Mobilizing Research Knowledge through Social Networks

by

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Abstract

Networks have been deemed an important knowledge mobilization (KMb) activity; however, much network research fails to acknowledge the ways that relational linkages among members mediate its work. The purpose of this study is to investigate the ways in which patterns of interaction among members of an implementation support program mediate KMb activities in support of evidence-informed policy-making. This was a bounded sample where coaches (N=6) and Mental Health Leaders (MHLs; N=31) from the first two cohorts of the program were invited to participate. This descriptive case study used a sequential, explanatory mixed methods design. Phase one of the study included a survey, administered online (response rate = 97%), that included social network and attribute-based questions. Network data were analysed at multiple levels using UCINet, and SPSS was used to conduct appropriate descriptive and inferential analyses. Phase two consisted of interviews with all five coaches, and six MHLs selected based on phase one degree centrality findings. The constant comparative method was applied to the analysis of the interviews. Each network exhibited low levels of activity and reciprocal ties, and the patterns of interaction in each focused on a subset of people. Certain individuals stood out as dominant sources of research/advice/influence. Overall, coaches received significantly more relations than MHLs; however, there were two MHLs who were often sought out more than other coaches. Attributes positively
associated with indegree centrality included relational capital, level of research use, and research experience. People very rarely facilitated relationships among their otherwise unconnected colleagues, and the brokering of research knowledge appeared to focus on direct connections typically maintained through the formal program. An online forum, program coaches and resources, capacity-building activities, research literacy and community were considered facilitators of KMb, whereas organizational structure, tension among system priorities, and external groups were perceived as constraints. This study describes an innovative KMb model where formal events mattered most and the key players were not always coaches. The broader context of the program mediated KMb activities, where it was not only the people within the network, but also the resources and opportunities available within it that connected research and practice.
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There are so many people whom I need to acknowledge for the role that they have played during my doctoral experience at OISE, but absolutely, without a doubt, the most important person has been Dr. Stephen Anderson. I remember quite clearly the first time I met with Steve in his office way back in September 2006 when, as a newly minted Masters student, I went to investigate a graduate assistantship opportunity with him. I felt intimidated by the ‘great scholar’ whose quiet demeanour put me ill at ease, not knowing what to expect from him. Who knew, nine years later, I would be recognizing him as one of the most influential people in my professional life! Steve is in every way a ‘master’ at everything he does. He teaches with such skill and a rich ability to build an engaging and challenging learning community in his classes. He is a passionate and curious researcher who carries out robust research with great integrity and attention to detail. He is generous with his time and his work, providing learning opportunities too numerous to count for those who have the privilege of his mentorship. He is a thoughtful and principled man who took the time to celebrate all of my life’s milestones, academic and otherwise. He guided me through what I needed to do without ‘telling me what to do’ and that is the greatest gift any teacher can give a student. Most importantly, he agreed to supervise my doctoral research knowing full well that I was heading down an uncharted path among education researchers in Canada. His belief in me and my ideas did not go unnoticed and I will be forever grateful for all that I have learned from him. I look forward to our continued work together.

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And last (but certainly not least!), there’s my husband Joe. He told me way back when that I wouldn’t be happy if I didn’t pursue my PhD and he was probably right. He signed on to this deal not knowing what it was going to bring our way, but he did it anyway. He is my one true love, the absolute best man I know. With him I have welcomed my life’s greatest gifts and I cannot wait to see what adventures life has in store for us as we move on to the next chapter. He remains my favourite part of every day.
For Joe, Michael and Elise,

Who have taught me more about love, life, and laughter than anyone or anything else ever could.

And for Mom, Dad, Jaclyn, Liam and Lexi,

The other members of my most important social network.
# TABLE OF CONTENTS

Abstract................................................................................................................................. ii

Acknowledgements.............................................................................................................. iv

Dedication............................................................................................................................. vi

Chapter 1: Introduction....................................................................................................... 1

- Connecting research and practice in education ...................................................... 2
- Project Child and Youth Mental Health................................................................. 8
- Purpose of the study..................................................................................................... 12
- Significance of the Study............................................................................................. 13
- Research Questions...................................................................................................... 14

Chapter 2: Literature Review................................................................................................. 16

- Why do networks matter?.......................................................................................... 16
- What do we know from early research about networks in education? .......... 17
- Moving network research forward in education.................................................. 24
- Building a Theoretical Framework: Social Network Theory and Analysis...... 32
  - Cohesion..................................................................................................................... 36
  - Prominence.................................................................................................................. 38
  - Brokerage.................................................................................................................... 41
  - Actor attributes......................................................................................................... 44
- Pulling It All Together ................................................................................................. 45
Chapter 3: Methodology ............................................................. 49

Phase I: Mapping the Project CYMH Networks .............................. 50

Participants. ................................................................................. 50

Data collection ........................................................................... 54

Data analysis ................................................................................ 62

Phase II: Understanding Network Influences on Knowledge Mobilization

Activity ....................................................................................... 72

Participants. ................................................................................. 72

Data collection ........................................................................... 75

Data analysis ................................................................................ 77

Chapter 4: Patterns of Interaction within Project Child and Youth Mental Health ........ 81

Professional Profile Characteristics of Network Actors ...................... 81

Research Use .............................................................................. 82

Learning Variables ...................................................................... 82

Organizational Culture ............................................................... 83

Linkage Mechanisms .................................................................. 84

Relational Capital ........................................................................ 84

Summary of professional profile characteristics ............................ 85

Quantity of Ties ........................................................................... 85

Network cohesion ........................................................................ 86

Network Prominence ................................................................... 93
LIST OF TABLES

Table 1 Participants' Demographic Information by Position and Cohort ....................... 53
Table 2 Description of Relational Variables ..................................................................... 56
Table 3 Overview of Variables Used to Construct Participants’ Professional Profiles .... 59
Table 4 Definitions of Complete Network Measures ...................................................... 66
Table 5 Definitions of Egocentric Network Measures ...................................................... 69
Table 6 Explanations of Composite Attribute Variables ................................................. 71
Table 7 Overview of Phase 2 Mental Health Leader Participants ................................. 74
Table 8 Detailed Outline of Step-by-Step CCM Procedure ............................................ 79
Table 9 Network Density Comparisons ......................................................................... 88
Table 10 Summary Table of Network Cohesion Measures ............................................ 90
Table 11 Descriptive Statistics for the Distribution of Normalized Outdegree Centrality Scores by Role ................................................................. 95
Table 12 Descriptive Statistics for the Distribution of Normalized Indegree Centrality Scores by Role ................................................................. 100
Table 13 Descriptive Statistics for Normalized Betweenness Centrality Scores with the Project CYMH Network ................................................................. 107
Table 14 QAP-Correlation Coefficients for the Four Relational Dimensions of the Project CYMH Network ................................................................. 117
LIST OF FIGURES

Figure 1. Levin's Model of Knowledge Mobilization ................................................................. 4

Figure 2. Conceptual Framework ............................................................................................... 48

Figure 3. Research seeking behaviour (outdegree centrality) within the Project CYMH network. ................................................................................................................................. 97

Figure 4. Advice seeking behaviour (outdegree centrality) within the Project CYMH network. ................................................................................................................................. 97

Figure 5. Attributions of influence (outdegree centrality) within the Project CYMH network. ................................................................................................................................. 98

Figure 6. Social support seeking behaviour (outdegree centrality) within the Project CYMH network. ................................................................................................................................. 98

Figure 7. Sources of research (indegree centrality) within the Project CYMH network. ................................................................................................................................. 103

Figure 8. Sources of advice (indegree centrality) within the Project CYMH network. 103

Figure 9. Sources of influence (indegree centrality) within the Project CYMH network. ................................................................................................................................. 104

Figure 10. Sources of social support (indegree centrality) within the Project CYMH network. ................................................................................................................................. 104
LIST OF APPENDICES

Appendix A: Administrative Letter of Consent ................................................................. 203

Appendix B: Letter of Invitation and Consent ................................................................. 206

Appendix C: Survey ........................................................................................................ 215

Appendix D: Survey Pilot Instructions and Feedback Form ............................................. 217

Appendix E: Email Invitation to Participate in Phase 2 of the Study ............................... 220

Appendix F: Interview Protocol – Director ..................................................................... 221

Appendix G: Interview Protocol – Coaches ................................................................. 222

Appendix H: Interview Protocol – Mental Health Leaders .............................................. 223

Appendix I: Sample Summary Table Used for Member-checking Purposes ................. 225

Appendix J: Data Tables for Professional Profile Attributes (Survey Part B) ............ 229

Appendix K: Bivariate Correlations between Degree Centrality Scores and Professional Attribute Composite Variables ................................................................. 235

Appendix L: Core-Periphery Analyses ............................................................................. 236

Appendix M: Sociograms for Multiplex Tie Networks .................................................... 237

Appendix N: Summary Chart of Phase 2 Qualitative Findings ....................................... 241
Chapter 1: Introduction

Over the past two decades, ‘networks’ have become popular in educational administration, and as a school improvement strategy in particular. However, in much of the work that purports to investigate networks, the conception of what constitutes a network is often limited to establishing boundaries around a group of educators, such as a professional learning community (PLC), for example. In this way, ‘networks’ are treated as objects of study with little differentiating these studies from other studies other than the use of a new term (‘network’) to label old concepts (e.g., a PLC). There was much to be learned from these studies; however, they offered little in regards to detailed insights into the specific ways in which the connections among and between members of networks enable opportunities for the group to carry out its work. This study was designed to fill this gap by focusing specifically on the relational dimension of educators’ work within networks. I argue that a network is not merely an object to be studied, but rather that networks emerge through the relationships that connect individuals. The purpose of this study was to understand the ways in which a network functions by examining how people’s interactions with each other within the context of a provincial education initiative provided (or restricted) opportunities to engage with research knowledge in support of school district policy-making.

In this introductory chapter, I will do three things. First, I will describe the current context of accountability in education in Ontario, highlighting the provincial government’s focus on connecting research and practice within its education system — a process which is formally referred to as knowledge mobilization (KMb). I will present a KMb model that identifies the setting where the work of connecting research and practice
is carried out in this study. These contextual details will provide you, the reader, with the key knowledge and definitions required in order to understand the work of the participants in this study. Second, I will introduce Project Child and Youth Mental Health (referred to simply as Project CYMH from this point forward) — the program which graciously agreed to participate in this research. This section will outline the history and objectives of the work of this provincially-sponsored policy implementation support initiative. Last, I will put all of these details together and present the goals and significance of this study.

**Connecting research and practice in education**

There has been a growing shift toward evidence-based policy making in many areas of social services in recent years (Nutley, Walter & Davies, 2007; Davies, Nutley & Smith, 2000). A more educated public has increased demands on governments and publicly-funded institutions to explain how they make decisions about where its tax dollars are being spent (Davies, Nutley & Smith, 2000; Cooper, Levin & Campbell, 2009). As a result, an emphasis has been placed on the sources and types of information that are used to inform these decision-making processes. What constitutes evidence and how it should be used in the daily function of education systems, however, has been the topic of much debate (e.g. Hargreaves, 1996, 1997; Hammersley, 1997). But despite scholarly criticism and controversy, the reality on the ground is that, given the current political context of increased accountability, evidence matters.

This political context of increased accountability and subsequent focus on evidence-based decision making in social services have given rise to a concomitant interest in the connections between research, policy and practice in multiple jurisdictions around the world. Over the last decade, scholarly interest in the role of research in policy
and practice is increasing in the Western world (Cooper et al., 2009). Scholars have been contributing to the emergent body of literature that focuses on what has been termed as 'knowledge mobilization' (KMb) in rising numbers. However, KMb research is not an entirely new field; it builds upon previous work that considers research and knowledge utilization, dissemination and diffusion (see Anderson, 1996; Cousins & Leithwood, 1993; Huberman, 1994, 2002; Seashore Louis, 1992, 1994, 1998, for examples in education). Nevertheless, interest in the relationships between research and practice has been reinvigorated worldwide over the last decade or so (Levin, 2008).

Across other social sectors such as health, criminal justice, and social work, other terms have been used to describe KMb processes. Knowledge transfer, knowledge translation and knowledge exchange among others are all terms currently in use across disciplines (Cooper, 2012). In this study, I choose to use the term 'knowledge mobilization' to align with Canada’s Social Science and Humanities Research Council's preference for this term because it "opens the door to non-linear, dialogical, discursive and multi-directional approaches with the general acknowledgement that all knowledge is 'socially constructed' unlike the unidirectional 'producer-consumer' implications of concepts such as knowledge and technology transfer" (original emphasis, SSHRC, n.d., p. 5). Thus, for the purposes of this study, I define knowledge mobilization as intentional efforts by research producers, intermediaries, and/or users to build stakeholder awareness and use of research-based knowledge to inform decision-making and action in educational policy and practice settings. To be clear, research based knowledge may come from a variety of potential sources, including (but not limited to) universities,

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1 Historically, the acronym used for knowledge mobilization in the education literature has been 'KM'; however, there has been a shift recently in social science towards using 'KMb' to avoid misinterpretation of KM as meaning 'knowledge management'. In keeping with popular terminology, I will use KMb to refer to knowledge mobilization in shortened form.
colleges, government/ministries, governing bodies (i.e., Ontario College of Teachers; Ontario Nurses Association), think tanks (i.e., Canadian Centre for Policy Alternatives), advocacy groups (i.e., Parents for Education) and practice settings (i.e., school districts, public health units). It can emerge from any environment where a formal research process is engaged to investigate a question of interest, where a ‘research’ refers to the systematic inquiry of a particular phenomenon using widely accepted research methodologies producing findings that are open to public scrutiny. Research findings "must be collated, summarized and synthesized, and then presented in ways that make them acceptable and informative" (Davies & Nutley, p. 2) in order to inform actual use in policy or practice.

Many conceptual models of research use (KMb) have been offered by researchers across disciplines (see Landry, Amara & Lamari, 2001; Weiss, 1979, for examples). I use Levin's (2011) model of knowledge mobilization (see Figure 1) to illustrate the broader KMb context which serves as the background for this study because it clearly and succinctly describes the interactive nature of KMb.

![Figure 1. Levin's Model of Knowledge Mobilization](image-url)
In this model, there are three contexts involved in knowledge mobilization processes: research production, research mediation, and research use. Each of these functional contexts is represented by a triangle in the model with KMb happening when at least two of the contexts interact, which is indicated by the arrows in the model. The thicker the arrow, the stronger the relationship between contexts; and, individuals (or groups, organizations, etc.) may operate in different contexts at different times (i.e., one might fulfill a user function at one point in time and a mediating function at another) (Levin, 2011). These arrows represent the ‘interactive space’ (Coburn and Stein, 2008) in which network activity takes place and, as I will explain more fully in a subsequent section of this chapter, it is in the space between the research mediation and research use contexts that this network study is situated. Furthermore, this model also recognizes that these interactions occur in their own unique social contexts which determine the KMb priorities (e.g., what type of research evidence in being mobilized) and how the KMb activities are carried out (e.g., organizational norms and culture among the parties involved).

The Ontario government, and the provincial Ministry of Education in particular, has a vested interest in connecting research and practice. To build the system’s capacity to connect research and practice, the Ministry of Education launched its Research and Evaluation Strategy in late 2005. The strategy clearly articulated that the Ministry was "committed to developing and implementing policies, programs and practices that are evidence based, research informed, and connected to provincial education goals" (Ontario Ministry of Education, n.d.) in an effort to improve student achievement and public confidence in the education system. The Research and Evaluation Strategy is a comprehensive approach that endeavours to include representation from across the
Ministry of Education and the broader education research and practice communities. It includes several evidence and research-focused activities including building research capacity; applying research to inform policy, program, and practice; communicating/mobilizing knowledge; fostering research collaboration through networking and partnerships; contributing to an international body of knowledge; and leading the Ministry’s Education Research and Evaluation Strategy branch (Ontario Ministry of Education, n.d.).

In 2006, to help support the Research & Evaluation Strategy, the Ministry also created the Ontario Education Research Panel, OERP, (Comité ontarien de la recherche en éducation, CORE) "to facilitate discussion and collaboration among Ontario's school boards, faculties of Education, researchers, professional organizations, community agencies, and ministries relating to: research priorities for Ontario education; the state of knowledge in specific areas; opportunities for and impediments to the advancement of research; and the potential for future partnerships" (Ministry of Education, n.d.). Both the Research & Evaluation Strategy and the OERP/CORE speak directly to the need to foster a culture of enquiry that values research-based knowledge and of the importance of engaging in knowledge mobilization activities. Thus, through the creation of the Research & Evaluation Strategy and the OERP (both of which continue to exist today) and the central role that knowledge mobilization plays in each of these contexts, it is clear that using 'evidence', including research-based knowledge, is a priority for the Ontario government.

The Ministry of Education released Achieving Excellence: A Renewed Vision for Education in Ontario (Government of Ontario, 2014), a document that redefines the goals for the provincial education, in April 2014. The renewed vision sets out to develop
an education system that strives to **achieve excellence** for all students and to **ensure equity** among students in achieving their full potential. It commits to building a system that **promotes well-being** among students, focusing on both mental and physical health, and which also strives to **enhance public confidence** in the quality of a publicly funded education (Government of Ontario, 2014). This education system provides the context for the Project Child and Youth Mental Health (Project CYMH) initiative, which is the focus of this study.

Project CYMH is a provincially sponsored school district support program that functions as a mediator between research producing and research use contexts. The program is not producing original research itself; rather, it is using what is already known from existing empirical research from relevant bodies of knowledge to develop tools, strategies and resources to support school districts in developing their own unique school district mental health strategies that relate to the Ministry’s goal of supporting student health and well-being. In this way, the program connects research and practice by functioning as a research broker or intermediary (Cooper, 2012, 2014; Honig, 2004), whose function is to bring research-based knowledge into the purview of district leaders. Thus, by using the resources and materials provided by the program in the creation and enactment of school district policy, district leaders function as users of research-based knowledge in their practice settings. This introduction to knowledge mobilization and to Ontario’s focus on evidence-based and research-informed policy and practice provides the backdrop to this exploratory case study, which investigates the role of the provincial Project CYMH program in mediating the use of research-based knowledge in the development of district mental health strategies. The following section provides a
detailed description of Project CYMH in terms of its origins and how the program functions.

**Project Child and Youth Mental Health**

Within this context of evidence informed policy and practice, the Ontario Ministry of Education identified student mental health as a new priority area of focus. As a partner ministry in *Open Minds, Healthy Minds* — the province's long-term mental health and addictions strategy (Government of Ontario, 2011) — the Ministry of Education supported the creation and implementation of Project CYMH. In 2009, the Provincial Centre of Excellence for Child and Youth Mental Health at the Children's Hospital of Eastern Ontario published a review of research called *Taking Mental Health to School: A Policy-Oriented Paper on School-Based Mental Health for Ontario*, which was presented to multiple ministries within the provincial government. As part of the research for this paper, the researchers queried school districts about their current practices related to issues in child and youth mental health. The goal of this task was to find out what was happening 'on the ground' and map it in relation to what research says organizations working with children and youth ought to be doing. A number of strengths and gaps in connecting research to practice were identified; one of these gaps was that school districts indicated that they did not know what the current evidence base was in the field, and when they did have research knowledge and evidence on this topic, they did not know what to do with it. Drawing upon this paper's findings, some of the authors along with a few colleagues in the field (including a school district that had begun work in this area) submitted a proposal to the Ministry of Education outlining their ideas for the creation of an implementation support team that would help school districts address
the mental health needs of its students. This proposal was approved by the Ministry and Project Child and Youth Mental Health came into being.

The intent of the Project CYMH initiative is to provide support to school districts as they develop and implement evidence-based mental health strategies in their unique contexts. Project CYMH has three key areas of focus: 1) developing organizational conditions and leadership for effective school mental health; 2) capacity-building for education professionals; and, 3) implementation support for school mental health promotion and prevention programming. To support school districts, Project CYMH provides a suite of evidence-based resources, tools and implementation supports that are developed in consultation with their partner organizations and other experts in the field of child and youth mental health in Canada and the United States. The director of the program describes Project CYMH as an "implementation intermediary [whose] goal is...bridging that knowledge and doing gap and to do that in very systematic ways" (interview, January 3, 2014).

A core component of the Project CYMH program is its school district coaches. As each district goes through the process of developing and implementing a board mental health strategy, it receives individualized coaching provided by experienced mental health personnel (psychologists and social workers) and former school district administrators (directors and superintendents) who have been contracted to work with the

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2 This description of the Project CYMH program is based on a documentary analysis as well as information provided by the director of the program in a personal interview conducted in January 2014.

3 Project CYMH partner organizations include (but are not limited to), the Centre for Addiction and Mental Health (CAMH), The Provincial Centre of Excellence for Child and Youth Mental Health, Association of Chief Psychologists with Ontario School Boards, Ontario Association of Social Workers, and the Council of Ontario Directors of Education (CODE).

4 For example, Dr. Mark Weist, former director of the Centre for School Mental Health in the United States; Dr. Tom Kratochwill, Professor, University of Wisconsin - Madison; Joyce Sebien, Substance Abuse and Mental Health Services Administration in the United States.
Project CYMH program. At the time of this study, each school district had been assigned to a regional group that is supported by two coaches, one coming from a clinical psychology or social work background and one with the skills and knowledge of a former school district administrator. On average, coaches work with each of their assigned school districts at least one half day per month. Most of this interaction is via telephone (or teleconference) and email. Coaches visit their school districts for face-to-face meetings at least twice during the year — once in the Fall and once in the Spring. This individualized coaching time is an opportunity for the school districts to ask for guidance and assistance while attending to the particulars of their own unique situations.

In structuring its work in this way, the Project CYMH leadership team recognizes that "the nuances that need to be considered at the [district] level" (interview, Program Director, January 2014). As of the 2013-14 academic year, Project CYMH also employs a program coach that specializes in indigenous mental health issues. This individual is not assigned to a particular region, but rather she is a resource available to all school districts serving First Nations students across the province. In total, as of the 2014-15 academic year, there are thirteen coaches working as part of the Project CYMH program.

The Project CYMH initiative began as a pilot program in the 2011-12 academic year, with 15 school districts chosen from across Ontario to serve as 'focus boards' for the program (representing English, French, public and Catholic schools). Working with the Project CYMH core team (director and coaches), these focus boards provided feedback on the materials and supports provided by the program. In 2012-13, another 15 school

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5 This regional model is new as of the 2013/14 academic year. In years prior, school districts were assigned to one coach (regardless of previous experience - clinical or school administration) with no particular regional division.

6 There are four publicly funded education systems in Ontario: English Public, English Catholic, French Public, and French Catholic.
focus boards were added to the program, for a total of 30 participating school districts through to the end of June 2013. Based on the success of the initiative, the Ministry of Education announced in the spring of 2013 that it would continue its funding, and beginning in September 2013, all 72 Ontario school districts were participating in the Project CYMH program.

Each school district receives funding to employ one, full-time Mental Health Leader (MHL) who is responsible for providing "leadership and coordination within the board and community in the area of school mental health, with particular focus on (1) the development/refinement, and implementation of the board mental health strategy, and (2) the delivery of educator mental health literacy resources amongst school staff" (Project CYMH, 2013, p. 8). Within their own school districts, the MHLs manage and lead a full team of individuals\(^7\) who are committed to the overall health and well-being of its student population. During its first year of involvement with Project CYMH, the school district focus is on resource mapping within the district and developing the board mental health strategy. Once their strategy has been created, school districts move ahead with the complex work of creating the organizational conditions, and building and implementing the required supports to enact student mental health programming at the district, school and classroom levels.

Approximately every six weeks, the Mental Health Leaders, often with their school district supervisory officers (SOs), attend formal Project CYMH meetings where they are provided with professional development that has been coordinated in response to reported needs of the school districts and they are also informed of any updates from the Ministry of Education. Each meeting is organized around a module that is designed to

\(^7\) The size of these teams varies by school district. Data was not collected to further describe these teams.
connect the school districts with current research and information relating to the module's focus. Topics include developing protocols (e.g. for suicide issues, pathways to care), building capacity (awareness materials, literacy/expertise) and evidence-based practice. In addition, the MHLs and SOs are provided with time to network with other school districts so they can discuss shared challenges and board success stories, thereby learning from each other as well. In addition to these regular, formal Project CYMH meetings in which each school district participates and the individualized coaching it receives, each regional group also conducts regional meetings with its coaches and district peers. There is also an online mechanism called EENet, which is a closed, online discussion forum hosted by the Centre for Addiction and Mental Health where MHLs can post questions and seek information, advice, and other resources from their peers. Overall, all participants in the Project CYMH program are provided with multiple opportunities and avenues to communicate and interact with each other about research-based strategies and issues affecting student mental health.

**Purpose of the study**

This study is situated at the intersection of three important developments in education: 1) growing interest in the use of evidence-based policy and practice; 2) recent recognition that student mental health is a significant issue that often goes unaddressed in schools and school districts; and, 3) the underexplored role of social networks in using research knowledge to inform policy and practice. In this study, I investigate the role of social networks in mobilizing knowledge in support of evidence-based practice within schools and school districts. In particular, I seek to understand the ways in which social networks support district personnel in the development of evidence-based mental health strategies in Ontario school districts. I investigate how the Project CYMH initiative
facilitates interactions between the Project CYMH coaches and school district mental health leaders (MHLs) in an effort to build MHLs' capacity to use research-based knowledge in the creation and enactment of evidence-based mental health strategies within their individual school districts. I begin by mapping the relationships occurring among participants in the program outside of formal Project CYMH events, describing the patterns of interaction within the informal social network that support this work. I explore the informal network by querying four social resources (research knowledge, advice, influence, and social support) that are available to the program participants through their relationships with each other. Lastly, I seek to understand the ways in which these patterns of interactions and the resources exchanged within them influence mental health leaders' abilities to find and use research-based knowledge in support of evidence-based board mental health strategies.

**Significance of the Study**

Knowledge mobilization is a social process. Increasing awareness of and access to research-based knowledge and the requisite meaning-making activities that are necessary for knowledge use (Coburn 2001, 2005; Datnow, Hubbard & Mehan, 2002; Spillane, Reiser & Reimer, 2002) imply the relevance of social interaction in connecting research to practice. In fact, building and using 'networks' as a KMb strategy is often cited in the literature that describes how KMb occurs on the ground (Cooper, 2013; Cooper & Levin, 2010; Levin, 2008). However, in the extant literature on KMb processes, the network concept in practice remains unexplored. The term 'network' is often employed to define groups or to modestly describe linkage mechanisms (e.g., organizational listservs or mailing lists, contact directories, social media, and so on) between researchers and potential research users (see Cooper, 2013; Cooper et al., 2009,
for examples), without paying attention to the particulars of the relational linkages between knowledge mobilizing entities that should characterize the influence of networks on KMb activity. And so, using the Project CYMH initiative to set the network boundary, this study is designed to address what has yet to be a key area of focus in network research in education: how interactions between individuals (or groups) affect the desired outcomes of the network itself. In this particular case, I explore how network interaction affect the use of research-based knowledge in support of evidence-based policy and practice in education. Taking a social network perspective to inform the conceptual framework and methodology alongside the existing literature on networks as educational change strategies, I will unpack how these interactions enable/constrain district mental health leaders' efforts to find, understand and use research-based knowledge to inform the development of an evidence-based school mental health strategy.

**Research Questions**

The questions guiding this study are:

In what ways do the social interactions among participants in the Project CYMH initiative mediate knowledge mobilization activities in support of evidence-based school mental health policy and practice in Ontario school districts?

1. What are the patterns of interaction among participants in the Project CYMH program?
   - What is the quantity of interactions among program participants?
   - What is the quality of these interactions?
   - Who are the central figures within these patterns?
2. To what extent do the Project CYMH network interactions affect the ways in which district mental health leaders find, understand, share and use research-based knowledge in the development of evidence-based school district mental health strategies?”

- How do these interactions facilitate and/or constrain MHLs' abilities to find, understand, share and apply research-based knowledge in the development and implementation of an evidence-based board mental health strategy?
Chapter 2: Literature Review

Why do networks matter?

The importance of networks lies in its very definition: a network is “a group or system of interconnected people or things” (Oxford Online Dictionary, 2015, emphasis added). There is no one thing on the planet that is not connected to (and thereby affects) at the very least one other, and it is this very fact, I argue, that underpins why networks matter. Schools are complicated places, and teachers’ work is comprised of complex tasks. Previous research has shown that individuals make sense of their work collectively (e.g., Coburn, 2005; Rodway, 2008) and there is much evidence within the field of education that highlights the importance of relationships. For example, the literature on parent engagement tells us that students whose parents are actively involved in their education are more likely to experience greater success in school (Epstein, 2001, 1995; Epstein & Salinas, 2004); research shows that teachers’ actions have the most within school direct influence on student achievement (Hattie, 2012; Louis, Leithwood, Wahlstrom & Anderson, 2004; Louis, Leithwood, Wahlstrom, Anderson et al., 2010).

In each and every context that contributes to educational systems, it is the connections (or relations) among and between all of the available resources (i.e., human, physical, financial, and so on) that facilitate work inside (and outside) classrooms, schools, and school districts. Among many things, we know from previous research that relationships facilitate the exchange of knowledge (Cross & Parker, 2004; Haythornthwaite, 1996), build trust (Bryk & Schneider, 2002; Tschannen-Moran, 2004), and permit individuals to make sense of the world around them (Weick, 1995). Further,
we know that patterns of relationships are the building blocks of what constitutes a network. Relationships matter, and thereby, so too, do networks.

Although we are likely to find widespread agreement with the assertion that relationships are an integral part of educational phenomena, we are far less likely to find studies in education research that deliberately focus specifically on their relational properties. This is particularly true in what little research exists that focuses on knowledge mobilization within education where networks are often cited as an important KMb strategy (e.g., Cooper, 2014; Nutley et al., 2007), but they are rarely ever examined through a relational lens to determine how they carry out KMb work. What do we know about education networks in general?

**What do we know from early research about networks in education?**

Network studies in education have been on the rise over the last twenty years; however, there are many ways in which the term network has been conceived and a variety of methodologies have been used to investigate this phenomenon (see Coburn & Russell, 2008, Lieberman & Grolnick, 1996; McCormick, Fox, Carmichael & Procter, 2011; Smith & Wohlstetter, 2001, for examples). Generally, in sociological terms, a network represents a set of relationships, or ‘ties’, that exist between a group of actors, which could be individual people, groups, organizations, or countries, for example (Granovetter, 1973, 1983). In education, networks are often comprised of individuals (e.g., teachers, students, administrators) or organizations (e.g., schools, school districts) who come together around a shared concern or issue, and work collaboratively to find solutions to a perceived problem. They are a place for ‘knowledge construction’ (Townsend, 2010) — a place where through their shared work, professionals create new knowledge that is brought back into the field for application. They are often viewed as
‘communities of practice’ (Wenger, 2000) where mutual trust and feelings of empowerment among the membership provide the optimal context for professional learning, and where each member acts as a facilitator of learning for their colleagues (Veugelers & O’Hair, 2005). Networks “create pathways for what flows through an organization, such as resources, influence, and information” (Hite, Williams & Baugh, 2005, p. 92). Ultimately, the goal of networks in education is to effect educational change, specifically to reform schools through improved professional practice.

A common understanding of networks in the education literature is that networks are established because of a shared purpose or common goal amongst a group of people. Lieberman and Grolnick (1996) assert that “engaging educators in activities in which they learn to work interdependently, reflect on their practice, value their own expertise, play leadership roles, and respond flexibly to unanticipated problems and opportunities is as central to the purposes of networks as it is to the processes of school reform” (para. 19). Reciprocal relationships exist between the members of the network and the work in which they engage: the membership defines the work of the network and the network’s work influences its membership (Lieberman & Grolnick, 1996; Townsend, 2010).

Although there are few examples where networks have been created through a more directed approach (see Katz & Earl, 2010, for a description of the establishment of networked learning communities in the United Kingdom, for example), a prominent feature of networks in much of the education literature is that they are created from the ‘bottom-up.’ They are not typically bureaucratic structures that are created and populated as a result of a provincial, state, or local directive per se, but rather that participation is voluntary and activated because of a mutual concern at the level of practice (Townsend, 2010; Veugelers & O’Hair, 2005).
Some education researchers have attempted to create a typology of the types of networks that exist in the field (e.g., Hite et al., 2005; Smith & Wohlstetter, 2001); however, this work is far from complete. For example, in their research, Hite and her colleagues (2005) identified four types of networks based on analysis of 22 different relations that they purport exist among school administrators: innovation networks, where the common thread among participants was the belief in innovation for improvement; resource networks, which facilitate connections for the provision of physical and/or financial capital, information and/or advice supports; social/emotional networks, where relationships exists outside of work settings and allow for the mutual exchange of social and emotional supports; and university-school partnerships that comprise of collaborative work based on district initiatives. Other types of networks such as professional networks, issue networks, external partner networks, and affiliation networks have also been identified (Smith & Wohlstetter, 2001). Although no one has claimed to offer a study that is exhaustive in its findings, existing network research in education often suggests that the connections and relationships that exist among the network membership are defined in terms of the shared purpose and goals of network activity, as well as the content and outcomes produced through these interactions: goals, actions, and outcomes define networks in much of the education research.

Whenever the object of study is a group of individuals, the question ‘who leads?’ is a natural one, yet in the context of networks in education, it remains understudied (Lieberman & Grolnick, 1996). There is consensus across many studies on education networks that the opportunity for leadership across the membership of the network is a dimension of effectiveness (Mullen & Kochan, 2000; Townsend, 2010; Veugelers & O’Hair, 2005). There is a predominant sense in the literature that leadership within
networks is not formally ascribed; people who occupy formal positions of authority within the education system may not be leaders within all networks. Authority may instead come from the interactions between individuals who have the requisite knowledge deemed necessary by the network membership to arrive at an appropriate decision (Smith & Wohlstetter, 2001). In this way, “[i]n a network structure, authority and accountability are redefined: they do not reside in a single person but rather in the relationships between network members” (Smith & Wohlstetter, p. 505). However, other education scholars suggest that this kind of ‘leading and following each other’ pattern of relationships that often occur within education networks can be alternatively thought of as a “web of influence” (Townsend, 2010, p. 260) rather than in simple terms of authority and accountability. From this point of view, leadership focuses on sources of influence rather than absolute power such as decision-making power (Townsend, 2010). This notion of leadership aligns itself to the ideals of democratic practice, which has been cited as a foundational element of network activity (O’Hair & Veugelers, 2005).

Investigations of networks as a specific school improvement or educational reform strategy have yielded some insights into the characteristics of effective networks. Effective networks have a common purpose or focus with shared goals and beliefs (Katz & Earl, 2010; Lieberman, 1999; Lieberman & Grolnick, 1996). They are also characterized by norms of collegiality and joint work (Lieberman & McLaughlin, 1992) as well as well-developed communication and negotiation skills (Smith & Wohlstetter, 2001; Wohlstetter, Malloy, Chau & Polhemus, 2003). Collaboration is an inherent element of network work (Katz & Earl, 2010; Veugelers & Zijlstra, 2002). Activity within networks is often mutually determined and agreed upon among participants, and provides opportunity for enquiry and reflective practice, direct impact on practice, and
accountability (to peers, students, stakeholder communities) (Veugelers & O’Hair, 2005). Relationships within effective networks are trusting and respectful, developed within supportive environments that span organizational boundaries (i.e., heterogeneous groups) (Lieberman, 1999; Lieberman & Grolnick, 1996). They demonstrate a shared responsibility and commitment to the network’s goal and uses a common language to guide the voluntary action of its membership (Katz & Earl, 2010). Effective networks also emphasize capacity-building activities where mutual learning, personal and professional growth are a priority within the group (Katz & Earl, 2010; Lieberman & Grolnick, 1996; O’Hair & Veugelers, 2005; Wohlstetter et al., 2003). Opportunities for informal and formal leadership responsibilities within a distributed leadership structure also contribute to the effectiveness of networks (Katz & Earl, 2010; Lieberman & McLaughlin, 1992; Townsend, 2010). Lastly, the most effective networks were found to be those who received adequate funding to ensure network sustainability, had administrative supports, and shared control of resources (i.e., involved in the decision-making processes around resource allocation) (Lieberman & Grolnick, 1996).

When a network is working well, the strengths of the network’s activity are directly aligned with what makes an effective network: a group of people who have come together out of a shared passion for a particular educational issue, who pool their resources (knowledge, expertise, influence, funding, and so on) in effort to promote educational change. However, there are many challenges associated with the establishment and sustainability of networks and their work. The foundation of education networks are the people within it. As such, there is the challenge of ensuring that a network’s membership has the skills necessary to participate effectively in collaborative work (Smith & Wohlstetter, 2001). It may seem ironic to imply that
educators may lack the foundational skills for productive interaction with each other, but facilitating collaborative work among one’s colleagues can be quite different from facilitating collaborative work among students in a classroom. It is important that each network establishes the ‘group process skills’ (Smith & Wohlstetter, 2001) that are necessary for network activity to even begin as well as continue.

Ideally, networks are fluid and responsive to the work of its membership: network activity should shape its purpose and its purpose should shape its work (Lieberman & Grolnick, 1996; Townsend, 2010). At least initially, there is often a perception that the membership ‘owns’ or ‘controls’ the network — its current and future work (controlling the direction in which the work is going). As time passes, however, a growing tension between maintaining informal/flexible versus formal/rigid organizational structures develops (Lieberman & Grolnick, 1996); a real danger of losing organizational flexibility develops (Lima, 2010). In an effort to preserve the work and continue the success of network activity (or even expand it), the temptation to institutionalize procedures arises (Lima, 2010; Lieberman & Grolnick, 1996; Veugelers & O’Hair, 2005) as a network matures. Based on their work, Lieberman & Grolnick (1996) suggest that in an effort to negotiate this tension, for a network to survive it must “measure its success in the quality — not just the quantity — of its person-to-person connections” (para. 114).

