this evolution in North American police policy and practice may be explained in terms of how police and police agencies use information to make sense of changes in their environment (Dervin, 1998; Dervin & Naumer, 2009), adjust their thinking to develop new policies and practices more suitable to the new realities (Choo & Bontis, 2002), to achieve organizational goals and outcomes through action (O'Reilly, 1983). In explaining how organizations use information to construct meaning, create knowledge, and make decisions Choo (2006) identified three primary uses of information with an organization: “(1) create an identity and a shared context for action and reflection, (2) develop new knowledge and new capabilities, and (3) make decisions that commit resources and capabilities to purposeful action” (2006, p. 1).

A core underlying theme pervades most, if not all, of the issues identified in the foregoing review of the previously identified demands for police policy and practice reforms, the litany of criticisms contained within the high profile police investigations, and the evolution of policing models and the associated issues and concerns over successful implementation and integration. This theme is that police information and knowledge are impeded by aspects of organizational behaviours, values, and beliefs (culture), information technology, organizational structure, policies, and/or processes. This systemic information and knowledge use impairment, whether viewed from the level of a specific individual police agency or from the field of policing generally, does not philosophically nor practically support police reforms that require increased organizational accountability, effectiveness, or innovation, nor does it allow for effective organizational learning. Support for the latter premise was provided by Maguire (2004) who stated:
Lacking both the right kinds of information and the skills necessary to transform that information into meaningful and useable measures, police agencies tend to suffer from what management guru Peter Senge (1990) calls an 'organizational learning disability.' While the extent of the disability certainly varies across agencies, it is to some extent systemic, affecting the entire policing industry. (p. 1)

Within the context of knowledge generation and generalization within an organization, a number of additional organizational learning disabilities were identified (Yeung, Ulrich, Nason, & Von-Glinow, 1999) as follows:

a. Blindness: inability to assess environmental opportunities and threats accurately;

b. Simple mindedness: deficiencies in analysis and solution generation;

c. Homogeneity: lack of variety in skills, information, ideas, and values;

d. Tight coupling: excessive coordination among different organizational units

e. Paralysis: inability to implement new actions or procedures;

f. Superstitious learning: inability to interpret accurately the meanings of experience;

and

g. Diffusion deficiency: inability to share ideas with all relevant parts of the organization (pp. 105-106)

While the foregoing disabilities were specified within the private sector, many of these same information sharing and learning dysfunctions can be clearly observed within the field of public policing. These disabilities can be subsumed under the rubric of organizational behaviours, values, and beliefs (culture), information technology, organizational structure, policies and/or processes.

Decision-making within organizations is a dynamic and complicated process that requires decision makers to “exploit their existing knowledge, but they must also invest in continually exploring new knowledge as strategic options” (Sambamurthy & Subramani, 2005) and “make choices among alternatives that are often uncertain and to choose wisely
in order to benefit both the organization and its key stakeholders” (Nutt & Wilson, 2010, p. 3). Both of the foregoing statements are directly applicable to police organizations in North America for the following reasons. Firstly, there is a significant amount of information and knowledge that exists within both the minds of police personnel and in the structures, policies, and processes of each and every police organization. Reflection on the demands outlined in Chapter One for improved effectiveness, accountability, and information and knowledge sharing within and across police agencies, and the examples of high profile investigations that were marred by ineffective sharing and cooperation at the organizations’ technological, structural, and cultural levels, demonstrated a clear need for police leaders to invest more time and effort in understanding and mediating these issues in the future.

Secondly, all decision making in policing is essentially aimed to achieve three broad outcomes: (1) creating work that is beneficial to the organization and the community; (2) improving the problem-solving capabilities of the police and the communities that they serve; and (3) improving information sharing consistent with the needs of contemporary policing models and stakeholders within and outside of the organization. Therefore, police leaders and organization must: (1) exploit their existing knowledge, (2) invest in the creation of “new” knowledge, and (3) make better informed decisions based on an understanding of the information and knowledge sharing dynamics, as dictated by the existing technical, structural, and cultural infrastructures, within their own agencies, and take advantage of all reasonably available information and knowledge that is within and outside of the individual police organization.

Gaps in our Knowledge and Literature

Limited conceptualization of information use within the policing literature. The foregoing review of policing and relevant information use and knowledge
management literature revealed a key gap in our knowledge and research on this topic. The preponderance of information and knowledge management literature, as it relates to policing, has targeted areas such as intelligence-led strategies and issues (Collier, 2006; Gottschalk & Gudmundsen, 2009; Liu & Eck, 2008; Ribaux & Birrer, 2010; Xu & Chen, 2005); police investigations (Gottschalk, 2006); knowledge management strategies and issues within policing at higher levels of abstraction (Brown & Brudney, 2003; Chávez, 2005; Chen et al., 2002; Dean & Gottschalk, 2007; Hughes & Jackson, 2004); police performance (Collier, Edwards, & Shaw, 2004); and police training (Canadian Police Knowledge Network, 2012).

This literature is of definite interest and value to the field of policing and, in some instances, touches upon organizational values and culture as potential barriers to knowledge management or intelligence-led strategic implementation. However, the dearth of research was notable regarding specific information and knowledge sharing issues and observations of rank and file police officers who must share copious quantities of information and knowledge many times a day as part of their regular police duties, let alone observations of personnel who work within the areas of intelligence, street crimes, crime analysis, planning and research, or any other knowledge intensive role within the agency.

Further, this gap in our knowledge with respect to impediments to effective police information and knowledge sharing at the rank and file level is of critical importance, since each and every contemporary policing model is based on the core principles of information sharing and problem solving. Examples include the primary policing models employed across North America today: Community Policing (Community Oriented Policing Services, 2009; Royal Canadian Mounted Police, 2012); Problem-oriented Policing (Braga, 2008; Cordner & White, 2010; Read & Tilley, 2000); Compstat (Bratton
& Malinowski, 2008; Petrosino, Farrington, & Sherman, 2004); Intelligence-led Policing (Goldstein, 2003; Peterson, 2005; Ratcliff, 2007); Evidence-based Policing (Petrosino, 2001; Sherman, Farrington, Welsh, & MacKenzie, 2002); or other derivations or applications of these models, including “reactive” policing.

**Poor alignment of organizational behaviours and values.** In terms of police accountability, cost reduction, and organizational performance, this gap in our knowledge does not allow police leaders and police agencies in North America to identify where potential impediments to information and knowledge sharing reside within their organization, which rank and role functions are impacted the most, what actions can or cannot be taken to remediate the issues, and whether personnel are aligned to the desired values and behaviours of the organization as they relate to the achievement of organizational outcomes. Without such knowledge, police leaders are ill-equipped to ensure that strategic goals are achieved, resources are used effectively, and police personnel have the knowledge, skills, and resources to do their jobs.

**Applicable conceptual framework for information use in policing.** Recognizing the importance of information seeking, creating, and use within the field of policing, while acknowledging the positive and/or negative impact that organizational structure, technology, and culture (behaviours, values, and norms) have on achieving desired goals and outcomes, this dissertation extended prior research (Bergeron et al., 2007; Choo, Bergeron, Detlor, & Heaton, 2008) that explored the linkages between organizational information management and organizational information behaviours and values (culture) on the achievement of three specific information use outcomes: (a) problem solving, (b) creating work that is beneficial, and (c) information sharing.

Within that research program, three particularly salient and important research outcomes were noted: (1) each of those studies suggested that the overall “information
culture” of an organization could be identified by examining the underlying information behaviours, values, and norms of the organizations members; (2) the information management practices and information behaviours and values within each organization were unique; and (3) these unique constellations of practices, behaviours, and values accounted for significant proportions of variance in the achievement of the information use outcomes.

Consideration of the multitude of information and knowledge sharing and use issues within North America policing presented in Chapter One, and the need to improve police policy and practice in relation to the achievement of information use outcomes, along with the observed gaps in our knowledge and research identified in Chapter Two, informed the overall objective of this research study: to make relevant and valuable contributions to policing within North America by conducting research on information use policy, practice, and organizational effectiveness that might support empirically based recommendations for improvements to policing practice and policy.
CHAPTER THREE

Method

Research Aims

The specific objectives of this program of study were to explore, gain a better understanding of, and report on:

1. The underlying information management and information behaviours and value factor that best supported the achievement of three key information use outcomes within policing, namely (a) problem solving; (b) creating work that is beneficial; and (c) information sharing (Chapter Four);

2. Whether three Canadian police organizations were differentiated in terms of their information management, information behaviours and values, and/or the achievement of the three information use outcomes (Chapter Four);

3. Whether the information use and outcome research concepts and framework previously applied within Canadian health science, legal, and engineering organizations by Bergeron et al., (2007) and Choo et al., (2008; 2006) were applicable and of value to policing organizations (Chapter Four); and

4. The perceived underlying impediments to information and knowledge sharing within the context of three Canadian police agencies, as framed from the structural, technical, and cultural knowledge management infrastructure perspective (Chapter Five).

Research Design

A single web-based self-completed survey questionnaire (Appendix C) was delivered to all sworn police practitioners within three municipal police agencies in Canada. Responses to closed and open-ended survey questions yielded data that provided the platform for both studies and empirical papers presented in Chapters Four and Five, respectively. A complementary within-stage mixed-methods approach was undertaken,
wherein both quantitative and qualitative research methods were utilized to identify and measure interconnected yet different perspectives on the issues under investigation within a single-stage study (e.g., information use outcomes and information sharing).

A quantitative research approach was utilised within the first research study (Chapter Four), which collected and subjected the data to various statistical analyses in order to support or refute the application within policing of the “information use” research framework previously applied within the health, legal, and engineering fields. That research method was followed by an inductive qualitative study presented in the second research article (Chapter Five), which was used to “discover” what the data were saying by applying a bottom-up data–to-theory approach.

By combining the two research methodologies, this research program sought triangulation across the findings (i.e., convergence and corroboration of results) and obtained a rich and more elaborated understanding of the larger information use issues.

**Study One**

The quantitative information management, information behaviour and values, and information use outcome findings reported in empirical research study presented in Chapter Four were obtained by applying a research design previously tested and used within the context of Canadian health science, legal, and engineering organizations (Bergeron et al., 2007; Choo et al., 2008; Choo et al., 2006).

**Independent variables.** The primary independent variables, as used by Bergeron et al. and Choo et al., included a total of 25 survey items related directly to the two information constructs “information management” and “information behaviours and values” (Table 2-1).
**Information management.** The information management construct contained ten survey items that specifically probed information policies, strategies, and systems within the organization (Questions 27, 29, 32, 33, 35-40, Appendix C).

**Information behaviours and values.** The five information behaviours and values constructs were probed by a total of 15 survey items examining the larger “information culture” of the target organizations, and related to how information was used and applied within those organizations. Definitions for each of the five information behaviour and value constructs were adapted from Choo et al., (2008, p. 796) and are provided below with the corresponding survey question numbers:

**Information integrity.** Use of information in a trustful and principled manner at the individual and organizational level (Questions 42-43, Appendix C).

**Information transparency.** Openness in reporting information on errors and failures, thus allowing learning from mistakes (Questions 44-46, Appendix C)

**Information sharing.** Willingness to provide others with information in an appropriate and collaborative manner (Questions 48-51, Appendix C).

**Information proactiveness.** Active concern to obtain and apply new information to respond to changes and to promote innovation (Questions 52-54, Appendix C).

**Information informality.** Willingness to use and trust informal sources over institutionalized information (Questions 55-57, Appendix C).

Additional independent variables were included within the research survey, exploring three evidence-based policing scenarios (Questions 1-21, Appendix C); personal and organizational demographics (Questions 22 and 23, Appendix C); perceived policing style within the organization (Question 24, Appendix C); perceived incentives to information/knowledge sharing (Question 25, Appendix C); perceived impediments to information/knowledge sharing (Question 26, Appendix C); extra-organizational
information scanning frequencies (Question 28, Appendix C); who within the organization, was responsible for policy and practice improvement information seeking (Question 30, Appendix C); and which specialty unit was responsible for policy and practice improvement information seeking (Question 31, Appendix C). This dissertation portfolio and Chapter Four utilized and reported on the personal and organizational demographics (Questions 22 and 23, Appendix C).

**Dependent Variables.** The dependent variable, information use outcomes, contained a total of seven survey items, as displayed in Table 2-1. Five of these questions were adopted from the previous research by Bergeron et al. and Choo et al. (Questions 58, 59, 61, 62, 63, Appendix C) whereas the remaining two items were developed by the candidate (Questions 47 and 60, Appendix C).
<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Definition</th>
<th>Survey Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information management</td>
<td>Organization information and knowledge policies, strategies, and systems</td>
<td>Knowledge and information in my organization is available and easy to access what I need. My organization has formal procedures to collect knowledge regarding best practices and current research in policing. My workplace has a formal policy for managing knowledge creation and information. My organization has a culture that promotes knowledge and information sharing. My work unit promotes knowledge and information sharing. My organization has formal procedures to share knowledge regarding best practices and current research in policing. My work unit encourages experienced officers to communicate their knowledge to less experienced officers. My organization has formal mentoring programs and/or apprenticeships. Information about good work practices, lessons learned and knowledgeable persons is easy to access in my organization. My organization makes use of information technology to facilitate knowledge and information sharing.</td>
</tr>
<tr>
<td>Information Sharing</td>
<td>Willingness to provide others with information in an appropriate and collaborative manner</td>
<td>I often exchange information with the people in my agency but outside my regular work group/unit. In my work unit, I am a person that people come to often for information. I often exchange information with partner organizations. I often exchange information with citizens and the community. I actively seek information on changes and trends in my profession by looking outside my organization. I use information to respond to changes and trends outside my organization. I use new leading practice information to create or enhance my organization’s enforcement/crime prevention programs, policies and procedures.</td>
</tr>
<tr>
<td>Information proactiveness</td>
<td>Active concern to obtain and apply new information to respond to changes and to promote innovation</td>
<td></td>
</tr>
<tr>
<td>Independent Variables</td>
<td>Definition</td>
<td>Survey Questions</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Information transparency</td>
<td>Openness in reporting information on errors and failures, thus allowing</td>
<td>Senior officers and supervisors of my work unit encourage openness.</td>
</tr>
<tr>
<td></td>
<td>learning from mistakes</td>
<td>The people I work with regularly openly share information on errors or failures in police policy or practice.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The people I work with regularly use information on errors or failures to address problems constructively.</td>
</tr>
<tr>
<td>Information Integrity</td>
<td>Use of information in a trustful and principled manner at the individual</td>
<td>Among the people with whom I work (group/unit), it is normal for individuals to keep information to themselves.</td>
</tr>
<tr>
<td></td>
<td>and organizational level</td>
<td>Among the people with whom I regularly work (group/unit), it is normal to leverage information for personal advantage.</td>
</tr>
<tr>
<td>Information informality</td>
<td>Willingness to use and trust informal sources over institutionalized</td>
<td>I trust informal sources (e.g. colleagues) more than I trust formal sources (e.g. memos, reports, research).</td>
</tr>
<tr>
<td></td>
<td>information</td>
<td>I use informal sources (e.g. colleagues) extensively although credible formal sources (e.g. memos, reports, research) are available.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I use informal sources (e.g. colleagues) to verify and improve the quality of formal sources (e.g. memos, reports, research).</td>
</tr>
<tr>
<td>Information use outcomes</td>
<td>The construction of new knowledge and new meanings; the transformative</td>
<td>(New) My work tasks demand that we use enforcement and crime prevention policies/procedures that have been successful in the past.</td>
</tr>
<tr>
<td></td>
<td>act of shaping decisions and influencing others; and the movement and</td>
<td>My work benefits my organization.</td>
</tr>
<tr>
<td></td>
<td>exchange of information with colleagues</td>
<td>I have influence over what happens within my work unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(New) My work is guided by the most current research on law enforcement/crime prevention policies and practices.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I quickly recognize the complexities in a crime prevention/reduction situation and find a way to solve the problem.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>My work tasks demand new, creative ideas and solutions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sharing knowledge and information is critical to my ability to do my job.</td>
</tr>
</tbody>
</table>

*Note. Adapted from Choo et al. (2008)*
Although Studies One and Two differed in terms of research methodology applied (i.e., one applied quantitative and the other qualitative methods) they are complementary and interconnected in terms of their stated research goals: (1) the identification of information management and information behaviours and values that support the achievement of three critical police information use outcomes: problem solving, creating work that is beneficial, and information sharing, and (2) the identification of cultural, technical, and structural impediments to information and knowledge sharing within police organizations.

**Research Hypotheses**

**Study one (Chapter Four).** Two research hypotheses were posited in Study One in relation to the research presented in Chapter Four. Firstly, it was hypothesized that when compared with four the other information behaviour and value constructs (information management, transparency, proactiveness, and integrity) the “information sharing” construct would have the greatest impact on the achievement of the information outcomes of problem solving, creating work that is beneficial, and information sharing. This hypothesis was based on the understanding that information sharing, as a behaviour and a value, is one of the cornerstones of contemporary policing methods and models (LeBeuf & Paré, 2005).

The second hypothesis was that statistically significant differences would emerge between the three police agencies in their information management and/or information behaviours and value factors. This hypothesis was based on two premises: (a) each police organization is constrained and/or enabled by its own unique institutional environment (Zhao, Ren, & Lovrich, 2010), and (b) the prior research by Bergeron et al., (2007) and Choo et al., (2008) indicated that within the organizations that they studied, unique information cultures were observed when one organization was compared to the other.
**Study two (Chapter Five).** This research study, reported in Chapter Five, was qualitative in nature and inductively explored the impediments to information and knowledge sharing as reported and perceived by the police practitioners responses to a single open-ended question (Question 26, Appendix C). An inductive methodology was applied to analyse these data as this approach allowed the researcher to move from the specific perceptions and observations of the police practitioners to broader themes, generalizations, and theories. Given the exploratory and inductive nature of the analyses, no specific research hypotheses were formulated and tested.

**Materials and Procedures**

A web-based self-completed survey questionnaire was delivered to all police practitioners within three municipal police agencies in Canada (Appendix B). A copy of the survey questionnaire is attached marked Appendix C.

**Demographic information.** Demographic data were collected from participants who scrolled through a number of drop-down boxes that contained general personal and organizational descriptors described within Questions 22 and 23 respectively (Appendix C). Question 22 was optional and sought general personal and professional information that included: gender; age range; police rank; years of service within the policing agency; years of service within policing generally; highest level of education completed; and broad work unit category. Question 23 was also optional and solicited information related to the participants’ policing agency, i.e., organization type; organization size; and province where the police organization was located.

**Information management, integrity, sharing, proactiveness, informality and transparency.** Responses pertinent to participants’ views on Information Management, Integrity, Sharing, Proactiveness, Informality and Transparency were gathered by assessing the participants’ level of agreement with a series of statements on a 5-point
Likert scale (1 = strongly disagree; 5 = strongly agree) with a sixth option to answer “don’t know.”

**Information management.** Questions 27, 29, 32, 33, and 35 through 40 (Appendix C) asked questions related to the information policies, strategies, and systems within the policing organization.

**Information integrity.** Questions number 42 and 43 sought responses in relation to information integrity, which was the use of information in a trustworthy and principled manner at both the individual and organizational levels (Appendix C).

**Information transparency.** Questions 44 through 46 (Appendix C) asked practitioners to assess their level of agreement with the statements that senior officers and supervisors encouraged openness, that people within the workplace share information regarding policy and practice failures, and the statement that people address problems constructively by reflecting on errors and/or failures at the workplace.

**Information sharing.** Information sharing survey items included Questions 48 to 51 respectively. This bank of four questions sought the practitioners’ levels of agreement with questions as to whether there was a willingness to share information, both inside and outside of the organization, in “an appropriate and collaborative manner” (Appendix C).

**Information proactiveness.** Questions related to information “proactiveness” were presented in Questions 52, 53 and 54 respectively (Appendix C). Question 52 asked whether the practitioner “actively” looked outside of their organization for changes within the policing profession. Question 53 followed up by asking whether the person “used” information to respond to these police profession changes. In further examining the level of proactiveness, Question 54 asked practitioners whether they used new policy and practice information to “create or enhance” their organization’s policies, practices, and procedures.
**Information informality.** This portion of the survey, which generally examined whether there was a willingness on the part of police practitioners to use and trust informal sources over institutionalized information were represented by Questions 55 to 57 (Appendix C). Question 55 asked if practitioners trusted informal sources over formal sources, Question 56 asked whether practitioners used informal information sources despite “credible” formal sources being available, and Question 57 asked whether the practitioner used informal information sources to augment and/or verify formal material sources.