The challenge of resisting institutionalization and formal governance structures is intimately related to issues of network leadership. Leadership has been framed in a variety of ways in network research: a discussion of autonomy and authority (Smith & Wohlstetter, 2001), as a web of influence between network members (Townsend, 2010). As time goes on and the network matures, some scholars have suggested that the pull towards the centralization of power increases (Lieberman, 1999). The challenge is to be
able to balance between assigning responsibilities without creating a negative hierarchical structure that can diminish participant willingness to engage in network activity (Lieberman, 1999). The management complexities that network governance and leadership present may result in power imbalances and a partial loss of autonomy in decision-making for some members within the group (Lima, 2010).

Network membership itself is not without its own challenges. From the onset, it must be decided whether or not the network will have open (i.e., anyone can join) or restricted (i.e., only certain individuals can join) membership (Lieberman & Grolnick, 1996). There are challenges in both situations and diversity in network membership can pose its own challenges (Veugelers & Zijlstra, 2002). Diversity in educational philosophies can be a barrier to network work, despite a shared commitment to a cause. Too much diversity among the participants (in expertise, experience, beliefs, etc.) can result in the stagnation of network activity. However, there is also the danger of network homophily (Lima, 2010), where the membership is too homogenous in its views, and thereby, not necessarily open to receiving ‘new’ knowledge, particularly from divergent points of view. Sometimes, the agenda that a particular network is pushing forward may not be in the best interest of the broader education system.

Other challenges pertain to funding and who set the agenda for network activity. Loss of funding over time is often the cause of disintegration of a lot of educational networks (Lieberman & Grolnick, 1996). Furthermore, funding agencies (external to or within the school district) often present networks with the challenge of ultimately who is controlling the network’s work. This is a major conundrum of many network whose trajectory over time may shift away from the goals of their funders; the issue of ‘network
ownership’ (Lieberman, 1999) is often a consequence of funding issues, particularly when the funding agencies are external to the school district.

It is not uncommon for educational networks to represent partnerships between or across organizations — for example, a collaboration of different schools within one or across many districts; regional, national, and international networks; or educational advocacy groups and teacher organizations. While this type of cross-site collaborative work can definitely be a strength of the network approach to educational change, it, too, come with its own plethora of challenges. Partnerships run the risk of a culture clash (Lima, 2010) where the organizational cultures of the ‘home bases’ may not mesh well into a cohesive network of relations. The contextual aspects of networks (e.g., organizational norms of network members, organizational goals and priorities) emphasize the importance of addressing issues such as communication, leadership, and decision-making from the onset and ensuring that a culture of collaboration takes precedence over individual approaches to network activity. The issue of partnerships reinforces the imperativeness of ensuring that the network’s purpose and activity inform each other, and not to let one voice dominate over others as doing so may risk the integrity of the network strategy and the goals of the improvement process.

Moving network research forward in education

It is important to make a distinction between the different ways that networks are conceptualized in much of the research on networks in education. On the one hand, there is a body of literature that uses the network concept or idea as a means of describing a group of people who are an object of study. Often times, the term network could easily be substituted with other education terms that connote collaborative work such as professional learning communities or communities of practice. Although these studies
may recognize the importance of relationships among the individuals within it, they do so in somewhat superficial ways. Many of the network-focused studies conducted over the last two decades do not employ a formal social network analysis methodology, nor do they use the concepts and tools of social capital and network theories with any depth to formally investigate the network in question. This is not to suggest that these studies do not make a positive contribution to the field, but rather to say that there are research tools currently available to education researchers that would allow for a deeper understanding of the specific activity that is taking place within education networks and how network members interact. It is time to acknowledge what we can learn from other fields about networks (i.e., sociology and business administration) and apply it in education research.

Hite, Williams & Baugh (2005) identify six ways that networks are typically examined in literature and research on educational organizations: 1) 'network' as a title, label, or metaphor for organized groups; 2) related to educational issues such as mentoring or administration; 3) detailed qualitative examination; 4) detailed quantitative examination (examining dyadic relations); 5) a methodology design on network research (social network analysis); and, 6) using network methodologies from sociology, management and organizational theory. Education researchers and practitioners who are familiar with the discourse around professional (learning) communities will find that much of the dialogue in the literature that addresses network as an identification of a group of individuals strongly resembles what has been written formally about professional communities (see Bryk, Camburn & Louis, 1999; Little, 1992; Louis, Kruse & Bryk, 1994, 1995). For example, if we take three studies that use network as a title or label for groups organized around education issues — Lieberman & Grolnick (1996), Mullen & Kochan (2000), and Smith & Wohlstetter (2001) — and consider what we have
learned from these studies, you will find a lot of overlap with findings from the professional community literature. Looking closely as these studies’ findings, one will find a strong emphasis on shared values, collaborative work, distributed leadership, and an emphasis on practitioner learning for the goal of increased student achievement. All of these points are valid and important, and they need to be considered in dialogues about school improvement and educational change. However, this is not new knowledge, but rather ‘recycled’ knowledge that has been attributed to a ‘new’ source — to a network this time around. I say ‘new’ because what is sometimes labeled as new, in fact, is not new at all, but rather a new name for something that already exists (in this case, a professional community of some sort). Most often these studies virtually ignore the social network theories and tools that have been yielding complex insights into how networks actually function in other disciplines such as health and business management.

On the other hand, there has been a growing body of research that views networks in terms of their function, focusing more on the actions that are taking place within them. These studies, which use both qualitative and quantitative methodologies and are informed by social capital and network theories and use social network analysis tools, make a much stronger contribution to the field of educational change as a whole because they bring something truly new to education research: a whole set of tools and related theories that can be used to investigate the relational dimensions of complex education issues. As Hite and her colleagues (2005) state, “network analysis allows researchers to better understand the role of relationships…by facilitating the systematic analysis of these relationships and the structures they create from both qualitative and quantitative perspectives” (p. 116, emphasis added). Where appropriate, using network analysis tools in addition to conventional methods allows education researchers to more thoroughly
investigate the complexities of educational change phenomena (e.g., leadership and policy).

When networks are studied using methodologies and tools that are designed to develop a deeper understanding of how relationships are facilitating or constraining the work of networks (i.e., social network analysis), much more detailed and thorough knowledge is generated about how networks function and influence school improvement initiatives. This is where education researchers can push the boundaries of what traditionally has been done in early research on networks as a school improvement strategy. Studies that limit themselves to applying to definition of a network at a global level (simply taking the network as a broad object of study) do so with the consequence of findings that can be under-developed; findings that are limited to describing the necessary conditions for network activity to take place, rather than investigating how the patterns of interaction within a network facilitate its work. Taking a social network approach in designing research allows education researchers to clearly articulate what the network activity looks like and explain how it contributes (or not) to the attainment of school improvement goals. A multi-pronged approach that includes both quantitative and qualitative methodologies and encourages depth in understanding is needed to push the network research agenda forward in education (Lima, 2010).

Indeed, there has been a growing interest over the last decade among education scholars about the applicability of social network theory and methods to their research agendas. Coburn and her colleagues used formal social network concepts in their investigations of policy implementation within schools (see Coburn, Mata & Choi, 2013; Coburn & Russell, 2008; Coburn, Russell, Kaufman & Stein, 2012). Although focusing on different dimensions of school and district leadership, Daly and Finnigan (see Daly &
Finnigan, 2010, 2012; Finnigan & Daly, 2013) and Spillane and his associates (e.g., Spillane, Hunt & Healey, 2009; Spillane & Kim, 2012; Spillane, Kim & Frank, 2012) have applied social network analysis to increase understanding about how patterns of interaction among school and district leaders distinguish informal from formal leadership structures, while elucidating on the effects of these network structures on particular educational outcomes. Social network analysis has also been applied in studies of teacher professional development (Penuel, Sun, Frank & Gallagher, 2012; Sun, Penuel, Frank & Gallagher, 2013); diffusion (Frank, Borman & Zhao, 2004; Penuel, Frank, Sun, Kim & Singleton, 2013; Sun, Frank, Penuel & Kim, 2013); data use (Daly, Finnigan, Moolenaar & Che, 2014); innovative climates in schools (Moolenaar, Sleegers & Daly, 2011); teacher collaboration (Moolenaar, Sleegers & Daly, 2012; Moolenaar, 2012); school and student performance (Leana & Pil, 2006; Pil & Leana, 2009); and even to facilitate comparisons of different types of networks themselves (Moolenaar, Sleegers, Karsten & Daly, 2012). Yet, despite the increased interest in using social network analysis in education research, at the time of this study’s design, there were only a couple of studies that examine practitioner use of evidence (including, but not limited to research-based knowledge) through a social network lens.

Cynthia Coburn (2010) conducted a three-year study *The Partnership for District Reform* (PDR), an initiative between school district administrators and a university research centre where both groups worked collaboratively to identify problems within the district and to co-construct evidence-based action plans to address them. Taking into account internal (within the district) and external (outside the district) sources of information, Coburn used social network data to investigate the "pathways" that
permitted research and evidence to become a part of the discussions and decisions about district problems and solutions.

Overall, the general finding from this study was that, in the case of this particular school district, the use of research in decision-making was quite limited. Coburn attributes this "to the organizational and social conditions for decision-making in the school district" (2010, p. 175). When the time and resources were made available for district personnel and external partners to come together to co-construct knowledge and action plans, instrumental (i.e., direct, specific application) and conceptual use (i.e., indirect, less specific use such as change of belief or disposition) of research increased; however, in times of budget constraint when these sorts of opportunities were inconsistent, if available at all, research evidence, where used at all, was employed symbolically (i.e., to reinforce or support pre-existing positions) in ways that did not benefit the school district's decision-making processes.\(^8\) Although social network analysis tools were used modestly in this study, their inclusion nevertheless permitted Coburn to describe the ways in which research evidence became a knowledge source included in this school district’s decision making processes. Combined with qualitative data about how the research evidence was used, Coburn was able to provide a robust example of how collaborative district-university initiatives facilitate the use of research evidence.

In response to the William T. Grant Foundation’s request for proposals for studies that "focus on when, how, and under what conditions research evidence is used in policy and practice that affect youth, and how its use can be improved" (W.T. Grant Foundation, 2010), further explanations of instrumental, conceptual, and symbolic use of research are made on page 57 of this chapter.
Kara Finnigan and Alan Daly investigated the acquisition, diffusion, and use of research evidence in low-performing schools that are under sanction as part of the No Child Left Behind (NCLB) legislation in the United States. Their exploratory, mixed method case study (Finnigan, Daly & Che, 2013) is the only study in education research that I have found that has made extensive and rigorous use of social network theory and analysis in its design and execution.

This study revealed some interesting preliminary insights into the diffusion of research-based knowledge within schools and the school district. It found that within schools the principal is a central figure in connecting research evidence and practice and has significant influence on the flow of information within the network. Finnigan and Daly suggest that this is a likely explanation for the over-emphasis of student and school performance data as the most frequently cited forms of research evidence in use in school improvement planning. Given the heavy emphasis on data use in the NCLB legislation (now renamed the Elementary and Secondary Education Act, or ESEA), it is probable that principals favour this type of evidence at the expense of other types of research-based knowledge.

The social network findings in this study also indicated sparse ties between district and school level administrators, further constraining the exchange of research evidence. Furthermore, ties between these two groups were extremely sparse in the emotional support network. This is problematic as the lack of strong ties may inhibit the types of relationships that are necessary for building a culture of trust and reciprocal relationships (Finnigan, Daly & Che, 2013) within the district. In the absence of such a

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9 Details on the current RFP are available at http://www.wtgrantfoundation.org/funding_opportunities/research_grants/use-of-research-evidence.
culture, it is unlikely that educators will develop the skills and co-construct the knowledge necessary for school improvement initiatives to be successful. The authors also assert that the lack of central office to school site ties also limits the school-level access to the varying types of research-based knowledge that is available at the district level. In the researchers’ view, it is imperative for the district to attend to the disconnectedness among school leaders if it wants to move beyond the superficial levels of research use that described the current district context towards more evidence-informed school improvement processes.

These two studies highlight the ways in which social network theory and analysis are beginning to inform thinking about the use research and other forms of evidence in school district decision-making processes. Coburn's (2010) study used social network data to be able to trace the source of research-based knowledge, demonstrating how it can be used to illustrate the importance of external partners in the acquisition and use of research-based knowledge in a partnership context between a school district and an intermediary organization. Finnigan, Daly and Che's (2013) work offered more nuanced insights into how one network concept, centrality, helped explain the diffusion and use of research-based knowledge within and between low-performing schools and the central office within one mid-sized urban district. Both of these studies signal the relevance and timeliness of social network analysis in understanding district and school leaders' use of research-based knowledge in complex educational systems. Furthermore, these studies also demonstrate how research evidence is not often used as a direct input into decision-making, but rather is used more selectively to justify decisions that have been already tacitly or explicitly made.
Using these studies that relate specifically to understanding networks as a mechanism to connect research and practice as well as the broader literature that uses social network theory and methods as examples to draw upon, I also turn to social network theory to inform the theoretical framework in this study. In the following section I review the foundational concepts that inform social network investigations and I explain the theoretical concepts that are applied in this study.

**Building a Theoretical Framework: Social Network Theory and Analysis**

The foundation of social network theory is the concept of *social capital*, which can be generally defined as the valued social resources that are embedded and exchanged within social networks (Burt, 2005; Lin, 2001; Putnam, 2000). Depending on the discipline and perspective from which a theorist is operating, social capital has been defined in many ways. Adler & Kwon (2002) provide an overview of how social capital has been defined across perspectives. They categorize social capital definitions based on whether they focus on bridging forms of social capital (relationships that bring together otherwise unconnected groups), bonding forms of social capital (relationships that strengthen connections among actors within the same group), or definitions that they consider to be neutral. In the education literature, Hargreaves and Fullan (2012) state that "social capital refers to how the quantity and quality of interactions and social relationships among people affects their access to knowledge and information; their senses of expectation, obligation, and trust; and how far they are likely to adhere to the same norms or codes of behaviour" (p. 90, original emphasis). A full discussion of the nature of social capital is beyond the scope of this dissertation; however, although definitions of social capital differ along some dimensions (e.g. its function - bridging or
bonding), they all share in common an emphasis on the availability and access of resources through social interactions.

Social network theory and analysis provides a framework and set of methodological tools that can be used to investigate the ways in which social relations, called ties, play a role in education networks. A network is comprised of a group of actors, often referred to as nodes, which are connected by defined relationships (Carolan 2013; Prell, 2012; Scott, 2001; Wasserman & Faust, 1994; Wellman & Berkowitz, 1988). Borgatti & Halgin (2011) emphasize that “it is the researcher—by choosing a set of nodes and a type of tie—that defines a network” (p. 1169). By focusing on the relationships between actors, social network analysts endeavour to unpack the ways in which patterns of interactions provide or restrict opportunities to exchange resources (e.g., information, advice, social support) within a network (Borgatti and Ofem, 2010; Carolan, 2013; Wasserman & Faust, 1994). Thus, the emphasis on the structure of relationships within networks is what distinguishes network theory from other theories (e.g. actor-network theory) that also take interpersonal relationships into account.

A foundational concept in network theory is the tie — the relationship that connects two actors (Scott, 2001; Wasserman & Faust, 1994), and the quantity of ties is determined by counting the number of instances where two actors are connected to each other in terms of an identified relational dimension (e.g., advice, social support). Actors may be human, organizations, governments, countries — any two objects that share a relationship can be considered an actor through a network lens. Whereas traditional sociological research has focused on the individual attributes of actors, network theory considers the properties and consequences of the relationships that connect actors to each other (Borgatti & Halgin, 2011). In this sense, social network theory emphasizes the
connections between actors, highlighting the interdependence of actors as opposed to
their independence from each other. This is not to say that social network studies ignore
individual attributes of actors (attributes may in fact be more important variables
depending on the study); rather, within the realm of social network theory and analysis,
attributes should be considered in relation to the patterns of interaction within a network
(Wasserman & Faust, 1994).

There are many different types of ties that can connect actors within a network.
Borgatti and Ofem (2010, p. 19) offer a useful typology of relations that includes five
different types of ties typically studied in social network research: similarities such as
location (spatial or temporal space), membership (same clubs, events) or attributes (same
gender, attitude); social relations such as kinship (mother of, sibling of) or another role
(i.e., friend, boss or student of); mental relations such as affective (i.e., likes, hates) or
cognitive relations (i.e., knows, knows about); interactions (i.e., talked to, advised,
helped); or flows (i.e., information, beliefs, money). Furthermore, it is assumed that
different types of ties function differently (Borgatti & Foster, 2003); for example, the
consequences of social support ties may be different from those resulting from expertise
ties. As such, ties can be further classified into two groups based on function:
instrumental ties and expressive ties. Instrumental ties are relationships that directly
Project CYMH actors in carrying out their work tasks, such as information, expertise,
advice (Ibarra, 1993), whereas expressive ties are relationships that possess more
affective elements that may be needed to carry out tasks, such as social support,
friendship, or trust (Gibbons, 2004). However, ties are not exclusively instrumental or
expressive as many social ties (e.g., advice) can serve both instrumental and expressive
functions within a network (Ibarra, 1993).
While assessing the quantity of ties is a necessary first step in network analysis, determining the quality of ties within a network contributes to a more robust understanding of the ways in which the patterns of relationships within a network may affect activities within it. Determining the extent to which each actors within a network share mutual ties with each other is one method of assessing the quality of ties. For example, when A seeks advice from B and B also seeks advice from A, the tie is called a reciprocal tie. Ties are perceived to be much stronger when they are reciprocated (Coleman, 1988). When ties are mutually shared, the belief is that they are more likely to “become imbued with trust, value, and legitimacy and be valuable in the learning process” (Daly, 2012, citing Honig & Ikemoto, 2008). Moreover, reciprocal ties are considered to be of better quality because shared relationships are believed to create the conditions necessary to exchange more complex information (Hansen, 1999, 2002; Uzzi, 1996, 1997). This has important implications as earlier network research has demonstrated that individuals are more likely to seek information from someone with whom they share a tie rather than seeking information from an ‘expert’ (a unidirectional tie) (Cross, Parker, Prusak & Borgatti, 2001; Daly et al., 2010; Moolenaar, Daly & Sleegers, 2010). That said, it should be recognized that reciprocal ties also run the risk of reinforcing group norms that may be counterintuitive to the desired goal of the network (Krackhardt, 1999).

In addition to mutual relations, ties between individuals are considered to be better quality when they exist along multiple relational dimensions. The relationship between two individuals who share information, advice, and social support, for example, are believed to be stronger than those where only one type of relationship exists (Daly, 2010). This is referred to as tie multiplexity. The idea underpinning multiplex ties is that
they “[allow] the resources of one relationship to be appropriated for use in others” (Coleman, 1988, p. S109), thereby making the tie more durable as the dissolution of one type of relationship does not result in the dissolution of all ties between those individuals. Thus, networks comprised of high quality, multiplex ties are considered to be more robust networks (Hanneman & Riddle, 2005; Haythornthwaite, 2005).

With this basic understanding of the core social network ideas needed to understand this research, I will explain the network theoretical concepts used in the design and execution of this study in the remainder of this chapter. I begin by discussing network cohesion and its relevance to understanding how social interactions mediate connections between research knowledge and practice. From there, I move on to explain ideas about network prominence and brokerage and how they relate to mobilizing research knowledge.

**Cohesion.** Coleman’s (1988) argument is that social capital is derived from closely connected social networks (i.e., cohesive networks); the greater one’s social capital, the greater the opportunity for reward. The trouble is, however, that it is difficult to offer a clear, concise explanation of what exactly constitutes a cohesive network (Kadushin, 2012). Nevertheless, the premise of network cohesion as a theoretical concept is that members are connected to one another and resources flow easily through network structures that are unlikely to become disconnected should any of the relationships dissolve (Kadushin, 2012; Moody & White, 2003; Prell, 2012). Prell (2012) describes cohesion as “the extent to which a network ‘stays together’ versus the extent to which a network breaks apart” (p. 166) given particular circumstances. The challenge with network cohesion, as with many social network measures, is that its interpretation is relative to the networks themselves and the other networks to which they
are being compared given that there is no defined threshold for what constitutes a cohesive network (Prell, 2012).

The level of activity within a network — determined by calculating a network’s density\(^{10}\) — is considered to be an indicator of network cohesion (Borgatti, Everett & Johnson, 2013; Scott, 2001; Wasserman & Faust, 1994). Theoretically, resources flow more easily and directly through dense social networks (networks with high levels of activity or more connections), thereby considered to be more cohesive than less connected networks (Kadushin, 2012; Reagans & McEvily, 2003). However, although it is a useful measure in that it describes activity levels and allows for comparison between networks of the same size (Carolan, 2013; Prell, 2012), there are some important properties of density that should be taken into consideration when using it to assess the cohesiveness of a network.

However, as a measure, density is sensitive to network size (Borgatti et al., 2013; Scott, 2001; Wasserman & Faust, 1994); the greater the number of actors within a network, the more challenging (and unlikely) it is for a network to reach maximum density (Prell, 2012). It would be unreasonable to draw direct comparisons between a small, rural school district with fewer actors to a large urban school district with many actors as it may be easier for networks with fewer actors to possess more ties.

Furthermore, only considering the number of relations within a network does not take into account the degree to which these ties are spread across all members within it. The density of a network could be quite high, but a disproportionate number of ties are connected to one member or a particular group of members. In this case, density as an individual measure may not be an effective indicator of network cohesion given that a

\(^{10}\)Density as a concrete measurement of a network attribute is discussed more fully in the methods chapter (chapter 3).
network whose activity is greatly centralized (meaning that it focuses highly on one actor or group of actors) is more susceptible to “break[ing] apart” (Prell, 2012, p. 166) once these ‘key players’ are removed (Borgatti, 2003). As such, measures of network centralization also provide insight in the degree of cohesion within a network.

The ways in which resources are distributed through ties within a network are affected by centralized structures given that a disproportionate amount of power and/or influence being attributed to some people over others (Carolan, 2013). High levels of centralization are indicative of networks with lower levels of cohesion because the removal of the central figures (or ‘key players’) would reduce the amount of activity within the network (Borgatti, 2003; Prell, 2012). In highly centralized networks, “the power of individual actors varies rather substantially, and…overall, positional advantages within the network are rather unequally distributed in this network” (Hanneman & Riddle, 2005, Ch. 10); hence, there is an inverse relationship between cohesion and centralization.

**Prominence.** The idea that there are some actors within a network who are more important than others is one that occupied the minds of the earliest network scholars (Scott, 2001) and persists among network scholars today. An actor is considered prominent, or important, if his/her ties with others result in him/her being “particularly visible to other actors in the network” (Wasserman & Faust, 1994, p. 172). These actors are considered to be central figures within networks and, consequently, occupy positions of advantage (Borgatti, Everett & Johnson, 2013; Freeman, 1979; Wasserman & Faust, 1994). “Prominent actors are those that are extensively involved in relationships with [others]” (Wasserman & Faust, 1994, p. 173), and as a result of their patterns of activity,
these actors enjoy privileges (e.g. easier access to resources) that others in the network do not.

To facilitate a clearer understanding of what it means to be ‘visible’ within a network, Knoke and Burt (1983) offer two classifications of prominence: centrality and prestige (in Wasserman & Faust, 1994). As the term implies, centrality emphasizes actors who are at the centre of activity within a network; however, one should not assume that the most central figures in the network are always those actors with the greatest number of ties. As Borgatti et al. (2013) point out, centrality “is not one thing, but rather a family of concepts” (p. 164) that help researchers to understand how an actor contributes to network structure (Borgatti et al., 2013; Carolan, 2013; Prell, 2012). By identifying who are central actors in networks and understanding what network conditions contribute to that centrality, we are better able to understand what is happening within the network (Prell, 2012).

Key to understanding issues of centrality is recognition that ties can be either positive or negative. Positive relations are those where one actor’s gain does not come at the expense of another (e.g., friendship, trust), whereas with negative relations, one actor’s gain is at the expense of another actor’s loss (e.g. hatred) (Prell, 2012). Furthermore, centrality can also be conceived of in terms of local versus global centrality (Scott, 2001). Local centrality refers to the extent that an actor is prominent within its own patterns of interaction (its own network neighbourhood) whereas global centrality speaks to the extent that an actor is prominent within the whole network structure (Scott, 2001).

There are many different measures of centrality, each of which focus on the different ways in which actors can occupy key positions within a network. One of, if not
the most frequently used measure of centrality is *degree centrality*, which is the simplest centrality measure (Borgatti et al., 2013; Prell, 2012). Degree centrality measures levels of activity or involvement by calculating the number of ties that each actor has in a network. In this way, degree centrality measures help identify who is most ‘popular’ within the network (Carolan, 2013; Prell, 2012). When researchers are able to determine the direction of ties, degree centrality can be further refined into *outdegree* (who is sending the tie), a measure of the expansiveness of an actor’s network, and *indegree* (who is receiving the tie), a measure of popularity and prestige (Prell, 2012). Therefore, the most highly visible nodes in a network are those actors who possess the greatest number of ties. As Borgatti et al. (2013) describe, “If we assume that thing — such as information and infections — flow through ties, then degree centrality can be seen as an index of exposure in the network” (p. 166). In this way, individuals with higher degree centrality are seen to have more opportunity or access to resources, thereby occupying positions of advantage; they may also have greater control over resources within the network (Scott, 2001; Wasserman & Faust, 1994).

Prestige, the other type of prominence offered by Knoke and Burt (1983), can only be determined when researchers are able to identify the direction of relationships within the network (i.e., outdegree, indegree). Actors’ levels of prestige increases when they “are the object of more ties” (Wasserman & Faust, 1994, p. 174), meaning that they have higher indegree centrality. Prestigious actors are those who are most frequently sought out within the network; in this way, an actor can be central with a network (e.g., reaches out to many other actors within the network), but not necessarily prestigious (e.g., not often sought out by others) (Wasserman & Faust, 1994).
Degree centrality, as a measure of prominence, is widely criticized as being a “relatively coarse measure” (Borgatti et al., 2013, p. 168). Although it measures the level of activity within a network in general, it does not discriminate between how this activity is distributed within the network. As Borgatti et al. (2013) point out, “if a node is connected to five others that have no other ties, the centrality of this node is no different from the centrality of a node that is connected to five others that are well connected themselves” (p. 168). As such, degree centrality measures are less refined than other centrality measures (e.g., betweenness, closeness) and detect much less variance among actors (Prell, 2012). In addition, degree centrality measures are sensitive to the size of the network (Wasserman & Faust, 1994) and can only be used meaningfully in comparisons among actors within the same network (Prell, 2012). Nevertheless, as a measure of prominence, degree centrality allows researchers to highlight which actors are structurally important in terms of the overall level of activity within a network. Within the context of knowledge mobilization, degree centrality measures will deepen our understanding of who is most often seeking out research-based knowledge and who is most often its provider within the Project CYMH program. Doing so permits us to identify who’s important in the network (Prell, 2012), or rather those individuals with the most access to and/or most control over resources (Wasserman & Faust, 1994) within the Project CYMH network.

**Brokerage.** In the development of the theoretical framework informing this study thus far, emphasis has been placed on the theoretical benefits of direct relations between individuals within a network. However, brokerage, from a social network point of view (distinct from the multiple definitions of ‘knowledge brokers’ in KMb literature) refers to a structural position within a network, shifting gears and focusing on the extent
that there are individuals within a network who act as connectors or ‘bridges’ between individuals who would be otherwise unconnected (Freeman, 1977; Wasserman & Faust, 1994) — the ‘man in the middle’ so-to-speak, or the person who lies between two others within a network. These individuals facilitate indirect relations between others within a network. Take for example, a straight line with three points: A, B, and C. A has a relationship with B, and B has a relationship with C, but there is no relationship between A and C; A is indirectly related to C through B. In this case, B is acting as a broker, sharing resources with A and C which they are unable to directly receive from each other. This is the essence of brokerage from a social network perspective: “The betweenness of a point [person] measures the extent to which an agent can play the part of a ‘broker’ or ‘gatekeeper’ with a potential for control over others” (Scott, 2001, p. 87).

Burt (1992, 2005) describes brokerage as a structural network concept that occurs when individuals within a network bridge ‘structural holes.’ Structural holes are areas of disconnect within a network. Carolan (2013) explains structural holes as an “argument that posits that one’s location between two otherwise disconnected groups of actors creates a competitive advantage for that actor” (Key Terms supplement, p. 7). Theoretically, the idea behind brokerage is that brokers — individuals who are positioned between two disconnected others — possess advantages within the network that others do not because they bridge structural holes within a network (Burt, 2000, 2005; Prell, 2012). These advantages may include outcomes such as early access to a wide variety of information and greater control over the diffusion on this information within the network (Burt, 2000). Burt (2005) offers four levels of brokerage that create value within network. First, people who play brokering roles within a network are able to make people on both sides of a structural hole aware of the interests and difficulties in the other
‘group.’ Second, by witnessing what works in one group and being able to share that with another, they facilitate the transference of best practice. Third, they may be able to draw an analogy based on what is happening in both groups, when what is happening in one group may seem irrelevant to another. And finally, those playing a brokering role in a network are also in the position to be able to synthesize the activities of two groups thereby identifying possible new beliefs and behaviours based on the actions of both groups.

With this in mind, a different notion of centrality is revealed. If we consider a figure to be central if s/he brokers relationships within a network, then we are emphasizing betweenness as the criterion of centrality. Prell (2012) notes, “With betweenness, the thinking is if you are placed between two disconnected actors, then this place of betweenness affords you certain advantages” (p. 104, original emphasis). This behaviour is captured with a network by using a measure of betweenness centrality (Freeman, 1977), which measures the amount of brokerage that individuals have between everyone else within a network (Borgatti et al., 2013). An individual could have a betweenness score of zero if s/he did not occupy a position on the shortest path between two otherwise unconnected people within the network. Conversely, a maximally centralized person based on betweenness would be someone who is situated in the middle on the shortest paths between all others within a network (Borgatti et al., 2013). Although it is one of the most complex measures of centrality to calculate (Scott, 2001), betweenness centrality as a measure typically yields highly variable results (Borgatti et al., 2013). Because it is a much more discriminate measure than degree centrality, it is suited to best capturing the most important people within a network (Prell, 2012). Furthermore, in relation to studies of knowledge mobilization, betweenness (as an
indicator of brokerage) helps identify who are the brokers (if any) within a KMb network, noting that because of their higher betweenness, brokers have greater control over the flow of information within it.

**Actor attributes.** Non-network data are also important in social network research (Borgatti et al., 2013). Carolan (2013) identifies three types of variables that are integral in social network studies: relational, which consider the ties between pairs of actors within the network (e.g., density, indegree, outdegree); structural variables conducted at the whole network level (e.g., centrality, positions); and, attribute variables, which are characteristics of the individual actors within the network. The attribute variables are similar to those in conventional social science research (Carolan, 2013; Wasserman & Faust, 1994) and are combined with network variables (relational or structural) in statistical analyses (Borgatti et al., 2013; Carolan, 2013). Scott (2000) defines attribute data as “the attitudes, opinions and behaviour of agents, in so far as these are regarded as the properties, qualities or characteristics that belong to them as individuals or groups” (p. 2).

Although the number is increasing, there have not been many empirical investigations of research use in social services such as (but not limited to) education (Nutley et al., 2007) and there is even less literature on the predictors of research use. In Canada, however, there was a large scale empirical study in the health sciences that considered the ‘organizational determinants’ of research use (see Belkhodja, Amara, Landry & Ouimet, 2007), which identified several factors (e.g., research relevance, experience with research, organizational culture, and linkage mechanisms) that predicted levels of research use at different levels of Canadian health care systems. These
variables were adapted for use in this study to collect attribute data for each individual involved in Project CYMH (further detailed in Chapter 3).

**Pulling It All Together**

I included four components in the development of the conceptual framework for this study: 1) the contexts of KMb (research production, mediation, and research use); 2) the structure of social networks (quantity and quality of interactions); 3) organizational attributes that contribute to research use (adapted to individuals for use in this study); and, 4) the broader policy context within which the Project CYMH program is operating in Ontario (see Figure 2).

Recall that research on knowledge mobilization sets the broader stage for this study and that KMb occurs when at least two functional KMb contexts interact (Cooper, 2012; Levin 2004, 2011). All KMb activity is constantly influenced by the dynamic social context within which it is occurring. In this work, I focus specifically on the mediation and use contexts. Project CYMH program serves a mediating function between research production and use contexts by providing an 'interactive space' (Coburn & Stein, 2008) where coaches (professionals who relay research based knowledge on student mental health issues) and district Mental Health Leaders (district administrators who are responsible for developing evidence-based board mental health strategies) interact with each other. By engaging with others in the Project CYMH network to find, understand, share and apply (Campbell & Levin, 2012; Levin, 2011) research-based knowledge in their pursuit of evidence-based student mental health policy and programming, school district Mental Health Leaders represent the potential users of related research knowledge in the KMb model.
Inherent in models of KMb is the expectation that the definitive outcome of KMb is the 'use' of the mobilized research knowledge. There are many different models and conceptualizations of what it means to use research (see Knott & Wildavsky, 1980; Landry, Amara & Lamari, 2001a, 2001b; and Weiss, 1979, for prominent examples). Generally, research use is conceptualized across a continuum from *conceptual use*, which includes developing awareness and building knowledge and understanding of research-based knowledge, to *instrumental use*, which emphasizes the role of research in the change processes of policy and practice (Nutley et al., 2007). There has been some empirical research on what research use looks like in education settings (see Cousins & Leithwood, 1993; Rickinson, 2005). A suggested next step in KMb research in education is to investigate processes that allow education stakeholders to find, understand, share and apply research-based knowledge (Campbell & Levin, 2012; Levin, 2011), actions which can span the conceptual-instrumental continuum of research use — actions which I use to operationalize KMb in this study.

The use of ‘networks’ as both an educational change (e.g., Penuel & Riel, 2007; Wohlstetter, Malloy, Chau & Polhemus, 2003) and knowledge mobilization (e.g., Cooper & Levin, 2010; Levin, 2008) strategy has been gaining popularity over recent years. However, in both contexts, empirical research on the inner workings of networks has been limited. Much of the discussion in the educational change literature has focused on limiting the term network to simply identifying a collective group of individuals or to describing conditions that support network development rather than explaining how they actually function. Within the body of KMb literature, networks are referred to as a mode of mobilizing knowledge, but empirical studies on how networks make connections between research and practice are virtually non-existent. While acknowledging that
research from both these fields have made positive contributions to understanding how relationships between people in education systems affect desired educational outcomes, I argue that there are a variety of network-based theoretical perspectives and analytical tools that education researchers have yet to capitalize on — theories and methods that would greatly enhance our understanding of how the relational dimensions of networks facilitate/constrain the work of educators and those with an interest in education.

To explore the connections between research and practice, I turned to social network theory and analysis (SNA) to provide the tools and concepts to examine the patterns of interaction that facilitate knowledge mobilization. The underlying premise of social network theory is that the exchange of social resources (e.g. advice, expertise, information) affects the success of actions (Lin, 1999, 2001); who you know and what (and who) they know matters. 'Social capital' — defined as "[the] resources embedded in a social structure that are accessed and/or mobilized in purposive actions" (Lin, 2001, p. 29, original emphasis) — can positively or negatively affect the outcomes of any given activity. To review, social network theory postulates that one's position within a network affects the extent to which the resources embedded within it are available for the individual\textsuperscript{11} to access and use; better positions result in increased levels of social capital, which result in increased availability and access of resources for individuals, thereby potentially improving the outcomes of intended action, although it could also negatively affect outcomes as well (Lin, 2001). By focusing on the quantity (frequency of interaction) and quality (how 'good' the interaction is) of interactions (Daly & Finnigan, 2010, 2011), this study is designed to examine the extent to which specific social

\textsuperscript{11} I am using the term 'individual' here because I am referring to individual participants within the Project CYMH program; however, this term could be substitute by 'group' or 'organization'. Social capital is not limited to individuals, although it should be noted that the individuals to whom I am referring, the district Mental Health Leaders, are representatives of school districts (as organizations).
resources — research, advice, influence and social support — are being engaged within the Project CYMH network and with what effect on mobilizing research knowledge in support of developing evidence-informed student mental health policy in Ontario school districts. As depicted in Figure 2, these four components are put together in an original conceptual framework that I developed for application in this study.

Figure 2. Conceptual Framework.
Chapter 3: Methodology

This investigation presents a descriptive case study (Yin, 2014) where the intention is to describe "a phenomenon...in its real-world context" (Yin, 2014, p. 238). Its overall objective is explanatory in nature as I seek to explain the ways in which individuals' informal interactions with each other shape the structure of the Project CYMH network, and in turn, how the network structure enables/constrains participants' abilities to find, understand and use research-based knowledge in their daily work.

To that end, this study follows a sequential, explanatory mixed methods design (Cresswell & Plano Clark, 2011); qualitative data were collected and analysed as a follow-up to initial quantitative data collection and analysis in an effort to elaborate upon the quantitative findings. Data were collected in two phases. Phase one focused on the network structure, mapping the Project CYMH ‘network typology’ (Carolan, 2013) by analyzing the patterns of interaction among participants along four relational dimensions (information, advice, influence, and social support). Phase two of the study used interviews with individuals purposefully selected based on findings from the social network analyses to examine the influence of network structures on Mental Health Leaders' capacity to find, understand, and apply research-based knowledge in their efforts to develop evidence-based district mental health strategies.

This chapter is organized in two sections — one for each phase of the study. In each section, I will provide a detailed description of the following key components: 1) participants and sample selection; 2) data collection procedures, including details of the collection instrument and variables used to investigate the research question; and, 3) data analysis techniques employed to generate the study's findings.
Phase I: Mapping the Project CYMH Networks

Phase one is the quantitative phase of data collection and analysis. Data collected in this phase of the study seek to identify the patterns of interaction with the Project CYMH program, including the *quantity* and *quality* of interactions between program participants. Ultimately, the intent in this phase of the study was to make the relationships between and among coaches and Mental Health Leaders visible. Furthermore, by quantifying the patterns of interaction within the group, I am able to apply various social network measures (e.g., cohesion, prominence) to the data resulting in a deeper understanding of the Project CYMH networks.

**Participants.** In the spring 2013, I contacted the director of the Project CYMH program to make her aware that I was looking to conduct a study that looked at the ways in which interactions among members of a professional community affected the ways research knowledge was mobilized within it. I became aware of the Project CYMH program through informal conversations with OISE colleagues with whom I had been discussing my research ideas. The Project CYMH program presented a favourable context to conduct this study for several reasons. First, it provided a bounded network of a manageable size to be able to carry out this network analysis within a timeframe conducive to a doctoral study. Second, participants came from thirty school districts, including English and French language, rural and urban, public and Catholic school districts, thereby providing an interesting set of participant characteristics that represents the full range of school district types across Ontario. Third, a core tenet of the Project CYMH mandate was connecting research and practice, with all aspects of the program’s design and delivery influenced by knowledge mobilization ideas.
After some informal conversations over the phone, during which the director expressed an interest in this work, I sent her a formal letter of invitation asking for her consent to ask the Project CYMH coaches and Mental Health Leaders to participate in my study (Appendix A). Upon receiving her consent, we agreed that I would formally present my study and distribute invitations at one of the group’s formally scheduled meetings held in Toronto. In November 2013, I presented my study to the group through a formal PowerPoint presentation that focused on the ideas informing the study, what would be required of participants, as well as the benefits of participating in a social network study. At the end of my presentation, I distributed an envelope that contained the formal letter of invitation that also included a consent form (Appendix B) to each coach and Mental Health Leader. I asked willing participants to sign the letter of consent and return it to me using the addressed, stamped envelope included in the package. Each envelope also contained a $10 coffee shop gift card in appreciation of their time that day and for completing the survey should they choose to do so.

To facilitate the mapping of the complete network, I used a position-based approach to boundary specification to identify the individuals participating in this network (Carolan, 2013; Laumann, Marsden & Prensky, 1983; Marin & Wellman, 2010). This means that all people involved in the Project CYMH program potentially could have been a part of the sample. However, because I was asking participants to reflect on their interactions with Project CYMH colleagues in relation to the development of their board mental health strategy, only individuals who worked in a school district that had already established its board mental health strategy under the guidance of the Project CYMH program were invited to participate. This restricted participation to school districts that joined the program in the 2011/12 (cohort 1, N=15) and 2012/13 (cohort 2, N=15)
academic years. The third cohort of school districts that joined the program in the 2013/14 academic year (N=42) was excluded from the study. Similarly, only coaches with more than one year experience with the program were included in the sample; coaches who began their employment with the program in September 2013 were excluded because they had yet to mentor a school district through the entire strategy development process. Hence, the following individuals (N=37) were invited to participate in the study:

- Cohort 1 school district mental health leaders (n = 15)
- Cohort 2 school district mental health leaders (n = 16)
- Project CYMH program coaches (n = 6)

The survey response rate was 97%; the final sample consisted of thirty-one Mental Health Leaders and five coaches. However, because I investigate bounded networks in this study, the names of all participants (including the coach who did not complete the survey) were included on the survey roster.

Participant characteristics. Developing descriptions of network actors is helpful in understanding who are the individuals involved in network activity (Wasserman & Faust, 1994). I collected attribute data for each individual for who participated in the study. First, I collected basic demographic information for each participant, including

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12 In most cases, the Mental Health Leaders had been with the program since the start of their district’s involvement with Project CYMH. However, in the case of 3 school districts, the Mental Health Leaders were new to the position in September 2013. Because these individuals represented Cohort 1 or 2 school districts, they were included in the study. A total number of 4 MHLs with less than one year experience with Project CYMH were included as one large, urban school district expanded the position to 2 MHLs instead of one.

13 In each cohort, 15 school districts are represented. However, one school district in cohort 2 employs two mental health leaders, so the total number of cohort 2 MHLs is 16.

14 The program director also served a coaching role with the program in its early stages, and continues to provide guidance and assistance to school districts on request. Therefore, I have included this individual in the count of the coaches.
the participant’s sex and highest postsecondary degree obtained. I asked for the sex of each participant as a basic descriptor of the group, although I did not expect to see any differences between the sexes. However, I asked participants to identify their highest obtained postsecondary degree because I suspected that those individuals with higher level postsecondary degrees — a doctorate, in particular — would be correlated with higher patterns of research seeking behaviour. This hypothesis was based on the assumption that individuals with graduate degrees would be more inclined to include research knowledge as an information source because of their exposure to it during their graduate study (a point that is further explored in the following section detailing the professional profile of participants). The data for these two variables were disaggregated by group (cohort 1, cohort 2, and coaches) and are presented in Table 1.

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mental Health Leads (N = 31)</th>
<th>Coaches (N = 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cohort 1 (n = 15)</td>
<td>Cohort 2 (n = 16)</td>
</tr>
<tr>
<td>Sex</td>
<td>Count (%)</td>
<td>Count (%)</td>
</tr>
<tr>
<td>Male</td>
<td>2 (13)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Female</td>
<td>13 (87)</td>
<td>16 (100)</td>
</tr>
<tr>
<td>Degree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor</td>
<td>2 (13)</td>
<td>1 (6)</td>
</tr>
<tr>
<td>Master</td>
<td>9 (60)</td>
<td>11 (69)</td>
</tr>
<tr>
<td>Doctorate</td>
<td>4 (27)</td>
<td>4 (25)</td>
</tr>
</tbody>
</table>

Note. Percentages may not equal 100 due to rounding.
Respondents were also asked to provide details on their number of years of work experience in the field of child and youth mental health (CYMH) in exclusively education-based settings (e.g., school districts) as well as within the broader field of CYMH overall regardless of location of practice. Overall, Mental Health Leaders had an average of 12.4 years ($SD = 8.3$) experience working in education settings, ranging from 0.4 to 25 years. Coaches had nearly twice as much experience in education settings with an average of 21.4 years ($SD = 12.4$), ranging from 10 to 35 years. Mental Health Leaders had more work experience in the field of child and youth mental health overall, averaging 20.8 years ($SD = 7.8$), ranging from 7 to 40 years. Coaches had slightly more experience within the broader field than in education settings with an average of 25 years work experience ($SD = 11.8$), ranging from 7 to 36 years.

**Data collection.** The structural mapping of the Project CYMH network focused on the analysis of census data\(^{15}\) (Carolan, 2013) collected using an online survey that was administered using Survey Monkey, a fee-based survey administration service available on the World Wide Web. Based on Survey Monkey analytics, it took respondents roughly 20 minutes, on average, to complete the survey. Because of the bilingual nature of the participant group, both French and English versions of the survey were available.

**Survey.** The survey was divided into two sections and is provided in Appendix C. The first section, called "Part A - Professional Networks," collected relational data about individuals' relationships with their colleagues. The second section titled, "Part B - Professional Profile," contained questions that were used to understand each individual's professional background and to measure their attitudes towards and experience with

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\(^{15}\) **Census data** is data collected from "a master list of actors bounded by some context" (Carolan, 2013, p. 74) where each actor on the list is asked to identify relationships with others whose name is on that list.
research-based knowledge in their professional practice. These questions were intended to provide a fuller description of the program participants in relation to research use. Each of these sections is described in detailed in the following paragraphs.

Part A — Professional Networks. Part A of the survey included eight relational (network) questions that were designed to elicit information about the frequency or intensity of relations between two individuals, otherwise known as ‘valued relational data’ (Prell, 2012; Wasserman & Faust, 1994). For example, participants were asked, "Please select the frequency of interaction with Project CYMH colleagues from whom you have received advice (i.e., guidance, recommendations) about developing an evidence-based board mental health strategy." The respondents then chose the appropriate response from a clearly worded and defined 5-point rating scale; for example, "Very rarely (once a year)" to "Very frequently (1-2 times/week)." These types of questions are easier and quicker to administer and "provide a more precise measure of the relationship" (Carolan, 2013, p. 91). However, for the information network, it was decided that the type of information exchanged (research, data, or other) was more important than the frequency of exchange, so respondents were asked to only identify the information type. Given that social network surveys can be quite cumbersome to complete, the frequency of interaction around information as a social resource was forfeited, which yielded binary (unvalued) data. Relational questions in this survey were modeled on those questions that have been previously validated and used in other social network studies (e.g. Cross & Parker, 2004; Daly & Finnigan, 2010). A full outline of the relational variables, including the measurement scales used for each, is provided in Table 2.
Table 2

*Description of Relational Variables*

<table>
<thead>
<tr>
<th>Resource (Network)</th>
<th>Measurement Scale</th>
<th>Type of Relational Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instrumental Resources</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advice</td>
<td>5 point frequency scale, where:</td>
<td>• Directed</td>
</tr>
<tr>
<td></td>
<td>1 – Very rarely (once a year)</td>
<td>• Valued</td>
</tr>
<tr>
<td></td>
<td>2 – Rarely (twice a year)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 – Occasionally (3-4 times a year)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 – Frequently (every month or so)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 – Very frequently (more than once a month)</td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>Type of information:</td>
<td>• Directed</td>
</tr>
<tr>
<td></td>
<td>1 – Research</td>
<td>• Binary</td>
</tr>
<tr>
<td></td>
<td>2 – Data</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 – Other (unspecified)</td>
<td></td>
</tr>
<tr>
<td>Influence</td>
<td>5-point influence scale, where:</td>
<td>• Directed</td>
</tr>
<tr>
<td></td>
<td>1 – Not at all influential</td>
<td>• Valued</td>
</tr>
<tr>
<td></td>
<td>2 – Slightly influential</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 – Moderately influential</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 – Very influential</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 – Extremely influential</td>
<td></td>
</tr>
<tr>
<td><strong>Expressive Resources</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Venting</td>
<td>5-point frequency scale (as above)</td>
<td>• Directed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Valued</td>
</tr>
<tr>
<td>Close Professional Relationship</td>
<td>5-point frequency scale (as above)</td>
<td>• Directed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Valued</td>
</tr>
</tbody>
</table>
Respondents were prompted to consider their relationships with each person identified on a list of names of Mental Health Leaders from each school board in addition to the Project CYMH coaches and program director. This is referred to as the roster (or recognition) method of data collection (Scott, 2001; Wasserman & Faust, 1994). The advantages of using the roster/recognition method are that both weak and strong ties are measured, a clear network boundary is identified (thereby reducing ambiguity), and it minimizes the burden on respondents to remember all possible individuals who may be identified (Carolan, 2013; Lima, 2010). Consequently, measurement error is reduced as there is a decreased likelihood of respondents forgetting to include people in their responses (Carolan, 2013). I did not impose limits on the number of people that the respondent could identify; the free-choice technique (recall guided by the names listed on the roster) was used and respondents were encouraged to check all names that applied to the question asked.

Respondents were not able to nominate additional people to whom they go to vent about their work or with whom they have a close professional relationship; they were restricted to identifying only those individuals whose names were included on the roster in these instances. However, in the case of the advice, information and influence networks, participants were provided with a text box where they could enter the positions of people outside of the Project CYMH network who were instrumental to their work. Nevertheless, this study concerns itself only with relationships that exist within the boundary of the Project CYMH program as opposed to understanding to which other people outside the Project CYMH program the mental health leaders also may turn for support. Hence, the roster method, employing the free choice technique (no restrictions), was the most appropriate methodology to employ in this study.
Part B — Professional Profile. In addition to relational data collected in part A of the survey, respondents were asked to provide information used to construct their individual professional profile. This attribute data (Wasserman & Faust, 1994) included not only biographical data (e.g. sex, highest degree obtained, and number of years of work experience in the field of child and youth mental health overall, as well as specifically in education settings), but also data collected from a number of questions that pertained to respondents’ experience with and attitudes towards using research-based knowledge within their professional practice. Little empirical research has been conducted on research use in the social sector (Nutley et al., 2007); hence, I chose to use a section from a validated survey instrument used in Belkhodja, Amara, Landry and Ouimet's (2007) study of the organizational determinants of research utilization in Canadian health service organizations to explore these additional attributes.

Questions replicated from Belkhodja et al.’s (2007) survey were adjusted to reflect the different contexts (e.g., the word "schools" replaced "hospitals" and "school districts" replaced "regional health authorities," and so on). Nine variables related to research use used in this study were also included in this research. These variables in addition to the demographic variables (excluding sex) were grouped into five categories again replicating the original study: learning, organizational culture, linkage mechanisms, relational capital, and professional capital. ‘Research use’ was used as the dependent variable in the original study’s data analyses. In this study, the research use scale was employed simply as another attribute variable in an effort to get a sense of individuals’ perceived levels of research utilization within their school districts, in effect, acting as a sixth category. Table 3 presents a summary of the variables included in part B of the
survey (organized into each of the categorical groups for easy reference) and briefly summarizes each measure.

Table 3
*Overview of Variables Used to Construct Participants’ Professional Profiles*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Survey Question</th>
<th>#</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research Use</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of research use in practice</td>
<td></td>
<td>9</td>
<td>Measured as an index on a frequency scale ranging from 1 = <em>Never</em> to 5 = <em>Very often</em>, regarding six aspects</td>
</tr>
<tr>
<td><strong>Learning</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training Activities</td>
<td></td>
<td>16</td>
<td>Complete the statement filling in the blank with a frequency selected from a frequency scale ranging from 1 = <em>Never</em> to 5 = <em>Very often</em></td>
</tr>
<tr>
<td>Users’ experience in research</td>
<td></td>
<td>12</td>
<td>Measured as a variety index indicating the number of the different categories of research activities in which the respondent had been involved in the last five years (1 = Yes, 2 = No)</td>
</tr>
<tr>
<td>Percentage of time allocated to research</td>
<td></td>
<td>17</td>
<td>Percentage of time (0-100%) allocated to research</td>
</tr>
<tr>
<td>Most advanced university degree</td>
<td></td>
<td>20</td>
<td>Select from 3 options: bachelor, master, doctorate</td>
</tr>
<tr>
<td>Relevance of the research</td>
<td></td>
<td>14</td>
<td>Measured as an index on a frequency scale ranging from 1 = <em>Never</em> to 5 = <em>Very often</em>, regarding two aspects</td>
</tr>
</tbody>
</table>
**Organizational Culture**

<table>
<thead>
<tr>
<th>Source of Information</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research is preferred</td>
<td>15</td>
</tr>
<tr>
<td>Complete the statement filling in the</td>
<td></td>
</tr>
<tr>
<td>blank with a frequency selected from a</td>
<td></td>
</tr>
<tr>
<td>frequency scale ranging from 1 = Never to</td>
<td></td>
</tr>
<tr>
<td>5 = Very often</td>
<td></td>
</tr>
<tr>
<td>Intensity of research use</td>
<td>10</td>
</tr>
<tr>
<td>Measured as an index on a frequency</td>
<td></td>
</tr>
<tr>
<td>scale ranging from 1 = Never to 5 = Very</td>
<td></td>
</tr>
<tr>
<td>often, regarding four aspects</td>
<td></td>
</tr>
</tbody>
</table>

**Linkage Mechanisms**

<table>
<thead>
<tr>
<th>Linkage Mechanisms</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured as an index on a scale of</td>
<td></td>
</tr>
<tr>
<td>importance ranging from 1 = Not</td>
<td></td>
</tr>
<tr>
<td>important at all to 5 = Extremely</td>
<td></td>
</tr>
<tr>
<td>important, regarding seven aspects</td>
<td></td>
</tr>
</tbody>
</table>

**Relational Capital**

<table>
<thead>
<tr>
<th>Relationships with other researchers</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured as an index on a frequency</td>
<td></td>
</tr>
<tr>
<td>scale ranging from 1 = Never to 5 = Very</td>
<td></td>
</tr>
<tr>
<td>often, regarding five aspects</td>
<td></td>
</tr>
</tbody>
</table>

**Professional Experience**

<table>
<thead>
<tr>
<th>Child and youth mental health overall</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of years of practice in child</td>
<td>19</td>
</tr>
<tr>
<td>and youth mental health overall,</td>
<td></td>
</tr>
<tr>
<td>regardless of workplace setting</td>
<td></td>
</tr>
<tr>
<td>Child and youth mental health in</td>
<td>18</td>
</tr>
<tr>
<td>school settings</td>
<td></td>
</tr>
<tr>
<td>Number of years of practice in child</td>
<td></td>
</tr>
<tr>
<td>and youth mental health overall</td>
<td></td>
</tr>
<tr>
<td>exclusively in school environments</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Adapted from Belkhodja et al. (2007).

**Survey Pilot.** The survey was piloted in October 2013 with eight individuals.

Because this study's sample tailored specifically to this study, it was not possible to pilot
it with other school district Mental Health Leaders or coaches. To mitigate this complication, the pilot was carried out with practicing K-12 educators as well as three individuals whose current work is in the field of policy and program development. These individuals were recruited from graduate classes within the faculty as well as from within my own network of professional contacts.

A cognitive interview was initially conducted with a practicing educator where she was asked to 'think aloud' as she completed the survey (Pitts & Spillane, 2009). This individual shared her thoughts as she completed the survey, explaining what she was thinking as she was completing it, as well as identifying where she experienced difficulty. At the end of the interview, this individual was invited to provide overall comments and general insights based on her experience with the survey. The cognitive interview resulted in revisions including amending the instructions to include explanations of terminology and a re-ordering of the questions in Part B of the survey. The intent of the cognitive interview was to not only identify potentially problematic areas in the surveys, but also to examine whether or not the respondent was interpreting the questions in the way that was intended.

Following the cognitive interview, the survey was distributed to seven individuals who were provided with a link to the survey via email. Five individuals reviewed the English version of the survey, and two individuals reviewed the French version. Along with the survey link, individuals participating in the survey pilot were also provided with an instructions and feedback form to guide the process (Appendix D). This form provided a brief explanation of the context in which the survey would be employed, directions on how to access the survey, and a series of guiding questions related to the survey's instructions, content, and layout. Space was also provided for general feedback.
Pilot participants were asked to complete the form whilst completing the online survey, and to return their feedback to me via email.

**Data analysis.** The survey data collected in this study represent two separate and distinct types of data (relational data and standard attribute data) that require different approaches to analysis. I discuss the approaches to data analysis for each type of data in separate sections: 1) social network analyses; and, 2) attribute analyses.

**Social Network Analyses.** Social network theory allows for analysis at multiple levels (Kadushin, 2012; Scott, 2001; Wasserman & Faust, 1994). Relational data were analysed at both the complete (whole) and egocentric (individual) network levels using UCINet 6 (Borgatti, Everett & Freeman, 2002). As outlined earlier in the description of the data collection procedures, the survey collected data on five relational variables, including three instrumental relations (advice, information, and influence) and two expressive relations (venting and close professional relationships). Each of these networks resulted in its own unique data set that was used during analysis. These datasets are further explained in the following subsections.

**Data Sets.** Each of the relational variables for which data was collected resulted in the creation of an individual network. For example, information collected on who received advice from whom resulted in the creation of the ‘advice network.’ However, further data extractions and combinations were required before the commencement of the formal social network analyses. First, the information network, which collected directed, binary data based on type of information, was broken down into three separate networks, one for each information type: research, data, and other information. In order to keep the number of networks to a manageable set for both myself to work with and my readers to follow, I decided to focus solely on the research network in my dissertation given its
explicit focus on knowledge mobilization; data for the ‘data’ and ‘other information’ networks were set aside for future analyses. Thus, the instrumental network analyses focused on advice, influence and research-based information.

Early presentations of the preliminary findings to various audiences (e.g., my committee, various conference presentations) suggested that the number of networks be further pared down for easier understanding. Given that the majority of people who indicated having a close professional relationship with another also typically shared a venting tie with that same individual, I decided to combine these two networks into one. I employed the Boolean combination function in UCINet to instruct the program to create a new network which was comprised of all instances where either a venting or a close professional relationship tie (or both) was present. This resulted in the creation of a new network that I refer to as ‘social support.’ This restricted the number of expressive networks investigated in this study to one, and to four overall (advice, influence, research and social support).

Recall that the survey collected valued data for advice, influence, and social support networks based on the frequency of interaction reported by each respondent. For these networks, I also created datasets that used only the most frequent (or most influential) ties by instructing UCINet to extract only those ties with a value greater than 3 on the rating scale in order to construct advice, influence and social support networks that contain only strong ties (Daly, 2010). Based on these operations, seven datasets were created and used in the subsequent analyses: four overall datasets that contained all ties for each network (advice, research, influence and social support), and three datasets that contained only the strongest (most frequent or influential) ties. Although the network measures were applied to all of the data sets during data analysis, based on
feedback from conference presentations and in the interest of clarity, I have chosen to
only report on the most frequent advice, influence, and social support ties. This decision
is justifiable given that the literature suggests that the most frequent ties are more reliable
than less frequent ties (Daly, 2010) in the sense that people are better able to recall
patterns of ties rather than individual interactions. Therefore, four datasets are reported
on in the dissertation: research-based information, the most frequent advice and social
support ties, and the strongest influence ties. With this in mind, I introduce the relevant
social network measures by elaborating on those that are applied at the whole, or
complete, network level.

*Whole Network Analysis.* Three measures of cohesion — density, fragmentation,
and centralization — were used to describe the Project CYMH 'network typography'
(Carolan, 2013). These measures permit a better understanding for how tightly or
sparsely connected individuals are to each other (density), the extent to which pairs of
individuals are connected to each other within the network (fragmentation), and to what
degree activity within the network tends towards a central group of members (degree
centralization). Table 4 provides formal definitions for each of the complete network
measures and an explanation of what the measure reveals about the Project CYMH
network.

First, density and fragmentation scores were calculated for each network
containing all ties; the calculations were then repeated on the strong tie networks to get a
sense of the change in structure once tie strength (frequency/influence) was taken into
account. The density of the research network was then compared to the overall (all ties)
and the strong tie advice, influence, and social support networks using bootstrapped
paired samples *t*-tests in UCINet (Hanneman & Riddle, 2005). In addition, the
relationship between each of the networks was investigated using UCINet’s QAP-correlation procedure (Hanneman & Riddle, 2005).
### Table 4

**Definitions of Complete Network Measures**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Definition</th>
<th>Explanation</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Network Cohesion</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>The number of ties (relationships between pairs) in the network reported as a fraction of the total number of possible ties.</td>
<td>A density score of 1.0 means that all of the possible ties within a network are present; everyone has literally identified a connection to everyone else in the network. This measure will inform us about the degree to which members in this network are connected to each other. To maximize KMb activity, a high density score would be desirable.</td>
<td>$D = \frac{L}{N(N-1)}$</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>The proportion of mutual (reciprocal) ties in a network.</td>
<td>This measure will tell us the degree to which pairs of individuals both report a connection to each other, e.g., person A says identifies a connection with person B and vice versa. It will give us a sense as to the directionality of ties — are the majority of ties asymmetric (meaning only one person in the pair reports a relationship between the two) or are they shared (reciprocal)? Higher numbers of asymmetric ties can indicate a hierarchical structure within the network. Reciprocity is also considered to be a measure of a network’s stability as reciprocated relationships are generally more stable over time.</td>
<td>$R = \frac{(A_{ij}=1) \text{ and } (A_{ji}=1)}{(A_{ij}=1) \text{ or } (A_{ji}=1)}$</td>
</tr>
<tr>
<td>Fragmentation</td>
<td>A measure that calculates the ratio of disconnected pair to the total number of possible connected ties.</td>
<td>Fragmentation is the opposite of connectedness; thus, when a network has a high fragmentation score, it has a low level of connectedness. Resources tend to flow better in highly connected networks, so the implication of this measure is that it suggests the possibility that resource flow is neither maximized nor efficient when the network has a fragmented structure.</td>
<td>$F = 1 - \frac{\sum_{i&lt;j} r_{ij}}{n(n-1)}$</td>
</tr>
</tbody>
</table>
Network Prominence

| Degree Centralization | A structural measure that reflects the degree with which a network's relations are focused on one or a small set of actors. When results indicate a high degree of centralization in a complete network, it means that one person or a small group of individuals maintain most of the relationships within the network. The consequence in terms of knowledge mobilization practices could be that a disproportionate amount of influence is attributed to a small group of people (or to one individual). More nuanced centrality measures (closeness and betweenness centrality) will provide more insight into the consequences for KMb; these measures will be explained in the next section. |

\[
CD = \frac{\sum(D_{max} - D_{min})}{n^2 - 3n + 2}
\]

Note. Explanations are informed by Carolan (2013) and the definitions are reproduced from the chapter resources for Carolan (2013) retrieved from: http://www.sagepub.com/carolan/study/materials/KeyTerms.pdf
Degree centralization measures were calculated on the research network and on the networks of strong advice, influence and social support ties. As all networks demonstrated some degree of centralization (as explained further in chapter 4), core-periphery analyses were also conducted for each of these four datasets to determine whether or not activity within each network core centred on the same individuals across each network. These calculations concluded the whole network level analyses after which attention shifted to egocentric (individual) measures of network prominence.

_Egocentric Network Analysis._ Egocentric network data were extracted from the whole network data for the research network and the strong tie advice, influence and social support networks to provide snapshots of an individual's unique pattern of activity within the each network. By focusing on measures of centrality — identifying who appears to occupy "an important position of prestige and visibility" (Carolan, 2013, p. 155) within the network — analysis at the actor level within a complete network provides general insight on who are the important actors within a network (Prell, 2012; Scott, 2001; Wasserman & Faust, 1994). Multiple centrality measures, including degree, betweenness and closeness centrality, were used at this level of analysis; Table 5 provides formal definitions and explanations of these egocentric level measures of network prominence.
### Definitions of Egocentric Network Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Definition</th>
<th>Explanation</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree Centrality (including in-degree and out-degree)</td>
<td>The number of ties to and from ego. In-degree is the number of ties received and out-degree is the number of ties sent. Can be adapted and applied to complete network-level data analysis.</td>
<td>This is the most common centrality measure and is related to network size. It calculates the number who reported having a tie with the ego (in-degree centrality) and the people with whom the ego reported having ties (out-degree centrality). Broadly defined, centrality measures capture the degree of prominence an ego has within the network; it &quot;captures the extent to which a focal actor occupies an important position of prestige and visibility&quot; (Ibid., p. 155).</td>
<td>( C_D = \sum \frac{d_i}{N-1} )</td>
</tr>
<tr>
<td>Betweenness Centrality</td>
<td>A measure that captures how an ego actor controls or mediates the relations between pairs of actors that are not directly connected. Can be adapted and applied to complete network-level data analysis.</td>
<td>This measure indicates the degree to which the ego serves a 'gatekeeping' function. Because it measures the extent to which the ego acts as the connector between two otherwise unconnected actors, it is an important measure in determining the amount of control ego has over the exchange of resources within the network.</td>
<td>( C_B = \frac{\theta_j \theta_k}{\theta_j \pi^2 - 3\pi + 2} )</td>
</tr>
</tbody>
</table>

*Note.* Definitions are reproduced from the chapter resources for Carolan (2013) retrieved from: [http://www.sagepub.com/carolan/study/materials/KeyTerms.pdf](http://www.sagepub.com/carolan/study/materials/KeyTerms.pdf)
First, *degree centrality*, a measure of network prominence that provides an indication of the number of contacts each individual has within the network, was employed to get a general sense of individual patterns of activity. Two degree centrality scores were calculated using UCINet: 1) *outdegree centrality* (the number of ties sent by an individual), and 2) *indegree centrality* (the number of ties received by an individual). The output from these analyses provided centrality scores for each individual in the network, which identified who were the most central people within the network in terms of information seeking and provision patterns of interaction. Descriptive statistics (mean, median, standard deviation, and range) were then generated for both outdegree and indegree centrality scores, disaggregating the data by cohort and role (cohort 1, cohort 2, and program coaches) to examine patterns of interaction for each participant group represented within the network. These data facilitated further investigations of mean differences in degree centrality scores by group, which were carried out using independent samples *t*-tests in SPSS (2013).

In addition to degree centrality measures, *betweenness centrality* scores were also calculated using UCINet for each individual in an effort to determine which people facilitate relationships between other pairs of actors thereby mediating resource flow within the network. The same statistical procedures that were applied to the degree centrality findings (descriptive statistics, mean comparisons) were also carried out using the betweenness data.

**Analysis of Attribute Variables.** Responses to the attribute questions yielded a combination of nominal, ordinal and scale data. The intent in the collection of this data was to provide a richer description of the participants in the Project CYMH program. As
such, appropriate descriptive analyses were selected based on the type of data yielded by each question in the second section of the survey. These procedures are described below.

Six indexes were used in the collection of attribute data, as was the case in the original Belkhodja et al. (2007) study. Crohnbach's alpha coefficients were calculated for each scale to test internal reliability of the items, and sub-items were summed to create composite scores for each variables. Table 6 provides definitions of each variable, the number of sub-items in each scale and the reliability coefficients, as well as the range for sum scores used in the creation of the composite variables.

Table 6

<table>
<thead>
<tr>
<th>Variable</th>
<th># sub-items</th>
<th>Crohnbach’s $\alpha$</th>
<th>Composite Score Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Use</td>
<td>7</td>
<td>.88</td>
<td>7 - 35</td>
</tr>
<tr>
<td>Intensity of Research Use</td>
<td>4</td>
<td>.75</td>
<td>4 - 20</td>
</tr>
<tr>
<td>Linkage Mechanisms</td>
<td>8</td>
<td>.81</td>
<td>8 – 40</td>
</tr>
<tr>
<td>Research Experience$^a$</td>
<td>6</td>
<td>.69</td>
<td>0 - 7</td>
</tr>
<tr>
<td>Relational Capital</td>
<td>5</td>
<td>.78</td>
<td>5 - 25</td>
</tr>
<tr>
<td>Relevance of Research</td>
<td>2</td>
<td>.74</td>
<td>2 - 10</td>
</tr>
</tbody>
</table>

$^a$ The experience in research subscale contained seven items; however, this scale was reduced to six items to improve internal reliability.

In addition to these six composite variables, there were six additional attribute variables included. Descriptive statistics (means, standard deviations, maximums, minimums) were generated for the coaches and Mental Health Leaders as separate groups for three variables: percentage of work time allocated to research, experience in child and youth mental health in school settings, and experience in child and youth
mental health overall. Two binary variables, ‘Research Culture’ (research is a preferred source of information), and ‘Training/Learning Activities’ (activities integrate research results) were used. If a respondent selected ‘often’ or ‘very often’ in response to the question prompt, their answer was recorded as ‘yes’ (1); all other answers were recorded as ‘no’ (0). Lastly, crosstabulations of highest degree obtained by role and cohort within the Project CYMH program were also conducted.

**Phase II: Understanding Network Influences on Knowledge Mobilization Activity**

The data collected in this stage of the study were used to elucidate the ways in which the patterns of interaction within Project CYMH may facilitate or constrain school district Mental Health Leaders’ capacity to find, understand, share and apply research-based knowledge in support of their school district mental health strategies. The intention was to look for any potential relationships between the reported structure of the Project CYMH networks and Mental Health Leaders' abilities to access and use research-based knowledge in their policy development work. Furthermore, these qualitative data help to contextualize the results of the structural analysis of the network, providing insights into why certain network features have come into being and what implications there may be for knowledge mobilization.

**Participants.** Two groups of participants were invited to participate in the second phase of this study: coaches and school district Mental Health Leads. Individuals did not receive formal invitation letter to participate in phase two data collection as the original invitation to participate distributed initially described the second phase of the study as well. I sent emails to the perspective interviewees signaling that they had been selected participate in phase two of the research (Appendix E), directing them to review the study’s initial invitation, which I attached to the email for their convenience.
Overall, the final sample for phase two of data collection contained eleven individuals. All coaches (N = 5) were invited to participate in the interviews for two reasons: 1) there is a very small number from which to sample, so I opted to include them all; and, 2) structural analyses across all networks suggested that the program coaches were key participants in every network based on degree centrality scores. All coaches agreed to participate in the interviews.

School district Mental Health Leads were also invited to participate in the interviews. Participant selection was based on individual outdegree and indegree centrality scores within the research network. These individual scores were sorted into four categories: high outdegree centrality, low outdegree centrality, high indegree centrality, and low indegree centrality. Individuals with the two highest and two lowest scores in each of these categories were invited to participate. In cases where many people possessed the same score (e.g., low outdegree and low indegree centrality score categories), the names of the invitees were randomly selected from a hat. Alternate names for each person were also selected (where possible) should the original invitee refuse participation. A final deadline for interview completion was set for June 30, 2014.

The achieved Mental Health Lead interview sample consisted of six MHLs, representing the following groups: high outdegree scores (n = 2), high indegree scores (n = 2), and low indegree scores (n = 2). Those individuals with low outdegree scores are unrepresented in this sample despite a total of four individuals having been invited to participate. Of the initial invitations, one Mental Health Leader accepted; however, despite multiple attempts to schedule the interview, it was not completed prior to the deadline. The second initial invitee declined participation. Two alternate people were invited to participate in lieu, but neither individual responded to multiple requests for an
interview. The lack of representation of individuals with low outdegree scores in phase two of the study limited my ability to probe these participants for information about why they were not active in seeking out research knowledge from their Project CYMH colleagues. Consequently, it was difficult to ascertain the reasons as to why some individuals patterns of interaction are very limited within this dimension of the network.

It is also important to note that, although not by deliberate design, both cohorts of Mental Health Leaders are represented in the sample. Half of the sample are Cohort 1 Mental Health Leaders representing 20% of the Cohort 1 school districts ($n = 3/15$). Similarly, the other half of the sample is made up of Cohort 2 Mental Health Leaders, again representing 20% of the Cohort 2 school districts ($n = 3/15$). Individual degree centrality scores led to two cohort 1 MHLs being identified for high indegree, two cohort 2 MHLs for high outdegree, and one from each cohort in the low indegree category.

Table 7 summarizes the sample of Mental Health Leaders represented in phase two of this study.

Table 7
Overview of Phase 2 Mental Health Leader Participants

<table>
<thead>
<tr>
<th>Centrality Type</th>
<th>High Score</th>
<th>Low Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdegree</td>
<td>#28 – Cohort 2</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>#36 – Cohort 2</td>
<td></td>
</tr>
<tr>
<td>Indegree</td>
<td>#31 – Cohort 1</td>
<td>#11 – Cohort 2</td>
</tr>
<tr>
<td></td>
<td>#34 – Cohort 1</td>
<td>#33 – Cohort 1</td>
</tr>
</tbody>
</table>
Data collection. Data was collected through semi-structured interviews that ranged from 30-75 minutes in length; participants were interviewed only once and were given a second $10 coffee shop gift card in appreciation of their time. All interviews with Mental Health Leads and one coach interview were conducted over the phone given the wide geographic region represented in the sample, while the remaining four coaches were interviewed in person given that most coaches were located within driving distance of the University of Toronto. All interviews were recorded and, in most cases, transcribed verbatim for use in data analysis. Three sets of interviews were conducted: coach interviews, Mental Health Lead interviews, and a preliminary interview with the program director (who also acted as a coach in the early years of the program). The interview protocols used in each of these sets of interviews are detailed below.

Director. An initial, formal interview was conducted with the program director in January 2014 with the intention of gaining a better understanding of the Project CYMH program. The interview consisted of ten questions which covered topics such as the program’s purpose, who was involved in its design and implementation, funding, relationship with the Ministry of Education, affiliated mental health organizations, and program evaluation (Appendix F). In addition, I queried the director’s perspective on the intended nature of relationships between coaches and Mental Health Leads and the role of research-based knowledge in the program.

Coaches. These interviews were guided by an interview protocol that contained eight questions (Appendix 'G'); participants did not receive the protocol prior to the

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16 A technical difficulty was encountered with one interview conducted over the internet using Skype. The Skype recording program failed; thus, I had to rely on taking notes immediately after the interview when the malfunction occurred.

17 I say ‘formal interview’ here because, in fact, I had had a few informal conversations with the director during which I gained much insight into the program. The intention with this interview was to formalize the process and focus on getting a detailed explanation of the program.
interview. The interview questions were informed by other qualitative studies investigating research use (e.g., Daly, Finnigan & Che, 2013), but they did not replicate any existing interview protocol. I designed the questions to illicit information about the ways in which the coaches understood and acted out their role as an intermediary agent, enabling Mental Health Leaders to become aware of and to access various bodies of research-based knowledge for use in their district’s mental health strategy development. Coaches were asked about what types of research knowledge they thought were most pertinent to their work and to provide examples of instances where they shared or discussed research findings with others in the group. In addition, they were asked questions about their perceptions of the communication patterns within the program overall, as well as the nature of their relationships with the people with whom they interact most/least frequently. The intention here was not only to gain further insights into the general patterns of interaction within Project CYMH, but also to triangulate the relational data obtained during phase one of the study.

**Mental Health Leaders.** This interview protocol contained fifteen questions that were informed by protocols used in other educational administration studies that employed a social network framework (e.g., Daly & Finnigan, 2010; Finnigan, Daly & Che, 2013) (see Appendix H). The questions were divided into four sections: introduction, advice, information, and influence. I began the interviews by asking respondents a series of four questions that queried how they obtained their position as a district Mental Health Leader, details of their work history, where their board was situated in terms of developing its mental health strategy, and their overall level of satisfaction with the Project CYMH program. From there, I turned to asking each individual about their advice seeking behaviours using four questions that sought out
details on the challenges that prompted each person to seek advice, to whom they turned for advice within the program as well as outside the program, and whether or not the advice that they were given was related to research knowledge in any way. Similarly, I queried respondents about from whom they received information and why they turned to these individuals over others, which types of information was most useful to their work, to what extent research-based knowledge was used in their work, and what role they played in sharing research-based knowledge within their individual school districts. The interview concluded with a question about the level of influence their interactions within the Project CYMH program had on their ability to find and use research in their board’s strategy development. These questions were intended to deepen my understanding of the conditions under which individuals sought out social resources to aid them in their work, in particular as these interactions related to their awareness of and access to research-based knowledge, as well as to triangulate data obtained from the survey.