**Impediments to information and knowledge sharing.** A single open-ended question was used to qualitatively explore the perceived impediments to information and knowledge within the police practitioner’s organization (Question 26, Appendix C). It asked practitioners within the three Canadian municipal police agencies to complete the following sentence: “In my agency, the greatest impediment(s) to the sharing of valid information and knowledge is/are....”

**Sampling Procedures and Recruitment**

Police practitioners from all line, supervisory, and command ranks within three Canadian municipal police agencies were targeted for inclusion within this research study. These three police organizations represented a mix of both independent municipal and Royal Canadian Mounted Police (RCMP) municipal police agencies.

Prior to sending invitations to participate in this research project to the officers in charge of the RCMP agency, approval of the overall research design and approval for any RCMP Detachment to participate was obtained from the RCMP Headquarters in Ottawa, Canada. Approval of the research design and approval for RCMP Detachments, at the discretion of the officer in charge, to participate in this independent research project was sought and obtained from the RCMP Survey Centre in Ottawa, Ontario (Appendix D).
Letters of invitation to participate in this research study were sent to the officers in charge of the three participating agencies. Upon agreement to participate, each of the three commanding officers identified a police officer within their police organization to act as a contact/liaison officer between the researcher and the participating agency. Further, these same three police organization liaison officers were tasked by their commanding officers to facilitate the internal distribution of the survey materials, on behalf of the researcher, to all sworn officers within their respective organizations. Recruitment of participants, within each participating agency, was accomplished by the liaison officer for that agency who issued internal organizational emails to all sworn officers.

**Procedure**

The survey was hosted by a secure web-based survey provider, SurveyMonkey ® (professional level contract with optional enhanced SSL encryption), and was piloted prior to full implementation. No issues were identified with respect to survey functionality, length, or the ability of the survey items to capture the appropriate content and responses. Procedurally, the choice for this format of delivery was due to the need to reach geographically dispersed police agencies, the need to control survey costs, all targeted participants were computer literate, and all police practitioners within these three police organizations had ready access to personal and/or general office computer systems and the Internet.

The survey was open for responses for six months from October 2010 and March 2011. All sworn officers, within the three policing organizations, received personal email invitations to participate in the research study. These emails included a Research Information Sheet attachment, which provided the participant with an overview of the research being conducted; contact information for the researchers; an explanation of the
process for access to the online survey; an estimate of how long it would take to complete the survey; how the data were to be collected and used; participant rights; and Charles Sturt University Human Research Ethics Committee contact information (Appendix E - English and Appendix F -French). Participants who were employed within the RCMP police agency were provided access to Research Information Sheets in both of the official languages of Canada, English and French, as was required by the federally mandated RCMP organization.

Recruitment emails included instructions for the survey and provided an active web-link to the online survey. When survey participants activated the survey URL web-link, the cover page of the survey was presented seeking acknowledgment of reading and understanding the attached Research Information Sheet (Appendix E - English and Appendix F -French) and consent to participate by checking the “Consent” box.

Due to the need to allow multiple responses per computer within the police organization setting, respondents were, by SurveyMonkey® configuration, restricted to completing the survey in one sitting (Appendix G). Procedurally, this meant that once a police officer left the survey for whatever reason and returned to complete it, he or she was compelled to start the survey from the beginning.

All participants were asked to complete a total of 63 questions, including general demographic questions and questions about three “evidence-based” policing scenarios. The survey took approximately 20 - 30 minutes to complete. For the purposes of this dissertation portfolio, participants’ responses to a total of 35 questions pertaining to general personal and organizational demographics, information use, and information use outcomes are reported.

Within the data collection period, three follow up e-mail reminders were sent to all sworn officers within the three police agencies by the appointed police organization
liaison officers. Though it would have been preferable to send targeted emails only those officers who had yet to respond to the survey invitation, the researcher was required to remain at “arms-length” from the participants for two reasons. Firstly, each of the three police organizations was concerned about independent researchers acquiring and using police organization email lists. Therefore, each police organization maintained full control of the names and email addresses of the police officers on the survey distribution list. Without access to and the use of the email distribution lists, the researcher was precluded from utilising built in targeted reminder systems available from within the web-based survey site. Secondly, this particular arrangement was in keeping with the needs of the Charles Sturt University Human Research Ethics requirement to protect participant confidentiality and to avoid perceived or actual coercion that the researchers maintain an “arms-length” distance in the participant recruitment process because of his employment within a Canadian policing organization

Sample Size

All sworn officers (N = 1850) within the three targeted police organizations had the option to participate, therefore were self-selecting. A total of 212 practitioners responded to the survey, comprising an 11% response rate. Of these, a total of 134 officers completed the survey to a level that was acceptable for the analyses reported in this dissertation portfolio. A case was deemed to be acceptable if four or fewer questions were missed across the survey, including “don’t know” responses.

Data Management and Screening

Survey responses were initially downloaded from SurveyMonkey® to a Microsoft Excel spreadsheet form. Responses were reviewed and deleted from the spread sheet in all cases where: cases were empty; it was apparent that the participant terminated the survey prior to completion; there were high levels of “don’t know” responses, which
would reduce the informative value of the data (Krosnick et al., 2002); and when there were cases that did not meet the acceptable criteria. Acceptable cases were then imported, when and where appropriate, into a PASW Statistics 18 software program, release Version 18.0.0, for quantitative statistical analysis and into QSR International NVivo 8, Version 8.0.340.0.SP4, for qualitative analysis.

Once the data were imported into the PASW Statistics 18 software program, further screening was conducted for invalid cases, as defined above. Missing values were identified and labelled. All independent and dependent variable measures were defined by type and provided with both descriptive and value labels. In those instances where the same question was delivered to each of three agencies, they were combined within a single new variable, e.g., law enforcement category.

All independent and dependent variables were examined using the Descriptive Statistics frequencies, descriptives, and cross-tabs commands to check for irregularities or errors in the variables. Through the data screening process it was ascertained that respondents misunderstood the scale for the information construct “integrity” (Questions 42-43, Appendix C), therefore the data were reverse coded.

The qualitative open-ended data related to Question 26 (Appendix C) that were utilized within Study 2 presented in Chapter V were also screened for possible irregularities. Case responses were initially examined within PASW Statistics 18 software and compared to the question being asked. Cases were excluded in all instances where: response fields were empty, the response(s) were ambiguous, or the responses did not match or were otherwise inappropriate to the question. Through this screening process, a total of four cases were excluded. The screened data were then imported into the QSR International Nvivo 8 software for further analyses.
Participants

Policing organizations. The three participating municipal police agencies comprised: (1) one medium-sized independent municipal agency (MED-IND); (2) one medium-sized Royal Canadian Mounted Police (RCMP) municipal police agency (MED-RCMP); and (3) one large sized independent municipal agency (LRG-IND). Agency size was based on the authorized strength or the budgeted number of sworn policy officers in the year that this research was conducted (years 2010-2011). The medium-sized municipal police agencies both employed between 200 and 300 sworn police officers, whereas the large municipal police agency employed in excess of 300 sworn police officers.

A total of 134 participants completed all demographic questions. The number of participants from each police agency and the percentage of the total were as follows: LRG-IND ($n = 74, 55\%$), MED-IND ($n = 31, 23\%$) and MED-RCMP ($n = 29, 22\%$).

Participant gender. Of the combined participant group, 84\% were men and 16\% were women.

Participant rank. With regards to police officer rank: 49\% of the participants were ranked Constables (line personnel); 43\% were ranked Corporals, Sergeants, or Staff Sergeants (supervisory level); and 4\% were Inspectors, Superintendents, Chief Superintendents, Deputy Chiefs or Chief (command level).

Participant formal education. Almost one half of the participants (48\%) reported some college education, and two-fifths (41\%) indicated they had completed a four year college or university degree. Very few of these participants (3\%) reported having completed a graduate degree. The remainder of the participants (6\%) reported completion of high school or their general education development (GED).
CHAPTER FOUR

Study One


Abstract

North American police leaders are tasked to do more with less while improving organizational performance and accountability. This study examined the information management and information behaviours and values of three Canadian police agencies to determine which factors had the greatest impact on the achievement of the information use outcomes of problem solving, creating beneficial work, and information sharing. A total of 134 sworn officers from various ranks across the three police organizations completed an online survey. Considering five information behaviours, regression analysis revealed that information proactiveness and information management played significant roles in the achievement of the three information use outcomes. Factor analysis, using the same five information behaviours, uncovered two new factors (information quality control and proactive collaboration) that accounted for 71% of variance in the achievement of information use outcomes within this policing context. Regression analysis, with interactions, revealed that these three agencies were differentiated in terms of the information management and sharing factors. In comparison to the RCMP agency, increases in information management had a greater impact on information use outcomes for the large independent municipal agency and significantly greater for the medium-sized independent municipal agency. The RCMP agency realized larger information use outcome gains for each unit of information sharing compared to the two independent municipal agencies. These findings are important as the outcomes of problem solving,
creating beneficial work, and information sharing are foundational to contemporary policing models.

**Keywords:** culture; police; information sharing; outcomes

**Introduction**

North American policing policies and practices continue to shift under the weight of competing administrative, programmatic, strategic, and technological priorities (Braga & Weisburd, 2007; Murphy & McKenna, 2007; Tilley & Laycock, 2002). Within this era of ever-increasing social, economic and management complexity and resource constraint, law enforcement leaders are called upon by a broad range of stakeholders to make more rational and accountable decisions for problems and policy issues that fall under their mandate or control (Lister, 2006; Sansfaçon, Barchechat, & Oginsky, 2002; Sherman et al., 2002). Central to this paradigm of accountability is the overarching need for leaders and their organizations to be open to new information, knowledge, and ideas that may support, refute, or modify current policy and practice (Correia & Wilson, 2001; Curry & Moore, 2003; Simons, 2005).

For the last two decades the “business” of policing, whether viewed from a crime fighting, crime prevention, and/or public service perspective, has been greatly influenced and impacted by a number of different, sometimes overlapping, and yet evolving policing policy and practice innovations. Among these are: policing competency development (Police Sector Council, 2011a); Community Policing (Gianakis & Davis, 1998); Problem-oriented Policing (Sidebottom, Tilley, & Eck, 2012); Hot-spots Policing (Weisburd & Neyroud, 2011); Compstat (Magers, 2004); Intelligence-led Policing (Carter & Carter, 2009); and Evidence-based Policing (Nutley, Walter, & Davies, 2008). These innovations were implemented in response to the rising crime rates of the recent past as well as
increased stakeholder dissatisfaction with police performance and problem solving. Within each of the previously mentioned policing models resides a set of information behaviours, values, and management requirements, which require not only a political and philosophical commitment from the leaders of the police organization but a technological and cultural commitment as well (Schafer, Buerger, Myers, Jensen, & Levin, 2011; Scott, 2000; Williams, 2003). While the judgement as to what sources and types of information and knowledge practices are required for sound decisions and improved organizational performance in any given context can be contentious, the linkage between an organization’s information knowledge management, information behaviours, beliefs, and values, and their impact on information use outcomes and performance are not (Alavi et al., 2005; Choo, 2006; Choo et al., 2008).

An organization uses information for three primary purposes: (1) “to create an identity and a shared context for action and reflection”; “develop new knowledge and new capabilities”; and (3) “make decisions that commit resources and capabilities to purposeful action” (Choo, 2006, p. 27). Recent studies describe this “sense-making” as the process by which individuals and organizations seek information to fill gaps in experience and knowledge when faced with uncertain, volatile, or otherwise equivocal environments (Choo, 2001a; Weick et al., 2005). It is therefore unsurprising that a dominant theme within the business management, economics, and sociology literature over the last two decades is that organizations need to innovate, adapt, and create new knowledge for action to survive within current business, economic, and social contexts (Fagerberg, Mowery, & Nelson, 2005). This message has a particular salience to the public sector and policing organizations as they deal with issues and problems that are often highly complex, contestable, or intractable in nature but little empirical research testing these issues in the
policing contexts been conducted (Gardner, 2011; Matthews, Lewis, & Cook, 2009; Prahalad & Krishman, 2008).

Though much of this same literature is devoted to the topic of information and knowledge management, researchers have acknowledged that, in addition to the technical prerequisites for information and knowledge sharing, organizations must consider the “softer” aspects of effective information and knowledge collection and use, such as: organization context, social interaction, politics and organization culture (Curry & Moore, 2003; Detlor et al., 2006; Schein, 2010). Accordingly, this study applied Pan and Scarbrough’s social-technical theoretical perspective where information and knowledge management are “…multi-layered systems, with loosely coupled technological, informational and social elements interacting over time to determine practical outcomes” (Pan & Scarbrough, 1999, p. 362). These multi-layered systems are defined as follows: “infrastructure” is the information technology systems that allow members of the organization to have contact; “info structure” are the formal rules that govern information exchange on the network; and “info culture” is the embedded cultural knowledge that governs knowledge and information constraints (Pan & Scarbrough, 1999, pp. 362-363).

**Organizational Behaviours and Values**

Undisputedly, an organization’s culture impacts the organization’s ability to make sense of its environment, adapt, perform, innovate, and take action (Alavi et al., 2005; Balthazard et al., 2006; Thompson, 2003). Present-day organizations face a variety of complex environmental, social, and financial volatility and chaos (Seijts, Crossan, & Billou, 2010). To develop effective decisions, policies and practices, reaction to these factors has increasingly emphasised the importance of information sharing, collaboration, and knowledge management within the private or public sector (Braga, 2008; Choo, 2006; Wren, 2002). Whether viewed from a public policy or a private sector perspective,
organizational culture plays a key role in the decision-making and action taking processes as the limits of personal and professional rationality are often confounded by a variety of factors, including: the norms, values and beliefs; shifts in attention, choices and preferences; incongruence between espoused values and theories in use; and shifting political coalitions within the organization (Argyris, 1993; Janis & Mann, 1977; Tversky & Kahneman, 1974).

The culture of an organization may be broadly defined as a composite of the values, beliefs, norms and attitudes within the organization. Values are attitudes about the worth or importance of people, concepts or things. Norms are the socially shared standards that provide guidance and indicate the expected behaviour, and attitudes are the mind-sets of individuals within the organization. One way of viewing the sets of values, beliefs, norms, and assumptions that belong to those participating in the achievement of the organization’s tasks is that they are the “rules of the game” and that these “…organizational games are mixed motive games of coordination and conflict, of cooperation and contestation” (Ocasio, 1997, p. 196). Simply put, rules, written and unwritten, guide organizational life. Another view of organizational rules suggests that:

Rules in organizations can be seen both as products of learning and as carriers of knowledge…rules evolve as organizations solve the political and technical problems they face and how they mediate interactions between the actions and lessons of the past and those of the present. (March, Schulz, & Zhou, 2000, p. 3)

Thus, written and unwritten organizational rules essentially guide, shape, and influence information and knowledge acquisition, innovation, and use, along with the outcomes that are derived from the application of that information and knowledge. These written and unwritten rules are of critical importance to policing as rank and file officers are not only guided by these rules, but these rules impact (positively or negatively) the achievement of
goals, including: problem solving, creating work that is beneficial, and information sharing.

**Organizational Goals and Outcomes**

Organizational theory and thinking has shown that organizations are highly complex, dynamic, and interactive social, economic and political systems that rely on their interaction with their external environments for materials, resources and information (Daft, 2009; Pondy & Mitroff, 1979). The same materials, resources and information inputs “…yield some outcome that is then used by an outside group or system” (Katz & Kahn, 1978, p. 3). Yet, relatively little is known about the utilization by policing organizations of their knowledge and information capabilities to achieve three key information use outcomes: (1) problem solving, (2) creating work that is beneficial, and (3) information sharing. These three outcomes, individually and collectively, play foundational roles in contemporary North American policing by supporting a broad range of strategic, operational, and human resource management initiatives, including, but not limited to: Problem-oriented Policing, Community Policing, Intelligence-led Policing, and police competency requirements (Braga & Weisburd, 2007; Peterson, 2005; Police Sector Council, 2011a).

Problem-solving incorporates a personal and/or professional need to seek information to address cognitive gaps, to deal with stress due to problem equivocality, risks, and to deal with contextual factors associated with specific problems (Moldoveanu, 2009; Simon et al., 1987). Each of these problem states and problem-solving activities are intricately linked to all forms of police practice, including those that employ systematic problem scanning, analysis, response and assessment, or other related steps (Rachel Boba & Crank, 2008; Royal Canadian Mounted Police, 2011b). Creating work that is beneficial is critical to all organizations, private and public sectors alike, but when it is considered
within the context of a police organization, this outcome naturally extends itself beyond
the confines of the police agency and out into the communities it serves. Information
sharing, formal and informal, is a keystone to modern police practice and forms the base
for all models of policing to one extent or another (LeBeuf & Paré, 2005; Plecas,

Recent research findings of Choo et al. (2006) and Bergeron et al. (2007) derived
from an examination of organisations in the health science, legal, and engineering fields
suggested that the information culture of an organization can be identified by examining
the information behaviours and values of its members. This same research indicated that
each organization’s information behaviours and values are unique and that these unique
sets of behaviours and values can account for significant proportions of variance in
information use outcomes. Research into organizational information culture and its
impact on information use outcomes, however, has been limited to a small number of
organisation types. The current study addressed this gap by expanding upon the research
of Choo and Bergeron by analysing the constructs that influence information use and
behaviours as well as information use outcomes within a Canadian policing context.

Specifically, this paper explored whether the conceptual framework used by Choo
et al. (2006) and further explored by Bergeron et al. (2007) was applicable to North
American law enforcement organizations. This study extended research using that
conceptual framework by incorporating three sets of factors (information management,
information culture, and information use outcomes) shown to influence information
application and use in knowledge-intensive environment and that are relevant in
identifying the information behaviour within organizations. In addition, this article offers
potential adaptations of those theories and that framework, which are relevant to policing
organizations and identified unique characteristics within three Canadian law enforcement agencies.

**Information Management**

The first factor “Information management,” was broadly labelled as the “…information policies, strategies and systems” of the organization (Bergeron et al., 2007, p. 2). A full explication of the various meanings of information management within organizations is beyond the scope of this paper, however, succinctly stated “…information that is acquired or created has to be organized and stored systematically in order to facilitate sharing and retrieval” (Choo, 2002, p. 33). It is within this acquisition, creation, storage, sharing and retrieval domain that the various organizational policies, strategies and information systems reside. Information policies, within organizations, generally consist of the various formal regulations, guidelines or positions of the organization as they relate to: information and data, information processing equipment, information systems and services, and staff roles and responsibilities (Lytle, 1988). In previous research a set of 14 survey items gathered information on four information management topics, namely “…information policy, formal procedures, training and mentoring” (Choo et al., 2006, p. 497). The same items and information management topic coverage was implemented by Bergeron et al. (2007) to examine information management in private sector organizations.

**Information Culture**

The second factor, “Information culture”, or the information values, norms and behaviours of the organization, determines how information is used and applied within the organization (Bergeron, et al., 2007, p. 2). Prior studies incorporated a total of 28 survey items that were designed to gather data about larger organizational information behaviour and values areas of information integrity, (in)formality, control, transparency, sharing and
proactiveness (Bergeron et al., 2007, p. 2; Choo et al., 2006, p. 497). The definitions used for each of these six constructs are as follows: (1) “Information integrity”: “…the use of information in a trustful and principled manner at the individual and organizational level”; (2) “Information formality”: a “willingness to use and trust institutionalized information over informal sources”; (3) “Information control”: “…extent to which information about performance is continually presented to people to manage and monitor their performance”; (4) “Information transparency”: “…openness in reporting and presentation of information on errors, failures and mistakes”; (5) “Information sharing”: “…the willingness to provide others with information in an appropriate and collaborative fashion”; and (6) “Information proactiveness”: “…the active concern to think about how to obtain and apply new information in order to respond quickly…and to promote innovation” (Choo et al., 2006, pp. 494-495).

Information Use Outcomes

The third factor, “Information use outcomes”, encompasses “task performance”, “self- efficacy” and “social maintenance” (Bergeron et al., 2007; Choo et al., 2006). Both researchers used a total of five questions to elicit responses pertaining to task-related outcomes where “…information was used to solve problems or innovate” (Bergeron et al., 2007; Choo et al., 2006).

The conceptual framework tested by Choo et al. (2006) and Bergeron et al. (2007) is depicted in Figure 4-1.
Figure 4-1. Conceptual and influential information behaviour elements that impact organizational performance.

Note: Adapted from Bergeon et al. (2007, p.2).

Awareness of the nature and quality of organizational information management, behaviours, and value variances allows organizations to identify potential strengths and/or weaknesses in the information culture; assess congruence between stated and observed values, goals, and outcomes; and assess their ability to achieve key information use outcomes.

**Research Aims**

The aim of this study was to contribute to both theory and professional practice by testing the applicability of this model within a law enforcement context and culture. The robustness of the model was tested by means of an indirect comparison of information behaviours and values within three Canadian policing organizations and those previously investigated in non-policing organizations. The current study examined the same underlying constructs with minor changes in terminology to categorize the information use outcomes to better reflect policing environments. Specifically, the research examined which information factor constructs had the most impact on the information use outcomes of problem solving, creating work that is beneficial, and information sharing in policing.
It was hypothesized that: (1) The “Information Sharing” factor would have the greatest impact on the information outcomes of problem solving, creating work that is beneficial, and information sharing since this element is the cornerstone of contemporary policing methods and models (LeBeuf & Paré, 2005); and (2) statistically significant differences would emerge between the three police agencies on the information behaviours and value factors, since each police organization is constrained and/or enabled by their own unique institutional environments, which create unique responses to these outside forces (Zhao et al., 2010). Such constraints and enablers may include bureaucracies, organizational structures, technologies, policies and processes.

**Methods**

**Materials**

A web-based self-completed survey questionnaire was designed, consisting of 63 questions. The questions sought a combination of closed and open-ended responses and took approximately 20 minutes to complete. This article reports on responses to 35 survey items focussing on three dimensions: Information Management, Information Behaviours and Values, and Information Use Outcomes, i.e., 28 items associated directly with the independent variables Information Management and Information Behaviours and Values and seven items associated with the dependent variable Information Use Outcomes derived from previously validated instruments (Bergeron, et al., 2007; Choo et al., 2006). The survey items and overall information behaviour and value construct associated with “Information control” (Bergeron et al., 2007; Choo et al., 2006) were omitted due to survey length. The three information use outcomes “task performance”, “self-efficacy”, and “social maintenance” were grouped under new headings of “problem solving”, “creating work that is beneficial” to the organization, and “information sharing”, respectively. These new groupings were based on each of the three individual information
use outcomes survey question groupings, the focus of those questions, and applicability to
the current context.

Independent Measures

The first dimension, Information Management, contained ten items about
organizational information policies and procedures, and support and mentoring
mechanisms (see Appendix A). Reliability and validity of the Information Management
dimension were previously tested by Choo et al. (2006, p. 498) yielding Cronbach’s
alphas of 0.90 (explicit) and 0.75 (tacit) respectively, thus positively confirming these
measures. Previous factor analysis revealed that the Information Management explicit and
tacit components loaded cleanly onto the two factors and overall contributed 57.8% of the
common variance (Choo et al., 2006, p. 498).

The second dimension, information behaviours and values, consisted of 18
questions probing the five separate constructs of information: Informality; Integrity;
Proactiveness; Sharing; and Transparency (see Appendix 1). The reliability and validity
of these construct scales were (Choo et al., 2006) positively and significantly correlated to
Information Use Outcomes, with Cronbach’s alphas above the .65 to .70 range, within an
acceptable level per the framework used by Choo et al. (DeVellis, 1991): Informality (α =
0.67), Integrity (α = 0.72), Proactiveness (α = 0.78), Sharing (α = 0.66), and Transparency
(α = 0.80). Additionally, Choo et al. (2006) found that five of the six information,
behaviour, and value factors tested contributed to 60% of the common variance. The sixth
factor, Information control, “did not show up in this study” (Choo et al., 2006, p. 501) and
was therefore omitted from the current study.

Dependent Measures

The last dimension of the model, Information Use Outcomes, used five questions
to garner information specific to the outcomes of problem solving, the creation of work
that is beneficial, and the information sharing domains (see Appendix 1). Reliability and validity of this dimension was previously tested (Choo et al., 2006), where the Cronbach alpha score of 0.67 and correlations between the Information Management and Information Behaviour and Value variables were all positively and significantly correlated to Information Use Outcomes. The 0.67 Cronbach value indicated sufficient dimension reliability and validity while the significant and positive correlations between the Information Management, Information Behaviours and Values, and Information Use Outcomes indicated that a relationship existed, where positive increases in Information Management and/or Information Behaviours and Values produced a positive increase in the Information Use Outcomes. This study added two new Information Use Outcome questions, which explored participants’ level of agreement with two statements: (1) “My work tasks demand that we use enforcement and crime prevention policies/procedures that have been successful in the past” and (2) “My work is guided by the most current research on law enforcement/crime prevention policies and practices.” Both questions devised by the authors, were pilot-tested prior to implementation with no issues identified, and served to identify to what extent “evidence-informed” policy and practice was perceived in the three police organizations. In response to each of the question items, participants indicated their level of agreement on a 5-point Likert type scale (1 = strongly disagree; 5 = strongly agree), or an additional sixth response option “do not know.”

**Sampling Procedures**

Invitations to participate in the study were issued to police chiefs in diverse Canadian law enforcement agencies. Three police agencies agreed to participate within the data collection period: one medium sized independent municipal agency (MED-IND), one medium sized Royal Canadian Mounted Police (RCMP) municipal police agency (MED-RCMP), and one large sized independent municipal agency (LRG-IND), thus
providing mixed law enforcement perspectives. Agency size was determined based on the authorized strength or the budgeted number of sworn police officers in the target year. The medium-sized agencies employed 200 - 300 sworn officers and the large agency employed in excess of 300 sworn police officers.

Sworn police officers within each of the three participating organizations were informed of the study by letter from the Chief Constable or Officer in Charge of the agency, and were sent individual email invitations containing web-based survey links. The MED-RCMP municipal agency is a federally controlled entity, thus that survey was administered in both official languages of Canada: English and French. The survey was open for two months during which period three email reminders were issued. Survey completion took approximately 20 minutes. All sworn officers (N = 1850) within the three organizations had the option to participate, therefore were self-selecting.

Participants

A total of 134 participants completed all demographic questions and the number and percentage of participants, by agency, was as follows: LRG-IND (n = 74, 55%), MED-IND (n = 31, 23%) and MED-RCMP (n = 29, 22%). Of the combined participants, 84% were men and 16% were women. Furthermore, 49% of the participants were ranked Constables (line personnel); 43% were ranked Corporals, Sergeants, or Staff Sergeants (supervisors); and only 4% were Inspectors, Superintendents, Chief Superintendents, Deputy Chiefs or Chief (command).

Almost one half of the participants (48%) reported some college education, and two-fifths (41%) indicated they had completed a four year college or university degree. Few participants (3%) had completed a graduate degree. The remainder (6%) reported completion of high school or their general education development (GED).
Analysis

Data were analysed using Statistical Package for the Social Sciences (SPSS) Version 18 software. Descriptive statistical analysis was initially used to screen data, identify potential outliers, and characterize differences at the group or case level. A univariate generalised linear model (GLM) modelled information use outcome on the basis of information behaviours and law enforcement category. This was followed by factor analysis, to reduce information behaviours into a smaller number of factors. Finally, a univariate GLM was again used to model information use outcomes, this time on the basis of the newly extracted factors and law enforcement category. Statistical significance ($p$) was measured at the .05 and .001 levels.

Results

The means and standard deviations for each of the independent and dependent variables, by organization, are provided in Table 4-1.
Table 4-1 Variable Means and Standard Deviations by Organization Type

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Organization</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information proactiveness</td>
<td>MED-IND</td>
<td>30</td>
<td>3.48</td>
<td>.82</td>
</tr>
<tr>
<td></td>
<td>LRG-IND</td>
<td>75</td>
<td>3.23</td>
<td>.88</td>
</tr>
<tr>
<td></td>
<td>MED-RCMP</td>
<td>29</td>
<td>3.38</td>
<td>.73</td>
</tr>
<tr>
<td>Information sharing</td>
<td>MED-IND</td>
<td>30</td>
<td>3.53</td>
<td>.74</td>
</tr>
<tr>
<td></td>
<td>LRG-IND</td>
<td>75</td>
<td>3.40</td>
<td>.76</td>
</tr>
<tr>
<td></td>
<td>MED-RCMP</td>
<td>29</td>
<td>3.66</td>
<td>.63</td>
</tr>
<tr>
<td>Information management</td>
<td>MED-IND</td>
<td>30</td>
<td>3.39</td>
<td>.72</td>
</tr>
<tr>
<td></td>
<td>LRG-IND</td>
<td>77</td>
<td>3.40</td>
<td>.72</td>
</tr>
<tr>
<td></td>
<td>MED-RCMP</td>
<td>29</td>
<td>3.77</td>
<td>.75</td>
</tr>
<tr>
<td>Information transparency</td>
<td>MED-IND</td>
<td>30</td>
<td>3.72</td>
<td>.80</td>
</tr>
<tr>
<td></td>
<td>LRG-IND</td>
<td>76</td>
<td>3.58</td>
<td>.90</td>
</tr>
<tr>
<td></td>
<td>MED-RCMP</td>
<td>29</td>
<td>3.75</td>
<td>.57</td>
</tr>
<tr>
<td>Information integrity</td>
<td>MED-IND</td>
<td>30</td>
<td>2.48</td>
<td>.58</td>
</tr>
<tr>
<td></td>
<td>LRG-IND</td>
<td>76</td>
<td>3.02</td>
<td>.74</td>
</tr>
<tr>
<td></td>
<td>MED-RCMP</td>
<td>29</td>
<td>2.78</td>
<td>.65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Organization</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information use outcomes</td>
<td>MED-IND</td>
<td>30</td>
<td>3.99</td>
<td>.51</td>
</tr>
<tr>
<td></td>
<td>LRG-IND</td>
<td>75</td>
<td>3.72</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>MED-RCMP</td>
<td>29</td>
<td>3.89</td>
<td>.44</td>
</tr>
</tbody>
</table>

Pearson product moment correlations of organization type and information behaviours and values are provided in Table 4-2.
Table 4-2  Bivariate Correlations Among Organization Type and Information Behaviours and Values

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Org type</th>
<th>Proactiveness</th>
<th>Sharing</th>
<th>Management</th>
<th>Transparency</th>
<th>Integrity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Org type</td>
<td>1</td>
<td>-.03</td>
<td>.06</td>
<td>.14</td>
<td>.01</td>
<td>.04</td>
</tr>
<tr>
<td>Proactiveness</td>
<td>-.03</td>
<td>1</td>
<td>***.64</td>
<td>.20</td>
<td>**.23</td>
<td>-.14</td>
</tr>
<tr>
<td>Sharing</td>
<td>.06</td>
<td>***.64</td>
<td>1</td>
<td>*.24</td>
<td>*.19</td>
<td>-.12</td>
</tr>
<tr>
<td>Management</td>
<td>.14</td>
<td>.20</td>
<td>*.24</td>
<td>1</td>
<td>***.61</td>
<td>**.35</td>
</tr>
<tr>
<td>Transparency</td>
<td>.01</td>
<td>**.23</td>
<td>.19</td>
<td>***.61</td>
<td>1</td>
<td>***.51</td>
</tr>
<tr>
<td>Integrity</td>
<td>.04</td>
<td>-.14</td>
<td>-.12</td>
<td>**.35</td>
<td>***.51</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: * p < 0.05; ** p < 0.01; ***p<.001 (two-tailed).

No statistically significant correlations between organization type and the five target information behaviours and values emerged. Statistically significant correlations between the five information behaviour dimensions are shown in Table 4-2.

A univariate generalised linear model was fitted, modelling information use outcome on the basis of information behaviours (Information Proactiveness, Management, Integrity (reverse scored), Sharing, and Transparency) as well as law enforcement category (MED-IND, LRG-IND, RCMP) (see Model 1, Table 4-3), thereby testing the first hypothesis. A second model was also fitted, including law enforcement category by information behaviour interactions, thus allowing the relationship between information behaviour and information use outcome to vary by organisation type (Model 2, Table 4-3), thereby testing the second hypothesis.
Table 4.3 Univariate Generalised Linear Models of Information Use Outcome on the Basis of Information Behaviours and Law Enforcement Category (Model 1) and Information Behaviours, Law Enforcement Category and Their Interaction (Model 2)

<table>
<thead>
<tr>
<th>Level</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>Constant</td>
<td>1.63</td>
<td>.29</td>
</tr>
<tr>
<td>Law enforcement category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category 1 (MED-IND)</td>
<td>.12</td>
<td>.11</td>
</tr>
<tr>
<td>Category 2 (LRG-IND)</td>
<td>.02</td>
<td>.09</td>
</tr>
<tr>
<td>Category 3 (MED-RCMP)</td>
<td>.00</td>
<td>-</td>
</tr>
<tr>
<td>Information behaviour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>.14</td>
<td>.06</td>
</tr>
<tr>
<td>Sharing</td>
<td>.08</td>
<td>.06</td>
</tr>
<tr>
<td>Proactiveness</td>
<td>.28</td>
<td>.06</td>
</tr>
<tr>
<td>Transparency</td>
<td>.07</td>
<td>.06</td>
</tr>
<tr>
<td>Integrity</td>
<td>.06</td>
<td>.05</td>
</tr>
<tr>
<td>Law enforcement category by information behaviour interactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MED-IND X Management</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>LRG-IND X Management</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MED-IND X Sharing</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>LRG-IND X Sharing</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MED-IND X Proactivity</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>LRG-IND X Proactivity</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MED-IND X Transparency</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>LRG-IND X Transparency</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MED-IND X Integrity</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>LRG-IND X Integrity</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: Dependent variable = Information Use Outcomes.

The results of Model 1 indicated that the independent variables were significantly associated with Information Use Outcomes: (F (7,124) = 14.30, p < 0.001), accounting for 43% of the variance. The regression analysis revealed that both Information Proactiveness (F (1,124) = 24.13, p < 0.001) and Information Management (F (1, 124) = 5.05, p = .026) significantly predicted Information Use Outcomes whereas Information Integrity (F (1, 124) = 1.79, p = .184), Information Sharing (F (1, 124) = 1.80, p = .182), and Information Transparency (F (1,124) = 1.29, p = .259) were not individually significant predictors of the Information Use Outcomes of Problem Solving, Information Sharing, and Creating
Beneficial Work within the police organizations. However, Information Integrity, Information Sharing, and Information Transparency were all associated with positive increases in the Information Use Outcome variable.

To determine whether the relationship between information factors and information use behaviours varied by organisation, Model 2 (in Table 4-3) added an information behaviour and value by law enforcement category interaction. Analysis of between-subject effects revealed statistically significant differences between the three law enforcement organizations on the two main effect information factors of Information Management (F (2, 124) = 4.33, p = .015) and Information Sharing (F (2, 124) = 3.18, p = .046).

Firstly, in comparison to the RCMP increases in Information Management had a greater impact on Information Use Outcomes for the LRG-IND police agency and significantly greater for the MED-IND police agency. Specifically, using the b values from Table 4-2, for the RCMP, one unit increase in the Information Management yielded small decreases in Information Use Outcomes (b = -.152). In comparison, for each unit increase in Information Management, moderate increases in Information Use Outcomes were observed for the LRG-IND municipal agency (b = .106) and far more substantial increases in Information Use Outcomes were observed for the MED-IND municipal police agency (b = .414).

Secondly, there was significant information sharing by organisation interaction. For each unit increase in Information Sharing, the RCMP achieved an increase of .332 in Information Use Outcomes, whereas the MED-IND municipal agency achieved moderate increases (b = .251) and the LRG-IND municipal agency reflected a slight decrease (b = -.035).
Factor analysis on the five key information constructs of Information Management, Information Sharing, Information Proactiveness, Information Integrity (reverse scored), and Information Transparency was conducted to extract the underlying dimensions. The five information constructs loaded onto two underlying factors, shown in Table 4-4.

*Table 4-4 Factor Analysis of Five Information Behaviours*

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Management (α = .89)</td>
<td>.76</td>
</tr>
<tr>
<td>Information Sharing (α = .71)</td>
<td>.89</td>
</tr>
<tr>
<td>Information Proactiveness (α = .84)</td>
<td>.90</td>
</tr>
<tr>
<td>Information Transparency (α = .73)</td>
<td>.85</td>
</tr>
<tr>
<td>Information Integrity (reverse scored) (α = .75)</td>
<td>.76</td>
</tr>
<tr>
<td>Eigenvectors</td>
<td>2.17</td>
</tr>
<tr>
<td>Percentage of variance</td>
<td>37.73</td>
</tr>
<tr>
<td></td>
<td>1.37</td>
</tr>
<tr>
<td></td>
<td>33.01</td>
</tr>
</tbody>
</table>

Combined, these two factors yielded a cumulative common variance of 71% within the information behaviours and values dimensions. The first factor, which incorporated the three constructs of Information Management, Information Transparency, and Information Integrity, denoted the importance of Information Quality Control within the context of these three police organizations. This new factor accounted for 38% of the common variance within these three police organizations. The second factor, which incorporated the constructs of Information Sharing and Information Proactiveness accounted for 33% of the variance, exemplified the importance of proactive collaboration within these same three organizations.

A third multiple regression (Model 3, Table 4-5) was conducted using the two new factors that were identified within the factor analysis process: (1) Information Quality Control (composed of the constructs Information Management, Transparency, and Integrity); and (2) Proactive Collaboration (compiled of the constructs Information Sharing and Proactiveness).
Table 4.5 Univariate Generalised Linear Model of Information Use Outcome on the Basis of the Two Factors Extracted from Factor Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Level</th>
<th>B</th>
<th>SE</th>
<th>Sig.</th>
<th>Adj. R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td></td>
<td>1.61</td>
<td>.29</td>
<td>&lt;.001</td>
<td>.41</td>
</tr>
<tr>
<td>Law enforcement category</td>
<td>Category 1 (MED-IND)</td>
<td>.15</td>
<td>.11</td>
<td>.16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Category 2 (LRG-IND)</td>
<td>.03</td>
<td>.09</td>
<td>.73</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Category 3 (MED-RCMP)</td>
<td>.00</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Information behaviour</td>
<td>Management</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sharing</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proactivity</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transparency</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Integrity</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Information Quality Control</td>
<td></td>
<td>.27</td>
<td>.07</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>Proactive Collaboration</td>
<td></td>
<td>.38</td>
<td>.05</td>
<td>&lt;.001</td>
<td></td>
</tr>
</tbody>
</table>

Note: Dependent variable = Information Use Outcomes.

The results of the regression indicated that the two new information behaviour factors Information Quality Control and Proactive Collaboration were significantly related to Information Use Outcomes, (F (4, 124) = 22.281, p = .000), and adjusted R² = .407.

Model 3 was statistically significant and accounted for 41% of the variance in Information Use Outcomes within the three police organizations. The regression analysis revealed that both Information Quality Control (b = .265, p < 0.001) and Proactive Collaboration (b = .380, p < 0.001) significantly predicted Information Use Outcomes within the three participating police organizations.

When comparing the original information factor regression model (Model 1) to the new two factor model (Model 3), despite the finding that both regression models were statistically significant overall (p < .001) and that both models had similar dependent variable predictive capabilities (43% and 41% respectively) the following subtle but important improvements were observed in Model 3. First, the statistical significance for the relevant information behaviours and values increased and the effect sizes (values of
partial eta squared) for the statistically significant variables increased: Information Quality Control ($\eta_p^2 = .123$) and Proactive Collaboration ($\eta_p^2 = .305$) versus Model 1 Management ($\eta_p^2 = .041$) and Proactiveness ($\eta_p^2 = .171$). For every unit increase in Information Management and Proactiveness within Model 1 there was an expected .139 and .282 increase in Information Use Outcomes, however, there was a greater increase in Information Use Outcomes within Model 3 as Information Quality Control achieved an expected .265 increase and Proactive Collaboration achieved an expected .380 increase in Information Use Outcomes.

**Discussion**

Though it is possible to identify certain large scale similarities between organization information needs and behaviours across professional sectors, it is the finer influences and outcomes that differentiate organizations. We indirectly tested the robustness and applicability of the information behaviours and values model applied previously in organizations within the legal (Choo et al., 2006) and health sciences fields (Bergeron et al., 2007) and found that this model was applicable to policing organizations.

The findings regarding Information Use Outcomes applied the social-technical theoretical perspective and supported Pan and Scarbrough’s premise that “such systems involve more than technology but rather a culture in which new roles and constructs are created” (1999, p. 372). In support of this conclusion the following is offered.