**Data analysis.** To prepare for data analysis, the complete transcripts were summarized into summary tables that contained passages that pertained to the research questions guiding this study. As such, the tables included a section for statements that addressed the quantity and quality of interactions among participants in the Project CYMH program, the influence of the program participants' abilities to find, understand, share, and use research-based knowledge in their practice, as well as space for any other additional/important information that did not speak directly to the interaction patterns or influence categories. The summary tables for the Mental Health Leader interviews also contained a section where comments about the development of the district mental health strategy were recorded. Participants were provided with a copy of the summary tables
for review (member-checking) prior to the start of data analysis,\textsuperscript{18} a sample of a completed summary table is provided in appendix I. There were no requests for substantial changes to the summary tables. Requests were limited to not citing the use of someone’s name in the report and corrections of any spelling or grammar errors.

The constant comparative method (CCM) of qualitative data analysis was applied to analyse the summary tables (Glaser & Strauss, 1967; Corbin & Strauss, 2008). I followed Boeije's (2002) step-by-step approach to developing the CCM procedure, resulting in comparisons made at three levels: 1) within a single interview of an identified group (e.g., coaches, high outdegree MHLs); 2) between interviews within the same group; and, 3) between interviews from different groups. An overview of the complete approach is provided in Table 8. Coaches were identified as one group, representing the Project CYMH program staff and Mental Health Leaders were grouped based on their research network degree centrality scores (as outlined in the phase two sample section of this chapter). Because of the exploratory nature of this study, the constant comparative method is the most appropriate for the inductive analysis of this qualitative data.

\textsuperscript{18} The complete transcripts were quite lengthy averaging 16-18 pages; thus, to lighten the load of the request for member-checking, the summary tables, which averaged 3-4 pages, were provided to the phase two participants instead.
### Table 8

**Detailed Outline of Step-by-Step CCM Procedure**

<table>
<thead>
<tr>
<th>Type of comparison</th>
<th>Analysis Activities</th>
<th>Aim</th>
<th>Questions</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Comparison within a single interview</td>
<td>Open coding: summarizing core of the interview; finding consensus on interpretation of fragments</td>
<td>Develop categories understanding</td>
<td>What is the core message of the interview? How are different fragments related? Is the interview consistent? Are there contradictions? What do fragments with the same code have in common?</td>
<td>Summary of the interview; provisional codes (code tree); conceptual profile; extended memos</td>
</tr>
<tr>
<td>2. Comparison between interviews within the same group that is persons who share the same position within the network</td>
<td>Axial coding: formulating criteria for comparing interviews; hypothesizing about patterns and types</td>
<td>Conceptualization of the subject Produce a typology</td>
<td>Is A talking about the same as B? What do both interviews reveal about the category? What combination of concepts occur? What interpretations exist for this? What are similarities and differences between interviews A, B, C...? What criteria underlie this comparison?</td>
<td>Expansion of code words until all relevant themes are covered; Descriptions of concepts; Criteria for comparing interviews; Clusters of interviews (typology)</td>
</tr>
<tr>
<td>3. Comparisons of interviews between groups that is person who share different positions within the network</td>
<td>Triangulating data sources. Complete the picture; enrich the information</td>
<td></td>
<td>What does group 1 say about certain themes and what does group 2 have to say about the same themes? What themes appear in group 1 but not in group 2 and vice versa? Why do they see things differently? What nuances, details or new information does group 2 supply about group 1?</td>
<td>Verification of provisional knowledge from group 1; Additional information; Memos.</td>
</tr>
</tbody>
</table>

(Adapted from Boeije, 2002)
I began analysis by selecting one interview (high outdegree, MHL #28) and carrying out 'open coding' (Corbin & Strauss, 2008) - inductively developing categories through data fragmentation (Boeije, 2002) to facilitate initial understanding and identification of emerging patterns in the data. Upon completion of this initial coding, I created an memo that summarized the interview and created an initial 'coding tree' (Boeije, 2002). I also began to journal my thoughts and ideas that emerged as part of this analysis (Corbin & Strauss, 2008). This process was repeated for the other interview within the same group (high outdegree, MHL #36). Later stages of analysis included 'axial coding' (Corbin & Strauss, 2008) where the goal was to build my understanding of the characteristics and conditions of each category that facilitated comparison across categories that emerged from the data throughout the CCM process. The findings for these two phases are presented in chapters four and five.
Chapter 4: Patterns of Interaction within Project Child and Youth Mental Health

In this chapter, I present the findings to the first subsidiary research question: "What are the patterns of interaction among participants in the Project CYMH program?" These findings describe the network structure of each of the four relations queried in this study: research-based knowledge (referred to simply as the ‘research’ from this point forward), advice, influence, and social support. I start by describing the professional profiles of the individual actors in the network by presenting the findings to the questions in Part B of the survey. As described in chapter three, I investigated whether or not these characteristics were positively or negatively related to centrality scores generated during the network analyses. Following the presentation of these findings, I move on to the social network findings, which focus initially on presenting the quantity of ties in each network. I use density, fragmentation, and centralization measures to examine network cohesion and I use degree centrality and betweenness centrality measures to investigate who are prominent people within the Project CYMH network. From there, I move on to describe the quality of these ties through a further examination of tie frequency, reciprocity and multiplexity. Where relevant, I present both quantitative and qualitative findings throughout the chapter. I conclude with a summary of these findings, highlighting where patterns of interaction converge and diverge across the networks.

Professional Profile Characteristics of Network Actors

Participants were also asked a series of questions to help build a professional profile relating to research use in their own practice as well as in their individual district contexts more broadly. These questions were based on an existing large-scale study on the organizational determinants of research use in Canadian healthcare institutions (Belkhodja et al., 2007). Consistent with this study, these attribute questions were grouped into five categories: research
use, learning, organizational culture, linkage mechanisms, and relational capital. A summary of these findings as they were used to understand individual participant characteristics is included in this chapter. The complete findings (data tables) for each attribute variable are provided in Appendix J.

**Research Use.** Replicating the original survey, respondents were asked to rank their level of engagement for each stage of research utilization on a scale where ‘1 = never’ and ‘5 = very often.’ Research use composite scores ranged between 23-35 with Mental Health Leaders averaging 30.35 ($SD = 3.33$) and coaches possessing a slightly higher average score of 32.6 ($SD = 5.37$) These scores suggest that all members of the Project CYMH program report high levels of use across each stage in the research use scale.

**Learning Variables.** Five variables were grouped under the heading "Learning" (Belkhodja et al., 2007): users' experience in the research process, relevance of research to the user, training (professional development) activities which integrate research results, percentage of respondents' time allocated to research activities, and the most advanced university degree completed.\(^{19}\) For each scale, a composite variable was created by summing the responses within the scale to provide a single score.

Respondents reported having various levels of experience with different stages of the research process. Most participants have collected data for a research project, but very few have been the principal or co-investigator leading a study. For the most part, individuals have the most involvement in outcomes, evaluation or quality assurance projects. Composite score

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\(^{19}\) Details on the highest level of education obtained are included earlier in this chapter in the "Individuals" section; thus, it will not be reviewed again here.
comparisons suggest very similar overall levels of research experience between Mental Health Leaders (\(M = 9.03, SD = 1.62\)) and coaches (\(M = 9, SD = 2.83\)).

Project CYMH participants generally agree that current research-based knowledge is both relevant and meets the needs and expectations of professional practice. All MHLs and coaches agreed (29%) or strongly agreed (71%) that current research-based knowledge is pertinent to their professional practice (missing \(n = 1\)). Similarly, the majority of Mental Health Leaders (87%) and all coaches also agreed or strongly agreed that research-based knowledge meets their needs and expectations. That said, 13% of Mental Health Leaders disagreed with this statement.

On average, Mental Health Leaders reported spending approximately 39% of their time (\(SD = 25.28\)) with a range of 3-90% of time spent on research-related activities. Coaches reported a slightly higher average of 47% of their time (\(SD = 37.01\)), with reports ranging from 5-100%.

All respondents indicated that their workplaces arranged for professional development and training activities that incorporated research-based knowledge. Almost half of the Mental Health Leaders stated that their school districts’ professional development activities ‘often’ (35%) or ‘almost always’ (10%) incorporated research-based knowledge. A further 45% indicated that research knowledge was ‘sometimes’ incorporated into PD activities while 10% said that it was ‘rarely’ incorporated. Most coaches (60%) took the stance that research-based knowledge was ‘sometimes’ incorporated into training activities in their work environments, with 20% saying that this rarely occurred with another 20% saying that it was often a part of professional development.

**Organizational Culture.** Two variables explored the organizational culture of participants’ professional work settings. First, the survey asked respondents to rate the intensity
of use of research-based sources of information on a scale ranging from ‘1 = never’ to ‘5 = very often.’ Mental Health Leaders averaged a slightly higher intensity of research use ($M = 16, \ SD = 3.6$) than coaches ($M = 15.2, \ SD = 3.35$).

Secondly, respondents were asked to complete a sentence indicating the degree to which research-based knowledge is a preferred source of information within their fields of practice. Mental Health Leaders rated the preference for research-based knowledge more highly than coaches, with 36% selecting "sometimes" (n=11), 32% choosing "often" (n=10) and 26% selecting "almost always" (n=8) in response to the question. Only one MHL (3%) selected "rarely" and another (3%) chose "never." Eighty percent of the Project CYMH program staff, on the other hand, indicated that research-based knowledge was "rarely" (n=2, 40%) or "sometimes" (n=2, 40%) a preferred source of information, with one program staff member indicating that it was "almost always" (n=1, 20%) a preferred sources of information.

**Linkage Mechanisms.** Participants were asked a question that asked them to assess the importance of various types of mechanisms that are frequently used to link potential users with research-based knowledge using a scale ranging from '1 = not at all important' to ‘5 = extremely important.’ There was little difference in composite scores on this measure between Mental Health Leaders ($M = 32.65, \ SD = 4.26$) and coaches ($M = 31, \ SD = 4.12$). It appears that in most cases, these various opportunities to connect research and practice are considered by both groups to be important.

**Relational Capital.** Participants in this study reported relatively modest levels of interaction with researchers, regardless of the where the researchers came from. Mental Health Leaders’ composite scores averaged 12.0 ($SD = 3.03$) while the coaches’ average was slightly higher at 13.8 ($SD = 6.54$). The most frequently reported interaction among Mental Health
Leaders was with school district researchers followed by university researchers. In most cases, however, Mental Health Leaders reported infrequent interaction with researchers. The coaches reported higher levels of contact with researchers; however, less than half of these individuals reported frequent contact. Researchers from private firms were the least likely group of researchers to have contact with this study’s participants.

**Summary of professional profile characteristics.** All participants reported high levels of research use with coaches reporting slightly higher levels of use than Mental Health Leaders. Coaches and MHLs reported similar levels of research experience. All participants, regardless of role in the network, (strongly) agreed that research knowledge is both relevant and meets the needs and expectations of their professional practice. While coaches spend more of their time on research activities than MHLs, there is wide variation within each group. Both coaches and MHLs most frequently indicated that research knowledge was ‘sometimes’ or ‘often’ incorporated into professional development opportunities. MHLs reported slightly higher intensity of research use within their organizational settings, and also rated the preference for research-based knowledge more highly than coaches. Both groups considered opportunities to connect with research knowledge through a variety of linkage mechanisms to be important. Lastly, coaches reported higher levels of contact with researchers (although there was variation within this group) while MHLs reported infrequent interactions with researchers regardless of where they were from.

**Quantity of Ties**

I have used two distinct groups of measures to investigate the quantity of ties within the Project CYMH networks. I begin with network cohesion, presenting the findings from three measures: density, reciprocity, and fragmentation. From there, I present the findings from the
network prominence measures, which focus on two types of network centrality: degree and betweenness.

**Network cohesion.** Recall from the previous chapter that *density* \((D)\) is a ratio representing the number of actual ties present to the total number of possible ties within a network (Scott, 2001; Wasserman & Faust, 1994). Because I use a bounded, saturated approach to network specification in this study (Carolan, 2013; Laumann et al., 1983), the size of the network is consistent across all networks regardless of the type of relationship, which will allow for just comparisons of cohesion across the networks (Kadushin, 2012; Prell, 2012). Given that there are 37 individuals involved with the program, the Project CYMH network size is 37 (15 Cohort 1 MHLs + 16 Cohort 2 MHLs + 6 program staff); thus, the total number of possible ties in a network of this size is 1332.\(^{20}\) As such, the density measures represent the proportion of ties present out of a maximum number of 1332 ties. It is important to remember that the data collection instruments employed in this study asked respondents to report on their patterns of interaction during times between the formally scheduled Project CYMH activities; it must kept in mind that these results do not report on those interactions that take place during the times between the formally scheduled Project CYMH activities.

The research network is the most populated network \((D = 9.5\%)\), yet only about one of every possible ten ties is present. This means that for every set of ten possible relationships between people in the network, only one relationship is actually present. Thus, there is opportunity for many more informal connections to be made within this network. The advice \((D = 8.3\%)\), influence \((D = 8.8\%)\), and social support \((D = 8\%)\) networks show similar results with less than one out of every ten possible ties being present in each. Density comparisons

\[^{20}\text{The formula for determining the maximum number of ties within a network is } N (N-1).\]
conducted using bootstrap paired-sample $t$-tests in UCINet 6 reveal significant mean differences between the levels of activity in the instrumental networks (research, advice, and influence) and the expressive network (social support), but there are no significant mean differences when the densities of the instrumental networks are compared to each other (see Table 9 for $t$-test results). Thus, although the differences in network activity between the research, advice, and influence networks could be observed by chance, the differences in density between the social support network and each of the research, advice, and influence networks indicate that there are significantly fewer social support (expressive) ties in each of these comparisons. The lack of expressive ties within the overall Project CYMH network is concerning given that previous research has suggested that networks that are dense in expressive ties (i.e., social support) create the conditions necessary for the exchange of complex information (Daly & Finnigan, 2010). That said, it is not possible to claim whether these results are ‘good’ or ‘bad’ given the unique nature of the group and the lack of longitudinal data that would facilitate more accurate comparisons over time. However, in comparison with other network studies in education that consider similar social resources, it is not uncommon to find sparsely populated informal networks (e.g., Finnigan, Daly & Che, 2013; Finnigan & Daly, 2012), such as those defined here in the Project CYMH network.
Fragmentation \((F)\) is another measure of network cohesion and can be interpreted as the inverse of connectedness (Borgatti, 2006; Borgatti, Everett & Johnson, 2013). In a fully connected network, the fragmentation score would be zero, meaning that each network member could access the resources available to them via their colleagues. However, in a fragmented network, this fact does not hold. Think of it this way: imagine that each person in a network represents a destination, and the pattern of interaction within the group sets out a number of paths that connects individuals with one another. In a fully connected network, there is at least one path that will connect a person with every other individual in the network. It may be a short or long path, but one can always reach every possible ‘destination.’ In a fragmented network, there may be some people within the network from whom one cannot benefit because, based on the current configuration of paths, there are no paths that connect some individuals with others; they cannot reach all of the destinations.

Fragmentation analyses on the Project CYMH network reveal that it is fragmented along each relational dimension. The research \((F = .74)\) and advice \((F = .75)\) are the most highly fragmented networks; and, although considerably less so, the influence \((F = .58)\) and social support \((F = .53)\) networks are also fragmented. Thus, in each of these networks, there are many

<table>
<thead>
<tr>
<th>Compared Network Densities</th>
<th>(t)</th>
<th>(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research &amp; Advice</td>
<td>0.641</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Research &amp; Influence</td>
<td>0.425</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Research &amp; Social Support</td>
<td>3.807*</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>Advice &amp; Influence</td>
<td>-0.311</td>
<td>&gt;.05</td>
</tr>
<tr>
<td>Advice &amp; Social Support</td>
<td>3.833*</td>
<td>=.001</td>
</tr>
<tr>
<td>Influence &amp; Social Support</td>
<td>3.209*</td>
<td>&lt;.01</td>
</tr>
</tbody>
</table>

\*Significant mean differences, \(p < .01\) or less.
individuals who are not able to benefit from the resources available to them from their colleagues based on the identified patterns of interaction.

*Centralization (CD)*, was employed as a final measure of network cohesion. Network centralization is a whole network level measure that provides insight into the degree to which the overall patterns of activity within the networks focus on a particular group of individuals (see chapter 3, p. 76 to review). Recall that a completely centralized network takes the shape of a star where all of the connections within a network are facilitated by the individual (or set of individuals) in the middle. When directed data is collected for a network, as it is in this study, centralization can be evaluated based on outdegree and indegree. The outdegree centralization score suggests whether or not the *resource seeking* behaviour within a network tends towards this star-shaped structure; similarly, the indegree centralization score implies the degree that the *resource provision* activity focuses on a select group of actors.

Each dimension of the Project CYMH network shows a tendency towards centralization, particularly within the patterns of incoming ties in the research (*CD*\textsubscript{In} = 44.4\%) and influence networks (*CD*\textsubscript{In} = 59.4\%). In each of these networks, these centralization scores imply that approaching half of the research-based interactions within the group (and more than half of the influence-based interactions) are organized around particular people within Project CYMH thereby suggesting a hierarchical structure within the network (Carolan, 2013; Prell, 2012). Although to a lesser extent, results for the advice (*CD*\textsubscript{In} = 25.7\%) and social support (*CD*\textsubscript{In} = 20.4\%) networks also indicate a tendency towards centralized structures. The consequence of this network structure is that some individuals wield a greater amount of power within these networks, especially in terms of who provides the resources within each network. Similarly, the patterns of outgoing ties, or who is seeking out resources, also indicated centralized activity, but
to a much lesser degree (see Table 10 for a summary table of cohesion findings). These findings will be further explored later on in this chapter in the section on network prominence where core-periphery analyses will identify who are central figures within the network as well as those who sit on the periphery. In the meantime, these findings collectively suggest that along all four relations, the Project CYMH network lacks cohesion and is therefore susceptible to dissolution, particularly should some central members have to leave.

Table 10

*Summary Table of Network Cohesion Measures*

<table>
<thead>
<tr>
<th>Network</th>
<th>( D )</th>
<th>( F )</th>
<th>( CD_{\text{Out}} )</th>
<th>( CD_{\text{In}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>.095</td>
<td>.74</td>
<td>13%</td>
<td>44.4%</td>
</tr>
<tr>
<td>Advice</td>
<td>.083</td>
<td>.75</td>
<td>20%</td>
<td>25.7%</td>
</tr>
<tr>
<td>Influence</td>
<td>.089</td>
<td>.58</td>
<td>28%</td>
<td>59.4%</td>
</tr>
<tr>
<td>Social Support</td>
<td>.08</td>
<td>.53</td>
<td>20.4%</td>
<td>20.4%</td>
</tr>
</tbody>
</table>

As described thus far, these patterns of interaction are based strictly on analyses of the phase one survey data; phase two interview data provide details as to why the research network structure may lack the levels of cohesion possessed by the others. Mental Health Leaders were provided with the opportunity during the interviews to talk about the ways in which Project CYMH connected them with research-based knowledge as well as any sources outside the group. In general, the MHLs cited Project CYMH as a “key source of research-based knowledge” (#31). All of the MHLs interviewed cited Project CYMH staff as the predominant source of research knowledge — only in one case did a Mental Health Leader identify another MHL as someone from whom she receives research-based information. One Mental Health Leader echoed other MHL comments describing Project CYMH as providers of research knowledge saying that, “It’s
responsible for pointing school boards [districts] in the right direction. School mental health is a very unique niche of mental health services for children and youth. So, as such, I don’t have the corner on the market on what the research of school mental health applications is and they’ve been the conduit to that and that’s been very valuable” (#33).

Furthermore, MHLs most often describe research-based information as coming from Project CYMH during the formal meetings where all participants come together. One MHL suggests that all of the work within Project CYMH is conducted within the context of evidence-based practice, which heavily includes the presence of research-based materials: “All of our handouts about implementation science and our consideration of things that we would implement at each level, it’s a constant reference to what the evidence says. Why are we doing this, what the evidence says? That’s very, very strong. What not to do and what to do” (#34). Although references to research knowledge as a common feature of learning opportunities within the formal program structure were the most prevalent, there were two other specific instances recounted during the interviews where programs staff provided research-based information to support school district responses to issues such as death by suicide.

Coaches also spoke of their Project CYMH colleagues as being key sources of research-based information in addition to what they consider to be part of their regular process. One coach identifies three other program staff as sources of research-based information, describing the materials as “a mixture of stuff” (#16) including clinical research as well as research from implementation science (research that focuses on best practices in the implementation of policy and programs). Coaches reported sources outside of the Project CYMH program more often

21 See the National Implementation Research Network (NIRN) website as an example of the types of implementation science research that informs the practice of Project CYMH. NIRN was identified by Project CYMH’s director as an influential information source in the design and implementation of the program.
than Mental Health Leaders. This group of participants spoke about awareness and access to research materials through other professional contacts in the field, attending professional conferences, having access to scholarly literature through university affiliations, and using strategies such as Google Alerts and email journal updates. Interestingly, one coach (prominent across all dimensions of the network) also identified Mental Health Leaders as being sources of research-based knowledge. He said, “[Mental Health Leaders bring in research-based materials] all the time. They either bring stuff they ask about, ‘what do you think of this program? I came across this. I found this? Here’s an article about resilience, what do you think about this stuff?’ Yeah, [MHLs] like that kind of stuff” (#3). Thus, unlike Mental Health Leaders who were much more likely to report colleagues (typically coaches) as sources of research-based knowledge with fewer references to external sources, coaches appear to have a broader range of influences on the types of research-based knowledge they bring to the Project CYMH program.

The quantitative findings relating to network cohesion suggest there is a low level of activity occurring within the research network; people are making less than 10% of all possible connections across the group outside of formal program events on a frequent basis. From a social network perspective, this could represent many missed opportunities for program participants to access the research-based knowledge resources of their peers, or rather a network constraint on knowledge mobilization activity. However, interview comments emphasize the formal structure of the program as an important conduit for research-based knowledge. In particular, the importance of the regularly scheduled program meetings where the entire group comes together for professional learning and development, processes which include research-based materials and dedicated time for people to interact with each other, appear to be the main access point to research knowledge.
Furthermore, an important contextual feature not yet introduced is that the Mental Health Leader position is a new role that is tied to a school district’s participation in the Project CYMH program. Until the program rolled out province-wide in September 2013, this position was unique to some school districts, and in some cases, the Mental Health Leader was a mental health professional who had little experience working within school systems. As such, the position was often perceived as somewhat isolating, given that there was no one else in the school district that had experience carrying out this kind of work. It seems that research-based knowledge, in this context, is viewed as an instrumental resource that is provided by Project CYMH through its formally organized events rather than through informal interactions that occur outside whole-group activities. It appears that formal interactions are perceived as the dominant contexts for research knowledge exchange, which would account for the low levels of individual, actor-initiated activity within this group along the research dimension, and thus, the seemingly low levels of network cohesion based on quantitative data.

Network Prominence. In addition to network cohesion, I used measures of network prominence to further elaborate upon the network structures. Specifically, I employed *centrality measures* to “capture the extent to which a focal actor occupies an important position of prestige and visibility” (Carolan, 2013, p. 155). There are two different centrality measures used in this study, degree centrality and betweenness centrality, and each of these centrality measures yields a different perspective on who are the most prominent actors within each network (see chapter 2, p. 46-50, for a full description), and each measure will be appropriately introduced at the beginning of its related subsection. This section focuses on degree centrality, which is used to quantify the number of ties to and from individuals within the network (Carolan, 2013). I also
used the professional profile attribute data to investigate whether or not there is a relationship between professional profile characteristics and structural locations within each of the networks.

I begin by focusing on the patterns of central tendency across the networks using degree centrality measures, specifically comparing the descriptive statistics for measures of outdegree centrality and indegree centrality for each of the four networks. Theoretically, because the average number of ties sent equals the same number of ties received, the mean numbers of ties for both outdegree and indegree are the same when considering the network activity overall (everyone as one group). Thus, to get a better sense of the patterns of interaction among and between the groups of individuals who make up the Project CYMH program (cohort 1 and cohort 2 Mental Health Leaders, and coaches) the data are disaggregated, compared and presented for each of these groups as well. I present the patterns of outgoing ties separately from the patterns of incoming ties for each network to ensure clarity in the presentation of the findings. Once the patterns of outgoing/incoming ties have been described and compared, I briefly revisit each network’s degree centralization scores as an introduction to the results of core-periphery analyses, which help further identify which people are the most central figures within the Project CYMH program.

**Patterns of outgoing ties.** The outdegree centrality measure assesses the number of times that people within the Project CYMH group are reaching out to their colleagues in search of a particular resource (in this case, research, advice, influence, or social support). The means

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22 As explained in chapter 3, I used normalized centrality scores in these analyses to facilitate possible future comparisons with other studies. These numbers should not be interpreted as raw counts of the number of times actors are reaching out to each other.

23 For example, if an average of 3 ties are being sent out within the group overall (outdegree), then an average of 3 ties are going to be reported as being received (indegree); thus, the mean number of ties will be the same for both the overall outdegree and indegree measures. This is not the case when we consider the data by role (Mental Health Lead or program staff) where the average number of ties sent will not necessarily equal the same average number of incoming ties.
and standard deviations for outdegree centrality scores for the coaches and for Mental Health Leaders as one group as well as by cohort are presented for each network in Table 11.

Table 11

*Descriptive Statistics for the Distribution of Normalized Outdegree Centrality Scores by Role*

<table>
<thead>
<tr>
<th>Network</th>
<th>MC\text{Coach}</th>
<th>SD\text{Coach}</th>
<th>M\text{MHL}</th>
<th>SD\text{MHL}</th>
<th>MC\text{C1}</th>
<th>SD\text{C1}</th>
<th>MC\text{C2}</th>
<th>SD\text{C2}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advice</td>
<td>5.02</td>
<td>4.12</td>
<td>9.15</td>
<td>7.17</td>
<td>7.42</td>
<td>6.44</td>
<td>10.76</td>
<td>7.64</td>
</tr>
<tr>
<td>Influence</td>
<td>8.9</td>
<td>6.34</td>
<td>9.14</td>
<td>6.91</td>
<td>7.41</td>
<td>4.87</td>
<td>10.77</td>
<td>8.22</td>
</tr>
<tr>
<td>Social Support</td>
<td>7.24</td>
<td>5.03</td>
<td>8.34</td>
<td>6.76</td>
<td>9.26</td>
<td>7.25</td>
<td>7.48</td>
<td>6.38</td>
</tr>
</tbody>
</table>

*Note.* Coaches N = 5; Mental Health Leaders (overall): N = 31; Cohort 1 MHLs: N=15; Cohort 2 MHLs: N=16.

There appears to be little difference between the resource seeking activity of coaches and MHLs. Overall, coaches have lower average outdegree centrality scores than MHLs; however, independent samples *t*-tests yielded no statistically significant mean differences between groups.

Mean comparisons were also conducted within the group of Mental Health Leaders, looking for statistically significant mean differences between Cohort 1 (n = 15) and Cohort 2 (n = 16) Mental Health Leaders. Although Cohort 1 MHLs possessed higher average outdegree centrality scores in the research (\(M = 10.39, SD = 7.06\)) and social support (\(M = 9.26, SD = 7.25\)) networks, and cohort 2 MHLs had higher average scores in the advice (\(M = 10.76, SD = 7.64\)) and influence (\(M = 10.77, SD = 8.22\)) networks, independent samples *t*-tests yielded no statistically significant mean differences between cohorts in any of the four networks.

I investigated the relationship between outdegree centrality scores and professional profile characteristics to see if there were any positive or negative associations between the profile characteristics and the levels of resource seeking behaviour within any of the four
dimensions of the Project CYMH network. With the exception of the social support network where research as preferred source of information (survey question #15) is negatively associated with outdegree centrality \((r = -0.37, p < .05)\), none of the professional profile characteristics are significantly correlated with outdegree centrality in any of the networks. The complete set of correlation findings between outdegree centrality scores and professional attributes is provided in Appendix K.

Visualizations of the network maps, formally referred to as sociograms, aid in making sense of these quantitative descriptions in a visual form, helping to understand the ways in which the members of this groups are connected to each other in relation to each of the four social resources queried in this study. Figures 3, 4, 5 and 6 present the sociograms for each relational dimension of the Project CYMH network. In these illustrations, the white triangles represent the coaches, the black circles represent Cohort 1 MHLs, and the grey circles represent the Cohort 2 MHLs. The numbers beside each node (triangle/circle) are the unique identification codes assigned to each individual. The size of the shape reflects the size of the outdegree centrality score; the larger the shape, the higher the score (in other words, the bigger the shape, the more that individual was reaching out to others for that particular resource).
Figure 3. Research seeking behaviour (outdegree centrality) within the Project CYMH network.

Figure 4. Advice seeking behaviour (outdegree centrality) within the Project CYMH network.
The variety of shape sizes in the sociograms illustrate the wide range of outdegree centrality scores among the participants. It is also appears that, in the research and advice networks in particular, there are some very active MHLs from each of the cohorts (with some
similarity among the most active members across networks) and others who are not as active. The social support network identifies eleven isolates — people who have no connections — demonstrating that there are individuals within the Project CYMH network who do not reach out to anyone for support on a frequent basis. This finding further elaborates on what we learned in the previous section on network cohesion. It is known that fewer than 10% of all possible ties are present along any of the relational dimensions of the Project CYMH network, but this identification of eleven isolates within the social support network adds further concern as there is approximately one third of the Mental Health Leaders who are not at all connected with their Project CYMH colleagues in terms of seeking social support. As indicated earlier in the discussion of the network cohesion findings, this lack of expressive relations among its membership could be prohibit the development of an organizational culture that encourages the exchange of complex research knowledge. That said, it is important to note that isolates appear only in the social support dimension of the Project CYMH network, so these individuals are seeking other types of resources among their colleagues.

**Patterns of incoming ties.** The *indegree centrality* measure quantifies the number of ties an actor receives from colleagues within the network; in other words, it identifies who are the sources of a particular resource within the group. The means and standard deviations for indegree centrality scores for each network considering the coaches, the MHLs as one group overall, as well as by cohort, are presented in Table 12.
Table 12

Descriptive Statistics for the Distribution of Normalized Indegree Centrality Scores by Role

<table>
<thead>
<tr>
<th>Network</th>
<th>$M_{Coach}$</th>
<th>$SD_{Coach}$</th>
<th>$M_{MHL}$</th>
<th>$SD_{MHL}$</th>
<th>$M_{C1}$</th>
<th>$SD_{C1}$</th>
<th>$M_{C2}$</th>
<th>$SD_{C2}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>30.56</td>
<td>19.15</td>
<td>6.66</td>
<td>9.00</td>
<td>8.72</td>
<td>11.96</td>
<td>2.78</td>
<td>3.20</td>
</tr>
<tr>
<td>Advice</td>
<td>20.54</td>
<td>8.91</td>
<td>6.20</td>
<td>6.64</td>
<td>8.35</td>
<td>8.13</td>
<td>4.18</td>
<td>4.18</td>
</tr>
<tr>
<td>Influence</td>
<td>35.00</td>
<td>21.40</td>
<td>4.40</td>
<td>6.68</td>
<td>7.24</td>
<td>8.45</td>
<td>1.74</td>
<td>2.66</td>
</tr>
<tr>
<td>Social Support</td>
<td>16.68</td>
<td>8.09</td>
<td>6.28</td>
<td>6.24</td>
<td>8.89</td>
<td>7.80</td>
<td>3.83</td>
<td>2.84</td>
</tr>
</tbody>
</table>

*Note.* Coaches N = 5; Mental Health Leaders (one group): N = 31; Cohort 1 (C1) MHLs: N = 15; Cohort 2 (C2) MHLs: N = 16.

Independent samples $t$-tests were conducted and results suggest statistically significant mean differences between the coaches and MHLs (as one group) within the research network ($t (4.3) = -2.86, p < .05$), the advice network ($t (4.7) = -3.45, p < .05$), the influence network ($t (4.1) = -3.17, p < .05$), and the social support network ($t (4.8) = -2.75, p < .05$). Across all four networks, Mental Health Leaders have statistically significant fewer number of incoming ties than coaches.

Among Mental Health Leaders, cohort 1 MHLs possess higher average indegree centrality scores than cohort 2 MHLs across all networks. However, independent samples $t$-tests conducted on these data reveal that there are statistically significant mean differences between cohorts in the influence ($t (16.6) = 2.4, p < .05$) and social support ($t (17.4) = 2.37, p < .05$) networks only; there are no significant differences between cohorts in the research ($t (15.9) = 1.86, p > .05$) and advice networks ($t (20.6) = 1.78, p > .05$). Thus, where we see significant
mean differences between coaches and MHLs across all four dimensions of the Project CYMH network, it is only in the influence and social support networks where significant differences are noted between cohorts where cohort 2 MHLs have significantly few numbers of incoming ties.

In contrast to the outdegree centrality findings, indegree centrality scores demonstrate multiple positive correlations with professional profile characteristics (see also Appendix K for the complete correlation table as only significant associations are reported here). Interestingly, the same three professional characteristics — reported research use (survey question #9), experience conducting research (survey question #12), and relational capital with other researchers (survey question #13) — were positively correlated with indegree centrality for all dimensions of the Project CYMH networks. Within the research network, experience conducting research was the most strongly correlated variable \( (r = .412, p < .05) \), followed by relational capital \( (r = .396, p < .05) \) and research use \( (r = .388, p < .05) \). In the advice network, research use was most strongly correlated with indegree centrality \( (r = .459, p < .01) \), followed by relational capital \( (r = .382, p < .05) \) and research experience \( (r = .373, p < .05) \). The same pattern applies to the influence network where, like the advice network, research use was the most strongly correlated variable \( (r = .42, p < .05) \), followed by relational capital \( (r = .409, p < .05) \) and research experience \( (r = .335, p < .05) \). In the social support network, only reported research use was significantly correlated with indegree centrality \( (r = .374, p < .05) \). Although important to keep in mind that these findings do not imply causation, they do demonstrate that an individual who has higher scores on the research use, research experience, and relational capital attribute variables are likely to have a higher indegree centrality score for almost all relational dimensions of the Project CYMH network. There is a positive relationship between certain
professional attributes and the frequency with which these individuals are sought out to provide the identified resource (research, advice, influence, and social support).

Again, to help visualize the patterns of interaction in terms of who is receiving the greatest number of ties from whom, sociograms for each relational dimension are presented in Figures 7, 8, 9 and 10. However, this time around, node size is determined by indegree centrality score; the larger the shape, the more often that person was a source of research/advice/influence/social support for someone else. Like the illustrations of outgoing tie behaviour, the variety of node sizes within these network maps suggest a wide range in levels of activity within these network. Of course, the isolates identified within the patterns of outdegree tie behaviour within the social support network are present within these illustrations of incoming tie behaviour as well. These illustrations also suggest that there are some individuals who could be considered central figures in terms of resource provision within the group. For example, individual #20 (a coach) and #31 (a cohort 1 MHL) consistently emerge as prominent figures in these networks as evidenced by the large node size. Thus, these analyses strongly suggest that further analyses be undertaken to identify the most prominent individuals within the networks, as well as to probe the individual characteristics of these people in an effort to explain why they hold these structural positions. The next section of this chapter will present the findings from a closer investigation of who are the most prominent figures within the Project CYMH network.
Figure 7. Sources of research (indegree centrality) within the Project CYMH network.

Figure 8. Sources of advice (indegree centrality) within the Project CYMH network.
Figure 9. Sources of influence (indegree centrality) within the Project CYMH network.

Figure 10. Sources of social support (indegree centrality) within the Project CYMH network.
Core-periphery models. Earlier in this chapter, I reported the centralization findings for the Project CYMH network which indicated that, across all dimensions of the network, there was a tendency towards centralized behaviour to some extent. Based on these findings, I conducted core-periphery analyses for all four network dimensions, shifting the discussion of centralization to the egocentric level and identifying those people who occupy positions within the core of a network and those who sit on the periphery. This is important because the core of a network is the central intersection point for resources that move through the network, which can result in some members possessing a greater amount of influence over how the resources move within the network. Furthermore, peripheral members are often marginalized and are unable to capitalize upon the resources available because of their position in the fringes of the network.

Each network core was a different size and generally comprised of different actors (specific details on core membership are provided in Appendix L). However, not all Project CYMH participants are represented among the network cores; twenty-two of the thirty-six respondents in this study were members of at least one network core (5 coaches, 9 Cohort 1 MHLs, and 7 Cohort 2 MHLs). In fact, in most instances among these twenty-two people, individuals were core members in two or more network cores. Interestingly, of the seven instances where people belonged to only one network core, five of those cases (#9, 22, 23, 32, 34) were in the research network (the other two, # 21 and 33, were in the social support network). Three coaches (# 3, 20 and 25) and two Cohort 1 Mental Health Leaders (#29 and 31) are members of all four network cores. There were also two Cohort 2 MHLs (#4 and #14) who were core members of all networks except the research network. Cohort 1 Mental Health Leaders were majority MHL core members of the research and social support network whereas the cohort 2 MHLs tended more towards core membership in the advice and social support
networks. Overall, model fit statistics indicate that the research network (.34), the advice network (.37), and the social support network are moderately correlated with a perfectly centralized graph; the influence network shows a slightly stronger correlation (.49).

Core periphery models also provide density statistics for the levels of interaction among and between members of the core and the periphery (see Appendix L). Across all of these networks, as evidenced by the core-to-core density statistics, the preponderance of ties occur among the core members — individuals who are connecting with each other the most are members of the network core. The general pattern is that peripheral members are sometimes reaching out to core members, but it is quite rare for network core members to reach out to peripheral members within the group. It seems that in each cohort there is a particular set of people who are more active (the core) than others (the periphery). This pattern of interaction is problematic as it reduces the flow of resources and novel ideas within the network, restricting flow to core members only, virtually ignoring potential contributions of peripheral members.

**Brokerage.** Unlike degree centrality measures that count the number of direct connections a person has with another, betweenness centrality ($C_B$) focuses on who is facilitating connections between otherwise unconnected individuals within a network (Carolan, 2013; Prell, 2012; Wasserman & Faust, 1994). Hanneman and Riddle (2005) explain betweenness centrality in this way: “…the more people depend on me to make connections with other people, the more power I have. If, however, two actors are connected by more than one geodesic [shortest] path, and I am not one of them, I lose some power” (online text, Ch. 10). Thus, people with higher betweenness centrality scores have greater control over the flow of resources or knowledge within a network (Carolan, 2013). To facilitate comparisons with other network studies, I report the normalized (or standardized) betweenness scores in this section. Recall from chapter 3 that
normalized scores range between zero and one, where a maximum score of one means that an individual “falls on the geodesic (shortest) path of every pair of actors” (Carolan, 2013, p. 158) within the network.

As evidenced in Table 13, which presents the descriptive statistics for the distributions of betweenness scores for each dimension of the Project CYMH network, the normalized betweenness scores are quite low in each of these networks. Furthermore, when considering the individual scores in the distributions, the majority of participants do not lie on the paths between any pairs of people (they have betweenness centrality scores of zero) in the research (73%), influence (65%), and advice (59%) networks. Similarly, almost half of the people in the social support network (46%) had betweenness scores equaling zero. Overall, the majority of individuals within the Project CYMH network do not appear to be playing brokering roles among their colleagues.

Table 13

<table>
<thead>
<tr>
<th>Relationship</th>
<th>M</th>
<th>SD</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>.01</td>
<td>.014</td>
<td>0</td>
<td>.07</td>
</tr>
<tr>
<td>Advice</td>
<td>.01</td>
<td>.012</td>
<td>0</td>
<td>.04</td>
</tr>
<tr>
<td>Influence</td>
<td>.03</td>
<td>.053</td>
<td>0</td>
<td>.19</td>
</tr>
<tr>
<td>Social Support</td>
<td>.03</td>
<td>.049</td>
<td>0</td>
<td>.18</td>
</tr>
</tbody>
</table>

Not surprisingly, given the low scores and small ranges, there were no significant mean differences detected between the coaches and Mental Health Leaders nor between the cohorts of MHLs. However, there is some evidence that certain professional attributes are related to betweenness scores. Research use is highlighted again as being positively related with betweenness in the research ($r = .367, p < .05$) and influence networks ($r = .333, p < .05$).
Similarly, research experience is positively related to betweenness in the research ($r = .377, p < .05$) and advice networks ($r = .425, p < .01$). Betweenness scores within the social support network were positively correlated with linkage mechanisms ($r = .382, p < .05$) and professional development activities that integrate research knowledge ($r = .497, p < .01$). Unlike with indegree centrality scores, relational capital did not share a relationship with betweenness scores in any network.

**Summary of Findings: Quantity of Ties**

The findings from this study provide baseline data about the patterns of interaction along four relational dimensions of the Project CYMH network. Across all dimensions, there are low levels of informal activity among program participants, but there are significantly fewer social support ties (or expressive ties) within the network in comparison with instrumental relations, such as research and advice. The informal patterns of interactions are also highly disconnected. In general, the informal Project CYMH network is not a cohesive one, leaving it susceptible to dissolution should the initiative come to an end. All dimensions of the Project CYMH network demonstrate some degree of focus on a small set of people, particularly among the sources of research knowledge and influence. There is a hierarchical structure in the provision of research knowledge with a small group of people being turned to as ‘go to’ people for this type of information. Interview data corroborate these findings citing Project CYMH program personnel and materials provided during formal meetings as being the point of access to research knowledge. Research as a specific type of information itself does not appear to be frequently sought out explicitly on its own, but rather, is embedded in the resources provided to address the challenges related to school mental health work.
There are no significant differences in the resource seeking behaviour of coaches and Mental Health Leaders; however, coaches possessed, on average, a fewer number of outgoing ties than did MHLs. Overall, there were no associations between the professional profile variables and the patterns of resources seeking behaviour. For patterns of resources provision (or incoming ties), there were significant differences in the number of ties that coaches received versus the MHLs across all network dimensions. Between cohorts of MHLs, cohort 2 leaders has significantly fewer influence and social support ties; no significant differences were found within the research and advice dimensions of the informal Project CYMH network. There were some positive associations found between individuals’ professional characteristics — in particular, their experience with the research process, their exposure to other researchers, and their reported levels of research use in their own practice — and the extent to which these people were sought out for assistance or were attributed influence by their colleagues. Lastly, there was very little informal resource brokering activity among Project CYMH members; people are not often facilitating connections among others outside of formal Project CYMH events. There is some evidence that demonstrates a positive relationship between an individual’s brokerage activity and their reported levels of research use and experience with the research experience.

Quality of Ties

Tie quality refers to the strength and depth of a tie, characteristics that can be investigated in multiple ways. A frequent measure of tie strength is tie frequency — how often actors interact with one another. To determine tie strength based on frequency of interaction, valued relational data is required. Consequently, a tie strength analysis based on frequency is restricted to the advice, influence and social support networks in this study as non-valued relational data was collected for the research network. Reciprocity is also a measure of tie quality. A tie is stronger
when the tie is mutual, which means that person A turns to person B for advice, and person B also turns to person A for advice. As such, I investigate the number of reciprocal ties for each relation in the Project CYMH network of most frequent ties. The last measure of tie strength, tie multiplexity, is applied to the research network later on in this section to measure the strength of ties within this network.

**Tie frequency.** The claim that more frequent ties are stronger ties is related to the idea that social capital among members of a group is generated through strong ties. The argument is that people develop a sense of community through building collective trust, both of which facilitate the development of shared attitudes and norms within the community (Coleman, 1988, 1990; Putnam, 2000). Within the context of the Project CYMH program, building strong ties may enable participants to build a community of practice to which Mental Health Leaders can turn as they progress through the challenging processes of developing and implementing research-informed school mental health policies. Moreover, by working together within a program that is itself research-informed in its own design and implementation, strong ties among the membership may help foster a culture of research use that can further be cultivated in the MHLs’ home school districts. As such, I chose to include questions on the survey that asked respondents to rate the frequency of their interactions (or depth, in the case of influence) in order to determine the extent to which these patterns of interactions included ‘strong ties.’

For the advice and social support relations, respondents were asked to identify how often they interacted with each individual on the roster using the following five point Likert scale: 1 = Very rarely (once a year); 2 = Rarely (twice a year); 3 = Occasionally (3-4 times a year); 4 = Frequently (every month or so); and 5 = Very frequently (more than once a month). When considering all ties regardless of the frequency, the advice network is comprised of 627 ties ($D =$
47%). Setting the threshold for tie strength at a frequency of every month or so (a ranking greater than three), the advice network is reduced to 111 ties ($D = 8.3\%$); thus; the proportion of ‘strong ties’ based on tie frequency within the overall advice network is about 18%. Within the social support network, there are 234 ties overall ($D = 17.7\%$). Once the same threshold for tie strength is imposed, the network is reduced to 106 ties ($D = 8\%$), indicating that approximately 45% of this network is comprised of strong ties.

Similarly, within the context of the influence networks, respondents were asked to rank the level of influence for each person on the roster based on a five-point Likert scale where 1 = not at all influential, 2 = slightly influential, 3 = moderately influential, 4 = very influential, and 5 = extremely influential. Overall, the influence network contained 365 ties ($D = 27.4\%$); however, when the focus is on only the ‘very influential’ and ‘extremely influential’ ties (a ranking greater than three), the network reduces to 118 ties ($D = 8.9\%$). Therefore, about 32% of the ties within the influence network can be considered strong ties based on depth of influence. Thus, it is evident across all of these networks that, when only the strongest ties are considered, the overall network size shrinks by about half in the social support network, and about 70-80% in the influence and advice networks respectively.

In light of the qualitative data, it is not surprising that the size of the networks decreases substantially once only the most frequent (or influential) interactions are considered. Both coaches and Mental Health Leaders speak about their work with other Project CYMH members in ways that are consistent with what these numbers suggest. During the interviews, coaches spoke more frequently about their interactions with other coaches more so than with MHLs. One coach suggests that, “those relationships where I might have a deeper connection…would probably go hand in hand with the amount of work that I’m doing with these particular folks.
The more I’m involved in one project with a certain group of people, the more I get to know them on different levels, which builds that relationship and the chance or the occasions to exchange and to share on a deeper level” (#1). This particular coach was heavily involved in module development and spoke often about working with other program staff on specific areas of program development (e.g., modules for delivery at the formal meetings) for implementation within the broader program; thus, as the respondent stated, “I may have deeper relationships with some of the coaches than I might with others because of the work that we are doing…So I spend a lot more time with some than I would with others” (#1). This is not to say that other ties are not important, but rather not as strong when quality is based on frequency of interaction. This coach goes on to say that, “I might have less of a deep relationship with some [MHLs]. It’s not that there is no relationship, it’s just that the need isn’t necessarily there. I mean I can offer a space, but it’s not always accepted, I suppose, or not needed” (#1). This remark would imply that Mental Health Leaders are in the driver’s seat when it comes to developing relationships with coaches.

Another coach echoed the sentiment that he creates the space for coach-MHL interactions, yet it is up to the MHLs reach out and build this relationship: “[I interact with some more than others] because the Mental Health Lead in those areas [school districts] reach out…I’ve met them all; I get along with all of them. The message has been the same to all of them, essentially, ‘I’m here if you need me, if you want some help’” (#16). That said, he characterizes his frequency of interaction with MHLs as “highly variable.” Similar to respondent #1, this coach speaks of more frequent interactions with other program staff around issues particular to the delivery of the program, speaking with each other “probably three times a week, every other day…” (#16). This coach says that “internally, I think communication is really good.
We do a lot of email traffic back and forth and everyone is copied on everything, so everybody is well-informed if they choose to be in terms of what’s going and what the current issue is.”

Furthermore, this coach, as well as another (#3), directly identify the director of the program as a key communicator among the program staff, the person responsible for ensuring that all program staff are current on what is happening within the program.

During the interviews, Mental Health Leaders spoke more often about their relationships with other MHLs than they did with their coaches. For example, three MHLs spoke directly about their meetings with other MHL colleagues. For example, respondent #31 said, “Well, it’s kind of funny [timing], because yesterday four of us met. We met on our own. There’s a couple of different groups of the Mental Health Leaders that I’m involved with and we meet. We talk outside of Project CYMH meetings and we also…have face-to-face meetings.” Curiously, this MHL was unable to elaborate up on why this group gets together beyond saying, “And so, for whatever reason, we’ve formed a connection and an attachment to one another. So we actually reach out to one another” (#31). Other MHLs speak of “[setting] up bi-weekly phone calls” (#28) with a MHL colleague as well as the regular monthly meetings of another group of MHLs in northern Ontario (#36). Across all interviews, coaches and Mental Health Leaders’ remarks centred on a core group of individuals with whom they interact most often, which is consistent with the quantitative analyses of the Project CYMH network’s patterns of interaction.

Thus, what we are seeing in the tie frequency findings is that when only the most frequent or most influential ties are considered, network activity reduces quite considerably. In the interviews, coaches spoke often about their interactions with each other in terms of the broader work of the Project CYMH program while also suggesting that the frequency of interaction with Mental Health Leads varies across the districts. MHLs tended to speak more
about their relationships with each other over their interactions with their coaches. In both cases, participants who were interviewed implied that they interacted with a particular group of people within the network rather than across the network as a whole. This is not surprising as one would expect to find people interacting with small groups of colleagues and not necessarily with everyone within the broader group. With these patterns in mind, I move on to look at the extent to which the research, advice, influence, and social support dimensions of the Project CYMH network possess mutual ties, where people are directly exchanging resources with each other.

**Reciprocity.** Reciprocity is also a measure of tie strength as “it also indicates the network’s stability, as reciprocated ties tend to be more stable over time” (Carolan, 2013, p. 103). Reciprocal ties refer to instances where a tie is mutual between actors meaning that each actor identifies a tie with the other along the same relational dimension. For example, a reciprocal tie would occur in this network when person A asks person B for advice and person B also asks person A for advice. Among the different relations within the Project CYMH network, the social support network boasts the greatest number of reciprocal ties with about two out of every ten ties being mutual ($R = 20.5\%$). The advice and influence network each possess approximately 1 in ten mutual ties ($R = 14.4\%$ and $R = 11.3\%$, respectively), and the research network has the fewest number of reciprocal ties with less than one out of every ten ties being mutual ($R = 6.7\%$). Previous research has demonstrated that people are more likely to seek out information from those with whom they share a tie as opposed to an expert who may not reciprocate the relation (Cross, Parker, Prusak & Borgatti, 2001; Daly et al., 2010). Furthermore, reciprocal ties are also shown to create organizational conditions that are optimal for the exchange of complex information such as research information (Hansen, 1999, 2002). Hence, the opportunities for the exchange of research knowledge within Project CYMH could be restricted because of the
weakening of the ties when the reciprocity criterion is applied to the patterns of interaction within the program.

**Tie multiplexity.** Individuals are likely to share multiple different types of relationships with one another; for example, two people may be friends (a friendship tie) who go to the same school (an affiliation tie) who frequently ask each other for advice (an advice-sharing tie). From a social network perspective, these are called *multiplex ties* — tie multiplexity occurs when an individual possesses more than one type of tie (e.g., a research tie and an advice tie within the Project CYMH network) with someone else in the network (Prell, 2012 citing Kapferer, 1969). Furthermore, there is greater depth within multiplex relationships and the connection between the actors is strengthened (Granovetter, 1973), which could improve the quality of ties if the goal is to build a network of strong ties. In the case of Project CYMH, where one of the program’s identified goals is to build a culture of using research evidence to inform decision-making, then building a network of strong ties would be desirable as strong ties have been shown to positively influence the development of shared attitudes (Erickson, 1988).

To investigate the nature of multiplex relationships within the program, I did two things. First, to query the relationship between the research and each of the other relational dimensions of the Project CYMH network, I conducted the QAP (Quadratic Assignment Protocol) Correlation procedure in UCINet 6 (Borgatti et al., 2002) to generate correlation coefficients for each pair of relational dimensions of the network, focusing on the most frequent or influential ties where valued data was collected. Second, using the Boolean combination matrix transformation feature in UCINet 6, I combined multiple network matrices to identify the degree to which individuals within the Project CYMH network shared multiplex ties with one another. Because I focus on knowledge mobilization in this study, I report only those multiplex ties that
include a research tie. Furthermore, I only use the strong tie advice, influence, and social support networks in order to continue developing the notion of the quality of ties within this network. Performing the matrix combinations allowed me to focus more closely on tie multiplexity for each node at the complete network level. The results of these analyses are presented in the proceeding subsections.

**QAP-Correlation analyses.** Data from these analyses indicate that there is a relationship between all of these networks, with some being stronger than others — a finding that is not unusual in network research. These results suggest that where a research tie exists, there is also a tendency for another relational tie to be present (see Table 14). Although all networks are correlated to some degree, the strongest relationship exists between research and strong influence ties \( r = .46, p < .001 \), suggesting that there is a positive relationship between the exchange of research knowledge and the level of influence participants attribute to their interactions with colleagues within the Project CYMH program. It is important to keep in mind that correlations do not imply directional causation; these results do not indicate that the presence of a research tie is the cause of a frequent advice tie or an extremely influential relationship. What these findings do suggest is that there is a positive relationship between these ties; as the number of research ties increases, the number of other relational ties also increases. Furthermore, this also provides additional evidence of the nature of multiplex ties within this network.
Table 14

*QAP-Correlation Coefficients for the Four Relational Dimensions of the Project CYMH Network*

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<thead>
<tr>
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<th>Research</th>
<th>Advice</th>
<th>Influence</th>
<th>Social Support</th>
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<td>Influence</td>
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<tr>
<td>Social Support</td>
<td>.28</td>
<td>.54</td>
<td>.57</td>
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**Matrix Combinations.** I used the Boolean combinations function within UCINet 6 (Borgatti et al., 2002) to create seven new matrices\(^{24}\) by combining the research matrix with various combinations of the matrices containing data about frequent advice and social support ties as well as the matrix for the most influential ties within the influence network. Sociograms for each pattern of multiplex ties are provided in Appendix M.

When each tie combination is considered as a separate network, the data indicate that the network densities range from 2-5%, steadily decreasing as more relationship types are layered upon the original research tie. The more relationships that are brought together to form the multiplex tie, the lower the amount of activity within the network (i.e., lower density). Nonetheless, when multiplex ties are considered as a proportion of the total number of research ties, it is evident that about one out of every two research ties also shares an advice tie, about one out of every three research ties shares either an influence or social support tie, and about one out of every five research ties shares a tie for each of the three other relations. There is only one

\(^{24}\) The seven ‘new’ matrices reflected the following relationship combinations: 1) Research + Advice; 2) Research + Influence; 3) Research + Social Support; 4) Research + Advice + Influence; 5) Research + Advice + Social Support; 6) Research + Influence + Social Support; 7) Research + Advice + Influence + Social Support
individual within the network (#6) who does not possess any other strong relational tie other than a research tie with a Project CYMH colleague. Thus, these data show that, for those individuals who are connected to others in the Project CYMH program, there is depth to the relationships with people engaging with others along at least one other relational dimension in addition to sharing research knowledge.

The network maps reveal that within these compound relational dimensions of the Project CYMH network, there are some individuals who are not connected to anyone else at all. These people are called isolates. A comparison of who are the isolates within each illustration helps to further understand who is sharing these multiplex ties. Within the research and advice combination network, there are five identified isolates (#4, 6, 13, 27, and 35); the number of isolates within the ‘research plus one’ other relation remain similar ranging from four (research + influence) to six people (research + social support). As more and more relationships are combined, the number of isolates within each new network increases. However, it is important to note that no one is identified as an isolate in only one network; in fact, most people identified as isolates occupy that position in four to five combination networks on average. Overall, the same eleven people25 (in various combinations) are isolates across these multiplex tie networks; furthermore, these individuals were previously identified as peripheral members of the network in earlier analyses. Thus, these data indicate that many of the relationships within the Project CYMH group more broadly constitute strong, or better quality, relationships based on the multiplexity criterion, although the depth of these relations decreases as more relations are combined to form the multiplex tie.

25 Cohort membership does not appear to affect who is an isolate within these patterns of interaction as both cohorts are almost equally represented (Cohort 1 = 5 people, Cohort 2 = 6 people).
Understanding Social Ties through a Qualitative Lens

A number of factors were identified during interview data analysis that explore the reasons why participants in the Project CYMH program turn to some people over others. The most commonly reported factor contributing the quantity of ties within the advice and information networks among program staff and Mental Health Leaders was the role of the coaches. Of the eleven people interviewed, all of the MHLs and four of the coaches spoke about the role of coaches in facilitating interactions among colleagues. This is not surprising given the high centrality scores of coaches across all networks.

All of the interviewed Mental Health Leaders spoke of the importance of the program coaches. One MHL stated, “all of the coaches have great expertise. So there’s a steady stream of valuable information that come from them” (#34), also acknowledging his coach’s “terrific system skills” (#34). Other MHLs speak of turning to coaches when there are “questions related to challenges [with the work]” (#36) or when there is “something more in depth [to discuss]” (#28). Many Mental Health Leaders spoke of strong connections with the program director who, although not a formally designated coach for the most part, is available to all program participants. The director’s strong centrality within the group was explained by one MHL as being related to the fact that “she was so instrumental in [the development of Project CYMH] and she’s the public face of it in so many ways… [She] is brilliant. She’s the whole package. She’s smart, she knows about systems, she’s articulate, she’s visionary, she’s evidence-based. She’s got it; she’s the package” (#31). Clearly, there is a lot of respect among the interviewed MHLs for the expertise, knowledge, and experience that the coaches bring to the program. These remarks shed light on why MHLs connect so often with the coaches, and hence, why coaches are prominent members of all of the queried networks.
The coaches often spoke of their perceived responsibility to connect Mental Health Leaders with each other as part of their duties in addressing individual school district needs. For example, one coach says, “They [MHLs] often ask me for examples of something and I will refer them to one of the other cohorts… Just because I have a little bit of knowledge about what each of them is doing and they may not have the same knowledge” (#16). Other coaches echo this point: “you [coaches] know who to connect people with from the group…a different mental health lead or somebody that is already do that. It’s helpful for them” (#25). This coach further elaborates on her responsibility by speaking about the importance of building a trusting relationship between the coach and the MHL saying that “once you have that [a trusting relationship], the people you are working with will reach out to you a lot more, even just for conversations” (#25). Another coach suggests that personality differences may play a prohibitive role in facilitating relationships, which could help explain why some members remain on the periphery of the network. He suggests that “style difference[s]” may play a role in why some people connect more with their coaches than others” (#3). It seems that coaches not only view their role to be about connecting just with MHLs one-on-one, but also facilitating connections among the MHLs together as a group so that they have access to the knowledge and experiences of the broader group.26

In addition to the role of coaches, both Mental Health Leaders (n = 3) and coaches (n = 3) also spoke of cohort membership being a contributing factor in the quantity of ties. The three MHLs who brought up the issue of cohort all belonged to the first cohort of school districts. One MHL said, “We are all part of cohort one and we formed a really strong bond when we were just one cohort and there was just a smaller group of us coming together” (#31) and another echoed

26 This point is directly related to the network concept of betweenness, which will be addressed later on this chapter.
this sentiment in stating, “We were the first fifteen. The guinea pigs” (#33). It appears that the many individuals within the first cohort of school districts developed a strong bond with each other; however, as the third MHL acknowledged, the second cohort of MHLs are also quite active, and combined, the two groups in the past year have begun “asking for a full day to talk amongst each other and they needed that. What’s happened is that they have expertise now that a coach couldn’t have” (#34). Evidently, Mental Health Leaders are perceiving cohort membership as a contributing factor to who is interacting with whom. It seems that this is a function of experience in developing board mental health strategies; as individuals gain more knowledge and expertise through their individual experiences in developing evidence-based mental health policy, they are more and more often turning to each other as valuable resources.

Coaches are aware that members from different cohorts are beginning to form their own independent networks: “We are also learning that those who were part of cohort 1 and cohort 2 are establishing their own networks…So it [Project CYMH] has evolved in that sense as…more people are involved in the process” (#1). Another coach hypothesizes that “there are pockets of where it’s happening [members interacting more often with each other forming their own networks]. In cohort 1 and cohort 2 there are smaller pockets and I believe it’s happening because of the way we set it up” (#25). Coaches attribute this pattern of behaviour among some of the membership to the changing nature of each cohort’s needs as they move through the process of developing and implementing and evidence-based mental health strategy.

Third, the needs and challenges related to the Mental Health Leaders’ work also shaped the patterns of interaction with in these networks. Some MHLs (n = 5) spoke frequently of the nature of their tasks determining to whom they would turn to for advice and information related to their work. One Mental Health Leader whilst talking about her tendency to interact with a
particular group of MHL colleagues explains, “So we encounter very similar challenges or issues, and I really value and appreciate the professionalism that those other three women bring to the role” (#31). These similar challenges seem to be issue based such as, “similar problems in terms of high risk kids…suicide, or on the wait list [for community resources]” (#28) or working with community organizations: “on ne veut pas détruire les relations avec eux, mais ça c’était un de nos plus gros défis qu’on devait s’en parler souvent entre les leads et aussi avec notre coach” (#36)\(^{27}\). Implementation issues also emerged as a prompt towards turning to others “to learn what other people are trying and what the snags are for implementation and what they’ve done about that” (#34). In many cases, Mental Health Leaders speak about their interactions with other MHLs as opportunities to learn from each other.

The majority of coaches interviewed \((n = 3)\) also spoke of needs and similar challenges being catalysts for interaction; however, they had a tendency to focus on coach–MHL interactions in their comments as opposed to the MHL–MHL interactions that dominated the Mental Health Leaders’ comments. For example, one coach described interactions as follows: “Sometimes it’s based on need. Like you mentioned [if] one of the Mental Health Leaders is having lots of challenges in a school board [s/he] might turn to the coach a little bit more, seeking a little bit more support, a little bit more kind of assistance or ideas or making sure that they are on the right track” (#1). Another coach more explicitly describes the kinds of situations where he interacts with Mental Health Leaders, “We talk particularly about the programs that they launch in schools…so we need to start out by selecting from things that have been shown to work and picking ones that would fit well locally… The other thing we talk about is what do we know about how to implement something so that it will be done properly and then sustained?”

\(^{27}\) Translation: “We don’t want to harm our relations with [community organizations], but [working with them] is one of our greatest challenges, which we talk about a lot among ourselves and with our coach.”
These two coaches focused on task specific issues that prompted support from the coaches. Another coach says “the more that they [MHLs] can connect with people that are doing similar, but not the same kind of work, the better they are going to be for all sorts of things” (#25). This coach took a more global approach the notion of needs and challenges, suggesting throughout her entire interview that the more diverse the group of professionals (not just coaches, not just MHLs), the better the Mental Health Leader will be able to support the school district in designing and implementing effective mental health strategies.

A final common factor cited by Mental Health Leaders ($n = 4$) and coaches ($n = 2$) was the influence of geography. Among MHLs, there were two perspectives reported where one individual stated that during her first year she felt it was difficult to reach out to others for support as there were no other school districts in her area involved in the program (#11) whereas another MHL spoke directly saying that “there’s geography to take into consideration, as well. So maybe someone who’s geographically close to you makes sense to connect because they may want to share a resource or do some similar kinds of things” (#33). In addition, two MHLs from the same geographic region of Ontario both spoke of frequent and regular interaction among the two French and two English language school districts in that region; “we’re all Northerners” as one said (#28). These individuals spoke about the resource limitations their school districts face in their day-to-day practice given their location within the province, and as such, these school districts had already worked collaboratively with each other over the years to overcome challenges resulting from geographic location.

Two coaches also brought up the importance of geography in the patterns of informal interaction that are taking place within the Project CYMH program. One individual highlighted that “they [MHLs] valued peer-to-peer learning and some regions really ramp that up to the point
of having their own kind of little learning communities” (#20). Another coach also spoke of the group of MHLs from the north describing them as having “a different flavour… because superintendents up there, they work like this [collaboratively], despite the fact that they are in different boards. But they do whole community implementation as a team. So their Mental Health Leads have gotten to know each other really, really, really well and they also knew each other before they got hired into that role” (#25). This coach also spoke about another group of MHLs in the southwestern region of Ontario that she was aware of that, by the end of the second year of the program, had also started forming their own community of practice of sorts, consulting with each other outside of the formal program about common issues in their work. It is interesting to note, however, that although geography emerged as a factor contributing to who was connecting with whom, geographic location was not a significant factor in quantitative analyses of tie patterns.

**Summary of Findings: Quality of Ties**

When only the most frequent interactions (i.e., every month or so) and most influential (i.e., very or extremely influential) were included in the analyses, the number of advice, social support ties, and influence decreased substantially. During interviews, both coaches and MHLs spoke about frequent interactions with a particular group of people, not necessarily reaching out across the whole network. Furthermore, most of these interactions were unidirectional, meaning that they were not reciprocal relationships, a characteristic that can diminish the quality of a tie given that mutual relationships are thought to cultivate environments supportive of the exchange and transfer of complex information. Stronger ties exist when people share more than one kind

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28 Recall from Ch. 3 that data was not collected on the frequency of research knowledge exchange. Thus, the criterion of tie frequency could not be applied to the investigation of tie frequency for the research knowledge dimension of the Project CYMH network.
of relationship with each other. Within the Project CYMH network, the number of strong influence ties increases as the number of research ties increases, suggesting that those individuals with closer connections to research knowledge are perceived as more influential members. Tie multiplexity analyses were conducted to examine the degree to which Project CYMH participants shared multidimensional relationships with one another, in other words, they shared multiplex ties. In all but one case, most individuals share at least one other tie with each other in addition to a research knowledge connection. Many of the relationships are strong relationships in the sense that they are multidimensional, but it should be noted that the depth of relations decreased as more relational dimensions were combined to form multiplex ties.

Interview participants spoke of the importance of coaches in facilitating connections with each other; similarly, the coaches spoke of their perceived responsibility to ensure that the group was interacting and learning with and from each other. There was a lot of respect exhibited for the knowledge and expertise of program staff during the interviews. Cohort membership was also a recurrent theme during conversations with MHLs where cohort 1 leaders spoke of the comradery and closeness that existed within this group because they were from the original pilot school districts. It seems that as MHLs are gaining more experience in their roles, they are more often turning to each other for support and assistance. The needs and challenges experienced by the school district was another factor that contributed to ways in which people were interacting with each other. When MHLs had common experiences, it seemed that they possessed stronger, multidimensional relationships with each other, at least anecdotally. Lastly, geography was also a noted facilitator of (and barrier to) interactions. MHLs who were from neighbouring school districts and who were able to more easily meet up with colleagues informally, reported doing so more often than those who were more geographically isolated. Chapter 5 continues to build on
these insights by presenting findings from the interviews as they relate to the ways in which people’s interactions with each other facilitated (or constrained) KMb activities that supported their district policy work.
Chapter 5: Perceived Influences of Network Interactions on Research Knowledge Mobilization

In Chapter 4, I focused on reporting the findings from both the phase one survey and phase two interviews as they related to describing the patterns of interaction within the research, advice, influence, and social support dimensions of the Project CYMH network. In this chapter, the focus is solely on presenting the findings from the interview analyses as they pertain to the ways in which interactions within the Project CYMH network influence how district mental health leaders find, understand, share, and use research-based knowledge in the development of evidence-based school board mental health strategies. Specifically, these analyses sought to identify patterns and themes that emerged during the interviews that helped understand the ways in which the informal patterns of interaction within the group facilitated and/or constrained knowledge mobilization. As such, this chapter is organized in two sections: The first section will focus on facilitators of research knowledge mobilization, and the second section will focus on KMb constraints. I remind the reader that I applied the constant comparative approach to these data; hence, throughout the chapter I compare and contrast the findings as they relate to the different categories of participants included in the phase two sample: coaches (n=5), high outdegree MHLs (n=2), and high indegree (n=2) and low indegree MHLs (n=2). I provide a summary chart of these findings in Appendix N.

KMb Facilitators

Interviews with phase two participants identified eight themes relating to the ways in which the patterns of interaction with Project CYMH help Mental Health Leaders find, understand, share, and use research-based knowledge. These themes included (listed in order from most frequently to least frequently identified theme): EENet (the program’s online
platform), resources, coaches, capacity-building activities, community, external connections, awareness of/access to expertise, and research literacy. The findings pertaining to each of these themes is presented in the subsequent subsections.

**EENet.** EENet was School Mental Health Project CYMH’s online platform during the initial years of the program (it has since changed), which provided a space where program participants could post questions and other members of the group could respond. In essence, it functioned as a discussion board where both coaches and Mental Health Leaders could interact with each other outside of formal group meetings.

Three of the five coaches interviewed identified EENet as a resource where MHLs and coaches can connect with each other to ask and answer each other’s questions, as well as sharing research-based resources. Two coaches spoke of the positive effects of EENet citing it as “a critical…[and] important tool…[because] it also has these little subgroups and the MHLs have their own little subgroup where they can go and exchange information” (#1) — a tool that “has been highly utilized by some the Mental Health Leads this year” (#25). Nevertheless, it was highlighted that EENet was a tool that seems to appeal to some MHLs and not others. One coach described it as an “interesting, lively place, but it’s only lively because you have people who are interested… There are some [MHLs] who are more interested in sharing and posting on EENet and responding than others” (#1). The director of the program goes on to say that “there were limitations to the electronic communication” and that it hadn’t “reached the hopes we had for it. I think some people like it, some people hate it; a lot of people don’t use it” (#20). The coaches recognize the utility of EENet as facilitator of connections among the group, but also understand that there are limitations and that it is more frequently used by some MHLs over others.
All but one (high indegree) Mental Health Leader spoke about EENet as tool that they use to connect with their Project CYMH colleagues outside of their formal meetings. There was no clear distinction in the ways that the MHLs spoke about EENet between groups of MHL participants interviewed; all MHLs spoke positively of the platform in general. One MHL echoed coach #1 in saying that EENet is a critical tool: “We use EENet a lot. So we do a lot of talking back and forth, so usually when I go to EENet, I’m either answering a question or asking a question” (#33). This MHL also goes on to point out that EENet provides a way of connecting with MHLs from across the province given that “some of them are like a five hour plane ride away” (#33). Similarly, another MHL also speaks about being able to share and communicate with colleagues via EENet, but she also points out that despite this ability to share online, it’s not the same as meeting in person: “mais même ça, ce n’est pas la même chose qu’en personne” (#36).

EENet is perceived to be a place where MHLs can “turn to people whom [MHLs know have] experience in [an] area” (#11). Not only are members able to connect with Project CYMH colleagues, because EENet is hosted by the Centre for Addictions and Mental Health (CAMH), there are “all sorts of people [on EENet], other agencies even, wanting to do things” (#34). This broadens the scope of knowledge sources available to school districts via the Mental Health Leads given that “the conversations on EENet, too, are all evidence-based” (#34). That said, one MHL cautions that “there’s big business, there’s big money in mental health right now, and there’s all sort of people packaging up stuff and wanting to come in the schools and show it” (#34) and this can be a challenge of the platform in terms of having access to a wide variety of stakeholders within the field of child and youth mental health. She goes on to emphasize that
despite this, participation in Project CYMH insists that “the chatter for us has to be ‘what’s the evidence?’ and that’s what we do” (#34).

EENet was identified by both coaches and Mental Health Leaders (regardless of their network positions) as an important tool in facilitating connections among and between members of Project CYMH, although the tool seems to be engaged by some people more so than others. The perception appears to be that conversations about ‘what the evidence says’ in the field of child and youth mental health continue on this platform; however, none of the MHLs provided a concrete example of how EENet helped them connect with specific research-based knowledge that was used in the development of their school district’s mental health strategy. Nevertheless, the availability of a virtual meeting place seems to be, at least for some, another avenue to explore in terms of facilitating KMb activity.

**Program Coaches.** The role of the coaches within the Project CYMH program as a formal structure was a dominant theme throughout the interviews, and not just in terms of facilitating KMb (see chapter 4 for more findings related to the formal role of coaches within the Project CYMH network). Among the coaches themselves, it seemed that there were two levels of responsibility to the group: first, to their other coach colleagues, and second, to the broader group as a whole. One coach described the coaching group as a “collective multidisciplinary group” (#25) where the coaches, each coming with their own professional knowledge and experiences, “have a responsibility to [each other] to share our perspectives and share our lenses and shape how we do the work because we do come from different backgrounds” (#25). Another coach (#1) spoke of the frequent work that she does with other coaches suggesting that, although she works with an assigned group of MHLs as well, she also very frequently interacts with other coaches, providing for greater opportunities for knowledge exchange within this particular
The third coach who spoke explicitly about the role of coaching in connecting colleagues to research-based knowledge spoke of the ways that the coaches, as a group, have “tried to introduce implementation science into this and tried to get people to think about more sustainable ways of embedding evidence-based core elements into practice…The directions that we are setting from a research perspective provincially filters through the work that the coaches do” (#20). In their preparatory work with each other, the coaches identify a collective responsibility to each other to ensure that they are positively contributing to the overall goals of the group, each bringing with them their own unique points of view based on their experiences in the fields of education administration, social work and psychology.

The coaches collectively identify establishing evidence-based practice into both Project CYMH routines as well as into the routines of the individual school districts as key elements of the program, thereby fueling their sense of responsibility to the Mental Health Leaders. One coach describes the opportunity for individual coaching as the time when “we are reinforcing those messages that are coming out of the mental health leadership meetings” (#1). Another goes on to support this description when she says, “So, as coaches, if we ask what [are the] structures that you have put into place so that your system is very clear about the language you are using, the purpose of your work, and the function of their group, we should all be getting the same answers” (#25). The program director, who also served as a coach in the initial years, views part of the coaching role as “helping people to make better use of research evidence, [and] yes, we’ve done that explicitly. I believe that that is part of the individual coaching that goes on and in my role when I was a coach, I saw that…I think you are teaching [MHLs] about how to do it. So critical appraisal skills, that kind of thing. It’s a part of how we do the coaching work” (#20). That said, another coach does not view his role as a coach to be as directly linked to
building capacity for research use; he says, “We have presented a rubric in terms of criteria for what constitutes good evidence-based usage. We’ve given them some examples of programs that are evidence-informed, if not evidence-based. But I don’t explicitly do that, no, in my role as a coach” (#16). Given Project CYMH’s mandate to build capacity for evidence-based practice, the coaches are perceiving a sense of responsibility to help deepen MHLs’ understanding and application of the professional learning that takes place during the formal Project CYMH meetings. Nevertheless, it seems that there is some variation in how the coaches view their role in terms of building capacity for evidence-based practice, with some coaches taking a much more direct approach that includes one-on-one interactions with MHLs, while at least one other tends to leave that role to the formal group meetings.