This study examined which information factor constructs had the most impact on information use outcomes of problem solving, creating work that is beneficial, and information sharing within the three police organizations by comparing findings of previous research to those obtained in this study. Within a public health organization factor analysis revealed that the information culture of the organization, (indicated by the statistically significant influence of information behaviours such as sharing, proactiveness,
and transparency), accounted for 29% of the common variance in the achievement of the information use outcomes (Bergeron et al., 2007). Similarly, within a large law firm, employee Information Behaviours and Values surpassed Information Management in the achievement of their information use outcomes of task performance, self-efficacy, and social maintenance (Choo et al., 2006). Specifically, the information culture of the law firm (indicated by the information behaviours and values of sharing, proactiveness, transparency, and informality) accounted for 38% of the variance in the organization’s ability to achieve Information Use Outcomes.

Unlike these previous findings, our analysis of the main effects indicated that both Information Behaviours and Values and the Information Management constructs were significant factors in the achievement of Information Use Outcomes within policing. Specifically, Information Proactiveness and Information Management had the most impact on Information Use Outcomes within three different policing organizations, with Proactiveness accounting for 28% of the common variance and Information Management accounting for 14% of the variance. Consideration of the larger field of law enforcement indicated that these factors were not out of line in terms of their focus or direction for the following reasons. The information behaviour and value Proactiveness was defined as “…the active concern to think about how to obtain and apply new information in order to respond quickly…and to promote innovation” (Choo et al., 2006, pp. 494-495) and Information Management was defined as the “information policies, strategies and systems” of the organization (Bergeron et al., 2007, p. 2). North American law enforcement organizations must continually keep abreast of community needs, changing laws and technologies, as well as innovative crimes and potential solutions. Further, these same law enforcement organizations must obtain, store, disseminate, and apply new information and knowledge on a daily basis in order to function within the currently
volatile social, economic, and technological environment. It was therefore unsurprising that the Information Management factor was retained within the policing context and not within the previously studied organizational contexts (Luen, 2001). The implication for policing is that information management, as one side of the socio-technical equation, serves an important function in the achievement of outcomes through effective information policies, strategies, and systems.

Factor analysis conducted on the information management and information behaviours and values identified two new factors within this policing context: (1) Information Quality Control, a composite of information management, transparency, and integrity; and (2) Proactive Collaboration, comprised of information behaviours and values of information sharing and proactiveness. The first factor, Information Quality Control, accounted for 38% of the variance and the second factor, Proactive Collaboration, accounted for 33% of the common variance as it related to the Information Use Outcome main effects. These new factors, within this policing context, not only support the idea that contemporary police organizations are knowledge and information intensive but they provide what stakeholders have been demanding from their police organizations and personnel for many years: better information management, increased information transparency and integrity, as well as improved information sharing (LeBeuf & Paré, 2005; Police Sector Council, 2011b). Further research, however, will be required to assess the prevalence and longevity of these two factors within the policing context in Canada and elsewhere.

We first hypothesised that Information Sharing would have the greatest impact on the information outcomes of Problem Solving, Creating Work That Is Beneficial, and Information Sharing within this policing context. Since Information Sharing did not have a statistically significant main effect on Information Use Outcomes, and was
overshadowed by Information Proactiveness and Information Management, this hypothesis was not supported. Information Proactiveness enables organizations to adjust to the volatile external environment, quickly shape strategies, and innovate as needed and this capability is complimentary to the current social, financial, and political climate of policing. However, Information Sharing was a significantly differentiating factor at the individual agency level, as noted below.

Secondly, we hypothesized that statistically significant differences would emerge between the three police agencies on the information behaviours and value factors, since each police organization is constrained and/or enabled by their own unique institutional environments. Statistically significant interactions emerged on two of the five factors: Information Management and Information Sharing.

Examination of the Information Management factor revealed that the MED-IND municipal agency was the most efficient, achieving the greatest increase in Information Use Outcomes for every unit increase in Information Management, whereas efficiency in the LRG-IND municipal agency was moderate, and the MED-RCMP was the least efficient, showing a slightly negative decrease in the achievement of Information Use Outcomes. One possible interpretation of the MED-RCMP agency’s negative returns for Information Management practices as it related to problem solving, creating beneficial work, and information sharing could be that the RCMP, as a national entity, is a very large policing agency based on a longstanding paramilitary foundation. Thus, the RCMP as a whole, is noted for its hierarchical structure, relative organizational inflexibility, bureaucracy, and provision of detailed administrative and operational guidance and support in the forms of formalized strategies, policies, and systems (Murphy, 1986; Murphy & McKenna, 2007).
Unfortunately, bureaucratic or otherwise mechanistic organizational structures are best suited for stable environments (Mintzberg, 1979; Rainey, 2009) and not the type of environment typical in Canadian policing, which is marked by changing roles, missions, and new financial realities (Clarke, 2002; Deukmedjian & DeLint, 2007; Murphy, 2007). Further support for the premise that bureaucratic organizational models can be limiting was provided by Teece (1998), who suggested organizations seeking to improve their information/knowledge “generating, acquiring, transferring and combining” must have:

- flexible boundaries—a presumption in favour of outsourcing and alliances;
- high powered incentives—to encourage an aggressive response to competitive developments;
- non-bureaucratic decision-making—decentralised or possibly autocratic, self-managed where possible;
- shallow hierarchies—to facilitate both quick decision-making and rapid information flow from the market to the decision-makers; and
- an innovative and entrepreneurial culture that favours rapid response and the nurturing of specialised knowledge. (pp. 41-42)

The foregoing recommendations for organizational structure are more consistent with “less formalized” and generally more open organizational structures found within many Canadian independent municipal police organizations (Murphy, 1986), which could account for the positive benefits to both independent municipal agencies in Information Use Outcome returns for each unit increase in Information Management.

Examination of each organization in relation to the second factor, Information Sharing, revealed that two of the three organizations achieved positive increases in Information Use Outcomes for every unit of Information Sharing created. Specifically, the MED-RCMP municipal agency benefited the most (.322), the MED-IND municipal
agency achieved positive but somewhat fewer benefits (.251) while in the LRG-IND municipal agency, a slight decrease (-.035) in Information Use Outcomes accompanied Information Sharing efforts.

To develop a plausible explanation for these findings, qualitative responses provided by participants regarding perceived impediments to information and knowledge sharing were examined (Abrahamson & Goodman-Delahunty, 2013b). Participants in all three organizations generally expressed similar views regarding impediments to Information Sharing, such as processes and technology, individual unwillingness, and organizational unwillingness, however, unique organizational level differences emerged. Comparisons of rankings of eight perceived impediments to information and knowledge sharing by participants in the LRG-IND agency with those in the two smaller agencies were highest in three of the eight categories, (Abrahamson & Goodman-Delahunty, 2013b). Lack of ‘Leadership’ was ranked higher (13%) by participants in the LRG-IND versus the MED-RCMP (3%) and the MED-IND (0%) agencies. Two other factors were perceived as more prominent barriers in the LRG-IND, namely ‘Organizational unwillingness,’ ranked slightly higher (16%) than in the other two agencies (MED-IND 15% and MED-RCMP 10%); and ‘Location/structure’ (14%) compared to 13% in the MED-IND agency and 8% in the MED-RCMP agency (Abrahamson & Goodman-Delahunty, 2013b). Each perceived impediment category, on its own, could possibly explain the negative statistically significant the LRG-IND agency and the other two agencies. However, it is more plausible that the negative relationship between information difference on Information Sharing between sharing and Information Use Outcomes was due to the compounding effect a highest number of higher percentage information sharing impediment categories in the LRG-IND compared to the two medium-sized police agencies.
Contributions and Limitations

The findings of this study contributed to the literature by testing and extending existing research findings within a new context, namely contemporary Canadian policing agencies. The findings of this study were supportive and generally consistent with those of previous studies conducted by Choo et al. (2006) and Bergeron et al. (2007) and in that the larger constructs of information management and information culture did indeed account for significant proportions of variance in information use outcomes within the policing context, and further support was provided for the notion that within a specific field, each organization has unique information behaviours and values. Thus, this study extended the existing theoretical stance to incorporate the information use outcomes of problem solving, creating beneficial work, and information sharing. More importantly, this study identified two new factors, Information Quality Control and Proactive Collaboration, that contributed significantly to the achievement of these same three foundational outcomes within the policing context.

The primary limitation of this study was the small sampling frame. Despite attempts to secure a larger more representative sample within the two-month study period, the nature of operational police work at the rank and file level within the participating agencies impacted completion rates.

The majority of the officers participating in this study were operational police, who have little to no “down” time for anything but “primary” work tasks, which includes: attending calls for service; conducting criminal investigations and follow-ups; conducting interviews; dealing with prisoners; completing associated investigative reports and judicial reports; and attending in-house and external training sessions. Beyond the significant organizational and operational burdens on Canadian police (McCreary & Thompson, 2006), Canadian police organizations also experience a high survey burden (Weiner &
Dalessio, 2006). Survey burden and fatigue has become more pronounced as sworn officers are increasingly asked to respond to a myriad of surveys covering topics such as leadership, stress, work-life relationship, and employee satisfaction surveys (Government of Canada, 2011; MacRae et al., 2005; Police Sector Council, 2011b; RCMP, 2011a).

The ratio of male to female respondents is consistent with the most current Canadian police statistics which indicate that 80.8% of Canadian police officers are male and 19.2% are female (Government of Canada, 2010). The ratio of line personnel and supervisor response rates were not representative of the larger Canadian rank/role demographic where line personnel and supervisors represent approximately 71% and 25% of the police population respectively, while the command level representation was appropriate at the 4% ratio (Government of Canada, 2009).

Implications for Future Research

The implications for future research are many. When we speak of information behaviours, values, and information use outcomes as they relate to police organizational information culture, problem solving, creating work that is beneficial and information sharing, we are speaking of subject areas that ultimately define, support, and guide the public policies, practices, and the actions of the sworn officers and the organizations that they serve. While caution is advised in generalizing these findings to policing organizations, they provide a framework for future research and analysis. The theoretical model utilized within this study has established a sound basis upon which further research may be conducted since a nexus exists between the constructs of information management, information behaviours and values (culture), and information use outcomes, whether explored within a health sciences, legal, or policing context. A future theoretical model should incorporate the constructs of information management, information culture, and information use outcomes, recognizing the mediating role of rank and file officers in
the achievement of outcomes and extend the outcomes so that each of the three outcomes are developed as separate and unique scales. This would enable police organizations to assess their existing capabilities in relation to each rank and file level and the achievement of each and/or all outcomes. Therefore, the following conceptual diagram is offered (Figure 4-2).

Figure 4-2. Proposed Conceptual Framework for Future Police Organization Analysis. *Note:* Adapted from Bergeron et al. (2007, p.2).

Further research and scale development is required with respect to the three individual Information Use Outcomes of (1) problem solving, (2) creating beneficial work, and (3) information sharing. An analysis of these sub-scales revealed low individual scale reliability, thus they were not sufficiently robust to stand on their own using the current sample. Future research with larger samples and development of these sub-scales would reveal whether these scales could be used for increased discrimination within the larger Information Use Outcome factor. Additionally, future large-scale research would yield a broader and deeper understanding of the nature and quality of the information behaviour and value elements from a number of organizational perspectives, including: agency type, policing model employed, and sworn officer rank, age, and years of service. Such delineations would provide a rich description that could be used to identify: (1) human
resource hiring and training requirements, (2) organization sub-culture differences, which support or hinder the achievement of strategic goals and outcomes, and (3) technical, operational, and administrative needs that may exist at various rank, service, and/or age stratifications within the organization.

**Implications for Policy and Practice**

The refinement and development of information use outcome scales that are specifically focused on the three police related and individual foundational outcomes of problem solving, creating work that is beneficial, and information sharing have direct implications for police policy and practice. Specifically, such refinement and development of individual information use outcome scales will allow police organizations to assess whether there is congruence between the organizations’ desired values, strategies, goals, and outcomes and the values, norms, and behaviours that actually exist at the individual unit and/or officer level and the outcomes that are then realized. Such levels of analysis and understanding will not only enhance public sector accountability and performance management within policing but will allow police leaders to identify, appreciate, and better understand the information management and culture gaps that may exist between the organization and the front line personnel who support the day to day operation of the organization. This awareness and understanding is critical to all police organizations as the actions of rank and file staff, individually and collectively, invariably impact the achievement of three foundational information use outcomes: problem solving, creating work that is beneficial, and information sharing.

**Acknowledgements**

The authors thank the following individuals for their help: Natalie Martschuk for her assistance in data analysis and Nigel Balmer for his review of statistical procedures and feedback.
CHAPTER FIVE

Study Two


Abstract

Information sharing is the lifeblood of policing yet information/knowledge sharing within and across organizations remains problematic. This paper elaborated on previous research on organizational information culture and its impact on information use outcomes in policing by examining perceived impediments to information and knowledge sharing of 135 officers in three Canadian police organizations. Inductive qualitative analysis of an open-ended question revealed seven mutually exclusive impediment themes, which included: processes and technology; individual unwillingness to share; organizational unwillingness to share; workload/overload; location/structure; leadership; and risk management. When viewed from the knowledge management infrastructure perspective, organizational structure was the single most common impediment identified, followed closely by organizational culture. Each organization had unique constellations of information sharing impediments. Recommendations for policy and practice are discussed.

**Keywords:** police; information sharing; impediments; culture; infrastructure
Introduction

Information and knowledge is literally the life blood of policing (Gottschalk, 2010; Ratcliffe, 2008a). While much attention in recent years has been focused on the criminal intelligence aspects of information and knowledge sharing in police organizations, the broader and more common day-to-day impediments to information and knowledge sharing within the larger body of rank and file officers have largely been overlooked.

Despite the broadly reported business management tenet that organizational information and knowledge resources are key assets to be exploited to support better organizational decision making, policies and practices, innovation and outcomes, many police organizations do not have explicit knowledge management (KM) strategies and/or persistently fail to recognize that management of knowledge resources involves factors above and beyond the requisite technological support systems (Chávez, 2005; Gottschalk, 2008; Luen & Al-Hawamdeh, 2001). This issue is not unique to policing, as both public and private sector organizations often ignore organizational structure, process capabilities, culture and/or organizational context factors when implementing KM systems or when considering the overall health of their information and knowledge sharing environments (Alavi et al., 2005; Detlor et al., 2006; Gold et al., 2001). Additionally, many police organizations fail to fully explore or understand the underlying information and KM context, structures, and processes, each of which may act either as barriers or enablers to information and knowledge acquisition, organization, control, dissemination, and use within the organization (Ekblom, 2002; Pendleton & Chávez, 1999).

When examined from a North American policing perspective, such oversights are far from trivial and must be addressed for three important reasons: First, the political, social, economic, and information sharing context in which police organizations operate has become increasingly complex and interdependent. At the same time, stakeholders
have become more demanding for public sector reforms, which include the need for improved accountability, efficacy, and efficiency (Armstrong, 1997; Stone & Travis, 2011). Second, police organizations are knowledge intensive and rely on a deep and broad information and knowledge base to support organizational administrative, operational, and strategic initiatives (Dean & Gottschalk, 2007). Third, all contemporary North American policing models rely on information and knowledge to feed and support their crime prevention and enforcement innovations and models, including, but not limited to: Intelligence-led Policing (Ratcliffe, 2002), Evidence-based Policing (Sherman et al., 2002), Compstat (Willis, Mastrofiski, & Weisburd, 2004), Problem-oriented Policing and/or Community-based Policing models (Braga & Weisburd, 2007).

However, few empirical studies of the effectiveness of information sharing within police organizations have been conducted. Accordingly, little is known about potential barriers that may impede knowledge and information sharing within a particular police organization.

The aim of the present study was to identify the information sharing impediments within this policing context, to identify potential policy and practice misalignment(s), and to gain a better understanding of the information barriers faced by rank and file officers so that police leaders will be empowered to take appropriate steps to lower and/or eliminate those barriers in the future. A brief overview of KM practice, theory, and its connection to organizational infrastructures, as they apply to policing policy and practice, serves to highlight areas that may become barriers or enablers to information sharing.

**Knowledge Management**

Management and information science studies have documented a continued evolution towards a “knowledge society” where public and private organizations are no longer viewed as merely processing or using information for problem solving, but also
viewed as creating new information and knowledge in a dynamic process that involves interaction and adaptation to a changing and turbulent environment (Nonaka, 1994; Wiig, 1997). Included within this evolution has been the advent of “knowledge management”, whereby knowledge, in both explicit and tacit forms, is an organizational resource to be captured, created, transferred and utilized within that organization (Alavi & Leidner, 2001).

Since the 1990’s, organizations have invested significant time, financial and other resources in KM systems and practices in the hopes of achieving increased performance, innovation, and improved decision making (Davenport & Prusak, 1998; Nonaka & Takeuchi, 1995). The outcomes of many of these initiatives within policing have failed to meet organizational expectations as governmental support has been mixed and mere information passing does not constitute collaboration or knowledge creation within this context (Gottschalk, 2007b; Hughes & Jackson, 2004).

Additionally, a number of academics have challenged the notion that knowledge, or “what we know”, can in fact be “captured” or embedded within an IT process (Wilson, 2002) or whether it can be “objectified” due to the nature of interpretation and the divergent “world views” of those knowing and those receiving (Butler, 2011). Butler (2011) poignantly noted:

…if information technology is to be utilized to give voice to organizational narratives, then it must be recognized that it will be a conduit for data only. And, because gaps in comprehension will always exist, no matter how sophisticated the technology and its power of representation, IT must enable a dialectic to take place between social actors and the phenomena they wish to understand. (p. 7)

In essence, information technology is not the panacea for effective information and knowledge creation and management within policing, but merely a system that facilitates the dialectic process between individuals, organizational units, and external partners.
Within this individual, organizational and external dialectic, apparently competing and opposing concepts and positions are brought to light as police leaders and organizations respond to policy and practice issues within their communities. Two broad examples of these include: budget constraints and increased public expectations (Police Sector Council, 2006) and public and private policing (Law Commission of Canada, 2006). Both examples illustrate two competing realities that are at the forefront of contemporary North American policing policy and practice. Therefore, the dialectic process is important as it is a dynamic that allows the reconciliation of what often appear to be competing and/or polar opposite ideas, concepts, or positions. In their explanation of paradox and its relation to knowledge, Takeuchi and Nonaka (2004) posited that in times of complexity, leading organizations must not only face opposing and paradoxical positions, but embrace a number of these paradoxes at the same time. Further, instead of thinking of opposing concepts and positions as “either or” statements or “this versus that”, Takeuchi and Nonaka (2004) suggested that mutually inclusive perspectives be taken where both concepts such as “control and independence” (p.6), “micro (individual) and macro (environment)” (p.9), and “top-down and bottom-up” (p.9) are considered simultaneously. They provided an explanation of how these opposing concepts are actually interdependent, interpenetrating, and unifying:

To complicate matters, we need to understand that opposites are actually not really opposites; hence the use of terms such as “what appears to be opposites” or “seemingly opposite” thus far. For one thing, opposites are interdependent, meaning that opposites depend on each other. It wouldn't make sense to talk about darkness if there were no such thing as light. Each member of a polar opposite seems to need the other to make it what it is. Second, opposites are interpenetrating, which means that opposites can be found in each other. There is some light in every darkness, and some darkness in every light. If we look into one thing hard enough, we can find its opposite right there. Third, opposites can turn into the same thing if we take an opposite to its very ultimate extreme and make it absolute. Thus, if we make darkness absolute, we are blind - we can't see anything. And if we make light absolute, we are equally blind and unable to see. (Takeuchi & Nonaka, 2004, p. 9)
Keeping Takeuchi and Nonaka’s (2004) explanation of paradox in mind, we can see how paradoxes might present themselves when police leaders try to balance the competing needs of the police organization, the local community, key stakeholders, and individual police officers. Having served over 30 years in policing and personally observed paradoxes present themselves in various policing contexts, the primary author identified a series of seven paradoxical goals within policing: secure and open; structured and flexible; individual and group; conformity and diversity; innovation and stability; certainty and risk; and loose and connected.

Underpinning these ostensible contradictions are three KM infrastructures that support the knowledge management process: structural, technical, and cultural (2001). Each of these infrastructures may act either as barrier or enabler to information and knowledge acquisition, organization, control, dissemination, and use within police organizations.

**Knowledge Management Infrastructures**

Where the resource-based theory of an organization recognizes the importance of the behavioural and social context in which organizations operate as resources, capabilities, and competencies (Barney & Zajac, 1994) the knowledge-based theory of the organization builds upon that platform by conceptualizing the ability to transfer and utilize knowledge as an organization’s greatest asset and competitive advantage (Spender & Grant, 1996). This knowledge transfer and utility within the organization cannot be accomplished without appropriate infrastructures to support the process. The integral nature of these support principles within North American policing was illustrated by quantitative findings showing that both information policies, strategies and systems (structure and technology), and information values, norms and behaviours of the organization (culture) impacted the information use outcomes of problem solving, creating
work that is beneficial, and information sharing (Abrahamson & Goodman-Delahunty, 2013a).

To better understand potential sources of barriers or impediments to information sharing within police organizations a brief account of the three KM infrastructures, as conceptualized by Gold et al. [7], is provided, namely the structural, technical, and cultural components of KM.

**Knowledge management structures.** Organizational KM structures provide the backbone for power, coordination, and control within an organization and essentially serve to guide and coordinate the tasks and activities of individuals as they work towards a common organizational goal (Skivington & Daft, 1991). These structures, whether at the unit or organizational level, serve to align and coordinate lines of responsibility, authority, communication as well as implement institutional rules, policies, practices, and processes. In addition to the organizational rules and roles that guide individual action, structure also includes the configuration, placement, and physical location of individual organizational units, which “can influence knowledge management processes through shaping patterns and frequencies of communication among organizational members, stipulating locations of decision-making, and affecting efficiency and effectiveness in implementing new ideas” (Zheng et al., 2010).

Therefore, the transfer and utility of knowledge within the organization may be helped or hindered by organizational structures that are in place at any given point in time, thereby impacting, positively or negatively, the desired goals and outcomes of the organization. Within the context of policing, such structures include rank, roles, and the location and coordination of organizational units, divisions, and/or agencies among others. By way of example, a prior study of the impact of information management and information behaviours and values within three Canadian police organizations revealed
that the structures and processes associated with information management and information sharing were moderately correlated with the achievement of the information use outcomes (Abrahamson & Goodman-Delahunty, 2013a).

This correlation can be increased by the presence of more effective structures and processes within the organization. Information processes and structures, however, do not stand alone nor operate in isolation and must be supported by a technical infrastructure.

**Technical Infrastructure**

The technical infrastructure provides technical support for rapid knowledge creation, storage and retrieval, transfer, and application within the organization and may include information technology systems such as data warehouses, Internets, intranets, knowledge directories and/or portals (Alavi & Leidner, 2001). This same technology is used to facilitate communication as well as consolidate what otherwise would be fragmented flows of information and knowledge within the organization. Accordingly, the technological structure plays a key role within the KM process (Lee & Choi, 2003; Teece, 1998). Technology, as it relates to policing, has profoundly shaped policing practice over the last 50 years. It was not that long ago that police officers were given truly “mobile” police radios. Now, with current technologies, including mobile data terminals (MDT’s) and powerful local, provincial, and national information databases, communication networks, and KM systems, police organizations constantly create, store, retrieve, transfer, and apply knowledge for the organization’s benefit and to improve policy, practice, and performance. The current study explored whether technology, along with two other infrastructures, was seen to facilitate or hinder the information and knowledge sharing process within three municipal law enforcement agencies.

The technological aspect of KM, however, has had its critics. Some described it as a management consulting fad (Wilson, 2002) or as creating a technological dependency
(Huysman & de Wit, 2004) that ignores existing work or group needs (Grudin, 1994). Notwithstanding such criticisms, KM technology support systems continue to be employed within the public and private sectors as knowledge transfer remains a goal for many organizations that wish to improve performance within their market and local context.

Therefore, the technical infrastructure needs and application must be given careful consideration in relation to the KM needs and goals of each policing organization. This perspective was supported by findings indicating that information management, comprised of information policies, strategies, and systems within an organization, was one of five factors that collectively accounted for 41% of outcome variance in three Canadian policing organizations (Abrahamson & Goodman-Delahunty, 2013a).

**Organizational Culture**

Organizational culture has consistently been recognized as a primary factor in the success or failure of information and knowledge sharing within organizations (De Long & Fahey, 2000; Ipe, 2003). Simply put, organizational culture is defined as the shared assumptions, beliefs, values (establishing priorities), and norms (establishing appropriate attitudes and behaviours) within an organization (Schein, 2010) and includes the subcultures that exist within the various units, sections, or departments within the organization (Hofstede, 1998). Individuals are not only guided by their own sets of values but are governed by the socially legitimated standards and norms set within the organization. Corporate cultures can be generally classified as either weakly or strongly functional (supportive) or weakly or strongly dysfunctional (not supportive), depending on how clearly the organizational culture is defined, communicated, understood, and managed on a day to day basis in relation to the organizational goals (Flamholtz & Randle, 2011).
A supportive culture is one in which employees not only understand and articulate the espoused values and standards of performance but put them into action each and every day. By contrast, a dysfunctional culture is one in which organizational values, even though they may be known by employees, are left for personal interpretation and implementation, with little to no “management” or follow-up by leaders within the organization (Flamholtz & Randle, 2011; Schein, 2010). For this reason, leadership is important in “setting the tone” and facilitating the socialization, externalization, combination, and internalization of knowledge and innovation within and across organizations (von Krogh, Nonaka, & Rechsteiner, 2012; Wilson, 1997b). Knowledge and innovation, however, are not organizational assets unless shared and integrated into practice. Not only does a culture of knowledge and innovation sharing have practical implications for policing, it has been recognized as of paramount importance within all aspects of police operations and strategic management (LeBeuf & Paré, 2005; Murphy & McKenna, 2007).

It is critical that organizational leaders not only identify the larger technological, structural, and cultural issues that have supported or impeded the achievement of specific organizational goals, but they must also specifically identify which of these factors has the greatest impact on the organization’s ability to achieve its goals. For example, Abrahamson & Goodman-Delahunt (2013a) demonstrated that two information management and information behaviour and value factors consisting of (1) information management, integrity, and transparency, and (2) information sharing and proactiveness collectively accounted for 41% of the variance in the achievement of specific information use outcomes within three police organizations. By examining both the quantitative and qualitative aspects of the information sharing experiences within these three police organizations, a broader and deeper understanding can be gained of the actual and
perceived impediments to information sharing and how these impediments impact the achievement of organizational goals and outcomes.

**Information Sharing and Use**

Human and organizational information use has been viewed from a variety of perspectives within the discipline of information studies. These perspectives include seven information use elements/principles that were synthesized from the broader information studies literature, namely: (a) information practices, (b) information search, (c) information processing, (d) information production, (e) the application of information, (f) knowledge construction, and (g) the effects of information use (Kari, 2010). An organization-focused and pragmatic information use perspective was provided by Choo (Choo, 2006), who stated that an organization uses information to: (1) “create an identity and a shared context for action and reflection”; (2) “develop new knowledge and new capabilities”; and (3) “make decisions that commit resources and capabilities to purposeful action” (p. 27).

This explanation is particularly important to knowledge intensive organizations such as police agencies, since a nexus exists between an organization’s information/knowledge management, information behaviours, values, beliefs, and the organization’s information use outcomes and performance (Abrahamson & Goodman-Delahunty, 2013a; Choo et al., 2008; Marchand, Kettinger, & Rollins, 2001). Notably, recent research conducted within police organizations identified positive correlations between the information integrity, management, transparency, sharing and proactiveness constructs and the information use outcomes of problem-solving, creating work that is beneficial, and information sharing (Abrahamson & Goodman-Delahunty, 2013a). Within the policing organization, these constructs not only impact information use outcomes but also assist the organization in making sense of the changes in the larger environment.
Making Sense of Change in Policing

Policing in the modern era is complex, costly, time consuming, and pluralistic in nature. Police do not merely enforce the law or maintain the peace within the communities they serve. There is an expectation that they will reduce crime and disorder; reduce fear of crime; solve community issues; and encourage cooperation within the communities (Gallagher, Maguire, Mastrofski, & Reisig, 2001). Adding to this complexity is the recognition that organized crime, technological crime, and terrorism know no boundaries, and these issues are also of local concern as well (Murphy, 2007; Sansfaçon, 2006).

It is within this volatile and equivocal environment that organizations and their agents wrestle with the discontinuous nature of reality and attempt to make sense of and manage the gaps between what was once known, where they are now, and an unpredictable future through information and knowledge sharing. The nature of this organizational “sense making” process was aptly described by Dervin (1998):

Humans, sense making assumes, live in a world of gaps: a reality that changes across time and space and is at least in part ‘gappy’ at a given time-space; a human society filled with difference manifested in madness, culture, personality, inventiveness, tentativeness and capriciousness; a self that is sometimes centred, sometimes muddled, and always becoming. In this view, the sense making and sense unmaking that is knowledge is a verb, always an activity, embedded in time and space, moving from a history toward a horizon, made at the juncture between self and culture, society, organization. (p. 36)

Key within this description is the notion that humans are not always rational, that they live in social environments, are influenced by personality and culture, and that the state of their knowledge is always in flux. Organizations, as human social constructs, also exist within social environments, are rationally intended, embody norms, values and beliefs, and seek and use information to solve problems across time and space as they strive to achieve future goals and outcomes (Ouchi & Wilkins, 1985; Weick & Sandelands, 1990). Sense-
making, whether at the individual or organizational level, allows individuals and organizations to acquire new insights into the problems at hand in new and innovative ways.

**Creating New Knowledge for Innovation in Policing**

Organizational knowledge creation and innovation is critical to all organizations as it is a “…continuous process through which one overcomes the individual boundaries and constraints imposed by information and past learning by acquiring a new context, a new view of the world and new knowledge” (Nonaka et al., 2006, p. 1182).

Organizational knowledge creation and innovation within organizations is neither a static or mechanistic process, but a dynamic social activity grounded within the history, relationships, rules, norms and values of the people within the organization. It is for this very reason that this study was interested in the qualitative responses of participants, as they are indeed grounded in the technical, cultural, and structural history and values of the organization and impact how information is used, whether new knowledge is created, and whether new innovations are nurtured.

The application or mobilization of new knowledge and innovation within organizations is traditionally done for economic, strategic, and operational advantage, which requires making decisions between possible courses of action. In contrast to the traditional private sector need to apply knowledge to enhance competitive advantage, public sector organizations must mobilize new information and knowledge to enhance administrative, operational, and strategic effectiveness and efficiencies to better adapt to the changing external social, political, and economic environments. Without an understanding of the organizational information sharing issues that exist at the individual officer level and become impediments, police leaders will be less effective in reaching organizational goals and outcomes. This study aids organizational leaders by providing
richer insight into the information behaviours and values of their officers and how these may positively or negatively affect organizational performance.

The current study extended previous quantitative findings on organizational information culture and its impact on information use outcomes in three Canadian policing organizations (Abrahamson & Goodman-Delahunty, 2013a), by examining the impediments to information and knowledge sharing perceived by sworn officers working in these organizations. This study complemented a quantitative study by providing a rich, complex, and multi-dimensional “insider’s” and “ground-level” view of the perceived impediments to information and knowledge sharing within policing identified by the end-users of that information, the officers. By asking an open-ended question about perceived barriers to information sharing, we were able to explore participants’ experiences, values, and behaviours, which were not evident or available in the aggregated quantitative data.

**Method**

**Materials**

This study analysed responses to one of two open-ended questions contained within a larger quantitative survey questionnaire administered to three diverse municipal police agencies in Canada (Abrahamson & Goodman-Delahunty, 2013a), which explored both positive and negative aspects of information sharing in policing. The questions asked: “In my agency, the greatest impediment(s) to the sharing of valid information and knowledge is/are…” and “In my agency, the greatest incentive(s) to the sharing of valid information and knowledge is/are…” This article addresses responses to the first questions, i.e., perceived barriers to information sharing and knowledge.

**Participants**

Police Chiefs of four municipal police organizations across Canada were sent letters of introduction, invitations to participate in this study, and research information
sheets. Three agencies agreed to participate in the study: one large independent municipal agency (LRG-IND); one medium-sized independent municipal agency (MED-IND), and one medium-sized Royal Canadian Mounted Police (RCMP) municipal police agency (MED-RCMP). All sworn officers within these agencies (N = 1850) were eligible to participate and were sent individual email invitations with web-based survey links.

Survey completion was voluntary and constrained by the operational needs of each organization within the data collection period. Therefore, participants were self-selecting. Within the four week data collection period, a total of 212 survey responses were received. Responses to the open-ended question were received from 64% (n = 135) of this group. The proportion of responses from each of the policing organizations was LRG-IND (56%, n = 75); MED-IND (23%, n = 31); and MED-RCMP (21%, n = 29).

Demographically, participants comprised: 84% (n = 113) men and 16% (n = 21) women, 50% (n = 67) of whom were line personnel (Constable), 44% (n = 59) were supervisors (Corporals, Sergeants, or Staff Sergeants), 4% (n = 6) were at command level (Inspector), and two participants (1%) reported their rank as “Other.” Self-reported education indicated that approximately one half of the participants (49%) had some college education, 42% had completed a four year college or university degree and a small number of officers (3%) had completed a graduate degree. The remainder (6%) had completed high school/general education development.

**Qualitative Analysis**

Written responses were analysed using inductive qualitative methods (Strauss & Corbin, 1998). This inductive approach allows “…research findings to emerge from the frequent, dominant, or significant themes inherent in the raw data, without restraints imposed by structured methodologies” (Thomas, 2006, p. 238, p.238). Thus, the developed themes were not only data-driven, they were theoretically “bottom-up” versus
“top-down” driven, and presented an “…accurate reflection of the entire data set” (Braun & Clarke, 2006, p. 83) while allowing a rich description of the data.

The survey responses were initially close read, re-read, and then open coded using qualitative data analysis software (QDAS). NVIVO 8 software was utilized to code the unstructured textual data and to develop and compare emergent themes and concepts between and across demographic groups (Bazeley, 2007). Very few participants (7%) reported that they were unaware of any impediments to information and knowledge sharing or that no impediments to information sharing existed. Most respondents were aware of information sharing impediments within their organization and were willing to share their thoughts on this subject. A recursive and iterative approach was used in developing the themed categories.

Upon collapsing all overlapping or otherwise redundant sub-categories, a total of seven impediment themes emerged. Two additional categories were created to encapsulate responses indicating that there were (a) no perceived impediments to information sharing and (b) miscellaneous responses that were either: blank, ambiguous, or inappropriate in response to the question. Four responses were excluded from further analyses as they did not fit any of the final categories due to ambiguity in the participants’ wording. A multi-coder system was implemented to establish shared interpretative validity (Maxwell, 1992).

**Inter-rater reliability**

To assess coding reliability, all open-ended responses were dual-coded by two trained raters who identified the theme or themes contained within each participant’s response. Cohen’s kappa coefficients were calculated for each category. The Kappa coefficients yielded good inter-rater results, with agreement percentages at or above the
90% acceptable level (Miles & Huberman, 1994). All disparities between raters were resolved by follow-up discussions to reach consensus.

**Results**

Definitions of the seven themes or types of impediments to information sharing that were distinguished, and illustrative examples of each, are displayed in Table 5-1.

**Table 5-1 Categories Distinguishing Perceived Impediments to Information Sharing**

<table>
<thead>
<tr>
<th>Impediment</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workload/overload</td>
<td>Shortage of time, work overload, or general inability to deal with the information/work load.</td>
<td>&quot;workload... everyone is too busy;&quot; &quot;lack of time;&quot; &quot;information overload&quot;</td>
</tr>
<tr>
<td>Processes and technology</td>
<td>Internal and external information sharing processes, systems, policies and/or technologies (e.g. police records information management environment (PRIME), email etc.)</td>
<td>&quot;our Information Technology section;&quot; &quot;formal channels have not been identified;&quot; &quot;confusion based on who does what...top heavy in bureaucracy;&quot; &quot;legislative restrictions;&quot; &quot;various systems that do not talk to one another through portals;&quot; &quot;policies and guidelines within different agencies&quot;</td>
</tr>
<tr>
<td>Leadership</td>
<td>Lack of direction, feedback, or support by the senior management or executive management team about information and knowledge sharing.</td>
<td>&quot;Equivalent to urinating in dark pants. You would get a warm feeling inside but no one notices;&quot; &quot;lack of organization direction&quot;</td>
</tr>
<tr>
<td>Individual unwillingness</td>
<td>Individual unwillingness to share information/knowledge due to personal attitudes, values, beliefs or actions.</td>
<td>&quot;control and egos;&quot; &quot;personal gain&quot;</td>
</tr>
<tr>
<td>Organizational unwillingness</td>
<td>Unit, department, or agency level unwillingness to share information with other units or departments internally and/or externally.</td>
<td>&quot;competition between sections/agencies;&quot; &quot;fragmented policing style in this region;&quot; &quot;unwilling to share because they are competitive;&quot; &quot;empire building and egos, by specialty units;&quot; &quot;competition between sections;&quot; &quot;silo like thinking of specialty units&quot;</td>
</tr>
<tr>
<td>Physical location/structure</td>
<td>The way the organization or policing generally is structured or located in the area or region.</td>
<td>&quot;compartmentalization nature of policing;&quot; &quot;too large...no access to other units;&quot; &quot;the size of our community&quot;</td>
</tr>
<tr>
<td>Risk management</td>
<td>Investigative or organizational risk management.</td>
<td>&quot;may jeopardize the case;&quot; &quot;need to maintain integrity of sometimes sensitive information;&quot; &quot;liability&quot;</td>
</tr>
<tr>
<td>None</td>
<td>No perceived or known barrier.</td>
<td>&quot;there isn't;&quot; &quot;none;&quot; &quot;can't think of one&quot;</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>Incomplete, non-codeable, or unintelligible responses.</td>
<td>&quot;so that I don't get chewed out by an Officer&quot;</td>
</tr>
</tbody>
</table>
Figure 5-1 displays the aggregated data on seven types of impediments to sharing information and knowledge distinguished by participants across all three Canadian policing agencies. The percentage of the total for each impediment and its ranking relative to the other noted impediments revealed three dominant themes regarding impediments to information and knowledge sharing across the three police agencies: Processes-technology (25%), Individual unwillingness (21%), and Organizational unwillingness (15%).

![Pie chart showing perceived impediments to information and knowledge sharing](image)

Figure 5-1. Perceived Impediments to Information and Knowledge Sharing

Collectively, these three impediments accounted for 61% of the perceived barriers to information and knowledge sharing within the three police organizations. Fewer participants mentioned “Workload-overload” (12%); “Location – structure” (10%); “Leadership” (6%); and “Risk management” (4%).

A closer inspection of the seven core information and knowledge sharing impediments was conducted within each of the three participant organizations to assess what, if any, differences or similarities were present across organizations. The seven
perceived impediment themes were plotted in terms of their frequency, and as an individual organizational value, as shown in Figure 5-2.

![Graph showing perceived impediments to information sharing by police agency](image)

**Figure 5-2. Perceived Impediments to Information Sharing By Police Agency**

Variability between organizations was most apparent among the five top-ranking impediments. Accordingly, similarities and differences between the three participating police agencies regarding these five impediments are briefly summarized.

**Top-Ranked Impediments to Information and Knowledge Sharing**

**Processes and technology.** Overall, “Processes-technology”, which represents both internal and external information sharing processes, systems, policies, and technologies (e.g., information portals, police records information management systems such as PRIME3, e-mail) within the organization, was identified by many participants as the greatest single impediment to information sharing across the three police organizations. This barrier was perceived to exist by more than two-fifths (43%) of the

---

3 PRIME refers to the British Columbia province-wide shared Police Records Information Management Environment.
MED-RCMP participants, more than a quarter of the sworn officers (28%) employed by the LRG-IND agency; and about one in five police (18%) in the MED-IND agency. In the latter agency, this theme was ranked as the second most significant impediment to information sharing, accounting for 16% fewer responses than the impediment characterized by “Individual unwillingness” to share information.

When specifying the aspect of process that created the impediment, several participants blamed organizational incentives for individual merit as opposed to teamwork: “…a promotional system which embraces singular deeds thereby leading to information hoarding and stealing” (LRG-IND, Supervisor). Another police supervisor stated:

I see this primarily as an issue involving the art of communication. As long as we hire/employ human beings and not machines, we are at the mercy of those who wish to hoard information and not share same. We can establish a myriad of systems to disseminate information/facts, unless the will is there to share it, to ensure it is broadcasted, we will continue to struggle with this (MED-RCMP, Supervisor).

Both comments reflected the often-discussed but neglected need to address both the social aspect of information sharing and the formal and informal organizational reward systems that exist within organizations creating incentives and disincentives to share information (Bartol & Srivastava, 2002).