Mental Health Leaders expressed similar views in their interviews. Two thirds of those interviewed (n=4) spoke about the importance of their coaches in terms of connecting them to research-based knowledge. As one MHL clearly stated, “I would say in terms of finding and using research knowledge it would be predominantly my coaches that sort of steer that, more so than my mental health lead [colleagues]” (#33). This individual goes on to explain that this is likely because of “who the coaches are” going on to state that they are “the A-team. They’re leaders in the field of school mental health. So they’re cutting edge…they’re presenting at…international conferences” (#33). She notes that her “mental health colleagues are influential as well, but [but that her] coaches are more influential” in this regard (#33). Other Mental Health Leaders also spoke about the importance of turning to coaches when they are “questioning evidence or [having trouble] believing the applicability of something” (#28). The importance of the coaches in terms of the overall structure of the program, including formal meeting times, was also highlighted in one MHL’s remark about the “precious time when
[MHLs] are being in-serviced through the coaching team on what’s the science for all of this [work in school mental health]” (#34). In general, the MHLs share in the coaches’ perceptions of their key role in facilitating connections between MHLs and research-based knowledge in support of school district policy development.

However, although the MHLs are mostly in agreement that the coaches are all working collectively to achieve these goals, one MHL suggests that it is the work of the program director that really makes “it [Project CYMH] influential” (#31) as she can sense the program director’s influence on the program’s resources; “I don’t know if she has written them…but I would bet dollars to doughnuts that she has helped to conceptualize it, scope it, give it direction, give it some bones, and then she’s given it away to other people to build it, to construct it” (#31). If commonly held across the group, this perception could help explain why the program director is (one of) the most influential figure(s) in the research and influence networks in particular. The majority of the MHLs interviewed in this study, regardless of the sampling criteria, were in agreement about the importance of Project CYMH coaches in connecting them to research-based knowledge.

Community. Nearly two-thirds of the interviewees spoke about how Project CYMH provided the spaces necessary to build a strong sense of community among members of the group. This was a particularly strong theme among the coaches; four out of five coaches spoke of the importance of community and “coming together to meet” (#1). The program director speaks directly to the ways in which Project CYMH deliberately set out to build community within the group:

It began with those face-to-face meetings and I think that is an important piece. That at every one of those meetings, we had time for networking
and sharing and we tried to set up a climate of trust where people would reach out to one another in those meetings, but also beyond the meetings. And I think there was a level of intimacy that was very real and people could let their hair down and they did. I think [MHLs] valued that. (#20)

This comment is echoed by another coach who emphasizes that during the provincial meetings, the leadership team “always want[s] to give [MHLs] time to talk to one another, because them [sic] forming relationships and community to support them is very important” (#3). Furthermore, an important aspect of this community-building was developing trusting relationships. One coach describes her work with MHLs as a “relational position” (#25) where it is important for “[MHLs] to trust you” (#25). Another speaks more broadly of building trust not only within coach-MHL relationships, but also among the MHLs themselves. In her experience, the MHLs with whom she works have explicitly requested time to come together: “But what I’ve heard from [my] groups is that they need to come together. They need to build a certain sense of trust and understanding…[The MHLs say] ‘We need to sit together; we need to come together; we need to have a little time to chit chat and make sure that we’re on the same page’” (#1).

There is a shared belief among the coaches that the role and responsibility of the Project CYMH program is to provide an interactive space where school district Mental Health Leaders can come together, sharing experience and encouraging each other, building trust within their own “community of practice” (#20), which then creates a context for potential research knowledge mobilization.

Mental Health Leaders also spoke of the importance of community; however, of their comments related more to building community with other MHLs with little emphasis on the
coach-MHL relationship. One MHL very clearly attributes the sense of community that she feels with her peers to the work of Project CYMH:

…if Project CYMH didn’t exist, we probably (as Mental Health Leaders) wouldn’t have come together so quickly. So we wouldn’t have been…I think, as a group, we feel very strongly linked to one another and because of that, the sense of frustration and isolation that goes along with the job and some of the challenge, they are not understood by others, other than Mental Health Leaders. So, if we didn’t have Project CYMH, there would not be this opportunity to network and to build a community of practice and support. Just in my mind, that wouldn’t [have] happened.

(#31)

Within this group, this MHL goes on to speak about a subset of her peers who “[have] formed a connection and attachment to one another” (#31). She goes on to explain how within this smaller group — all of whom work in school districts that neighbour each other and serve similar communities — research-based knowledge is often the focus of discussion. She describes how there are a few women within the group who are more likely than others to introduce research into their conversations, but explains that all members are “very happy to talk about it [research]” (#31). Another MHL also explained that the exchanges of information (including research) she has had with all of the other MHLs is extremely influential on her daily practice: “…juste en temps de parler, savoir où aller chercher la recherche, savoir où aller chercher telle information et réponses…le partage que j’ai eu des autres Leads en Project
CYMH a été extrêmement important pour moi” (#36). This MHL also describes a smaller group of MHLs from neighbouring school districts with whom she interacts on a regular basis as part of her work within the school district. The sense of community within the Project CYMH program, whether among or between coaches and MHLs, is “like so many other things…based on relationship and professional respect” (#33).

The comments of both coaches and MHLs clearly indicate that trusting relationships contributing to a sense of community among its members are a critical piece of the Project CYMH program. Coaches speak of trust and community more generally, laying the foundation for the broader work of the program. Mental Health Leaders speak more of the relationships that they have with each other, and the community of practice that emerge among the MHLs themselves as they engage in their work. The MHLs also spoke directly about the role of these communities in facilitating the introduction and exchange of research-based knowledge within the group.

**Resources.** The provision of research-based resources was another avenue explored in the interviews as a means of finding and sharing research-based knowledge. A couple of the coaches and the majority of the MHLs spoke of “needs-based” (#1) materials developed and provided by Project CYMH as very useful in their work. There is common acknowledgement across the group that the program is committed to providing school districts with support materials that are informed by current evidence and research. As one coach states, “[it is about] credibility. It’s not just somebody’s idea or opinion. It’s not just one of us spouting off the top of our heads; it’s based on something” (#16). Much, if not all, of the materials provided by the

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29 To paraphrase in English, this MHL says that her Project CYMH colleagues are extremely important in terms of having someone to talk to, finding out where to locate research knowledge and information, and answers to questions she may have.
leadership team have been developed in response to the needs of the group and are well-grounded in research where it is available, yet “the research is distilled down to something that is very practical and implementable” (#16). The idea behind Project CYMH, according to one coach, is “to support Mental Health Leaders so that they don’t have to do all the research” (#1). In this way, it seems that the program is retrieving and ‘repackaging’ research-based knowledge so that it is in a user-ready format, ready for use within the school district context. Although the coaches are “certainly indicating that the information being conveyed is based on good, solid evidence” (#16), Mental Health Leaders are not expected to “go back and read the original article” (#16). According to some of the coach interviews, the program staff filter the research knowledge and present it in ways that are more useful to its audience.

Almost all of the Mental Health Leaders interviewed (n=5) spoke favourably of the resources provided by Project CYMH, recognizing that “…it’s a constant reference to what the evidence says. Why are we doing this, what the evidence says? That’s very, very strong. What not to do and what to do” (#34). Even in terms of the collection of school district data, two MHLs identified Project CYMH as being influential in terms of the survey instruments that they used to collect the data; for example, one MHL stated, “Well, in developing our survey, I took an example from Project CYMH. They provide us with many great tools” (#33). The general sentiment across this group of MHLs, regardless of their network position, was that the program provides the necessary information to carry out this work and that there is no need to re-invent the wheel: “ce n'est pas nécessaire de réinventer des roues” (#36). There is general acknowledgement among both the coaches and the MHLs that the most current and available research are used to develop the materials provided by the program.
Capacity-building activities. The role of Project CYMH is not limited to the provision of resources, however. A commitment to building the capacity of school districts to use evidence in their school mental health decision-making processes is evident through the formal structure of the program (i.e., coaching, regular group meetings). Helping Mental Health Leaders develop the skills to be critical users of evidence is an explicit piece of the Project CYMH mandate. The program director identifies evidence-based practice as a distinct module in the program; she stated,

In terms of understanding evidence, every year we’ve done evidence-based practice modules and within that we talk about how to discern the high quality evidence from less reliable evidence and that kind of thing. And we point people in the direction of evidence-based practices and programs and we’ve tried to infuse new [research-based] knowledge in the directions that we are moving (#20).

Another coach echoes this sentiment, but stresses that although Project CYMH develops and provides MHLs and their school districts with resources to help them carry out their work, the coaches are careful to “help them do [their work], but not do it for them because we want that capacity to be built within the system; some [school districts] don’t have that capacity at all” (#1). This coach also emphasizes, “Project CYMH is not an entity that just builds and gives. It’s about co-creating [knowledge]. It’s about taking all of…recommendation and…learnings to see what [school districts] need” (#1). The capacity-building efforts within the program centre on helping school districts conduct needs analyses and develop policy and program plans that address their unique circumstances through the use of evidence-based and research-informed tools and resources developed and shared through the program. In doing this work, there is a
need for school districts to recognize their role within the broader mental health system. One coach identifies this as the starting point for his work: “I…try to give the Mental Health Leaders that I coach a systemic view of their job” (#3) further stating that this systemic view is “critical [to carrying out this work] and it comes only with great difficulty to many people. And they’re not unique” (#3).

Mental Health Leaders spoke of program-sponsored capacity building activities occurring both within the boundary of their own group, but also at external events such as the School Mental Health and Addictions Consortium Conference (a Project CYMH-sponsored conference). Speaking about the conference, one MHL describes how the program “permitted [her] to attend PD that’s specifically tailored to school mental health-based services…There were a lot of lessons shared there, and so I took away a lot of knowledge that I then brought back and informed our practice [within the district]” (#33). Another MHL also spoke about how participation in the program has allowed her to contextualize and better understand research-based resources that she has received both through the program itself as well as through her interactions with other external community groups.

References to capacity-building activities that regularly occur at scheduled intervals as part of the formal program were most common. One Mental Health Leader provides this description:

The other thing that Project CYMH provides to all of us as a group is…our own capacity-building. So in each of our [provincial] meetings, there is a capacity-building component…So we’ve received support and in-service around leadership, particular content topics [e.g., youth suicide], strategy implementation, [and] the change process. It’s a very
rich educational opportunity that we get because of Project CYMH and…if Project CYMH didn’t exist, we wouldn’t get that explicit expectation (#31).

The sentiment that without the program a lot of the learning and skill-building that is occurring would not otherwise be happening seemed to be present throughout all of the MHL interviews. When speaking about these capacity-building activities, MHLs did not make direct reference to the use of research knowledge in these activities. That said, the language of engaging with evidence and current research is omnipresent in the coaches remarks; thus, the coaches are directly serving a mediating function in terms of connecting research and practice. Although the MHLs did not making explicit connections between research and capacity-building in these interviews, there is a constant link to research knowledge emphasized by the program personnel.

**Research literacy.** Although not mentioned by any Mental Health Leaders, three of the coaches interviewed spoke of the perceived relevance of both the level of research literacy of the MHL and the school district as important aspects of the program’s approach to research knowledge mobilization. One individual, in reference to an example where, in her capacity as a coach, she provided evidence-based information on youth death by suicide to a particular MHL/school district explains that:

…you have to come [to their] level. So the person I was telling you about with the suicide [request], she’s pretty savvy with research knowledge. So for her I didn’t have to go into a lot of detail about what to take from each study because I knew that she would take the right thing from each study. For other people, you have to kind of slow down a little bit and be a little more explicit. (#20)
From this coach’s point of view, it is necessary to consider the skills and abilities of each individual Mental Health Leader in order to appropriately facilitate a connection between the individual and the research-based knowledge. Another coach builds on this point of view by suggesting that the research capabilities of the school district are also an important aspect to consider. She says,

If you have a board that has a research department, I think that has a big piece to play [as] there’s a more logical, sequential thinking process…systematic [approach]… So I think that plays a big role in how some of this evidence-based stuff gets initiated in the school [district] and the way they think about it. It’s their approach right from the very beginning. (#25)

This coach is suggesting that MHLs come to the Project CYMH program representing school districts with established predispositions towards evidence-based decision-making, asserting that those individuals coming from school districts large enough to have their own internal research departments arrive with an evidence-based frame of mind.

Lastly, yet another coach suggests that the professional background of the Mental Health Leader also impacts existing attitudes towards evidence-based practice. Some MHLs come from a clinical psychology perspective “where evidence-based practice has been alive and well for ten years” (#3). He cautions, however, that “it doesn’t mean they do it, but they know about it. So you’ve already got a head start, and then we just explain to them how we do it” (#3). In addition to MHLs coming from a clinical psychology perspective, he goes on to say that “the other people were almost uniformly [from] social work backgrounds, but interestingly all oriented toward evidence, which is unusual and they really love talking about all that stuff” (#3). Hence, the
professional backgrounds also seem to be a factor to consider in terms of KMb efforts and understanding where the MHLs are coming from. For the most part, individuals from a psychology background are assumed to be more aware of evidence-based practice, whereas it was more unexpected for those with social work backgrounds. Interestingly, it was only within the context of MHLs with social work backgrounds where this coach acknowledged that “not only do [they] talk about mental health related stuff, but they [social workers/MHLs] are also interested in bringing evidence to instruction” (#3).

None of the Mental Health Leaders made any comments that would validate the perceptions of these coaches. Nevertheless, over half of the (participating) program staff felt that varying levels of research literacy based on individual skill levels, school district capacity, and the MHLs’ professional backgrounds provided the basis for research knowledge mobilization within the program.

**Summary of KMb facilitators.** Six key themes emerged in the interview analysis that highlight the ways in which the patterns of interaction within the Project CYMH program facilitate knowledge mobilization activities. Both coaches and Mental Health Leads most frequently EENet, the initial version of the program’s online social media platform, as an influential aspect of the program in terms of facilitating conversations about research and “what the evidence” says about particular issues with which the MHLs are grappling. EENet was described as the ‘place’ where people most frequently interact with each other outside of the formal provincial meetings, although it was recognized that the platform appeals to some of the Project CYMH membership more than others. The program’s coaches were also highlighted as key facilitators of establishing evidence-based practice in both the work that they do with each other in designing and implementing the Project CYMH program as well as their work
supporting MHLs with their local school mental health policy development. The notion of building a strong and trusting community was inherent in the discussion of the relationships within the program. Coaches spoke about building a sense of community among themselves and also with the group of MHLs with whom they work; MHLs tended to focus their comment more on building community among themselves, with other MHLs who are doing work similar to their own. In addition, the research-based resources provided through the Project CYMH program were also highlighted as key connections to research knowledge. Although acknowledge as a category of their own, these resources were part of a larger range of capacity-building activities designed by the program leadership to develop MHLs’ abilities to critically engage with research and evidence in their daily work. It was emphasized that these resources and activities were designed not to do the work for them, but rather to empower the MHLs to engage with these sorts of materials themselves when setting policy directions within their individual districts.

Lastly, also related to the idea of capacity-building, some coaches spoke about research literacy being an important facilitator of KMb, and given the varying experiences with research and levels of expertise within the group, it was necessary to ensure that interactions and materials provided by Project CYMH were appropriate to each individual context in order to effectively facilitate research-informed practice.

**KMb Constraints**

Just as the patterns of interaction within the Project CYMH program facilitated knowledge mobilization activities, it also constrained them. Participants identified items such as the structure of the program, the role of the coaches, tension, existing knowledge, external connections and Anglocentrism as aspects of the program that, in some ways, complicate how they go about connecting with research-based knowledge within the group. Unlike in the case of
KMb facilitators where in most cases at least half of the group identified most of the recurrent themes, fewer than half of the participants eluded to factors that complicate KMb activities as will be described in the following paragraphs.

**Organizational structure.** The most frequently cited inhibitor of KMb activity was the organizational structure of the Project CYMH program. All five of the coaches and three of the six Mental Health Leads interviewed made reference to at least one of three aspects of the formal program that they thought possibly constrained efforts to mobilize research knowledge: 1) time and resources to facilitate face-to-face interactions between coaches and MHLs as well as among the MHLs themselves; 2) the role of the coaches within the program; and, 3) the limited representation of school districts in the program.

**Time for face-to-face interaction.** Two coaches highlighted the lack of time that the Mental Health Leaders actually got to spend with their coaches and with each other as impediments to KMb activity. One coach stated quite clearly that “you don’t get enough time to spend face-to-face together with the leaders” (#3), referring to the lack of time s/he feels s/he has to effectively build relationships with the MHLs with whom s/he is working. S/he also spoke about the importance of the MHLs connecting with each other, describing how “there is only one day and we always want to give them time to talk to one another because them [MHLs] forming relationships and community to support them is very important” (#3). The importance of in person communication was stressed by this coach, but was inhibited by factors such and “time and distance” (#3) within a context where “there’s not enough money [for coaches] to visit all the time” (#3). Similarly, another coach acknowledged the need for communication between both the coach and MHLs and among MHLs themselves. This coach remarked that s/he had been trying to facilitate group communication amongst her group members (French language
school districts) through teleconferences, “but it [hadn’t] always been conducive to building that capacity within the French language group” (#1). As such, s/he tried “requesting a separate room for them during those [sic] mental health leadership meetings, so that they could connect together” (#1). Both of these coaches recognize that an important function of the Project CYMH program is to build connections among program members, but describe the limitations of the formal structure of the program (i.e., limited ability to connect in person because of time, distance, and money) in allowing them to do so.

One Mental Health Lead (albeit a MHL who also moonlights as a coach from time to time) also spoke about the heavy reliance on the coaching model which, in his/her opinion, restricts the time allocated for MHL to MHL interactions. That said, s/he acknowledges that as the program grows and learns over time, this is changing:

Just recently there was a day where all 72 Mental Health Leads had a meeting at the Ministry [of Education], but the first 30 [participating school districts] wanted a whole extra day, where when they came…they had a day amongst themselves to just put their own agenda on the table for what they were struggling with, I guess. What were the challenges?
And also to tell each other about where they felt they had successes, and a day was almost not enough time. No one wanted to go home. (#34)

This Mental Health Lead describes how as MHLs gain experience within the program that their needs are changing. Although they were provided with this “extra day” to meet in the 2013/14 academic year, this was not the case in the first two years of the program. As this person said, “Initially, so much more of it was from the coaching model…and now as time goes on, it’s very clear that the learning is from each other too” (#34). The importance of having the time for
Mental Health Leads may not have been as evident in the early days of the program, but it is clear that as time passes, the need for more time for interpersonal connection is much desired.

Coaches’ work. Interestingly, the coaches were viewed not only as a facilitator of knowledge mobilization, but also as a constraint by both coaches and Mental Health Leads. Coaches critiqued their role in terms of their personal approach to coaching work as well as the development of the coaching role within the program overall. Mental Health Leads questioned the role and knowledge of program coaches through a wider lens as described shortly.

One coach questioned whether or not she was engaging in enough activity with his/her assigned group of MHLs. She said, “I guess one question that I have is why aren’t they calling more often? And is that because I have not reached out enough, not reminded them enough, not sending them my phone number and email every week?” (#16). This coach engaged in a reflective exercise on her practice and connection with MHLs during our interview, and wondered out loud (unprompted) whether or not her personal style in terms of approaching her work as a coach was a mitigating factor in connecting MHLs with the knowledge and skills that they may need in the development of their school district’s evidence-based school mental health strategies. This comment suggests that this coach in particular did not interact with her group of MHLs as much as she expected. That said, she did say that those MHLs in her group “seem to be getting it. They’re moving ahead” (#16), although it was unclear to what extent she felt that she was aiding them in the process.

The program director, reflecting not only on her experience as a coach, but also on the experiences of all coaches and the feedback she had received from MHLs in her role as director, stated that “the coaching model is a tricky one because we are just building it” (#20). She is aware of the successes and pitfalls of the coaching model but goes on to say that “we had some
people where it worked well and others where it didn’t” (#20). Personal coaching could be an aspect of this disconnect, but she also suggested that there was a stronger need for “one-on-one coaching” (#20) instead of a group-based approach as it was in the early days of the initiative. The coaching model is “an evolving thing,” she stated, suggesting that it has “lacked a standardization across the coaches, and the Mental Health Leaders have been quite direct with me about what their needs are and when they are being met and when they are not” (#20). The evolving nature of the role of the coaches would help explain why they were generally so central in most dimensions of the Project CYMH network. As the design of the coaching model shifts over time, the network structures likely will too.

Mental Health Leads also spoke about how interactions with coaches may actually function as a network constraint rather than a facilitator of knowledge sharing. One MHL indicated that, although they are formally assigned to specific coaches, “there are some coaches that they [MHLs] would talk about [issues] in front of anyway, but there are some that you don’t know why they are coaches” (#28). This remark brings up the idea that not all coaches are perceived to be equal among the MHLs; some coaches’ skills, experience, and advice may be considered to be more valuable to some MHLs over others. Interestingly, another MHL who is frequently sought out as a resource across all networks, made a remark that supports this statement. She reported, “…when other Mental Health Leads have called me about stuff, I’ll say to them, ‘Well, what has your coach said?’ And so few of them call their coaches. So few of them know who their coaches are. I kind of find that perplexing” (#34). This is perplexing. One would assume that given the highly formalized structure of the program that all MHLs would be connected with their coach. This may be true; one must be wary of taking the word of one individual to be representative of the group. That said, this statement does reflect what the
network analyses show: there does seem to be a common group of individuals who are far less connected than others. This could be a possible explanation and a focus for future study. This particular Mental Health Lead also makes a suggestion that builds on the director’s comment about the evolution of the coaching model. This MHL suggested differentiating the roles of the coaches, tailored towards each individual coach’s strengths: “I think there is some work to be done around what is the role of the coach, and can we use different coaches for different reasons” (#34).

Thus, both coaches and Mental Health Leads question the ways in which the initial coaching model failed to support KMb in support of MHLs’ unique needs. Whether it be at the level of the individual coach’s approach to the work (i.e., not reaching out enough) or a broader issue with the design of the coaching model, over a third of the phase 2 participants identified the coaching model (as it existed during the first couple of years of the program) to need revision, but not necessarily complete re-structuring. Despite its flaws, the general opinion seems to reflect the director’s sentiment that “I think we can broaden it [the coaching model], but I don’t think I would change the implementation coaching effectually, a feature that has made a really big difference because people have been able to reach out when they needed help” (#20). The value and underlying goal of assisting school districts in the design and implementation of school mental health policy and programming was uncontested among all participants, rather it was the design of the coaching model in terms of how the coaching groups were organized that was brought into question.

**Limited representation of school districts.** One coach raised an interesting point about the participation of school districts being limited to Mental Health Leaders as potentially problematic to research use in district-level decision-making. This coach acknowledged that as
the Project CYMH program staff “move into more years [of experience], the coaching team has been talking about what we need to do to build the communication with school boards, with Superintendents, with Directors, because it’s not just about the Mental Health Leads; it’s about people who have arrived at the broader scope” (#25). This individual voices concern that, even though Superintendents are welcome to come to the regular meetings (but most don’t), focusing solely on the district Mental Health Leader may not be in the best interest of bringing an evidence-informed school mental health model to scale at the whole district level. She goes on to say,

I’m probably one of the only people who talks so much about her Superintendent, but I think it depends on the superintendent you have…

We have to remember that the Mental Health Leader is the Mental Health Leader, but they report to the Superintendent. And so if the Superintendent’s nature is one of more structured implementation and they have a good research background, they are going to be looking at other things, not just what the Mental Health Leader brings from Project CYMH. In other school boards, the Superintendent is going to be relying on whatever the Mental Health Lead brings. (#25)

The point that this coach was trying to raise was that even though a Mental Health Leader may be exposed to research-based knowledge within the context of Project CYMH, this doesn’t necessarily mean that it will make it into school district policy; district Superintendents play a major role in this work and their lack of inclusion in the early days of Project CYMH may be problematic in actually seeing the work of the program come to life in the individual schools districts. In some cases, as s/he raises, the Superintendent may rely solely on the knowledge that
the MHL brings to the table, but this should not be assumed across all cases. The challenge of building broader communication channels between Project CYMH and school districts is one that needs to be addressed, especially given that it is ultimately the school district as a whole (reflected through its development of evidence-informed policies and practices) that is the most desired user of research-based knowledge, and not just the Mental Health Leaders themselves.

Thus, formal aspects of the program structure such as the provision of time for face-to-face contact with colleagues, the role of the coaches in terms of providing support to MHLs, and which school district representatives take part in the program, emerged as factors that constrain knowledge mobilization activities within the group. Although not consistently cited by all interview participants, nearly three quarters of those interviewed (including all coaches) spoke about features specific to Project CYMH’s formal structure as limiting interactions within the group. In the following paragraphs, I explore other less frequently cited factors, such as the tension between the directives of the program and the school districts as well as the ways in which external groups present their research, were also identified as network constraints.

**Tension.** One coach and one Mental Health Lead spoke about the tension between the provincial and local direction in terms of school mental health. In many ways, Project CYMH is a proxy for the provincial Ministry of Education as its work is closely coupled with the goals and intentions at the provincial level, whereas the MHLs are representatives of what is happening at the local level. One coach describes his/her work in this way,

So dealing with those kinds of conflicting demands — what Project CYMH is asking them [MHLs] to do and what the reality of their Board is — and the demands that their Board personnel are making of them [is
difficult]. So, it’s kind of the nuances of how to please both groups (#16).

This coach is acknowledging that sometimes a disconnect exists between the priorities of these two contexts. Interestingly, a MHL (who was not formally assigned to this particular coach’s mentor group) echoed this point of view:

So Project CYMH gives us direction. So there’s [sic] some deliverables. There are some ‘you must dos,’ ‘you have to dos.’ If there was no Project CYMH, there would probably be some directions or priorities that I wouldn’t be engaging in because that wouldn’t reflect my local Board priority. So I wouldn’t be doing them… And this is one of the tensions because it’s like how do you balance the direction provincially with the direction locally? And that’s a tension (#31).

Although the issue between provincial and district level tensions was raised by only two of the interview respondents, it is notable that this particular coach and MHL were not formally working together within Project CYMH, suggesting that this tension could exist across many individual contexts. The dynamic between provincial demands and local directions could also help unpack why some school districts are more active within the group than others.

**External groups.** Half of the interviewed Mental Health Leaders spoke about external organizations providing access to research-based knowledge. In many instances, the MHLs were referring to pre-existing relationships with community organizations such as community children’s centres or professional organizations (e.g. Child and Youth Workers, social workers, school psychologists). Generally, these connections were described as knowledge pathways that occurred outside of the program, so I will not spend a lot of time focusing on describing them
here. However, one MHL spoke directly about Project CYMH’s efforts to connect MHLs with external organizations during a formal provincial meeting in a way that suggests that the program’s leadership needs to ensure that research-based knowledge is presented in a way that the MHLs perceive as ‘usable’ in their daily practice. She said,

When they [Project CYMH] bring in other people, whether it be the Centre of Excellence or whatever in Ottawa, it’s usually a waste of time because it’s [their work and presentations], too general, too basic, too simple… It’s got to be down to the applicable. Okay, what is it that the research that you are doing that is going to make a difference for us to help the kids or help our partners help our kids. (#28)

This is an important point and KMb barrier that needs to be understood: if the KMb activity’s content and form do not present the research material in ways that are perceived to be practically relevant to the practitioner, then the value of the connection is lost. In this way, assuming that this individual’s sentiment is shared at least by some others in the group, intermediary groups such as Project CYMH need to ensure that they consider the function and form of the KMb activity, ensuring that its intended audience will receive the knowledge in ways that make it relevant to their daily practice.

**Summary of KMb Constraints.** In summary, three categories of knowledge mobilization constraints were identified from the interviews. The organizational structure of the Project CYMH program was the most evident inhibitor of KMb activity. The lack of time for face-to-face interactions between coaches and Mental Health Leads as well as among the MHLs themselves as a consequence of physical distance between the membership and a lack of money to facilitate more in person communication challenges effective KMb as most participants spoke
of the person of learning from each other through face-to-face interpersonal connections. In addition, the evolving role of the coaches was also attributed to the organizational barriers to KMb. In some cases, coaches questioned whether their own personal styles and approach to coach may be restricting communication, and in others, the function of the coaches within the broader formal structure of the program was called into question. The idea that some MHLs dismiss the knowledge and expertise of their coaches was also acknowledged, which can also act as a barrier to effective knowledge mobilization. Second, the tension between internal (school district) and external (Project CYMH, provincial ministry) demands was also identified. Potential misalignments between provincial directions (and Project CYMH directives) and local school district goals created difficulty for some MHLs depending on the level of misalignment in each individual case. Lastly, although not acknowledged as a key source of research-based knowledge within the program, the point was raised that in some cases where Project CYMH endeavours to connect school districts with research knowledge from external organizations, the content and form of the presentation calls the practical relevance of the research into question.
Chapter 6: Discussion and Conclusion

In this final chapter of the dissertation, I will discuss the findings presented in chapters four and five in relation to each other and within the context of the literatures that informed this study. I begin by discussing the Project CYMH program as a unique and innovative model of a knowledge mobilization network. The intention here is to highlight some important contextual features of the program that the reader should bear in mind as I continue to discuss the patterns of informal interaction within the network and how these patterns facilitate and constrain knowledge mobilization activities. From there, I focus the discussion on the ways in which the findings of this investigation propose that the formal aspects of the program are more influential on the development of social capital within this group given that informal connections within the network are quite sparse. I will also speak to the finding that although coaches are (for the most part) central figures across the four relational dimensions queried in this study, the ‘key players’ within the network are not always people in formal positions of responsibility. I will outline some ideas based on interview data about why certain Mental Health Leaders also occupy prominent positions within Project CYMH. The final discussion point will address the fact that it is the program itself that more directly facilitates connections between research-based knowledge and practice and not necessarily the coaches as one might expect. To bring the dissertation to a close, I present the implications of this study for researchers, policy and policymakers, and practitioners, while also making suggestions for future research on networks in education. Finally, I offer some closing remarks on the importance of networks to the field of educational change and why continuing to approach the study of educational change initiatives through a social network perspective is vital to advancing the field.
A Unique and Innovative KMb Network Model

Project CYMH presents a unique and innovative knowledge mobilization model in that the initiative was designed in direct response to a problem of practice identified through empirical research. Recall that the impetus for the proposal to create Project CYMH came from findings from a review conducted by the Provincial Centre of Excellence for Child and Youth Mental Health (Santor, Short & Ferguson, 2009), which identified that not only were school districts largely unaware of the knowledge base in child and youth mental health, but also that, when they did have research knowledge and evidence from the field, they did not know what to do with it. In response to their findings, some of the report’s authors developed a proposal for the Ministry of Education to develop an initiative that supports school districts in the development and implementation of evidence-based and research-informed school mental health policy and programs. Thus, the Project CYMH program was rooted in research from the moment its idea was conceived. Rather than being a generic response to the broader call of connecting research and practice in education in general, this initiative was designed to address a specific challenge that was itself identified through a rigorous research process.

Furthermore, the design and implementation of Project CYMH in its own right also connects research and practice. The program leadership (who were also co-authors of the Centre of Excellence report) connected with external partners in Canada and the United States in both the fields of child and youth mental, educational administration, and implementation science to inform the work of the Project CYMH project itself, creating its own implementation support network. In this way, the program not only ‘talked the talk,’ but also ‘walked the walk’ because it modeled in its own practice the importance of using research and evidence to inform decision-making and implementation processes. Project CYMH’s commitment to research-informed
practice is clearly outlined in its own project overview where the leadership explicitly commits to “draw[ing] on research-based strategies for effective mental health leadership, capacity-building, and implementation in developing resources…[and]…us[ing] best practices in knowledge mobilization for sharing information about mental health” (Project CYMH Orientation Guide, 2013).

The fact that Project CYMH brings together Mental Health Leaders who, for the most part (there are a few exceptions), are coming from different school districts from across the province and who have no previous relationships with each other, characterizes Project CYMH as an innovative initiative. In most other studies of intermediary organization’s work with school districts (e.g., Honig, 2004; Coburn, 2010), intermediaries enter into a particular school district where the individuals with whom they are working having prior professional relationships with one another. Consequently, the intermediary begins its work within an established workplace with its own cultural norms and practices that may affect research use in district decision-making; there is existing social capital within these environments. Although some of the coaches and some MHLs had previously worked together (albeit the numbers were very few), there was very little existing social capital within the group at the onset of their collaborative work. Beginning with cohort 1 MHLs, new relationships had to be formed and the cultural norms and practices of the program as its own entity had to be established. It is important to note that in many ways the Project CYMH team was starting from ground zero in building social capital among the program participants. This adds a layer of complexity to the task of building a learning environment conducive to sharing complex knowledge and engaging with complicated problems of practice (a point I shall return to later on in this chapter).
In much of the early literature on networks in education, networks were characterized as being ‘bottom-up’ structures where participants come together out of a shared concern and become engaged in some sort of shared work (Townsend, 2010; Veugelers & O’Hair, 2005). In this case, however, the network comes into being as a result of a provincial initiative where the organizational boundaries are pre-determined and where network membership is not entirely voluntary. The network membership may be determined from the ‘top-down,’ but nevertheless, the broader work of the program and its members is a response to a challenge identified from the ‘bottom-up.’ Although the participants in the network may not have been determined through an organic approach of self-selection, the membership nevertheless is committed to a shared goal of building strong and mentally healthy schools by working interdependently through reflective processes in which they value each other’s expertise (Lieberman & Grolnick, 1996).

There is very little research on intermediaries that engage in interdisciplinary work. The mandate of Project CYMH is unique in that it brings together two broader fields, mental health and education, into the same purview rather seeing them work independently in the typically siloed landscape of social services. With coaches representing the fields of clinical psychology, social work, and educational administration working along Mental Health Leaders who may or may not have experience working in the education sector, the interdisciplinary nature of Project CYMH’s work brings with it its own host of challenges and opportunities. Notably, the health sector is considered to be farther along than education in its use of evidence to inform policy and practice (Nutley, Walter & Davies, 2007). It also operates using its own jargon, processes, and dispositions towards evidence use. Consequently, there may be challenges in adapting what may be common practice in the health sector to an education context. The lack of a common language, shared goals and ideas, and differing approaches to problem-solving may slow down
the implementation of evidence-informed practice in some school districts where the cultural norms around decision-making may preclude the use of evidence. Where each sector sits in relation to the other in terms of adopting an evidence-based stance to policy and programming — more specifically where each school district sits in terms of the value it places on research knowledge as an information source in decision-making — will affect the pace at which (and perhaps even the extent to which) an evidence-informed approach can be implemented. Given that Project CYMH represents a nested model of knowledge mobilization where the intent is that the information and knowledge acquired through the program’s coaching and resources is expected to be brought back to, shared, and implemented within each school district, it may be particularly challenging for MHLs who may work from a paradigm where research knowledge is seen to be a valuable input, but who find themselves working in parts of the education system that are at the (very) early stages of developing an evidence-informed approach to making decisions. The interdisciplinary nature of its work is a distinctive feature of the Project CYMH program.

I deliberately opened up this discussion by focusing on the ways in which Project CYMH is a unique and innovative KMb model because these particular features of the program are important to keep in mind as I continue to investigate the initiative through a social network lens. It is important to recognize that Project CYMH is an interdisciplinary network that is comprised of individuals with varying levels of experience and experience in the health and education sectors, for knowledge of both fields is integral to the design of effective school mental health policy and programming. Moreover, these people come together, in most cases, without any prior relationships with each other; thus, in addition to helping support school districts implement evidence-informed school mental health policy, program staff also have to focus some
of their attention on building a program infrastructure that supports relationship-building among
the MHLs and other school district representatives as well. This program was born of a gap
between research and practice that was identified through a formal research process. The
initiators of the program are people who are strongly committed to the belief that using evidence
to inform policy and programming decisions is essential to developing a system that is compelled
to building mentally healthy schools, and as such, all elements of the program’s design and
outputs are themselves rooted heavily in the best evidence available from the related fields. With
these very important contextual features in mind, I will discuss four important findings that
emerge when taking a social network perspective in understanding the Project CYMH
implementation support network: 1) formal events matter most; 2) central figures are not always
coaches; 3) the program itself is the research broker; and, 4) building a robust network takes
time.

**Formal Events Matter Most**

Program participants are not often connecting with each other outside of formally
organized Project CYMH events, potentially compromising the long-term sustainability of the
network. Across the four relational dimensions queried within the network, for every ten
possible connections, less than one is present. Furthermore, it is important to point out that,
unlike the advice, influence, and social support ties where respondents were asked how often an
interaction occurred or how influential it was, a research knowledge relation was recorded
regardless of the frequency of research exchange. As such, the number of times that members of
the Project CYMH community informally exchanged research knowledge is unknown; in this
study, a tie was recorded even if a research exchange occurred only once during the reporting
period. Although the research dimension of the network has the highest level of informal activity, had valued data been collected for this relation, it is entirely possible that the level of activity would have diminished had the same frequency criterion of ‘every month or so’ been applied to the research ties. Nevertheless, even had the research network reported less activity, the result of less than one out of every possible ten ties across relations would continue to hold true.

So do these patterns of interaction represent low levels of activity from a network point of view? When considered as a proportion of the total number of possible ties, it is fair that to say that the presence of only ten percent of all possible ties is indeed indicative of low levels of activity. However, it should not be surprising to see these low levels of activity, particularly in the early years of an initiative where the majority of individuals are new to this kind of work. Nevertheless, low density networks are not efficient in moving resources among its members; therefore, based on these initial data, research knowledge is unlikely to reach all members in a timely fashion through the informal dimensions of the Project CYMH network. As such research exchange is limited predominantly to formal Project CYMH meetings, which effectively limits what research knowledge is being mobilized to that which is chosen by the program leadership. Furthermore, the lack of research exchange relationships outside of the formal structure might suggest that there is still much work to be done in terms of establishing a culture of research use and research-informed practice where Mental Health Leaders are actively engaging with each other about issues of concern and using research knowledge to inform their decision making.

30 Recall that these data were collected from a prompt that asked respondents to identify from whom they had received information relevant to their policy work. Rather than asking them for the frequency of this exchange, I asked respondents to identify what different types of information (research, data, or other) they received. Because responding to a social network survey can be quite taxing, I forfeited the opportunity to ask about frequency of interaction in favour of identifying the type of information exchanged.
Not only does the lack of research ties imply that there is not yet a strong culture of research use among members of the Project CYMH program, the sparseness of advice and social support ties also restrict the development of a research use culture. Other research suggests that networks comprised of strong affective ties are more effective at facilitating the exchange of complex information and changing professional values (i.e., shifting towards evidence-informed practice) (Gibbons, 2004). Although advice ties were treated as instrumental ties in this study (ties that directly influence how individuals carry out their work), they carry with them an affective dimension, since asking someone for advice is in essence an admission that one does not have the requisite knowledge, or is not confident in his/her knowledge, to make a particular decision. There is a vulnerability in the act of asking for advice (Daly, 2010). Combined with the low levels of frequent social support activity within the informal network, there are few opportunities for participants in the program to develop high level of trust and reciprocal relationships that are needed to cultivate an environment where complex knowledge can be exchanged. This circumstance has been found in an earlier study that examined the exchange of data as a research evidence. In Daly et al.’s (2014) study, the sparseness of emotional ties was also identified and acknowledged as a potential barrier to developing organizational conditions conducive to data use. These data suggest that, at least in the early years of the program, a similar restrictive pattern may be emerging. Networks that are abundant in multidimensional relationships contribute to much more robust network structures that are more likely to endure disruption. The low levels of activity and lack of multifaceted relationships puts the Project CYMH network at risk of dissolution over the long term should these patterns continue.

The high degree of centralization within the research sharing behaviours in the network also jeopardizes the lifespan of the network in terms of its KMb activity should the patterns of
interaction continue to be fairly starkly divided between those in the core of the network and those on the periphery. The data from this study clearly demonstrate that regardless of the relational dimension queried, the majority of network activity is carried out by about sixty percent of the membership, leaving quite a substantial number of people sitting on the periphery of the network. Such a centralized structure weakens the overall stability of the network, particularly given that even within the network core there are a few central figures who are most often the sources of research knowledge within the group. The removal of these ‘key players’ (Borgatti, 2006) would result in a significant reduction in informal activity.

Despite the low levels of informal activity and its related characteristics (lack of mutual relationships and the focus of activity on a few key members rather than widely dispersed across the group), it is important to keep in mind that these data represent early patterns of interaction within the Project CYMH program. This is particularly true for cohort 2 Mental Health Leaders who, at the time of data collection, had been engaged in Project CYMH activity for only one academic year — a relatively short time within which to establish ‘strong’ relationships with colleagues from differing school districts from around the province with whom they had no previous interaction. A key question to ask might be, should we realistically expect to see higher levels of engagement evenly dispersed across the network membership at such an early stage in the life of the initiative (if ever)? Perhaps that is not a realistic expectation. Because there is so little research in the area of social networks and use of research knowledge, it is impossible to situate these findings in relation to others. This study provides a first step towards investigating the relationship between the two fields.

Qualitative data suggest that many of the MHLs coming into the program have limited or no experience either within school districts at all (i.e., they were coming into school district
contexts from a clinical practitioner background from outside the education system) or they had experience in the system, but little experience with the administrative side of school district work (i.e., they may have come to their MHL role from a previous role within the school district, but not with experience navigating the administrative context of district policy development and implementation). Although the MHLs may be coming to their role with strong clinical psychology or social work skill sets, there may be considerable deficits in terms of policy development and implementation, especially in education contexts. This may strongly influence whom within the network MHLs turn to for advice and information to support their daily work, turning to those individuals with the most experience straddling both domains — a point that I will return to later on in this chapter.

**Key Players Are Not Always Coaches**

Given the design of the Project CYMH program where coaches are formally assigned to support school districts and their Mental Health Leaders in the development of school mental health strategies, it would be reasonable to assume that the coaches would be key sources of information and advice, and among the most influential people within the network. One might expect to find network patterns where there are clusters of activity among the coaches and their assigned school district representatives. One might hypothesize that outside of formally-organized Project CYMH events, Mental Health Leaders interact often with the coaches with whom they have been formally matched as part of the program. However, although true to some extent, it does not adequately characterize the informal patterns of interactions as identified in this study.

Within the Project CYMH program, the network activity along each relational dimension is distributed across the group as a whole; it is not divided up into individual coaching groups.
Although the coaches are consistently among the most sought out individuals in the network, the frequency of interaction is quite variable with the number of times some coaches are sought out for resources being double or even triple that of others. There is wide variability within the research and influence relations in particular. While participating coaches are often (but not always) a part of the network core (it depends on the type of relationships queried), the amount of ‘weight’ that they carry within each relational dimension is not equal. For example, in the research network, there are two coaches who are cited as the sources of research knowledge at least twice as many times as the other coaches (in some cases even triple the number of ties). When these two coaches alone are removed from the network, almost one third of the ties disappear, which is more than all of the incoming ties for the other four coaches combined. In addition, one of these coaches ranks as the top source of all 4 types of resources. This is an important characteristic of the network as it seems that, despite the formal design of the coaching model, MHLs are reaching out beyond their assigned program coach for assistance.

It is also important to note that these ‘others’ are not always program coaches; this is true across all relational dimensions of the network. In direct relation to knowledge mobilization, it is evident upon examining the research sharing ties that two Mental Health Leaders figure prominently as sources of research-based knowledge given that each of these MHLs are identified as sources of research information twice as often as (all but one of) the remaining coaches. In some ways, this challenges the notion that only people in formal positions within the network (i.e., coaches) are seen as the only pathways to connecting research knowledge with practice settings. Nevertheless, it is noteworthy that there were only two MHLs who were ‘popular’ within this dimension of the network; virtually all other MHLs possess fewer than the average number of incoming research-based ties. Thus, it is important to ask the
question, what is it about these two individuals that make them stand out to their colleagues in this context?

This particular point emphasizes the importance of incorporating qualitative data in social network studies. Without the nuanced understanding that came through knowledge acquired through the interviews conducted as part of this study, it would have been much more difficult to understand why some people stood out as prominent individuals when others did not. To be clear, none of the findings in this study make any causal connections between characteristics of the individual and the extent to which they are frequently sought out by their colleagues for information, advice, support, and so on. Nonetheless, the interview data collected in this study provide some insight as to why this particular group of people stood out in terms of being central figures in the search for research knowledge within the Project CYMH program.

Based on comments from both the coaches and the MHLs during the interviews, a key function of the program is to help moderate local district contexts in order to be able to mediate the use of research knowledge. In many ways, the program coaches fulfill these needs, but as is demonstrated within the research dimension of the Project CYMH network, sometimes MHLs are also (sometimes more) central within the patterns of interaction. Focusing solely on the exchange of research knowledge through KMb activities embedded in the program, it becomes clear that those individuals perceived to be the most knowledgeable in terms of research knowledge are those people who possess a wealth of experience working on both sides of the equation so-to-speak, within the field of child and youth mental health in education settings. The coaches who are the most central in this network both come with extensive experience in the niche field of evidence-based practice and school mental health; one coach, in particular, was intimately tied to the development of an evidence-based education services team in a school
district that presents a notable example of a system with a strong culture of research use (see Levin, Cooper, Arjomand & Thompson, 2011). Furthermore, one of the prominent MHLs also came from this school district, referring to it herself as “cohort zero” in her interview because a lot of the work that was being carried out in other school districts as part of the program had already been through a sort of pilot process in her view during the years leading up to the creation of the Project CYMH program. Similarly, the other prominent Mental Health Leader also came from a school district where mental health was considered a priority area and research knowledge was included in the evidence base to which administrators within the district turned when making decisions. In this way, both of these MHLs came from school districts where there was already a formalized research capacity; they were coming from districts that were already exhibiting many of the behaviours that were now being championed across the province through the program. This combination of field-based knowledge in the unique area of school mental health combined with an intimate understanding of the ways in which school districts function could have characterized the expertise of these individuals as more credible or more authoritative by their peers, thus contributing to their central positions within the network.

However, as discussed in chapter four, this highly centralized pattern of interaction threatens the sustainability of the informal Project CYMH network in terms of research sharing because, should these four key players be removed from the network, the number of research-based connections within the network reduces by half. When you remove all coaches and the two central MHLs, the level of activity reduces by 75%, leaving behind a virtually non-existent informal network of research sharing within the program. Not only does this reiterate the point made earlier that the formal opportunities for knowledge exchange are central to carrying out Project CYMH’s work, but it also highlights the fragility of the informal network supporting
knowledge mobilization. Essentially, should any circumstance arise that resulted in the reduction or complete elimination of the program and its people, this network will completely dissipate. This brings me to my next point: in the case of Project CYMH, it is the broader program itself that functions predominantly as the research knowledge broker.

**The Broader Context of the Program Mediates KMb Activities**

Recall that from a social network perspective, ‘brokerage’ refers to the role that actors play in the network when they facilitate connections between otherwise disconnected others. Remember the A $\rightarrow$ B $\rightarrow$ C scenario where A is not directly connected to C, but rather A is *indirectly* related to C through its relationship with B. In this study, the investigation into the number of times individuals were informally brokering relationships among colleagues (playing the ‘B’ role) revealed that this was very rarely happening within Project CYMH’s research knowledge network. When prominent figures were identified through the lens of betweenness (who was connecting who to whom), about one quarter of the program’s membership demonstrated acts of betweenness (or relationship brokering). Yet, when you look at these scores individually, the majority of the individuals (60%) sit barely above zero with betweenness levels evaluated at one percent, with maximum betweenness being assessed at 7%. Given that a maximum score would be 1.0 (or 100%), these low results demonstrate that individuals are very rarely playing a brokering role in the sense of facilitating connections among their Project CYMH colleagues, thereby limiting the extent to which research knowledge is informally ‘brokered’ within the informal network. But while brokering activity was limited from a social network perspective (as evidenced by low levels of informal activity (density) and low betweenness), the qualitative data provided many insights into the ways in which Project CYMH
was connecting research and practice in ways much more consistent with what is known in the KMb literature.

With very few exceptions, Mental Health Leaders clearly identified Project CYMH as the main source of research knowledge that was used to inform their work within the district during the interviews. However, when they spoke about the program in relation to research, they spoke most often about their perceptions that every aspect of Project CYMH itself was evidence-based and it was through their interaction with the program more broadly (as opposed to with specific individuals) that they accessed research knowledge. When MHLs spoke about connecting with research knowledge, they were referring most often to resources and materials that they had access to during the formal professional development days. In effect, it is the artifacts distributed through membership in the Project CYMH program that are connecting research and practice within this network more often than individual people.

Interviews with both coaches and MHLs suggest much more direct interaction around research knowledge, but through formal materials (or products) distributed through formal events. This aligns with what Cooper & Levin (2010) and Nutley et al. (2007) have noted in their work where products and events were identified as important KMb mechanisms. Project CYMH as a program provides access and opportunities for MHLs to reach out to a colleague (sometimes, but not always, a coach…and sometimes not the person’s ‘assigned’ coach) for assistance in making an evidence-informed decision when a school district is experiencing a particular issue (e.g., youth death by suicide). These direct interactions allow for Project CYMH participants to be supported through difficult decision-making processes in an effort to determine the appropriate course of action in response to a particular situation. However, the number of instances where participants were able to speak to specific incidents where they sought out or
were asked specifically for research-based knowledge were extremely rare. Some coaches spoke in general terms about turning to each other for knowledge rooted in various domains during the process of module and materials development, but in most cases, particularly when it came to MHLs, people spoke with confidence that they engaged with research knowledge through the use of the evidence-based materials provided to them through their participation in Project CYMH.

What is missing in this study is a research use outcome measure where it could be determined to what extent that these claims of using research knowledge in the development school mental health policy are true. However, given the nature of the task and that school mental health is a new area of formalized responsibility in many school districts and that many MHLs are new to working in education contexts, it is a reasonable expectation that MHLs are relying on the research-informed materials they are provided through Project CYMH to engage in their policy work within the district. Coburn (2010) found that when school district personnel were connected directly with sources of research knowledge and where research knowledge was considered to be a valuable information source (as I would argue is the case for participants in this initiative), the levels of instrumental and conceptual research use were quite high. Although it may appear that there is little informal research brokering happening within the network, this does not mean that research knowledge is not being shared and used in district policy processes. In this case, it suggests that research knowledge is flowing more freely through the formalized program structures than through informal interactions. I hypothesize that this may be the case because of the interdisciplinary work that Project CYMH is carrying out in the field of education, which is focused on building a culture of using research evidence from numerous bodies of knowledge (i.e., child and youth mental health, implementation science) to inform policy and practice decisions — part of a significant paradigm shift occurring within the field of education.
It makes sense that the formal program would wield a lot of influence over the MHLs who are, in many cases, starting from ground zero within their school districts. Not only is the field of school mental health new terrain in many school districts, but the culture of many evidence-informed decisions is as well. Although the levels of informal activity are quite low when considered as a proportion of the total amount of activity possible, based on anecdotal data, there is no doubt that Project CYMH provides a valued, multidimensional support system for MHLs and their school districts as they learn to carry out the Ministry of Education’s mandate to create mentally healthy learning environments for all of Ontario’s pupils.

Interview participants repeatedly spoke about the effectiveness of the Project CYMH program as being instrumental in creating a supportive community with a shared vision and commitment to enhancing the public education system by addressing the mental health and well-being needs of all students, in all grades, and in all schools. Project CYMH is laying the foundation necessary to cultivating a culture of research use by creating shared norms and a culture of trust and respect among districts from across the province. These are all characteristics of effective networks (Katz & Earl, 2010; Lieberman, 1999; Lieberman & Grolnick, 1996; Lieberman & McLaughlin, 1992), and must continue for the network to continue to evolve. Furthermore, the importance of face-to-face connections is well-established in the literature (e.g., Coburn, 2010; Cross, Parker, Prusak & Borgatti, 2001) and may account for the reasons why there were so few informal connections during the first two years of the initiative. Through these interactions, the formal structures of the Project CYMH program are brokering not only research knowledge, but a variety of relationships (advice, influence, and social support, among many other likely types of unidentified relations in this study) that are essential to developing the intellectual and emotional support ties that encourage trust and reciprocity, two
conditions necessary for the exchange of complex information (Finnigan, Daly & Che, 2013; Daly, Finnigan, Moolenaar & Che, 2014).

That said, there are some valid reasons to be cautious from a social network perspective as the network continues to move forward. Although Project CYMH is providing an organizational context that, at least formally, is providing the circumstances necessary for coaches and MHLs to build positive relations with each other and for developing a culture of research and evidence use, the highly centralized nature of the program (as mentioned earlier) remains a cautionary point. Because so much of the network activity is influenced by the formal program, and because the formal program design is influenced so heavily by a small group of people, some network analysts might suggest that a relatively small number of people may wield tremendous influence over what knowledge is included and what knowledge is being left out.

This power is further strengthened by the centrality of these people within the informal network as well. Depending on the perspective of the analyst or commentator, this could be a contentious point. One could say that, given that it is early days within the program (which indeed it was at the time of data collection as the program continues on at present day), perhaps this highly centralized structure was needed in order to put into place the mechanisms necessary in order to move Project CYMH’s work forward. In the absence of longitudinal data that would allow for a much more complete and dynamic picture, we can assume the program has remained responsive to the needs of the MHLs and the formal structures of the program have evolved as the needs of the school districts have changed over time.\textsuperscript{31} From another perspective, one could argue that a small number of people within this group are functioning as ‘gatekeepers’ (Carolan, \textsuperscript{31} Project CYMH has demonstrated that its formal structural is flexible and responsive given that it shifted towards a regional model in 2013 where school districts that are in proximity to each other are grouped into clusters to facilitate joint work in school mental health across districts.)
exercising control over what sources of research knowledge is being used to develop the program at the risk of excluding what others might considerable valuable to the group. Because of the size and scope of this study and its emphasis on interactions among people as an influence on KMb activities (and not research use *per se*), I chose not to analyse the resources and materials used and provided by Project CYMH. Future KMb studies should consider what and whose research knowledge is being mobilized and with what effects. Studies that take a network approach would do well to consider other theoretical perspectives and approaches to design other than the one used in this work. For example, this could include two-mode network studies where two different groups of actors are included in the analysis (e.g., research users and the KMb events that they attend). Alternatively, network based theories such as actor-network theory (e.g., Latour, 2005; Law, 1992), which considers non-human actors (e.g. research-based products and events) as part of the network and seeks to understand the associations between all participants, both human and non-human (Latour, 2005, in McCormick et al., 2011). These alternative approaches would also make a unique contribution to understanding knowledge mobilization through a network lens.

**Limitations of the Study**

Like all research studies, this project has its limitations. First, this is an exploratory study, and as such, it is not generalizable to other intermediary programs. Nonetheless, it does represent a necessary first step in exploring the relationship between social interactions and how educators find and understand research knowledge. The knowledge gained from this study will inform further work in this area that will help guide more comprehensive studies that will offer more nuanced understanding of the relational aspects of knowledge mobilization and about how formally established networks in the education sector function.
This study also reports on data collected at a single point in time, which simply allows for a static picture of relations within Project CYMH to be examined. Consequently, we are left with no insight into how these patterns of interaction have changed over time. This study would have benefited from having data from each year of the initiative. Because the group of Mental Health Leaders is comprised two cohorts (one with two years of experience with the program versus the other who had only one year experience), longitudinal data for each of these groups would have allowed for more refined comparisons within and between groups. Hence, longitudinal data would provide much richer information that would allow researchers to capitalize on the insights that network data can provide.

I used a bounded, saturated approach in the collection of the network data in this study. This limited respondents to focusing on individuals from within the Project CYMH program and did not allow for deep exploration of outside sources of research-based knowledge. Although the survey included space for respondents to generally identify outside influences, this was not the focus of analysis in this study, but should be given more attention in future exploratory work in order to recognize all possible sources of research knowledge.

There was no outcome measure taken into consideration in this research. Although each school district theoretically was supposed to have developed its research-informed district mental health strategy, this research did not examine the extent to which these strategies demonstrated evidence of research use. Further studies should include document analysis to examine the extent to which research knowledge was used in the development of district policy, which could then be further explored in terms of its relationship with knowledge mobilization networks.

Furthermore, this study may have benefitted by seeking out more information about the individual school districts that were represented in the study. Although basic data such as district
size and location were collected, it may have been helpful to have gathered some contextual data about the school districts represented by the Mental Health Leaders. Earlier work on social networks and policy contexts (see Coburn & Russell, 2008) have suggested that local policy contexts influenced teachers’ patterns of interaction. Details on the extent to which research knowledge was prioritized as a policy input within each district may help explain the range in research-associated behaviour within Project CYMH.

Betweenness as a measure of brokerage is extremely limited (Daly et al., 2014). Although in this particular study, there were few opportunities for brokering, any future work should consider multiple brokerage measures in order to offer more details on the particular types of brokerage that are occurring within the particular context (see Gould & Fernandez, 1989 as suggested in Daly et al., 2014). This is particularly important for studies of intermediary organizations whose main function is to connect research and practice.

Lastly, as this study was designed to be a general inquiry into a network as an educational change strategy, the body of literature surrounding school mental health, including recent work that considers research evidence and child and youth mental health (e.g., Leslie, L. K., Maciolek, S., Biebel, K., Debordes-Jackson, G. & Nicholson, J., 2014), was not considered in the design, collection, and interpretation of these findings. Future research in this area should consider how this body of knowledge intersects with the school improvement and knowledge mobilization literature in order to refine our understanding of the complexities of this type of interdisciplinary work in education settings.

Implications

For research. This study should be of interest to researchers who are interested in investigating the role of relationships in facilitating goal attainment (i.e., mobilizing research
knowledge in this particular case) because it provides an example of how the application of social network theory and analysis can provide valuable information contributing to the generation of thick descriptions of the relational dimension of educational phenomena. The recognized importance of such relationships is not new. There are many contexts in the field of education where the quality of interpersonal relationships have been considered a key input to the success of a particular initiative or school improvement strategy — the collaborative work of teachers and administrators, learning as a social process, to name but a few. The use of social network analysis provides researchers with a concrete way to make the ‘invisible work visible’ (Cross, Borgatti & Foster, 2002), also providing useful visualizations of the patterns of interaction among members of identified groups (e.g., teachers, students, administrators, parents, schools, and so on). These visualizations alone can influence our understandings of who is connected to whom, including who may be completely isolated from the group; how often people are connecting with each other; and, who are the prominent people within a network, for example.

Furthermore, this work also demonstrates the utility of a mixed methods design, particularly in studies that employ a social network perspective. Social network research has been criticized by some scholars in education as being too quantitative in its approach (Lima, 2010); this study highlights the value in following up a quantitative mapping of network interactions with a qualitative phase to help further examine and understand network patterns and dynamics. These findings demonstrate how the knowledge gained from interviews with key informants helped to realize that there are other variables (e.g., school district characteristics, prior work with other Project CYMH colleagues) at play in determining the central positions of some coaches over others, and why the levels of activity outside of formal meetings was quite
low. Without the qualitative findings to help contextualize the quantitative data, aspects of the Project CYMH network structure could have been misinterpreted or misunderstood.

**For policy and policymakers.** Networks in various forms (e.g., policy networks, learning networks, school networks) have become an increasingly popular strategy through which to implement policy. The Project CYMH initiative provides an example of a provincially-funded policy implementation support network where the goal is to build the necessary capacity within school districts to develop and implement evidence-based and research informed school mental health policy. Government and district policymakers would benefit from recognizing that quantity and quality of interactions within these networks facilitate and constrain the activity necessary to carrying out this work. Moreover, developing effective networks takes time and adequate resources. There is no doubt that networks are an expensive educational change strategy, particularly in the case of interdisciplinary work such as the work of Project CYMH where the levels of existing infrastructure, experience and expertise across the school districts are highly variable. The findings from this study reiterate the necessity of providing collaborative spaces where network members are able to meet face-to-face, working to together on common problems of practice, especially in the early years of an initiative where it is important to develop a culture of trust and reciprocity within the group. It is easy to assume that the provision of time and space to work together will meet the needs of all participants and that all members will participate; however, network studies such as this one demonstrate that the levels of activity often vary across a network. It is easier to identify areas where activity is happen over those where it is not. Applying a social network perspective to generate formative feedback can help governments and decision-makers to re-allocate resources to parts of the network that may be in
the most need. This study emphasizes the importance of formal program structures in the
development of social capital with a network-based model.

For practice. Taking a network perspective can really help people become aware of what is happening in their social environments, providing critical insights that can function as an important feedback loop to inform future actions. In this particular case, these research findings can help the program leadership team understand the ways in which its member school districts are communicating and interacting with each other outside of formal professional development. Depending on the priorities and direction of the program, this information can help Project CYMH make decisions about how to change the structure of its program to meet the needs of its membership, if needed. For example, based on these results, the Project CYMH leadership might ask itself whether the low levels of informal interaction among coaches and Mental Health Leaders should be considered ‘a problem’ for the program. If the answer is yes, then they can begin making decisions that will encourage greater connectivity outside of formal events. If the answer is no, the leadership team can focus its energies on patterns of interaction within the formal structure of the program. Similar decisions can be made about other network characteristics such as high levels of centralization, core and peripheral members as well as isolates (entirely disconnected individuals), and low informal brokerage, all of which may or not, depending on the orientation of the initiative, be considered problematic for the implementation of the program. Furthermore, theoretical concepts such as cohesion, prominence, and brokerage and what we know about how each facilitates (or constrains) knowledge exchange or building trust in communities can help leadership teams make informed decisions around future directions.
Project Child and Youth Mental Health provides a unique example of a program or an initiative that is part of a broader nested system where the expectation is that participants will return to their ‘home base’ to share and implement their learning. These analyses help raise some critical issues to address during the design and implementation of an initiative (e.g., professional learning communities) were education organizations to take a network approach to building internal capacity to carry out its work in mental health. It is important to always bear in mind that taking a ‘network approach’ means paying attention to the ways that people are (or are not) connected and why those patterns of interaction exist; it’s not just about drawing a boundary around a particular group of people and calling it a network. When designing and implementing educational change strategies from a network perspective, it is necessary to consider how you can facilitate both awareness of and access to the various kinds of expertise that exists among members of the group. Paying attention to who is included in your network and establishing structures and processes that enable the group’s ability to connect with each other is critical. Networks cannot be taken for granted; it is important to consider that they do not always function in positive ways. Some patterns of interaction may result in ‘group think’ or resistance to particular ideas — results that may be contrary to the original intent. Lastly, as is evidenced in this study about knowledge mobilization, the types of knowledge and how they get shared is an important aspect to consider as it may be the case that different resources and materials provided through network activity may also play a significant role in how the network functions, perhaps even having an impact on the patterns of social interactions among members of the group. Like most things in our increasingly complex world, patterns of social interaction are messy and complicated. The implications of a network, or relational, approach to understanding educational change phenomena for research, policy, and practice extend far beyond what are outlined here.
However, these ideas offer some first steps towards unpacking the social world with an aim of better understanding its impact on our work in education.

**Recommendations for Future Research**

Future research on networks, whether it be within the context of knowledge mobilization or any other related area of education, must include longitudinal data. The limitations of this research based on its collection of single, point-in-time data cannot be understated. Although this study provides some interesting insights and baseline data on early levels of informal activity within the Project CYMH program, the results of these analyses would have been enhanced had longitudinal data been collected. Social network data collected at multiple time points allows researchers to trace network evolution over time, which would be helpful in developing a fuller understanding about how, why, and in what ways the patterns of interaction within a particular context ebb and flow as time passes. Longitudinal data allow for more sophisticated and nuanced network modeling which would deepen our knowledge on the role of relationships in the field.

Furthermore, where feasible, social network studies should employ a mixed methods design. As I highlighted earlier in this chapter, the inclusion of interview data as a follow-up to the network mapping considerably influenced the ways in which this study’s findings came together. Phase 1 survey data enabled us to visualize and describe the patterns of interaction around research and advice seeking, influence, and social support. However, with analyses restricted to these data alone, the study would not have been able to explain the conditions within the program that contributed to the patterns of interaction as observed. Not being able to do so could have led to misinterpreting or misunderstanding how these patterns were shaped by the program and how they contributed to knowledge mobilization activity. The inclusion of both
quantitative and qualitative data undoubtedly enhances our understanding of how networks function.

Lastly, although the emphasis is on the relationships between people in social network analysis, the individual attributes of the network members remain an important aspect to query in network studies. Since the design of this study, a social network perspective has been applied in other investigations of the role of social networks in relation to the use of research evidence in education (see Finnigan & Daly, 2014). The researchers in these studies have developed more refined survey instruments that seek to define the culture of research use in schools that could be used in future studies. Although the attribute data based on work in Canada on KMb in the healthcare field did suggest some interesting areas to explore further (i.e., individuals experience with research, connections to researchers, and levels of research use), survey instruments tailored specifically to education contexts may be more adept at highlighting what characteristics of the individual may influence practitioners’ use of research knowledge in their daily work.

Continuing Forward: Some Concluding Thoughts on Network Research in Education

I designed this study in response to the rise in the number of studies in education research that recognized that networks were an important educational change strategy and that paying attention to the influence of social capital is essential if we are to understand why some change initiatives are successful and others less so. I asserted that up until the time of the study’s design (2011-2012), most network studies highlighted the organizational conditions that were necessary to facilitate the development of ‘effective networks’ without paying attention to the very thing that made them networks in the first place: the relationships within them. Building on the work of other education scholars who have also sought to highlight the ways in which relationship mediate a variety of educational phenomena (e.g., Alan Daly, Kara Finnigan, Cynthia Coburn,
Bill Penuel, and Jim Spillane among others), I set out to understand how social networks mediate knowledge mobilization within a policy implementation support network. I did this by employing social network theory and methods to examine the informal patterns of interaction within this network. I chose knowledge mobilization as the context for this work because more and more frequently I saw the same thing happening: networks being purported as an effective KMb strategy without investigating the ways in which they actually work.

Despite its limitations, this work reinforces ideas from early network research: shared values, a commitment to joint work, and communication skills are essential to success of a network. These things definitely matter. But more importantly, this work offers an example of how taking a social network perspective affords a detailed account of the ways in which members of a network interact with other. This perspective expands our knowledge about how networks function; it emphasizes the action within the network rather than focusing solely on the conditions that support its development. This research alongside the relatively few other studies in education that have taken a social network approach focuses our attention on the fact that, even in situations where contexts are relatively similar in terms of resources and access to expertise, the ways in which people interact with each other have profound influences on the ways in which educators and other education stakeholders carry out their work.

Networks matter. They have always mattered; they just have not always been at the forefront of our minds. I am confident that should one do a historical account of research in educational change, one would find that researchers have often spoke about the influence of people’s relationships with one another on their particular issues of interest. Where the shift is currently happening is, given the rise of social networking in a popular sense (think technology…Facebook, Twitter, Instagram and so on), people are more attuned to the fact that
our relationships matter. Where the old adage used to be, “it’s not what you know, it’s who you know,” we are increasingly coming to understand that “what you know depends on who you know.” And this matters — especially when it comes to connecting research and practice in education. Consequently, there is growing consensus across the field that the social capital generated through our interactions with each other has been a missing piece in our conversations as education scholars. Yes, it has always been there in the background, but it’s time to bring it out front and centre. And this study does just that.
References


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Appendix A: Administrative Letter of Consent

OISE
ONTARIO INSTITUTE FOR STUDIES IN EDUCATION
UNIVERSITY OF TORONTO

October 21, 2013

Dear Dr. [BLINDED],

My name is Joelle Rodway Macri and I am a PhD candidate in the Department of Leadership, Higher and Adult Education at the Ontario Institute for Studies in Education at the University of Toronto. Under the supervision of Dr. Stephen Anderson, I am conducting research for my doctoral dissertation that investigates the role of social networks in support of developing evidence-based policy in Ontario school districts. This letter is a formal request for your permission to ask your program members to participate in my study.

Participation in this study will afford your group with the opportunity to participate in a study that is using an exciting new methodology in education research: social network analysis. This study will provide the [BLINDED] leadership team and members with insights about their patterns of interaction with each other within the context of this community of practice. It will also provide you with information about how these interactions are supporting (or constraining) the use of research-based knowledge in the development of board mental health strategies. Results from social network analyses in previous organizational studies have been shown to help leaders improve opportunities for improved communication and collaboration in support of organizational goals. At the individual level, this experience will provide individuals with the opportunity to reflect on the ways in which participation in this program has been influential on their daily practice as well as the degree to which they are engaging the social resources available to them with the [BLINDED] community. Should your group choose to participate, each participant will receive an executive summary of the project in the readers' preferred language (English or French) upon completion of the study. You may request a full version of the dissertation from me directly; alternatively, a full version will also be available to you through the University of Toronto library system. In addition, upon request of the leadership team, I will make myself available to present and explain the study's findings during one of your regular meetings.

The objective of this study is to explore the role of professional networks in mobilizing knowledge that supports the development of evidence-based board mental health strategies. The central research question in this study is: "To what degree do social interactions among participants in the [BLINDED] initiative mediate knowledge mobilization activities in support of developing evidence-based school mental health policy?" This is a mixed methods study that proposes to collect data in two phases. Phase 1 focuses on the mapping and analysis of the [BLINDED] professional networks through the employment of questionnaire that will be administered online to all Mental Health Leaders who consent to participate. Phase 2 examines
more closely the ways in which the professional networks influence district Mental Health Leaders' use of research-based knowledge in their policy-making work. Based on the findings from phase 1 of the study, a sample of Mental Health Leaders and [BLINDED] coaches will be selected to participate in interviews that will be conducted in person where possible or via telephone or internet assisted media (i.e., Skype). Participation is voluntary and all participants will be offered a coffee shop gift card in appreciation of their time and effort at each stage of data collection. All data collection procedures will be offered to participants from French language school districts in French should that be their preference as I am functionally bilingual in English and French.

At no time during this study will I make any value judgements upon or evaluate participant responses or professional performance. Participants may refuse to answer a question or withdraw from the study (within indicated timelines) without consequence. Questionnaire and interview data will remain confidential at all times; the names of individual participants and school districts will not be identified in any written report of the study's findings. Although individual names will be used in the questionnaire, unique, randomly assigned identification codes will be given to each participant prior to data analysis and only these codes will be used in the presentation of results. Furthermore, data will be presented at the aggregate (group) level, NOT at the individual level. Only my doctoral committee members (Drs. Stephen Anderson, Carol Campbell from OISE/UT and Dr. Alan Daly from the University of California at San Diego) and I will have access to the data collected.

Should you choose to offer your consent for me to present my study to your group and ask for their individual participation, please sign below and return this letter to me in the envelope provided. I would be more than happy to meet with you to discuss this study in further detail and to answer any questions you may have prior to your giving consent should you desire. Please feel free to contact me (joelle.rodwaymacri@mail.utoronto.ca; 905-903-9867), or alternatively, you may contact my supervisor, Dr. Stephen Anderson (steve.anderson@utoronto.ca; 416-978-1156), if you have any questions or concerns about the project. Any further questions about the rights of participants should be directed to the University of Toronto Ethics Review Office (ethics.review@utoronto.ca; 416-946-3273). I thank you in advance for considering participation in my study. I look forward to hearing from you; I think there is much that we can learn from each other.

Warmly,

Joelle Rodway Macri (MA, OCT)
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Dr. Stephen E. Anderson
Professor, Leadership, Higher and Adult Education
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ACKNOWLEDGEMENT OF ADMINISTRATIVE CONSENT

Administrator's Name (Please print)

Signature

Date

Email address
Appendix B: Letter of Invitation and Consent

OISE
ONTARIO INSTITUTE FOR STUDIES IN EDUCATION
UNIVERSITY OF TORONTO

November 2013

Dear Coach or Mental Health Leader,

This letter is an invitation to participate in a research study which considers how social networks mediate the use of research-based knowledge in support of evidence-based student mental health policy-making. It is being conducted by Joelle Rodway Macri, OCT, to meet the requirements of the Doctor of Philosophy (Education) degree at the Ontario Institute for Studies in Education at the University of Toronto. The purpose of this research is to find out how professional interactions among colleagues in the [BLINDED] program may influence the use of research-based knowledge in the development of board mental health strategies. The goal is to understand how providing an interactive space for mental health professionals to examine, discuss and relate research-based knowledge to their practice may support and/or constrain the use of research-based knowledge in the development of board mental health strategies. All [BLINDED] program coaches and Mental Health Leaders with at least one year experience with the program are being invited to participate; the maximum number of participants in this study is 35. Your participation is completely voluntary.

Procedure. As a participant, you will be asked to fill out a survey. The survey will be administered online and can be completed over multiple sittings (you do not have to complete the survey all at once should you choose). Completing the survey should take approximately 30-40 minutes in total. Questions in this survey will ask you about your interactions with your [BLINDED] colleagues in terms of giving and receiving advice and information related to developing a mental health strategy. You will also be asked questions about your professional experience and use of research-based knowledge in your professional practice — information that will be used to provide an overall description of the participants in the program. You will have the right to refuse to answer any question that makes you feel uncomfortable and you can request to withdraw from the study within 14 days of completing the survey. Mental Health Leaders and coaches may be invited to participate in the interviews based on results of the phase 1 network analyses; individuals who provide consent for phase 2 consideration at the bottom of this letter and who meet eligibility criteria as determined by phase 1 findings will be invited via email to participate in the interviews. Each interview will be approximately 30-45 minutes long and will be administered face-to-face (where possible) or via telephone or internet assisted media (i.e. Skype); you will only be interviewed once. The intention of the interview is to deepen my understanding about who you interact with and why, how these interactions influence the ways in which you use research-based knowledge in your practice, and about what your role is in sharing research knowledge with others. With your consent, the interview will be digitally recorded for transcription purposes. You will be sent a copy of the interview transcript within two weeks of the interview and you will have 14 days to review/amend/withdraw your responses.
**Risks.** There are no known physical risks associated with taking part in this study. If you feel uncomfortable while filling out the survey or experience any fatigue or discomfort, you may choose to discontinue the session and end the data collection at any time. While some of the questions will ask you about relationships with others, your responses will never be used in any sort of evaluative capacity; no job-related risks are expected to result from participation in this study. At NO TIME will you be judged personally or will value judgements be placed on your responses. Your identity will remain confidential at all times. It will be protected by the assignment of an individual identification code immediately upon data collection; this code will be used during all data analysis procedures and presentation of the findings. All data that will be shared within the [BLINDED] initiative will be in aggregate form and anonymized; only general patterns of network activity will be described.

**Benefits.** In addition to adding to the knowledge base on connecting research to practice, your participation will provide you with the opportunity to reflect on your own professional engagement with the [BLINDED] program, allowing you to consider your current practice in light of your own professional goals. You will be involved in a study that is using a cutting edge methodological design in education research (social network analysis) that may provide you with new insights and methodological tools that you can bring back to and use in your own districts in order to better understand what's happening in your district's professional learning initiatives. Findings from this study may also be used to inform future [BLINDED] program planning and future evaluation work.

**Confidentiality.** To maintain confidentiality, your survey and interview information will be identified by unique, randomly assigned identification number (and not by name) so that your identity and personal information will be kept as confidential as possible. Additionally, all names that you provide will be kept confidential. Only the study investigator and members of her advisory committee will have access to the database. The investigator and advisory committee are required by the University of Toronto Ethics Review Board to maintain your confidentiality. All records will be kept in a locked cabinet in the investigator's home. Any digital materials will be kept in password protected documents, on a password protected computer, on a password protected private network in the investigator's home. Any data that may be transmitted over computer networks will be in encrypted format. After five years, all digital and print data will be destroyed. Results of this study may be used for publication or for presentation at scientific meetings; your identity and the identities of your colleagues and the [BLINDED] program itself will be protected by the use of pseudonyms in any and all reports of this study's findings.