Participants from both independent and national police agencies suggested that technology policies and systems were the primary impediments: “Our information technology section and their overly restrictive policies” (LRG-IND, Supervisor) and “Various systems that do not talk to one another through portals. Various levels of encryption that one agency would follow but not another” (MED-RCMP, Supervisor).

**Individual unwillingness.** The impediment ranked as the second most significant barrier to information sharing was “Individual unwillingness”, or a reluctance to share due to personal attitudes, values, beliefs and/or actions. In two of the three organizations, both
the LRG-IND agency and the MED-RCMP agency, one in five participants perceived this a problem, but the MED-IND agency, the frequency was one in three (34%), substantially more than “Process-technology”.

Comments by several officers captured the larger issue: “… empire building can protect and help many officers achieve their personal goals” (MED-IND, Line Officer); “Individuals keeping information to themselves to act upon themselves” (MED-IND, Line Officer); “…to beat out everyone else” (LRG-IND, Line Officer) and “Holding information gives me the "hero" factor. Meaning I will be the officer writing the warrant and getting the credit” (LRG-IND, Line Officer). These responses reflected rational self-interest, marked by an emphasis on personal goals versus collective priorities and interests, influenced by their agency’s unique social and organizational context. Such individual values and behaviours are not conducive to information and knowledge sharing.

The issue of real or perceived competition between individuals was further illustrated by the comments by several officers: “…internal competition and information hoarding” (MED-IND, Line Officer), “Officer hoarding of information and empire building” (LRG-IND, Supervisor), and “The individual silos of information and competition between units” (MED-IND, Command Officer).

The degree to which this type of behaviour was condoned and/or rewarded within these organizations was of interest, since individual unwillingness behaviours are contrary to the fundamental policing goals of information sharing, interoperability, and achievement of organizational goals. Logic dictates that at some point, individual unwillingness will become organizational unwillingness if left unchecked, since organizational culture is essentially a shared view “…to be taught to new members as the correct way to perceive, think, and feel…” (Schein, 2010).
**Organizational unwillingness.** The third impediment to sharing information most frequently identified was “Organizational unwillingness”, manifested by a unit, department, or agency level unwillingness to share information and knowledge with other units or departments, internally and/or externally. Results showed that this impediment was perceived as more common in the LRG-IND agency (16%) and the MED-IND agency (15%) than in the MED-RCMP agency (10%).

Competition within a unit and/or department for notoriety, resources, or public recognition was shown in several comments: “The individual silos of information and competition between units” (MED-IND, Command Officer); “Boundaries between outside agencies... unwilling to share information because they are competitive and seeking glory within public perception” (MED-IND, Line Officer); and “There is a sense that knowledge is power, and many do not want to relinquish power. They are not special if others have the info. From the executive level, there is a sense that “we can’t share info with the membership, the minions would not understand” (LRG-IND, Line Officer).

A recent study conducted by the RCMP examined police information sharing practices in Canada. Findings indicated that police relied heavily on personal interactions, relationships, and trust-based information transactions when dealing with sensitive information; that police trusted, overall, the security of the technology systems that are in place; that outside access to individual agency information data-banks was very limited; and that a large portion of the sharing was built on “personal initiative or judgement” and not on purely “secure and systemic” information sharing protocols (LeBeuf & Parè, 2005, p. 23, p.23). The foregoing comments from participants in the current study generally supported those findings, particularly statements that related to limited access to outside agency databanks, information sharing based on trust, and the requirement for systemic information sharing protocols.
**Workload–information overload.** The role that information technology plays in the facilitation of the storage, retrieval, and dissemination of information and knowledge within the organization is important. However, one of the unintended consequences of automation and re-arrangement of information flow is an overabundance of information and a need for the individual recipient to sort out what is important, what can wait, and what can be ignored. This overabundance of information, coupled with the need to sort and evaluate each new item of information for relevancy, creates an increased workload and/or overload for end users of this automation. A fourth impediment identified by participants was “Workload-Information Overload”. This impediment was perceived a barrier to information sharing to a similar and more extensive degree within the MED-IND agency (16%) and the MED-RCMP agency (15%), whereas workload-information overload was not perceived as a significant barrier to information and knowledge sharing in the LRG-IND agency (2%). Supervisors and Line Officers alike experienced this pressure: “…time constraints, I don't have time in the day in order to properly disseminate all the information” (RCMP, Supervisor); “…sharing information or knowledge often results in more work” (RCMP, Supervisor); “…information overload through too many mediums” (LRG-IND, Supervisor); and “Time is a large factor, people are too busy. Motivation is another due to workloads and limited time” (MED-IND, Line Officer). All of these officers felt overloaded by information and compelled to “do something” with information that they acquired, whether it was to assess its worth, disseminate it, record it, and/or take action.

The foregoing examples disclosed an issue of absorptive capacity at both the individual and collective organizational levels. Absorptive capacity was defined by Cohen and Levinthal (1990) as the ability to fully value, assimilate, and apply new knowledge. Unless sufficient time and/or resources are dedicated to mitigating information and work
overload, much information will be lost, overlooked, and/or ignored, to the detriment of the organization and the achievement of target goals and outcomes. More importantly, the increased workload caused by the massive influx of information defeats the information sharing goal, by creating disincentives for officers to use and contribute to the information systems and information flow. Because of this potential for backlash, it is important that organizations develop appropriate structures that facilitate and do not hinder the flow of communication between groups, units, and/or organizations.

**Location – structure.** The fifth impediment mentioned by a substantial proportion of participants was “Location-structure”, which related to the way the organization was internally structured or generally located in the applicable policing area or region. This was perceived as more of an issue by participants from the LRG-IND agency (14%) and the MED-IND agency (13%), whereas fewer participants in the MED-RCMP agency (8%) cited this factor as an impediment. The following comments illustrated this information sharing impediment succinctly: “The compartmentalization nature of policing” (MED-IND, Line Officer); “Too large a service and too spread out throughout the city to spread the information throughout. Too many specialty units that are too specialized and retain their information because they are segregated from the rest of the service” (LRG-IND, Line Officer) and “…too many different police agencies in a very small geographic area” (MED-IND, Supervisor).

Each of the foregoing comments identified the presence of information “silos”, which may be vertical within or horizontal between units, sections, or agencies. This lack of communication and information sharing within and across organizations is exacerbated by the location and structure of organizational units, different roles and responsibilities, accountabilities, budgets, and boundaries. Traditional bureaucratically-focused hierarchies do not always lend themselves to substantive information sharing due to
policies and boundaries, however, there has been a greater recognition of the need for and value of increased informal contact with peers and colleagues and the development of collaborative network structures in the transferring of knowledge within and across organizations (Agranoff & McGuire, 2004). A key role of leaders and managers in creating opportunities for knowledge sharing and integration within and across organizations is to eliminate or reduce barriers that produce physical or psychological distance (Argote, McEvily, & Reagans, 2003).

Two additional impediments to information and knowledge sharing that emerged in the responses from participants were: “Leadership” (lack thereof) and “Risk Management.”

**Leadership.** Leadership within organizations, positively or negatively, drives the values, behaviours, commitment, and cooperation of employees towards the achievement of a common goal. Relative to the other two agencies, the LRG-IND agency stood out as more than one in ten (13%) of the participants perceived that a lack of direction, feedback, or support by the senior management or executive management team was problematic. Illustrative of the perception that the lack of leadership or management support were impediments were these responses by officers: “Management failure to take appropriate action unless the issue is topical, sexy or in their individual political interest” (LRG-IND, Supervisor); “…lack of organization and direction. Confusion based on who does what and what goes where due to a system top heavy in bureaucracy” (RCMP, Supervisor); and “lack of recognition” (LRG-IND, Supervisor). In each of these instances, the impediments to information and knowledge sharing can be significantly addressed through the leadership function, whether at the supervisory or at the senior management level. In comparison, participants employed by both the MED-RCMP agency and the MED-IND
agency perceived that leadership issues with respect to information and knowledge sharing were minimal or non-existent (3% and 0% respectively).

**Risk management.** The final impediment identified was “Risk management”, suggesting that information and knowledge sharing was hindered by the overarching need for organizational or investigative level information and knowledge risk management. This issue was slightly more predominant within the LRG-IND agency (5%) than the MED-IND agency (2%) and was perceived as a non-issue within the MED-RCMP agency (0%).

Two issues of significance to policing were encompassed by this theme: maintaining investigative integrity and limiting agency liability in relation to lawsuits. Although there were comparatively few responses within this category, the responses reflected these concerns: “loose lips sink ships, if you have an important investigation, only want the investigating officers to know in order to complete invest without hiccups” (LRG-IND, Line Officer); “may jeopardize a case” (LRG-IND, Line Officer) and “…fear that the information may get in the wrong hands” (LRG-IND, Supervisor). Within this policing context, it was unsurprising that this theme emerged, but what was surprising was how infrequently this issue was identified as an impediment to information and knowledge sharing within these three agencies, possibly because this issue has been adequately addressed through each of the agency’s policies, procedures, and culture.

**Connecting Impediments to Knowledge Management Infrastructures**

To conceptualize and illustrate the connection between the seven perceived information and knowledge impediments and the three major organizational KM infrastructures, a diagram was created using NVivo 8 software analysis. The three organizational KM structures of technology, structure, and culture are depicted in Figure 5-3.
This diagram revealed a clear pattern in these data indicating, overall, that in this sample, the perceived impediments to sharing information and knowledge fell well-within the KM technical, cultural, and structural infrastructure components of the three participating organizations. Some overlap was observed on issues that had both a technical and a structural component (e.g., email overload). Consideration of the themes in light of these three infrastructures identified that although “Processes-technology” was rated overall as the single highest ranking impediment to sharing across the three organizations (Figure 1), the three most substantial infrastructure impediments to information sharing were “Organizational structure” (39%; n = 88) followed by “Organizational culture” (33%; n = 75) and “Processes-technology” (28%; n = 63).

Discussion

Similarities between Knowledge Management in Policing and Other Organizations
A recent study of obstacles to KM and information sharing yielded a ranked list of the top ten organizational impediments (Croteau & Dfouni, 2008). Although the rankings differed, six of the seven impediments identified within the current study appeared on that list, namely: Processes and technology; Individual unwillingness; Organizational unwillingness; Workload-overload; Location and structure; and lack of Leadership. A comparison of the findings is summarized in Table 5-2.

Table 5-2. Information Sharing Impediments in Policing versus Private Sector Organizations

<table>
<thead>
<tr>
<th>Rank</th>
<th>Impediments in Policing</th>
<th>Rank</th>
<th>Impediments in the Private Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Processes and technology</td>
<td>1</td>
<td>Organizational culture</td>
</tr>
<tr>
<td>2</td>
<td>Individual unwillingness</td>
<td>2</td>
<td>Lack of time</td>
</tr>
<tr>
<td>3</td>
<td>Organizational unwillingness</td>
<td>3</td>
<td>Information/ communication technology</td>
</tr>
<tr>
<td>4</td>
<td>Workload-overload</td>
<td>4</td>
<td>Lack of incentive (reward) system</td>
</tr>
<tr>
<td>5</td>
<td>Location and structure</td>
<td>5</td>
<td>Lack of senior management support</td>
</tr>
<tr>
<td>6</td>
<td>Leadership</td>
<td>6</td>
<td>Organizational structure</td>
</tr>
<tr>
<td>7</td>
<td>Risk management</td>
<td>7</td>
<td>Staff turnover</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>Physical layout of work spaces</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td>Non-standardized processes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>Emphasis on individual rather than team</td>
</tr>
</tbody>
</table>

Note. Adapted from Croteau and Dfouni (2008)

This corroboration provided further validation of outcomes of the thematic coding conducted in this study and that there were commonalities between non-policing agencies and police agency/organizations on this issue.

**Organizational Context and Impact on Information Behaviour**

Analysis of the perceived impediments to information and knowledge sharing at the organizational level (Figure 2) revealed unique differences between the three Canadian policing agencies in terms of the magnitude and rankings of the impediments. These organizational differences underscored the importance of context as a moderating factor when examining extant KM practices within organizations. For example, in their review of organizational information environments, Detlor et al. (2006) suggested that an organization’s technology systems, politics, and culture:
...constrain and shape the degree to which people in organizations can access, create, share, find, browse, create and use information. That is, an organization’s information environment has a direct effect on both employee and organizational information behaviour. (p.119)

This impact of culture on organizational context was echoed by De Long and Fahey (2000):

By defining the context for interaction, culture determines how all types of knowledge will be used in a particular situation. It does this primarily by dictating the norms - the rules, expectations, and penalties - that govern social interactions between individuals and groups, and by shaping people’s perceptions of their range of options acceptable to the organization. (p. 120)

The findings in the current study demonstrated how variations in organizational culture, structure, and technology can impact the successful integration of information and knowledge sharing within the three police organizations. These findings were further substantiated by quantitative analyses of additional data gathered regarding these organizations (2013a) demonstrating that information quality control and proactive collaboration accounted for 41% of the variance in a police organization’s ability to attain specific information use outcomes, such as problem-solving, creating beneficial work, and information sharing.

**Limitations of the Study**

This research highlighted important organizational information and knowledge sharing issues and perceived impediments within three police organizations. However, these perceptions were not necessarily representative of the larger police population. Despite the limited samples, remarkable consistencies and consensus emerged across these three organizations both with respect to the nature of the perceived impediments to information and knowledge sharing and the relative frequency or importance of each of these impediments (Figure 2). These outcomes indicated diffuse informant reliability. Follow-up studies, conducted at the organizational level within policing, will be required
corroborate or otherwise validate the perceptions reported in this study by rank and file
officers within three Canadian police organization.

**Policy and Practice Implications**

This study isolated some of the information and knowledge sharing barriers facing
North American police organizations at this point in their history and provided insights
into the sometimes fickle foundation on which all contemporary policing is based:
information and knowledge sharing. The rank and file groups sampled form the bulk of
personnel in every police organization, and therefore exert a direct and indirect influence
on all operations within those organizations and the achievement of any and all goals and
outcomes within the organization. In light of recent public sector reforms to improve
accountability, efficiency and effectiveness, it is surprising that little time has been
devoted to understanding this important, relevant, and influential group in terms of their
ability to support or impede organizational decisions, actions, and outcomes through
information and knowledge sharing.

Singularly, the three most significant discrete impediments to information and
knowledge sharing within all three police organizations were: processes and technology,
individual unwillingness, and organizational unwillingness. Collectively, when specific
impediments identified were grouped within their associated organizational KM
infrastructures, the relative order of the issues changed. Most perceived impediments
were aspects of organizational structure and organizational culture, not processes and
technology.

Within the core information and knowledge sharing impediments, a number of
critical sub-themes emerged, which have implications for police policy and practice.
Specifically, these sub-themes identified negative consequences of: information silos;
information hoarding; internal/external competition; personal versus collective goals; lack
of absorptive capacity; lack of incentives; existence of disincentives; and lack of trust within and/or across units, sections and agencies. The practical implications of these issues on police organizations cannot be underestimated. Table 5-3 itemizes the organizational consequences of the presence of these impediments.

Additionally, no matter which individual model or combination of policing models each of the three participating police agencies may ascribe (e.g., Community-Policing, Problem-oriented Policing, Intelligence-led Policing, Evidence-based Policing, reactive and/or proactive policing), each of the impediments identified above conflicts directly or indirectly with contemporary police models either culturally, technically, and/or structurally. For instance, a description of the community policing partnership element as provided by the Community Oriented Policing Services (COPS) states that:

Community policing, recognizing that police rarely can solve public safety problems alone, encourages interactive partnerships with relevant stakeholders. The range of potential partners is large and these partnerships can be used to accomplish the two interrelated goals of developing solutions to problems through collaborative problem solving and improving public trust. (2009, p. 5)
### Table 5-3. Practical Implications of Impediments to Sharing

<table>
<thead>
<tr>
<th>Impediments to sharing</th>
<th>Practical implications for organization(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processes and technology</td>
<td>Instead of facilitating the timely and effective capture, storage, and use of information, these systems and processes inhibit information flow, create disincentives for officer to contribute to and use database(s)</td>
</tr>
<tr>
<td>Individual unwillingness</td>
<td></td>
</tr>
<tr>
<td>Organizational unwillingness</td>
<td>Information and knowledge flows stagnate, effective decision-making and operational capacity is reduced, organizational learning and innovation is disrupted, duplication of effort is created due to lack of awareness, organizational performance is reduced, resentment and animosity is created within and across organization(s)</td>
</tr>
<tr>
<td>Information silos</td>
<td></td>
</tr>
<tr>
<td>Information hoarding</td>
<td></td>
</tr>
<tr>
<td>Internal/external competition</td>
<td></td>
</tr>
<tr>
<td>Personal versus collective attitude</td>
<td>Information will be briefly scanned (not fully considered), ignored, deleted, or filed for expediency, decision-making capabilities and ability to focus on critical elements will be reduced, creating potential risk management issues for organization due to missed sharing/application of information or knowledge</td>
</tr>
<tr>
<td>Lack of absorptive capacity</td>
<td>No impetus for individual and/or organization to change negative information sharing behaviours</td>
</tr>
<tr>
<td>Lack of incentives</td>
<td>Individuals and/or units are rewarded for counter-productive information sharing behaviours (e.g. promotion)</td>
</tr>
<tr>
<td>Presence of disincentives</td>
<td>Relevant and crucial information will be retained in-house, negatively impacting operations and investigations, duplication of effort is created due to lack of information awareness</td>
</tr>
<tr>
<td>Lack of trust</td>
<td></td>
</tr>
</tbody>
</table>

Using the impediments listed in Table 5-3 as a point of departure, we see that the “interactive partnerships”, “collaborative problem-solving”, and “improving public trust” elements of community policing cannot be truly realized within a policing environment that is characterized by internal processes that impede information sharing, individual or organizational unwillingness to share information or knowledge, or lack of trust among others. Similarly, the Intelligence-led Policing model would be hampered by these same information and knowledge sharing impediments.
The Intelligence-led Policing model has developed significantly over the last decade and is now conceptualized as an integral part of the Community-oriented policing and problem-solving process, as was noted in a U.S. Department of Justice report on Intelligence-led Policing:

Intelligence-led policing is a collaborative enterprise based on improved intelligence operations and community-oriented policing and problem solving, which the field has considered beneficial for many considered beneficial for many years. To implement intelligence-led policing, police organizations need to re-evaluate their current policies and protocols. Intelligence must be incorporated into the planning process to reflect community problems and issues. Information sharing must become a policy, not an informal practice. (Peterson, 2005, p. vii)

Once again, using Table 5-3 as a point of reference, we note that any or all of the negative information and knowledge sharing behaviours, values, and processes described by the sworn officers within the three participating agencies would inhibit the capacity of a police organization to effectively implement the Intelligence-led Policing model. At the core of the Intelligence-led Policing model is “collaboration” and “information sharing.” It is within this context that “information silos”, poorly designed “processes and technology”, and/or “lack of absorptive capacity”, for example, fail to philosophically or practically support the Intelligence-led Policing model.

A review of the responses of the sworn officers from each of the three policing organizations revealed that police organizations, not unlike organizations in general, are highly complex and adaptive social systems that can become maladaptive and dysfunctional, if allowed, through: lack of governance, lack of management, and lack of effective learning (Andreadis, 2009; Matthews, Ryan, & Williams, 2011; Van Fleet & Griffin, 2006). Many of the issues identified by the participants in this study are indeed rooted in lack of governance/leadership, management, and/or effective learning. For the sake of illustration, only a few of the many available examples are cited: processes and technology (lack of leadership and management); individual unwillingness (lack of
leadership, management, effective learning); presence of disincentives (lack of leadership, management, learning); lack of trust (lack of leadership, management, learning). Despite the presence of a number of dysfunctional or otherwise maladaptive behaviours within these three police organizations, these issues are not irreconcilable. Therefore, possible avenues for policy and practice improvement were provided.

**Conclusions**

Each of the impediments identified represents an opportunity for each organization to review and reflect upon its current information/knowledge sharing policies, practices, as well as the culture and context in which these issues arose. Although there is no prescriptive answer to solve all of the information-sharing dilemmas within organizations, a number of options exist to mitigate the impediments by improving coordination mechanisms and the context in which sharing occurs. These options include, but are not limited to: improve organizational identity and connectedness (Kogut & Zander, 1996); align organizational culture with information and knowledge sharing goals and needs (De Long & Fahey, 2000); develop information and knowledge sharing values (Nonaka, 1994); create incentives for information and knowledge sharing (Hung, Durcikova, Lai, & Lin, 2011; Ipe, 2003); promote boundary spanning (Tushman & Scanlan, 1981); control information overload (Savolainen, 2007); and improve levels of trust within and across units, sections, and departments (Chowdhury, 2005; Willem & Buelens, 2007). Such remediation efforts, however, fail to address one last issue: paradoxes in policing.

Each of the seven paradoxes identified earlier in this paper is germane to information and knowledge sharing within North American policing as it represents a potential sticking point for polarized debate on issues that are actually interdependent and interpenetrating (Takeuchi & Nonaka, 2004). Simplifying the dialectic stages of thesis, antithesis, and synthesis in each of the paradoxes presented essentially creates tensions
between the two apparently opposing positions, which would necessitate discussion and
debate within the respective police organization. This eventual debate would create a
dynamic that incorporates aspects of both the thesis (the first idea or position) and the
antithesis (the second idea or position) thus forming the synthesis or resolution, which
reveal themselves as new perspectives, patterns, attitudes, or structures. This synthesis
process is a learning process. Thus, the paradox of secure and open suggests that within
the thesis of secure and the antithesis of open there is room for synthesis, where aspects of
both concepts are present while yet creating an opportunity for a new perspective, attitude,
or structure. The same is true for each of the six other paradoxes.

The foregoing insights into the information and knowledge sharing barriers faced
by the rank and file officers within the participating agencies and the concepts of dialectics
and paradox will enable police leaders to better understand the needs of their respective
organizations, the needs of their officers, and better appreciate that information and
knowledge sharing cannot simply be accomplished through technology alone. A more
reflective, systematic, and engaged KM and use approach that recognizes the linkage
between the technical, cultural, and structural infrastructures must be undertaken so that
police organizations may achieve the goals placed before them.
CHAPTER SIX

Conclusion and Recommendations

Exegesis

As noted in the Preface, the purpose of exegesis within this dissertation was to integrate the research or investigation within the profession of policing. In this dissertation, reflective practice was encompassed and brought to light through personal academic and professional reflection in and on the research, the development and creation of the artefacts, and by placing this research into the broader theoretical and contextual frameworks.

This research was grounded within the context of North American policing, which for the last 20 years has been influenced and shaped by the broader social, economic, political, and technological environment in which it resides. During this time frame, an evolution of policing models began with a primarily reactive professional model of policing that was still prominent in the early 1980’s, favouring enforcement over community, to contemporary models of policing that have become increasingly proactive, collaborative, and technical in nature. To keep pace with these changes, police organizations have needed to change their structures, technologies, skills, cultures, and behaviours in order to support these changes despite reductions in police budgets and resources. The impact that these social, economic, political, and technological changes have had on police personnel and police operations is not an unknown entity (Brodeur & Dupont, 2006; Deschamps, Paganon-Badinier, Marchand, & Merle, 2003; Martinussen, Richardsen, & Burke, 2007). This awareness was illustrated by a commanding officer during the initial agency research recruitment phase who commented: “Our officers are being fed information with a fire hose and they are drowning… I fully support your
research but wish you good luck since we ourselves do not get very good response rates to our own surveys” (RCMP-Anonymous, 2009).

Research Questions

Four research questions were posed within the context of three Canadian municipal police agencies. All four research questions were addressed specifically during the research process and in the development of the two research manuscripts included in this dissertation portfolio. Summary responses to each of these four research questions are now provided:

Research question one. Which of the underlying information management and information behaviours and value factors best supported the achievement of three key information use outcomes: problem solving, creating work that is beneficial, and information sharing?

Overall, this research demonstrated that information proactiveness factor and information management had the most statistically significant impact on the achievement of the information use outcomes of problem solving, creating work that is beneficial, and information sharing when compared with the information behaviours and values of sharing, transparency, and integrity. Information proactiveness and information management accounted for 28% and 14% of the common variance respectively in the achievement of the three information use outcomes.

Additional statistical analysis of the data revealed two new information behaviour and value factors that had not been previously identified. These were unique to the three police agencies studied. The first of these new factors, information quality control, accounted for 38% of the common variance in the information use outcomes and incorporated aspects of information management, information transparency, and information integrity. The second new factor, proactive collaboration, accounted for an
additional 33% of the common variance and comprised of the information behaviours and values of information sharing and information proactiveness. In total, these two new information behaviour and value factors accounted for 71% of the common variance in information use outcome achievement.

These findings indicated that both information management practices and information behaviours and values within police agencies are important factors to consider when attempting to achieve the information use outcome of problem solving, creating work that is beneficial, and/or information sharing.

**Research question two.** Were the three Canadian police organizations that participated in this research differentiated in terms of their information management, information behaviours and values, and/or the achievement of the three information use outcomes?

Each of the three police organizations was scrutinized for differences in its information management, information behaviours and values, and the achievement of the information use outcomes of problem solving, creating work that is beneficial, and information sharing. Analysis revealed that these three police agencies were indeed differentiated, and that the observed differences were focused on the *information management* factor and the information behaviour and value factor of *information sharing*.

Specifically, for every unit increase in the *information management* factor, the medium-sized independent municipal police agency was found to be most efficient; the large-sized independent municipal police agency was moderately efficient; and the medium-sized RCMP police agency was found to be the least efficient, as shown by the indication of a negative return for increased units of information management.
Interpretation of these results suggested that organizational culture and context impacted organizational information behaviour and information use outcomes.

With respect to the second differentiating factor, *information sharing*, for every unit increase each of this factor, the three participating agencies achieved different results. Specifically, the medium-sized RCMP police agency reported the most benefit, the medium-sized independent municipal police agency was found to achieve slightly fewer benefits than did the RCMP agency; and the large-sized independent municipal police agency showed a negative outcome as units of information sharing increased. A plausible account for this differentiation between agencies, particularly the negative return on information sharing investment for the large-sized independent municipal police agency, was developed by analysing the qualitative data obtained in the second research study (Chapter Five), which explored perceived impediments to information sharing within each of the three participating police agencies. Despite the finding of broad agreement between each of the three agencies with respect to the ranking of possible impediments, these analyses ascertained that in comparison with the other two police agencies, the perceived information sharing categories within the large-sized independent municipal police agency exceeded percentages in the other agencies, thereby potentially compounding the information sharing issue.

**Research question three.** Was the information use and outcome research theoretical framework previously applied within Canadian health science, legal, and engineering organizations by Bergeron et al. (2007) and Choo et al. (2008; 2006) applicable and of value to policing organizations?

The research reported within this dissertation demonstrated that the theoretical framework utilized by Bergeron et al. (2007) and Choo et al. (2008; 2006) within fields outside of policing was applicable and of value to the field of policing. Support for this
statement was indicated by the achievement of research findings that were consistent with
prior research, while yielding unique differences in information behaviours and values
which emerged between the different fields of practice and within different organizations
within the same field (i.e., policing). Statistical analysis conducted on the information
management, information behaviours and value, and information use outcome constructs
indicated not only that the information behaviour and value and information use outcome
constructs were statistically viable, but that they did indeed account for statistically
significant proportions of variance in the achievement of the information use outcomes of
problem solving, creating work that is beneficial, and information sharing.

**Research question four.** Did the perceived impediments to information and
knowledge sharing within these three target police agencies fit within the structural,
technical, and cultural knowledge management capabilities infrastructures?

An analysis of the perceived impediments to information sharing across the three
participating police agencies revealed a total of seven discrete sources of information
sharing impediments. These sources are outlined as follows and ranked in order of the
frequency with which each was mentioned as an impediment: (a) processes and
technology; (b) individual unwillingness; (c) organizational unwillingness; (d)
workload/overload; (e) location/structure; (f) leadership; and (g) risk management. The
research findings suggested that, overall, all three police agencies agreed on the relative
rankings of these impediments from high to low. When these perceived impediments to
information sharing themes were analysed in terms of the three knowledge management
capability infrastructures (organizational technology, structure, and culture), findings
indicated that, overall, the sources of the impediments fell well within the framework of
organizational technology, structure, and culture.
The foregoing summary specified the four research questions that were central to this research program, how the studies that were conducted produced results, reported within each of the research manuscripts and within this exegesis. At critical question that follows is the value derived from this research in advancing knowledge of police information behaviours, values, and norms (culture) and its contribution to police practice and policy in North America.

**Limitations of the Research**

As was suggested within the research conducted in Chapter 4, the primary limitation of this research was the low survey response rate. This can be largely attributed to the nature of operational policing demands, which are highlighted by competing priorities, little to no down time, and diary dated investigative follow-ups.

Ironically, a number of information sharing obstacles were placed in the way of achieving potentially higher response rates to the web-based questionnaire. These included the recognized need for each police agency to control and otherwise manage their internal email distribution lists, manage the email survey distribution(s), and conduct the follow-up reminder systems and sequencing. These technical and process issues were previously discussed in Chapters Three, Four and Five of this dissertation, and do not need to be elaborated further here. With the benefit of hindsight, reflecting on the survey design, perhaps a simpler and shorter format could have been utilized and the survey distribution times extended. Such changes are recommended in future studies.

**The Contribution of these Findings to Policing Research, Practice and Policy**

The research conducted within Study One (Chapter Four) specifically explored, analysed, and reported on information management and information behaviours and values that have been shown to mediate an organization’s ability to achieve the information use outcomes of problem solving, creating work that is beneficial, and
information sharing. The research conducted within Study Two (Chapter Five) specifically explored, analysed, and successfully reported on the perceived information and knowledge sharing impediments experienced by the rank and file police personnel within three Canadian police agencies. That research identified information sharing barriers faced and/or created by the rank and file officers.

Both studies and their associated findings touched upon issues that are theoretical in nature but were primarily aimed at addressing issues, concerns, and outcomes that impact the daily working lives of police practitioners across North America. As a police practitioner working in a Canadian police agency, I face the same information and knowledge needs and issues as my fellow officers, and constantly need to ask “Who has what information? How easy is it going to be to get that information or knowledge? Is that person (or system) willing/able to share that information? How will I know if the information is correct?”

These questions signal the importance and value of this research to police practitioners and to police organizations in general. We need to do better. The research findings contained within this dissertation help unveil some of the information behaviours and values, structures, processes, and technologies that either support and/or impede current police policy and practice. A greater appreciation of these information sharing impediments will better equip police leaders to moderate the impact that these barriers have on those who are at the coalface of information and knowledge sharing, creation, and innovation.

**The Need for Well-Informed Police Policy and Practice**

Despite the negative impact that some external forces have exerted on contemporary North American policing (i.e., budget cuts, reduced resources, increased workloads, changing technologies), police leaders have a moral and ethical obligation to
fully understand and effectively manage organizational behaviours, values, and norms that support and/or impede the successful development, application, and evaluation of crime prevention and law enforcement policies and practices within their communities (Moore & Braga, 2003; Weisburd, 2003). Further, police effectiveness within the community “depends upon public confidence and coordination, police must strive to earn and deserve that trust” (Robertson, 2012). In furtherance of this goal, many of the primary demands for police reforms over the last 20 years were grounded in the need for police to earn and deserve the public trust. Examples of these reforms were encapsulated under the following headings: (a) need for improved information and knowledge sharing within and across organizations (Chávez, 2005; Homel, 2009; Sheptycki, 2004; Willis, Mastrofski, & Weisburd, 2004); (b) demands for improved police policies and practices (Bayley, 2008; Read & Tilley, 2000); (c) the linking of academic research(er) to police policy and practice (Laycock, 2001; Rojek, Smith, & Alpert, 2012; Weisburd & Neyroud, 2011; Wren, 2002); and (e) the reduction of police administrative and operational risks (Archbold, 2002, 2005; Braidwood, 2010).

**Role of Rank and File Officers in Police Reform**

The role of police reform in North America, however, does not rest solely on the shoulders of police management as it rests on the shoulders of the rank and file officers within police organizations as well (Sklansky & Marks, 2008). The importance of the rank and file officers to the success or failure of police policy and practice cannot be underestimated since individual use of information and knowledge in the knowledge creation, transfer, and application within practice starts and ends at the individual level.

A review of the research questions and research findings, the research limitations, and the contributions to police research and practice has been provided. The following section highlights why this research is timely, relevant, and innovative.
**Contribution of the Research to Police Policy and Practice**

This dissertation has made timely, relevant, and valuable contributions to the field of policing generally and police policy and practice specifically by:

1. extending existing academic research into a new context (policing);
2. empirically identifying the information management and information behaviours and values factors that aid in the achievement of three key information use outcomes within contemporary policing, i.e., problem solving, creating work that is beneficial, and information sharing. The identification of these factors contributes significantly to police policy, practice, and knowledge as all contemporary North American policing models, including but not limited to Community Policing, Problem-oriented Policing, or Intelligence-led Policing, share a need to problem solve crime and disorder issues within the community, create work that is beneficial for the community it serves and in support of the organization’s goals, and share information and knowledge within and across agencies, with key stakeholders, and with the public;
3. identifying a number of cultural, technological, and structural information sharing impediments that exist within the contemporary Canadian policing context;
4. acknowledging and carefully considering a number of policing issues that have been identified by stakeholders, academics, and practitioners over the last 20 years; and
5. developing research findings that contribute to a better understanding of these information management and information behaviour and value issues within policing by providing substantive policy and practice recommendations.

The research conducted within this dissertation portfolio was both timely and innovative. In an era of policing where information and knowledge has never played a larger role in day-to-day police policies and practices, information and knowledge sharing within and across policing remains a critical issue. Technologies and software programs
are now being developed and adapted to fit the needs and demands of increasingly
knowledge-intensive policing activities. Crime analysis, geographical profiling, and/or
intelligence-networks are increasingly common and are used in many of the policing
models we see today, including Intelligence-led Policing, Problem-oriented Policing,
Community-oriented policing, and Compstat. Findings of various Commissions of
Inquiry across North America of late have attributed high-profile police investigation
failures to individual and/or organizational unwillingness or inability to share information
and knowledge and to organizational structures, technologies, and cultures that by design
and/or by process impede the sharing of information and knowledge.

**Innovative Features of the Research Program**

Prior information and knowledge sharing research conducted within the field of
policing has been largely directed at police information and knowledge sharing related to
the implementation of knowledge management systems, information sharing in the context
of specific policing models (i.e., Intelligence-led, Compstat, Problem-oriented Policing),
and/or to specific types of police investigations. This research is unique and innovative in
that the information and knowledge sharing roles, behaviours, and needs of the rank and
file officers within police organizations were addressed, whereas these had largely been
neglected.

**Recommendations for Future Research**

This research program and subsequent research findings have positive implications
for future research and its application into police policy and practice. The application of
the theoretical model proffered by Bergeron and Choo and tested within this research
program demonstrated that the constructs of information management, information
behaviours and values, and information use outcomes were viable within the policing
context. Specifically, the theoretical model utilized within Study One established a sound
basis upon which further research may be conducted since a nexus exists between the constructs of information management, information behaviours and values (culture), and information use outcomes.

Future large scale research would be beneficial as the current finding are not widely generalizable and must be considered only within the context of the three agencies that participated. Future research should dig down into the data, beyond what was statistically feasible in this study, to answer potentially beneficial questions on the role that staffing levels (i.e., line, supervisor, or command) or ranks (i.e., Constable, Corporal, Sergeant, Staff Sergeant, Inspector etc.) play in the achievement of information use outcomes. Additionally, future large scale projects utilizing these constructs could also parse out factors and/or personnel levels that contribute the most to the achievement of each of the three information use outcomes (problem solving, creating work that is beneficial, and information sharing). These findings would afford a better understanding of whether information behaviours and values of their police personnel are congruent with the desired information use outcomes of the agencies.

A graphical representation of these possibilities and future research directions is displayed in the following conceptual diagram (Figure 6-1):
**Recommendations for Police Policy and Practice**

**Manage the context in which information flows.** Through the process of reviewing the information behaviour, use, and knowledge creation literature, a dominant recommendation for organizational policy and practice emerged: leaders must learn to manage the context and culture in which information is shared (Nonaka, 1994; Choo & Alvarenga-Neto. 2010; Snowden, 2002). Remember that all knowledge is socially constructed.

Specifically, police leaders need to provide both time and space to allow for the natural amplification and connection of individual knowledge to the larger organizational knowledge bank through the four enabling conditions of (a) social interaction (social/behaviour); (b) shared practices and commitments (cognitive/epistemic); (c) information management technologies (information systems/management), and (d) direction and structure (strategy/structure) (Choo & Alvarenga-Neto, 2010, p. 599).

**Remember that attitudes, beliefs, and behaviours do not develop in a vacuum.** Individuals (e.g., police officers) constantly “justify” the way they behave based on a set
of beliefs and values. Organizational context along with associated power, politics, and trust factors play important roles in the shaping of individual attitudes, values, and beliefs. These contextual factors are critically important since they provide the “justification” for the manner in which individuals choose to judge, screen, and determine what new information and knowledge is of “value,” which in turn contributes positively or negatively to the setting of organizational standards.

**Remove the structural, cultural, and technological barriers.** The findings of the qualitative research conducted in Chapter Five indicated that of the seven information sharing impediments identified, the three top impediments rated by all three agencies were (a) processes and technologies; (b) individuals unwilling to share information; and (v) organizational unwillingness to share information. As Detlor et al. (2006) reminded us, technologies, politics, and culture “constrain and shape the degree to which people in organizations can access, create, share, find, browse, create and use information. Put another way, an organization’s information environment has a direct effect on both employee and organizational information behaviour. (p.119)

**Final Comment**

Even though Spender (1996) made the following statement 17 years ago in relation to organizations, communities of practice, and organizational learning, it is just applicable today as it was then: “These days knowledge is less about truth and reason and more about the practice of intervening knowledgeably and purposefully in the world” (p.64).
References


Brodeur, J.-P., & Dupont, B. (2006). Knowledge Workers or “Knowledge” Workers? Jean-Paul Brodeur and Benoit Dupont are both researchers at the International Centre for Comparative Criminology. Policing and Society, 16(1), 7-26. doi: 10.1080/10439460500399304


*Knowledge management and business strategies: Theoretical frameworks and empirical research* (pp. 47-68). Hershey, PA, USA: IGI Global.


Geller, W. A. (1997). Suppose we were really serious about police departments becoming "learning organizations"? *National Institute of Justice Journal* (December), 2-8.


*International Journal of Human-Computer Studies*, 69(6), 415-427.


leadership survey on crime prevention through social development (P. S. Canada, 
Trans.) (pp. 88). Calgary: Canadian Research Institute for Law and the Family.

Magers, J. S. (2004). Compstat: A new paradigm for policing or a repudiation of 
community policing? *Journal of Contemporary Criminal Justice, 20*(1), 70-79. 
doi: 10.1177/1043986203262312

Number 6*(August 2004), 1-16.

Maguire, E. R., & Katz, C. M. (2002). Community policing, loose coupling, and 

American Academy of Political and Social Science, 593*, 15-41.

Mahdi, O. R., Almsafir, M. K., & Yao, L. (2011). The role of knowledge and knowledge 
management in sustaining competitive advantage within organizations: A review. 
*Journal of Business, 5*(23), 9912-9931.

of knowledge management in human enterprises. In C. W. Holsapple (Ed.), 

Kinney, B. (2005). A 30 year analysis of police service delivery and costing (pp. 1-
148). Abbotsford, BC: University College of the Fraser Valley, Department of
Criminology and Criminal Justice.

Manz Jr., C. C., & Sims, H. P. (1980). Self-management as a substitute for leadership: A
social learning theory perspective. Academy of Management Review, 5(3), 361-
368. doi: 10.5465/amr.1980.4288845


Interaction, 6, 95-117.


organizational codes: Standford University Press.


People, technology and the bottom line. [Article]. Sloan Management Review,
41(4), 69-80.

107-123. doi: 10.1080/156142604200190261

among state and local law enforcement agencies. Journal of Contemporary
Criminal Justice, 23(2), 159-173. doi: 10.1177/1043986207301364


mation\%20Driven\%20Organization/Guidelines\%20for\%20Knowledge\%20Management\%20in\%20Policing.pdf


Ribaux, O., & Birrer, S. (2010). Iterative development of co-operation within an increasingly complex environment: Example of a Swiss regional analysis centre. In


*Journal of Knowledge Management, 6*(2), 100-111.


Appendix A

Charles Sturt University “Progress, Supervision and Assessment Regulations: Theses and Other Examinable Research Works” Criteria: Excerpts

2.4.1.1.4 Research Professional Doctorate

A candidate in a research professional doctoral program is required to successfully conduct research into a current problem/issue relevant to the profession and report results in a thesis. Candidates for the award of a Doctoral degree must demonstrate advanced theoretical, professional and methodological knowledge and the work must demonstrate an original contribution to professional practice, policy or knowledge (CSU, 2012, p. 11).

2.4.1.2.4 Research Professional Doctorate

A candidate in a research professional doctoral program is required to successfully conduct research into a current problem/issue relevant to the profession. The work(s) presented will be supported by documentation that demonstrates the underlying evolution of the work(s) and a piece of critical writing/exegesis which places the work(s) into an historical and contemporary context. Candidates for the award of a Doctoral degree must demonstrate advanced theoretical, professional and methodological knowledge and the work must demonstrate an original contribution to professional practice, policy or knowledge (CSU, 2012, p. 12).
2.4.1.3 Portfolio

A candidate in a research professional doctoral program is required to successfully conduct research into a current problem/issue relevant to the profession. Candidates in specified research professional doctoral programs shall report the findings of their research as portfolios. A portfolio consists of a compilation of scholarly documents which can include academic or professional journal articles and conference papers, plans, and reports and policy documents. The portfolio is submitted with an analysis/exegesis which integrates the research or investigation within the profession while demonstrating academic and professional development over the course of study (CSU, 2012, p. 13).

2.4.3.1.1.4 Research Professional Doctorate

The maximum length for a research professional doctoral thesis shall be 60,000 words (CSU, 2012, p. 15).
Appendix B

Criteria for Examination of Professional Doctorate

General Criteria

Examiners shall examine a thesis or portfolio principally in terms of the following criteria:

- the candidate's understanding of the field of study;
- the originality of the work embodied in the thesis or portfolio;
- the significance of the portfolio as a contribution to knowledge in the field of study;
- the adequacy of the research methodology (e.g., the construction of hypotheses, the analysis of data, the arguments advanced to support conclusions); and
- the worthiness of the portfolio for publication.

Specific Criteria

- A research professional doctoral portfolio must be an original contribution to professional practice, policy or knowledge.
Appendix C

Survey: Plain Text Copy

Thank you for your valued input and assistance. Your insights and personal experiences are critical to the success of this study so PLEASE COMPLETE THE ENTIRE SURVEY

CONSENT

I have read the Research Information Sheet (email attachment) and fully understand the nature and purpose of this study. I have been given the opportunity to ask questions about the research and have received satisfactory answers.

IMPORTANT SURVEY COMPLETION NOTES:

Each and every question has a purpose and we ask that you answer all questions to the best of your ability.

IF YOU ARE UNABLE TO MOVE FORWARD ON A PAGE:

If you happen to miss a question accidentally the survey will not allow you to move on to the next page until you scroll down the current page and answer the missed question. Missed questions will have red text above them saying: "This question requires an answer."

FURTHER QUESTIONS?

If you have further questions please contact: Doug Abrahamson (Note. work contact information removed from this copy).

Pick one of the three following options:

B
M
N

(Note: these choices were randomized, only allowed for one scenario selection, and automatically moved the participant to that specific set of scenario questions only)
SCENARIO “B”
An unknown adult male breaks into and enters a closed business premise for the purpose of stealing merchandise. While escaping, this individual leans on the window ledge and leaves a set of clear palm and fingerprints. You want to know whether fingerprint evidence is a reliable method to “identify” unknown suspects.

Q1: Are you generally familiar with the subject of “fingerprint evidence” and how it is used in police investigations?
   Yes
   No

Q2: What are two (2) basic biological principles of fingerprints support the use of fingerprint evidence in the 'identification' of ‘individual’ people? (Bullet points OK)
   If you don't recall or don't know, please answer: 'Don't know'
   OPEN ENDED

Q3: Which of the following specifically guide your actions in this case? Mark all that apply:
   - Internal (organizational) policies and procedures
   - External government body recommendations/guidelines
   - Professional body recommendations/guidelines
   - Independent research findings
   * Please name external body, professional body and/or research source

Q4: Are there outside agencies (e.g. government, legal or professional body etc.) that tell you what steps you must follow when dealing with fingerprint evidence?
   Yes
   No
   Don’t know

Q5: In this case what steps would you follow? (High overview, bullet points OK)
   OPEN ENDED

Q6: What steps do you take to keep up-to-date on current practices, capabilities and issues related to fingerprint evidence? (High overview, bullet points OK)
   OPEN ENDED

Q7: I've received training (formal or informal) on fingerprint evidence within the last...
   (choose time frame)
   1-6 months
   7-12 months
   2-3 years
4-5 years  
6 or more years  
Never

**SCENARIO “M”**

A non-disguised lone male suspect committed a series of bank robberies within your jurisdiction. The bank’s surveillance systems captured a clear full-face image of the suspect. A copy of that photograph is suitable to show potential witnesses. Eyewitnesses are willing to attend your office to view your suspect photo line-up.

You want to know which photo line-up is more reliable, a single photo-pack (shown all at the same time) or a sequential photo-pack (photos shown one-by-one).

**Q8:** Are you generally familiar with “eyewitness identifications” and their use in police investigations?

- Yes
- No

**Q9:** What basic investigative principles must be considered when showing eyewitnesses photo line-ups? (High overview, bullet points OK)

If you don't recall or know, please answer: Don't know

**OPEN ENDED**

**Q10:** Which of the following specifically guide your actions in this case? Mark all that apply:

- Internal (organizational) policies and procedures
- External government body recommendations/guidelines
- Professional body recommendations/guidelines
- Independent research findings
  * Please name external body, professional body and/or research source

**Q11:** Are there outside agencies (e.g. government, legal or professional body etc.) that tell you what steps you must follow when showing eyewitness photo-lineups?

- Yes
- No
- Don’t know

**Q12:** In this case what steps would you follow? (High overview, bullet points OK)

**OPEN ENDED**

**Q13:** What steps do you take to keep up-to-date on current practices, capabilities and issues related to eyewitness identifications? (High overview, bullet points OK)
OPEN ENDED

Q14: I've received training (formal or informal) on eyewitness evidence within the last...(choose the timeframe)

1-6 months
7-12 months
2-3 years
4-5 years
6 years or more
Never

************************************************************************

SCENARIO “N”

You, and your agency, are investigating a high-profile violent serial rape case within your jurisdiction. Through proper investigation your agency recovered a DNA profile from the victims' bodies, which links all of the rapes to one suspect. Despite searches in the provincial and national DNA Databanks no matches result.

You want to know whether a “familial” DNA Databank search is reliable and can be used to develop investigative leads.

Q15: Are you generally familiar with the subject of DNA Databank searches and how they are used in police investigations?

Yes
No

Q16: What is the basic biological principle of DNA that supports the use of “familial” DNA Databank searches in the development of investigative leads? (High overview, bullet points OK)

If you don't recall or don't know, please answer “Don't know”

OPEN ENDED

Q17: Which of the following specifically guide your actions in this case? Mark all that apply:

- Internal (organizational) policies and procedures
- External government body recommendations/guidelines
- Professional body recommendations/guidelines
- Independent research findings

* Please name external body, professional body and/or research source
Q18: Are there outside agencies (e.g. government, legal or professional body etc.) that tell you what steps you must follow when dealing with DNA Databank search?

Yes
No
Don’t know

Q19: In this case what steps would you follow? (High overview, bullet points OK)

OPEN ENDED

Q20: What steps do you take to keep up-to-date on current practices, capabilities and issues related to DNA Databank searches? (High overview, bullet points OK)

OPEN ENDED

Q21: I've received training (formal or informal) on DNA Databank evidence within the last...(choose timeframe)

1-6 months
7-12 months
2-3 years
4-5 years
6 or more years
Never

Q22: Participant demographics

Gender
Male
Female

Age
Under 20
21-25 yrs.
26-30 yrs.
31-35 yrs.
36-40 yrs.
41-45 yrs.
46-50 yrs.
51-55 yrs.
56-60 yrs.
Over 60 yrs.
Decline

Rank
Constable
Corporal
Sergeant
Staff Sergeant
Inspector
Superintendent
Chief Superintendent
Deputy Chief
Chief
Other
Years of Service (Agency)
  With agency 1-5 yrs.
  With agency 6-10 yrs.
  With agency 11-15 yrs.
  With agency 16-20 yrs.
  With agency 21-25 yrs.
  With agency 26-30 yrs.
  With agency over 30 yrs.
Years of Service (Policing)
  Policing for 1-5 yrs.
  Policing for 6-10 yrs.
  Policing for 11-15 yrs.
  Policing for 16-20 yrs.
  Policing for 21-25 yrs.
  Policing for 26-30 yrs.
  Policing over 30 yrs.
Education (Highest completed)
  High school/GED
  Some College
  2 year College
  4 year College/University (BA)
  Master's Degree
  Doctoral Degree
  Professional Degree (MD/ JD)
Work Unit
  Administration
  General patrol
  Specialty unit (major crime, forensics, traffic etc.)
  Other (please specify)

Q23: Organization Demographics
Organization Type
  Independent municipal
  RCMP Municipal
  RCMP Provincial
  RCMP Rural
  Other
Organization Size
  Under 100 sworn officers
  101-200 sworn officers
  201-300 sworn officers
  Over 300 sworn officers
Organization Location
  Yukon Territories
  British Columbia
  Alberta
Saskatchewan
Northwest Territories
Nunavut
Manitoba
Ontario
Quebec
New Brunswick
Nova Scotia
Prince Edward Island
Newfoundland/Labrador

Q24: My agency's primary (the one that is used the most) policing style

Gathers information about incidents and designs appropriate response based on the nature of the underlying conditions that cause the problem(s).

Preserves peace and order through enforcement, random patrols and responding to dispatched calls for service, since the responsibility for crime prevention rests solely with the police.

Supports the systematic use of partnerships and problem-solving techniques to proactively address conditions that give rise to crime, social disorder and fear of crime.

Analyzes data and criminal intelligence to develop effective law enforcement/crime prevention strategies and to target prolific and serious offenders.

Uses the best available research on the outcomes of police work to implement guidelines and evaluate agencies, units, and officers.

Other (please specify)

*Note.* Sources for policing model definitions are provided below:

Community Policing: “Organizational strategies, which support the systematic use of partnerships and problem-solving techniques to proactively address conditions that give rise to crime, social disorder, and fear of crime.”


Intelligence-led Policing: “Analyzes data and criminal intelligence to develop effective law enforcement/crime prevention strategies and to target prolific and serious offenders.”

Evidence-based Policing: “Uses of the best available research on the outcomes of police work to implement guidelines and evaluate agencies, units, and officers.”


Problem-oriented Policing: “Gathers information about incidents and designs appropriate response based on the nature of the underlying conditions that cause the problem(s).”


Traditional/Reactive Policing: “Preserves peace and order through enforcement, random patrols and responding to dispatched calls for service, since the responsibility for crime prevention rests solely with the police.”

Q25: Complete this sentence: In my agency, the greatest incentive(s) to the sharing of information and knowledge is/are...

OPEN ENDED

Q26: Complete this sentence: In my agency, the greatest impediment(s) to the sharing of information and knowledge is/are...

OPEN ENDED

Q27: Knowledge and information in my organization is available and organized to make it easy to access what I need.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q28: Complete the following sentence: I scan outside my agency for information on changes or trends in law enforcement policies and practices...

Daily
Weekly
Monthly
Yearly
Rarely
Never

Q29: My organization has formal procedures to collect knowledge regarding best practices and current research in policing.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q30: Within my agency, the responsibility for gathering information to guide more effective law enforcement policy and practice decisions aligns most closely with:
Senior management/executive team
Middle managers (NCO’s)
Line officers
Specialty units
Everyone in the agency
Don’t know
Other (please specify)

Q31: If the responsibility rests on a specialty unit, that responsibility would most closely align with our:

- Planning and research unit/section
- Crime analysis unit/section
- Intelligence unit/section
- Strategic planning unit
- Other (please specify)

Q32: My workplace has a formal policy for managing knowledge creation and information.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q33: My organization has a culture that promotes knowledge and information sharing.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q34: Complete this sentence: I exchange information with the people with whom I work (group/unit) several times a...

- Day
- Week
- Month
- Year
- Other

Q35: My work unit promotes knowledge and information sharing.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q36: My organization has formal procedures to share knowledge regarding best practices and current research in policing.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q37: My work unit encourages experienced officers to communicate their knowledge to less experienced officers.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q38: My organization has formal mentoring programs and/or apprenticeships.
5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q39: Information about good work practices, lessons learned, and knowledgeable persons, is easy to access in my organization.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q40: My organization makes use of information technology to facilitate knowledge and information sharing.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q41: Among the people with whom I regularly work (group/unit), it is common to distribute information to justify decisions already made.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q42: Among the people with whom I regularly work (group/unit), it is normal for individuals to keep information to themselves.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q43: Among the people with whom I regularly work (group/unit), it is normal to leverage information for personal advantage.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q44: Senior officers and supervisors of my work unit encourage openness.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q45: The people I work with regularly openly share information on errors or failures in police policy or practice.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q46: The people I work with regularly use information on failures or errors to address problems constructively.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q47: My work tasks demand that we use enforcement and crime prevention policies/procedures that have been successful in the past.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q48: I often exchange information with people in my agency but outside my regular work unit.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)
Q49: In my work unit, I am a person that people come to often for information.
   5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q50: I often exchange information with partner organizations.
   5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q51: I often exchange information with citizens and the community.
   5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q52: I actively seek information on changes and trends in my profession by looking outside my organization.
   5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q53: I use information to respond to changes and trends outside my organization.
   5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q54: I use new leading practice information to create or enhance my organization's enforcement/crime prevention programs, policies and procedures.
   5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q55: I trust informal sources (e.g. colleagues) more than I trust formal sources (e.g. memos, reports, research).
   5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q56: I use informal information sources (e.g. colleagues) extensively although credible formal sources (e.g. memos, reports, research) are available.
   5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q57: I use informal sources (e.g. colleagues) to verify and improve the quality of formal sources (e.g. memos, reports, research).
   5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q58: My work benefits my organization.
   5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q59: I have influence over what happens within my work unit.
   5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)
Q60: My work is guided by the most current research on law enforcement/crime prevention policies and practices.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q61: I quickly recognize the complexities in crime prevention or law enforcement situations and find ways to solve the problem(s).

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q62: My work tasks demand new, creative ideas and solutions.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

Q63: Sharing knowledge and information is critical to my ability to do my job.

5-point Likert type scale (1 = strongly disagree; 5 = strongly agree)

COMMENTS:
Appendix D

Royal Canadian Mounted Police Research Approval

May 2010

Dear Sir/Madam:

The purpose of this letter is to provide RCMP approval for the research project being undertaken by Cst. Doug Abrahamson.

The research proposal has been received and reviewed. The overall plan is acceptable and conforms to the policy on surveying within the RCMP and therefore RCMP will encourage employees to participate in the research.

Regards,

Frances

Frances van den Enden
Director / Directrice

RCMP Survey Centre, / Centre de sondage de la GRC
Room H411-I Nicholson Building
Appendix E

Research Information Sheet: English

CANADIAN LAW ENFORCEMENT RESEARCH PROJECT

Research Information Sheet

Your participation is sought in a research project entitled: Law Enforcement Stratified Information Response Outcomes. Cst. Doug Abrahamson, a sworn police officer with the Victoria Police Department and a postgraduate doctoral student with Charles Sturt University, is conducting this research project under the supervision of Dr. Jane Goodman-Delahunty.

Dr. Goodman-Delahunty and/or Doug Abrahamson can be contacted if you would like extra information about this project.

Cst. Doug Abrahamson (Researcher)  Dr. Jane Goodman-Delahunty (Research Advisor)
Victoria Police Department  Charles Sturt University
Forensic Identification Section  Australian Graduate School of Policing
850 Caledonia Avenue  AGSP Building 44, North-Head Scenic Drive
Victoria BC Canada  Manly Campus NSW
V8T 6B

Phone: 1.250.995.7309  Phone: 61.2.9934.4828
Fax: 1.250.995.7262  Fax: 61.2.9934.4830
Email: vfa011@vcpol.ca  Email: jgd@csu.edu.au

To participate you will be logging on to a secure website and completing a confidential survey, which should take 15-20 minutes to complete. All responses will be anonymous and confidential. The data will be reported only in aggregate form. The aggregate data will be used in the researcher’s doctoral thesis and/or may be used in professional research papers and presented at professional conferences. Your decision to participate is entirely voluntary. You may withdraw at any time without penalty or discriminatory treatment. No personal identifying information will be released. There are no foreseeable risks to participants.

The Charles Sturt University Human Research Ethics Committee (HREC) has approved this study. If you have any complaints or concerns about this research project, please contact the Human Research Ethics Committee:

Executive Officer
Human Research Ethics Committee
Office of the Academic Governance
Charles Sturt University
Panorama Avenue
Bathurst NSW 2795
Phone: 61.2.6338.4829  Fax: 61.2.6338.4194

Your insights, personal experiences and input are critical to the successful completion of this study.

The Commonwealth Register of Institutions and Courses for Overseas Students (CRICOS) Provider Number is 00005F for Charles Sturt University and the Charles Sturt University Language Centre.
Appendix F

Research Information Sheet: French

PROJET DE RECHERCHE SUR L’APPLICATION DE LA LOI AU CANADA
Fiche de renseignements sur la recherche

Nous aimerions vous inviter à participer à un projet de recherche intitulé : Résultats de la réponse à la demande de renseignements précisée relative à l’application de la loi. Doug Abrahamson, agent de police assigné du Service de police de Victoria et étudiant en doctorat de troisième cycle à l’Université Charles Sturt, dirige le présent projet de recherche sous la supervision de Mme Jane Goodman-Delahuntley.

Pour obtenir de plus amples renseignements sur le présent projet, vous pouvez communiquer avec Mme Goodman-Delahuntley ou M. Doug Abrahamson.

Cet. Doug Abrahamson (Researcher)  Dr. Jane Goodman-Delahuntley (Research Advisor)
Victoria Police Department  Australian Graduate School of Policing
Forensic Identification Section  AGSF Building 44, North-Heads St. George Drive
650 Caledonia Avenue  Manly Campus NSW
Victoria BC Canada  V8T 5B
Phone: 1.250.995.7309  Phone: 61.2.9934.4828
Fax: 1.250.995.7262  Fax: 61.2.9934.4830
Email: v5011@vciopd.ca  Email: jdelahuntley@csu.edu.au

Afin de participer, vous devrez ouvrir une session sur le site Web sécurisé et remplir une enquête confidentielle d’une durée de 15 à 20 minutes. Toutes les réponses seront anonymes et confidentielles. Les données seront présentées sous forme globale seulement. Les données globales seront utilisées dans la thèse de doctorat du chercheur ou peuvent être utilisées dans des documents professionnels de recherche et présentés lors de conférences professionnelles. Votre participation est entièrement volontaire. Vous pouvez renoncer à tout moment sans encourir de sanction ni de traitement discriminatoire. Aucun renseignement d’identité ne sera divulgué. Les participants ne rencontreront aucun risque prévisible.

Le Comité éthique de la recherche sur l’humain (HREC) de l’Université Charles Sturt a approuvé cette étude. Pour toute réclamation ou préoccupation sur le présent projet de recherche, veuillez communiquer avec le Comité d’éthique de la recherche sur l’humain :

Executive Officer
Human Research Ethics Committee
Office of the Academic Governance
Charles Sturt University
Panorama Avenue
Bathurst NSW 2795
Phone: 61.2.6338.4628  Fax: 61.2.6338.4194

Vos idées, expériences personnelles et réponses sont essentielles à la réussite de la présente étude.
Appendix G

Survey Monkey Website Survey Configuration


Configure the settings to allow multiple responses:


1. Click on the [Change Settings] button located on the left side of the page.

2. Under Allow Multiple Responses? select: [Yes], allow multiple responses per computer - Recommended for kiosks or computer labs.

3. Then choose either Yes or No under the Allow Responses to be Edited? options:
   - [No], once a page in the survey is submitted, respondents cannot go back and change existing responses. (With this setting, the [Previous] button on the bottom of the survey page will not be active.)

OR

- [Yes], respondents can go back and update existing responses until the survey is finished or exited early. (This means when the [Done] button is clicked, the [Exit Early] link is clicked, or if the browser window is closed before the survey is finished.)

**NOTE: Editing Limitations** - If you are allowing responses to be edited, then once the recipient leaves the survey, s/he cannot pick up where it was last finished.

- This editing ability is only while the respondent is taking the survey. The response must be finished in one sitting.
- A new or blank survey will open every time the link is accessed because the cookie is refreshed.