**Compensation.** You will receive a $10 gift card for a coffee shop of your choice (Tim Hortons or Starbucks) in appreciation of your time and participation at each stage of data collection (survey and the interview, if applicable). The gift card is yours to keep, even in the event that you decide to withdraw from either phase of the study.

**Subject's Rights.** It is your right to decide to participate in this study. You are free to refuse to answer any question that makes you uncomfortable (by leaving it blank) or to discontinue participation in this study at any time. You have the right to withdraw your data from any phase of the study within 14 days of data collection. You will be reminded of your rights as a
participant prior to the commencement of each phase of data collection. Upon completion of the study, you will receive an executive summary of the findings in your preferred language (English or French). You will also be provided full access to the complete dissertation (English only) upon request.

Should you decide to participate in this study, please send an email to Joelle Rodway Macri (joelle.rodwaymacri@mail.utoronto.ca) indicating your intent to participate and return the completed form in the stamped, addressed envelope provided to you (see attached). If you have any questions, please feel free to contact Joelle directly or her supervisor, Dr. Stephen Anderson, using the contact information below. You may direct any questions about your rights as a research subject to the University of Toronto’s Office of Research Ethics at 416.946.3273 or ethics.review@utoronto.ca. Thank you in advance for your participation.

Sincerely,

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CONSENT TO PARTICIPATE IN STUDY

PLEASE RETURN THIS PAGE TO JOELLE RODWAY MACRI USING THE ENVELOPE PROVIDED.

By signing below, you are indicating that you are willing to participate in the study, you have received a copy of this letter, and you are fully aware of the conditions above. Your email address will be used to send you further information about your participation (i.e., link to online survey, invitation to participate in an interview if selected).

Name: ________________________________

School District: ________________________________

Signed: ________________________________

Date: ________________________________

Email address: ________________________________

Please initial if you are willing to participate in the phase 1 survey: __________

Please initial if you are willing to participate in a phase 2 interview (if invited): __________

Please initial if you agree to have your interview digitally recorded (if invited): __________

Please initial if you would like to receive a copy of the FULL dissertation upon completion: __________

***PLEASE KEEP A COPY OF THIS FORM FOR YOUR RECORDS.***
Cher leader en santé mentale,

Cette lettre est une invitation à participer à une étude de recherche qui prend en compte comment les réseaux sociaux jouent le rôle d'arbitrage sur l'utilisation des connaissances fondées sur la recherche en soutien à la prise de décision politique en santé mentale dans les écoles, fondée sur des preuves. Cette étude est conduite par Joëlle Rodway Macri, EAO, pour répondre aux exigences du doctorat en philosophie (Éducation) de l'Institut d'études pédagogiques de l'Ontario de l'Université de Toronto. L'objectif de cette recherche est de découvrir comment les interactions professionnelles parmi les collègues dans [BLINDED], peuvent influencer l'utilisation des connaissances fondées sur la recherche dans la création de conseil sur la santé mentale. L'objectif est de comprendre comment fournir un espace interactif pour les professionnels en santé mentale dans le but d'examiner, de discuter et d'établir les connaissances fondées sur la recherche à leur pratique afin de soutenir et/ou restreindre l'utilisation des connaissances fondées sur la recherche dans la création de stratégie de conseil sur la santé mentale. Tous les formateurs et les leaders en santé mentale de [BLINDED] avec plus d'une année d'expérience avec le programme sont invités à participer; le nombre maximum de participants dans cette étude est de 35. Votre participation est entièrement volontaire.

**Procédure.** En tant que participant, il vous sera demandé de répondre à un sondage. Ce sondage sera administré en ligne et peut être complété au cours de plusieurs séances (vous n'êtes pas obligé(e) de répondre au sondage en une seule fois). Ce sondage devrait vous prendre entre 30 et 40 minutes en tout. Les questions concerneront vos interactions avec vos collègues de [BLINDED] au sujet des conseils reçus et donnés et des informations liées à la création de stratégie sur la santé mentale. Il vous sera aussi posé des questions concernant votre expérience professionnelle - des renseignements qui seront utilisés dans le but de fournir une description généralisée des participants dans le programme. Vous aurez le droit de refuser de répondre à n'importe quelle question qui pourrait vous mettre mal à l'aise et vous pouvez aussi retirer des questions de l'étude dans les 14 jours après avoir répondu au sondage. Les leaders en santé mentale et les formateurs peuvent être invités à participer à des entrevues par rapport aux résultats des analyses de réseau de la phase 1; les individus qui fournissent un consentement pour la phase 2, en bas de cette lettre, et qui répondent aux critères d'admissibilité, tel que déterminé dans les résultats de la phase 1, seront invités par courriel à participer aux entrevues. Chaque entrevue sera d'environ 30-45 minutes et sera faite face-à-face (le cas échéant) ou par téléphone ou média internet (ex: Skype); il n'y aura qu'une seule entrevue. L'objectif de cette entrevue est d'approfondir ma compréhension sur les personnes avec qui vous interagissez et pourquoi, comment ces interactions influencent les manières dont vous utilisez les connaissances fondées...

**Risques.** Il n'y a aucun risque physique connu associé à la participation de cette étude. Si vous ne vous sentez pas à l'aise avec les questions du sondage ou si vous ressentez de la fatigue ou de l'inconfort, vous pouvez choisir d'arrêter la séance et la collecte de données en tout temps. Même si ce sondage vous posera des questions concernant vos relations avec d'autres personnes, vos réponses ne seront jamais utilisées dans aucune capacité d'évaluation; il n'y a aucun risque lié au travail par rapport à votre participation à cette étude. EN AUCUN CAS, vous serez jugé personnellement ou des jugements de valeur seront placés sur vos réponses. Votre identité restera entièrement confidentielle. Elle sera protégée par l'assignation d'un code d'identification individuel lors de la collecte des données; ce code sera utilisé pendant toutes les procédures d'analyse des données et la présentation des résultats. Toutes les données qui seront partagées sous l'initiative de [BLINDED] seront agrégées et anonymisées; seuls les modèles généraux de l'activité de réseau seront décrits.

**Avantages.** En plus d'enrichir la base des connaissances en connectant la recherche à la pratique, votre participation vous permettra de réfléchir sur votre engagement professionnel avec [BLINDED], vous permettant ainsi de prendre en compte votre pratique actuel et vos propres objectifs professionnels. Vous participerez à une étude qui utilise une conception méthodologique à la fine pointe dans la recherche sur l'éducation (analyse des réseaux sociaux), vous permettant ainsi d'obtenir de nouvelles perspectives et des outils méthodologiques que vous pouvez utiliser dans vos arrondissements afin de mieux comprendre ce qui se passe dans les initiatives d'apprentissage professionnel de votre arrondissement. Les résultats de cette étude peuvent mieux préparer la planification future de [BLINDED] et les travaux d'évaluation futurs.

**Confidentialité.** Pour préserver la confidentialité, vos renseignements liés au sondage et à l'entrevue seront identifiés par un numéro d'identification aléatoire et unique (et non par nom), afin que votre identité et vos renseignements personnels restent strictement confidentiels. En plus, tous les noms que vous mentionnerez resteront aussi confidentiels. Seuls la chercheuse et les membres de son comité consultatif auront accès à la base de données. L'Université de Toronto oblige la chercheuse et le comité consultatif à maintenir votre confidentialité. Tous les dossiers resteront dans une armoire verrouillée au domicile de la chercheuse. Tout matériel numérique sera gardé dans des documents protégés avec un mot de passe, sur un ordinateur protégé par un mot de passe, et avec un réseau privé qui sera aussi protégé par un mot de passe, au domicile de la chercheuse. Toutes les données qui seront transmises sur les réseaux de l'ordinateur seront en format crypté. Après cinq années, toutes données numériques et imprimées seront détruites. Les résultats de cette étude peuvent être utilisés aux fins de publication ou de présentation dans des réunions scientifiques; votre identité et l'identité de vos collègues, ainsi que le programme, seront protégés par l'utilisation de pseudonymes dans tous les rapports de cette étude.

**Risques.** Il n'y a aucun risque physique connu associé à la participation de cette étude. Si vous ne vous sentez pas à l'aïse avec les questions du sondage ou si vous ressentez de la fatigue ou de l'inconfort, vous pouvez choisir d'arrêter la séance et la collecte de données en tout temps. Même si ce sondage vous posera des questions concernant vos relations avec d'autres personnes, vos réponses ne seront jamais utilisées dans aucune capacité d'évaluation; il n'y a aucun risque lié au travail par rapport à votre participation à cette étude. EN AUCUN CAS, vous serez jugé personnellement ou des jugements de valeur seront placés sur vos réponses. Votre identité restera entièrement confidentielle. Elle sera protégée par l'assignation d’un code d'identification individuel lors de la collecte des données; ce code sera utilisé pendant toutes les procédures d'analyse des données et la présentation des résultats. Toutes les données qui seront partagées sous l'initiative de [BLINDED] seront agrégées et anonymisées; seuls les modèles généraux de l'activité de réseau seront décrits.

**Avantages.** En plus d'enrichir la base des connaissances en connectant la recherche à la pratique, votre participation vous permettra de réfléchir sur votre engagement professionnel avec [BLINDED], vous permettant ainsi de prendre en compte votre pratique actuel et vos propres objectifs professionnels. Vous participerez à une étude qui utilise une conception méthodologique à la fine pointe dans la recherche sur l'éducation (analyse des réseaux sociaux), vous permettant ainsi d'obtenir de nouvelles perspectives et des outils méthodologiques que vous pouvez utiliser dans vos arrondissements afin de mieux comprendre ce qui se passe dans les initiatives d'apprentissage professionnel de votre arrondissement. Les résultats de cette étude peuvent mieux préparer la planification future de [BLINDED] et les travaux d'évaluation futurs.

**Confidentialité.** Pour préserver la confidentialité, vos renseignements liés au sondage et à l'entrevue seront identifiés par un numéro d'identification aléatoire et unique (et non par nom), afin que votre identité et vos renseignements personnels restent strictement confidentiels. En plus, tous les noms que vous mentionnerez resteront aussi confidentiels. Seuls la chercheuse et les membres de son comité consultatif auront accès à la base de données. L'Université de Toronto oblige la chercheuse et le comité consultatif à maintenir votre confidentialité. Tous les dossiers resteront dans une armoire verrouillée au domicile de la chercheuse. Tout matériel numérique sera gardé dans des documents protégés avec un mot de passe, sur un ordinateur protégé par un mot de passe, et avec un réseau privé qui sera aussi protégé par un mot de passe, au domicile de la chercheuse. Toutes les données qui seront transmises sur les réseaux de l'ordinateur seront en format crypté. Après cinq années, toutes données numériques et imprimées seront détruites. Les résultats de cette étude peuvent être utilisés aux fins de publication ou de présentation dans des réunions scientifiques; votre identité et l'identité de vos collègues, ainsi que le programme, seront protégés par l'utilisation de pseudonymes dans tous les rapports de cette étude.

**Indemnisation.** Vous recevrez une carte-cadeau de 10$ dans le café de votre choix (Tim Hortons ou Starbucks) en remerciement pour votre temps et participation à chaque étape de la
collecte de données (sondage et entrevue, le cas échéant). La carte-cadeau vous appartient, même si vous décidez de vous retirer d'une des étapes de l'étude.

**Droits de la personne concernée.** C'est votre droit de participer à cette étude. Vous êtes libre de refuser de répondre à n'importe quelle question qui pourrait vous mettre mal à l'aise (en laissant les cases vides) ou en arrêtant votre participation à cette étude, en tout temps. Vous avez le droit de retirer vos données au cours de n'importe quelle étape de l'étude dans les 14 jours après la collecte des données. On vous avisera de vos droits en tant que participant avant le début de chaque phase de la collecte de données. À la fin de l'étude, vous recevrez un sommaire exécutif des résultats dans la langue de votre choix (anglais ou français). Vous recevrez aussi un accès complet à toute la dissertation (anglais seulement), sur demande.

Si vous décidez de participer à cette étude, veuillez envoyer un courriel à Joëlle Rodway Macri (joelle.rodwaymacri@mail.utoronto.ca), indiquant votre intention de participer et veuillez remplir le formulaire et le mettre dans l'enveloppe pré-adressée et timbrée (voir ci-joint). Si vous avez des questions, veuillez contacter directement Joëlle ou son superviseur, Dr. Stephen Anderson, en utilisant les coordonnées ci-dessous. Vous pouvez diriger vos questions concernant vos droits en tant que sujet de recherche au Bureau de l'éthique en recherche de l’Université de Toronto au 416.946.3273 ou par courriel à ethics.review@utoronto.ca. Merci d'avance pour votre participation.

Cordialement,

---

**Joëlle Rodway Macri (MA, EAO)**  
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Leadership, Enseignement supérieur et de l'éducation des adultes  
IEPO/Université de Toronto  
252 Bloor St. W., Room 6-126  
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**Dr. Stephen E. Anderson**  
Professeur  
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252 Bloor St. W., Room 6-116  
Toronto, ON M5S 1V6  
Téléphone : 416.978.1156  
Courriel : steve.anderson@utoronto.ca
CONSENTEMENT POUR PARTICIPER À L'ÉTUDE

VEUILLEZ RETOURNER CETTE PAGE À JOELLE RODWAY MACRI
EN UTILISANT L’ENVELOPPE FOURNIE.

En signant ci-dessous, vous indiquez que vous désirez participer à l’étude, que vous avez reçu une copie de cette lettre, et vous êtes conscient(e) des conditions mentionnées ci-dessus. Votre adresse électronique sera utilisée pour vous envoyer des renseignements supplémentaires concernant votre participation (ex : lien au sondage en ligne, invitation à participer à une entrevue, si vous êtes sélectionné(e)).

Nom :

Nom du conseil scolaire :

______________________________

Signature:

______________________________

Date:

Nom du conseil scolaire :

______________________________

Courriel:

Veuillez initialiser si vous désirez participer à la phase 1 du sondage : __________

Veuillez initialiser si vous désirez participer à la phase 2 de l'entrevue (si vous êtes invité(e)) :

Veuillez initialiser si vous acceptez d'avoir votre entrevue enregistrée (si vous êtes invité(e)) :

Veuillez initialiser si vous désirez recevoir une copie de la dissertation COMPLÈTE dès l'achèvement (sera disponible en anglais seulement): __________

***VEUILLEZ GARDER UNE COPIE DE CE FORMULAIRE POUR VOS DOSSIERS.***
Appendix C: Survey

Mobilizing knowledge through social networks

Introduction

Welcome to the survey, which collects data to better understand the ways in which social interactions mediate the use of research-based knowledge in the development of sound mental health strategies. The survey contains two sections: Part A will ask you a series of questions about your interactions with your School Mental Health ASSIST colleagues over the past 12 months; Part B will ask you some questions that will be used to build your professional profile in terms of your use of research-based knowledge in your professional practice.

Your participation is voluntary and greatly appreciated. The survey will take approximately 30-40 minutes; you may complete the survey all at once, or you may complete part of it now and return to the survey at a later time to finish. Your responses will be held in the strictest confidence with only the investigator and the supervisory committee having access to the data. The survey results will be shared with you at a scheduled SMH ASSIST meeting without any individual being personally identified. This will provide you and your SMH ASSIST colleagues with valuable feedback which may offer insights that may be helpful in future program planning.

It is critical that you assess your relationships honestly and be candid in your responses in order to yield the most valid and reliable data. In order to accurately report on patterns of interaction with the SMH ASSIST program, a response rate as close to 100% as possible is needed. Your participation really matters. This data will NEVER be used in any sort of evaluative capacity. You may choose not to answer any question that makes you uncomfortable and you have the option of withdrawing your responses from the study within 14 days of completing the survey. Continuing with the survey acknowledges your continued consent to participate.

Thank you very much for your participation!
La mobilisation des connaissances en réseaux sociaux

Introduction

Bienvenue à mon sondage réseau qui collecte des données dans le but de mieux comprendre les manières dont les interactions sociales jouent le rôle d'arbitrage dans l'utilisation des connaissances fondées sur la recherche dans le développement des stratégies de conseil sur la santé mentale. Le sondage contient deux sections : la Partie A vous posera une série de questions concernant vos conseils et interactive à la recherche d'informations avec vos collègues sur la santé mentale dans les écoles au cours des 12 derniers mois; la Partie B vous posera des questions qui seront utilisées pour construire votre profil professionnel sur votre utilisation des connaissances fondées sur la recherche dans votre pratique professionnelle.

Votre participation est volontaire et très appréciée. Le sondage prendra environ 30-40 minutes. Vous n'êtes pas obligé(e) de répondre au sondage en une seule fois, il peut être complété au cours de plusieurs séances. Toutes vos réponses demeureront strictement confidentielles, et seul la chercheuse et le comité de surveillance auront un accès aux données. Les résultats du sondage seront partagés avec vous au cours d'une réunion de l'Équipe d'appui SANS identification personnelle des personnes présentes. Cela permettra aux dirigeants d'Équipe d'appui et aux participants d'obtenir des précieux commentaires sur les modes d'interaction dans votre groupe, ce qui offrira aussi des perspectives utiles dans la planification de programmes futurs.

Il est très important que vous preniez le temps de vérifier vos réponses en toute nonchalance et que vous soyez sincère avec vos réponses, afin que les données soient valides et fiables. J'ai besoin d'un taux de réponse proche des 100% afin d'établir un rapport précis sur les modes d'interaction avec le programme Équipe d'appui, donc, votre participation est très importante. Ces données ne seront JAMAIS utilisées dans aucune capacité d'évaluation. Vous pouvez choisir de ne pas répondre à certaines questions qui vous mettent mal à l'aise, ou vous avez aussi la possibilité de retirer certaines de vos réponses de l'étude sous 14 jours après avoir répondu au sondage. En continuant, vous consentez à participer à ce sondage.

Merci beaucoup pour votre participation!
Appendix D: Survey Pilot Instructions and Feedback Form

Mobilizing Knowledge through Social Networks Survey

SURVEY PILOT

IMPORTANT NOTE: These questions have been tailored for a specific group of school district personnel (Mental Health Leaders). Because of the small number of people who hold this position in Ontario, I cannot pilot the survey with members of this particular group. Thus, I am piloting the survey with other education professionals, like you. At times, you will be required to use your imagination to help you answer a question. Where respondents are directed to refer to their experience with the [BLINDED] program, you should reflect on a particular professional community of which you are a part; for example, if you are a school administrator, you can think about the question in terms of your work that you may do with other school administrators within your family of schools, or if you are a teacher, you can think about your work in a particular professional learning community or some other sort of committee work that you may be involved in within your professional setting. If you find this confusing or need further clarification, feel free to call me at 905.903.9867 (local call in Toronto and Durham Region) and I will be happy to help.

INSTRUCTIONS:

1. Print a copy of these instructions and the worksheet to keep as a reference as you complete the online survey.

2. Launch the survey using the URL that was sent to you via email.

3. Complete the survey following the directions provided to you on screen. You can complete it all at once, or you can close it halfway through and return to complete it at a later time. Please note:

   **PART A** - For questions in this section, you're provided with a 'dummy roster' - a made-believe list of names intended to fill in for what will be a list of consenting participants in the final survey. You do not need to select any names in this section; your task for this part of the survey is to provide feedback on the attached feedback form.

   **PART B** - For this sequence of questions, please select responses for each question. This will help me test some of the data download and analysis features that Survey Monkey provides. I will not be looking at individual responses and all data will be deleted once the piloting process has been completed.
4. Fill in the feedback form (see next page) as it relates to your experience completing the online survey. You may choose to do this as you’re completing the survey (both at the same time) or upon completion of the survey.

5. Return the completed form back to Joelle either as a MS Word or .pdf attachment; mailto:joelle.rodwaymacri@mail.utoronto.ca.

You may complete this form as a MS Word document and email it back to me OR you may complete it by hand, scan to .pdf and email the .pdf document. Thank you!

| INSTRUCTIONS: |
| Do you understand the objective of the survey? Are the instructions clear? Please make note of any problematic terms or points lacking clarity (e.g., things that made you think, "Huh? What’s she talking about?") for each of the following sections. |
| INTRODUCTION (on page 1) |
| PART A (on page 2) |
| PART B (on page 8) |

<p>| QUESTIONS: |
| Make notes for any question to which you wish to draw my attention in relation to the questions asked below. |
| Were the questions worded clearly? Please make note of the question number for problematic questions and briefly explain the nature of the problem. |
| Did you feel uncomfortable or ill-at-ease presented with any particular question? |
| Were there any questions that you required you to think too long and hard about before answering (too difficult to answer)? If so, which question? Why was it challenging? |
| Were the answer options (rarely, sometimes, often, and so on) appropriate to your experience? Is there anything that needs to |</p>
<table>
<thead>
<tr>
<th><strong>LAYOUT:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Do you have any suggestions or recommendations for improving the layout of the survey? Consider: spacing, font size, question order, colour, etc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>GENERAL FEEDBACK:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Have I overlooked any issues in designing this survey?</td>
</tr>
<tr>
<td>• How long did it take you to complete this survey? Was it too long? Did you complete it at one sitting?</td>
</tr>
</tbody>
</table>
Appendix E: Email Invitation to Participate in Phase 2 of the Study

The following text is a copy of the email sent out to prospective participants in phase two of this study.

On Wed, Jan 29, 2014 at 2:59 PM, Joelle Rodway Macri <joelle.rodwaymacri@mail.utoronto.ca> wrote:

Good afternoon,

I hope this message finds everyone well and warm during this chilly winter season! I'm writing to you to formally invite you to participate in my study’s second phase of data collection, which will consist of one, 30-45 minute interview. The intention of the interview is to deepen my understanding about who you interact with and why, how these interactions influence the ways in which you use research-based knowledge in your practice, and about what your role is in sharing research knowledge with others. I'm attaching a copy of the original letter of invitation to participate in my study that you received in the Fall, which will remind you of your rights and responsibilities as a participant and provide an overview of the study. You will also receive a $10 Tim Hortons gift card as a token of appreciation for taking the time to speak with me. I reckon a hot drink or two won't go astray when we're all living in a cold, winter wonderland!

I would like to conduct these interviews during the month of February. Most interviews will be conducted over the phone, unless the weather permits me to drive to visit with any of you who may be within a drive-able distance from my home in the Greater Toronto area. Please contact me as soon as possible to arrange an interview time (or to refuse participation if that is the case). I will tailor my schedule to suit yours. I look forward to hearing from you.

Warmly,
Joelle

PS - Let me also take this opportunity to sincerely thank you for your participation in the phase 1 survey. I am happy to report that I received a 100% Mental Health Leader response rate!
Appendix F: Interview Protocol – Director

1. What is the purpose of the [BLINDED] program?
   • What is the program's theory of action?
   • What are the goals of the program?

2. Who is/was involved in the design and implementation of the [BLINDED] program?

3. What is your relationship with the Ministry of Education?
   • Do you work with any other provincial ministries?
   • Are you responsible for reporting on the program's work to the ministry? If so, how often?

4. Who funds the program?
   • What is the extent of the funding?

5. With what other mental health organizations is the program affiliated?
   • What is the extent of your relationship with these organizations?
   • Are they involved in the regular operations of the program? If so, in what capacity?

6. What is the role of the coaches in the program?

7. What is the intended nature of the relationships between the coaches and mental health leaders?
   • How frequently do they meet?
   • For what purpose?
   • How were the coaches assigned to school districts for which they are responsible?

8. What role does research-based knowledge play in the work of the program?
   • To what extent are the materials distributed by the program research-based?

9. In what ways does the program build the capacity of its participants to use research-based knowledge?

10. Has the program undergone any evaluations?
    • If so, can you please describe the evaluation process?
    • What have been the findings of the evaluation(s) and how has it affected the design or work of the program?
Appendix G: Interview Protocol – Coaches

1. How do you view your role within the [BLINDED] program?
   - What is your responsibility in terms of the group as a whole?
   - What is your responsibility to the school districts to which you're assigned to mentor?

2. What types of research-based knowledge are pertinent to your work?
   - What are your sources of research-based knowledge?
   - How do you determine what is credible research knowledge in terms of your work within the program?

3. Can you provide an example (examples) of a time(s) when you have shared research-based knowledge with a Mental Health Leader in an effort to help them develop their board mental health strategy?

4. How would you characterize the communication patterns within the program?
   - Show sociograms of complete network activity around each of the dimensions (advice and information seeking) and ask the coaches for their perceptions of the patterns of interaction. From their point of view, are there any possible explanations for what is evidenced from the phase 1 analysis?

5. How would you characterize the nature of your relationships with the people with whom you interact most often?
   - Least often?
   - Why do you think you communicate more frequently with some than you do with others?

6. In what ways does the structure of the [BLINDED] program support your interactions with Mental Health Leaders?
   - In what ways does the structure constrain your interactions?

7. In what ways do you prepare the Mental Health Leaders to use research-based knowledge in their professional practice?

8. What types of challenges do you face in your work with Mental Health Leaders?
INTRODUCTION

1. Tell me a bit about where you are in terms of developing your board mental health strategy.
   - To what degree would you say it is 'evidence-based'?

2. What's your opinion on the provincial push to have evidence-based and research-informed education policies, including those at the district level?

ADVICE

3. What types of challenges do you experience in your daily practice that prompt you ask your [BLINDED] colleagues for advice?

4. Who are the people whom you would typically turn to for advice?
   - What is it about these people that makes you go to them for advice?

5. Are there people outside of the [BLINDED] program that you go to for advice?
   - Who are they?
   - Why do you turn to these people?

6. How would you describe/characterize the advice you receive through these interactions?
   - Is the advice ever rooted in/informed by research? (If yes, ask for examples.)

INFORMATION

7. When developing your board mental health strategy, what sorts of information are most useful to you?
   - Probe for types of information; ask for examples.
8. To what extent would you say that research-based knowledge was considered in the development process?
   - What types of research did you consult/use? Where did you get it from? (source)
   - Ask for examples of how research-based knowledge was applied in the district's policy. If it wasn't applied, ask why not.

9. How do you choose which colleagues to go to when looking for information relevant to your mental health strategy?
   - Who do you turn to within this group for information related to your work? Be sure to ascertain what types of information from whom?

10. To what extent did the [BLINDED] initiative provide you with research-based information that was useful in your daily work?
    - How does [BLINDED] compare with other initiatives that you've been involved in terms of promoting and connecting you to relevant RBK?

11. Outside of your colleagues in the [BLINDED] program, what were your other sources of information?

12. Do you share research-based information among your [BLINDED] colleagues? If so, what kinds? (source?)
    - Within your school district?

**CONCLUSION**

13. Overall, how influential (helpful) were your interactions with [BLINDED] colleagues on your ability to find, understand and apply research knowledge in the development of your board mental health strategy?
Appendix I: Sample Summary Table Used for Member-checking Purposes

Participants were sent an email that provided member-checking instructions along with the summary table. The email read:

August 28, 2014
Dear Participant,
I hope this message finds you well as the new school is about to start. I am currently in the process of analysing the phase 2 interviews. You will find attached a summary table, which contains information that I pulled from the transcript that relates to the three research questions guiding my study (reviewed below for your convenience):

1. What are the patterns of interaction among participants in the [BLINDED] program?

2. To what extent do the [BLINDED] network interactions influence the use of research-based knowledge by district mental health leaders in the development and implementation of evidence-based board mental health strategies?

Please take the time to review this short document (average 2-3 pages in length), and highlight any information that you would prefer to exclude from this study (if any). You have two weeks to complete this task. If I have not heard back from you by Friday, September 12, 2014, I will assume that there are no issues with this document and will proceed with analysis as planned. I promise that this is the last you will hear from me until you receive my final report!

I offer you my sincerest thanks again for your participation in my doctoral study.

Warmly,
Joelle
The following is an example of a summary table sent out to one of the phase two participants:

Table II
*Example of Interview Summary Table Used for Member-Checking*

<table>
<thead>
<tr>
<th>Participant Info:</th>
<th><em>BLINDED</em></th>
</tr>
</thead>
</table>
| **School District Context:** | • English, Catholic  
• Prior history within district of comprehensive psychological services that moved beyond the traditional district approach of focusing on intelligence and achievement  
• District has been committed to using “evidence-based approaches” for 20 years...e.g., “…it’s a part of our philosophy that physical activity, and this is research based, of course, physical activity is very important to mental health...physical activity and engagement.”… “I don’t ever go out and talk about any mental health literacy whether it’s with parents, or teachers, or students or anything. I cite research evidence that’s guiding where we’re going and I talk about how important that is. This is not armchair psychology. It’s not a bunch of “sound good” ideas. It’s best knowledge, best practice based on what we are doing.”  
• It has a researcher and a research committee”…committee approves applications for researchers to conduct studies in the board...research partnerships: “And usually the research that we have researchers come and do ends up being a partnership, where the research they’re doing is important to us and we’re looking at wanting to apply what we learn from the research. So we have quite a bit of research going on at our Board actually.” |

Key points related to network:

1. **Structure**  
   (Quantity/Quality)  
   • Turns to others for advice “to learn what other people are trying and what the snags are for implementation and what they’ve done about that. Learning that from the other MHLs has been fantastic.”  
• Two types of interactions: 1) with coaches 2) with MHL peers: “there’s a precious time when they are being in-serviced through the coaching team of what’s the science for all of this and what’s the structure and what is this role? And then there’s this whole other level where the mental health leads talk to each other and they value that so much, as well. They absolutely thirst for that.”… “Because they wanted time just to talk about themselves, they didn’t want me to dominate the conversation with a “top down” approach. This was a “bottoms up” thinking.” … “So you learn from each other.”  
• “I go to my own coach, Louise Moreau. She’s got terrific systems skills from being a Superintendent and working at the Ministry, and so I do, very much, and Cathy too … well, actually, all of the coaches have great expertise. So there’s a steady stream of really
valuable information that comes from them, and the coaches get together and think through what they are seeing and what theory and science is saying and what mental health initiatives in other countries and other provinces, what’s the learning there.”

- “So there’s a great feed from the coaching model, as well as, a great feed from people with the lived experience right now in Ontario trying to carry that out. Both are very, very important. I don’t know which one I would say is more important. They’re both important.”
- “…cohort 1 and 2, the first 15 and the second 15, they were very assertive in asking for a full day to talk amongst each other, and they needed that and what’s happened is that they have expertise now that a coach couldn’t have. None of the coaches have done this job. They come in with wonderful experiences and knowledge from other places, but there’s now an expertise developing from people being in the job.”

### 2. Influence (Facilitators/Constraints)

- **CONSTRAINT:** Heavy reliance on the coaching model restricted time allocated for MHL-MHL interactions, but that is changing: “Just recently there was a day where all 72 mental health leads had a meeting at the Ministry, but the first 30 wanted a whole extra day, where when they came, all that big travel to Toronto anyway, they had a day amongst themselves to just put their own agenda on the table for what they were struggling with, I guess. What were the challenges? And also, to tell each other about where they felt they had successes, and a day was almost not enough time. No one wanted to go home. They were thirsting for that opportunity to learn from each other.” … “Initially, so much more of it was from the coaching model and what we were learning as the structure and what to implement, and now as time goes on, it’s very clear that the learning is from each other too is a big part of the picture.”
- **FACILITATOR:** EE Connect (EENet?)… “I am, almost on a daily basis, using EE Connect, so I do follow that.” … “EENet is something that I have an agreement with Cathy that I check it regularly to make sure people aren’t going off on a tangent away from our structure, our approaches for [BLINDED], and the conversations on EENet too are all evidence based. We have all sorts of people, other agencies even, wanting to do things … there’s big business, there’s big money in mental health right now, and there’s all sort of people packaging stuff up and wanting to come in the schools and show it, but the chatter for us has to be ‘what’s the evidence?’ and that’s what we do.”
- **FACILITATOR:** “That’s the context by which we work [within [BLINDED]]. All of our handouts about implementation science and our consideration of things that we would implement at each level, it’s a constant reference to what the evidence says. Why are
we doing this, what the evidence says? That’s very, very strong. What not to do and what to do.”

- FACILITATOR: “I’m convinced that at the end of say 5 years out, 10 years out, I’m convinced that the vast majority of teachers in our system will have an elevated mental health literacy level and a different way of relating to kids because of that [BLINED], absolutely.”

### Additional Quotations:
- “I see that [research] as the first place to go. At the same time as we look at a parent’s need, we’re looking at what’s the evidence based approach to address that, and that was our approach before, as well, where we’ve got a lot more awareness of that now and focus on that now in general at our Board, but that was the psych department’s approach before.”
- Referring to a newly hired MHL who works with remote school districts in the north: “she is moving very fast to understand what their needs are and to do an evaluation or a scan of what the structures are for the implementation science part, as well as, being able to size up what she needs to focus on in her work to bring change to promote mental health literacy. That would have been very hard to do back two years ago as a mental health lead in year 1. She can capitalize on so much information, both from the top down structured approach and from working with other mental health leads.”
- “So it’s a real culture change. It’s the biggest culture change I think I have ever witnessed in education.” referring to the Ministry’s commitment to connecting evidence-based mental health practices into the daily practice of Ontario schools.

### Other Important Information:
- Currently contracted by EDU to act as a coach 1 week/month… “You might say I’m 25% coach”; “So most of my job is Mental Health Lead now. I’m just a little bit of a hybrid in getting involved with the coaches”
- Took on ‘Acting Director’ role while program director had to take a leave... “I took over the coaching of coaches”
### Levels of Reported Research Use among Program Participants Disaggregated by Group

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<th>Stage of Utilization</th>
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<th>Often</th>
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Table J2

*Participants’ Reported Experience with the Research Process*

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<td>Co-Investigator</td>
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<td>Conducted Literature Review</td>
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<tr>
<td>Involved in outcomes, evaluation, or quality assurance projects</td>
<td>22 (71)</td>
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<tr>
<td>Involved in research combining university and non-university researchers</td>
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Table J3

*Frequency of Professional Development Activities that Integrate Research Knowledge*

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<th>Position</th>
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<th>Almost Always Count (%)</th>
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<td>Coaches</td>
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</table>

*Note.* Percentages do not add up to one hundred due to rounding.
Table J4

*Intensity of Use of Research-based Sources of Information*

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<th>Source of Information</th>
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<th>Coaches (N = 5)</th>
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<td>Count (%)</td>
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<td>Often</td>
<td>11 (36)</td>
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<tr>
<td>Very Often</td>
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<td>1 (20)</td>
</tr>
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<tr>
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<td>1 (20)</td>
</tr>
<tr>
<td>Rarely</td>
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<tr>
<td>Occasionally</td>
<td>14 (46)</td>
<td>1 (20)</td>
</tr>
<tr>
<td>Often</td>
<td>1 (3)</td>
<td>1 (20)</td>
</tr>
<tr>
<td>Very Often</td>
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<tr>
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<tr>
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<tr>
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<tr>
<td>Often</td>
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<td>Very Often</td>
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Table J5

*Importance of Mechanisms Linking Practitioners to Research*

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<td>19</td>
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<tr>
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Table J6

Frequency of Person-to-Person Contact with Researchers from Various Organizations

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Appendix K: Bivariate Correlations between Degree Centrality Scores and Professional Attribute Composite Variables

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<td>1. Outdegree Centrality Score</td>
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<td>3. Research Use</td>
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<td>.428**</td>
<td>.254</td>
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<td>6. Experience in Research</td>
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<td>.269</td>
<td>.073</td>
<td>.097</td>
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<td>-.178</td>
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* *p < .05
** *p < .01
Appendix L: Core-Periphery Analyses

The following table provides the details of the core-periphery analyses conducted for each dimension of the PROJECT CYMH network.

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<th>Influence</th>
<th>Social Support</th>
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<td>Bolded numbers</td>
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<td>3</td>
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<tr>
<td>(coaches)</td>
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<td>14</td>
<td>4</td>
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<tr>
<td>italicized numbers = cohort 1 MHLs)</td>
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Densities

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Model Fit

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Appendix M: Sociograms for Multiplex Tie Networks

*Note.* Nodes are sized by indegree; shape refers to position, where circles = Mental Health Leaders and triangles = coaches; colour refers to cohort, where black = cohort 1 MHLs, grey = cohort 2 MHLs, and white = coaches.

*Figure M1.* Research and advice ties combined network.

*Figure M2.* Research and influence ties combined network.
Figure M3. Research and social support combined network.

Figure M4. Research, advice, and influence combined network.
Figure M5. Research, advice, and social support combined network.

Figure M6. Research, influence, and social support combined network.
Figure M7. Research, advice, influence, and social support combined network.
Appendix N: Summary Chart of Phase 2 Qualitative Findings

<table>
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<th>THEMES</th>
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<td>PATTERNS OF INTERACTION</td>
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<td>Coach</td>
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<tr>
<td>Cohort</td>
<td>31 (1), 34 (1)</td>
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<tr>
<td>Francophone</td>
<td>36 (2)</td>
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<tr>
<td>Frequency</td>
<td>28 (2), 36 (2)</td>
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<tr>
<td>Geography</td>
<td>28 (2), 36 (2)</td>
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<tr>
<td>Needs</td>
<td>28 (2), 36 (2)</td>
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<tr>
<td>Personality</td>
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<td>Prior Relationship</td>
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<tr>
<td>Similar Challenges</td>
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<tr>
<td>Social Support</td>
<td>31 (1)</td>
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<tr>
<td>Trust</td>
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</table>

**KMb FACILITATORS**

| Awareness of/access to expertise | 28 (2) | 34 (1) | | 1, 16 |
| Capacity building | | 31 (1) | 11 (2), 33 (1) | 1, 3, 20 |
| Coaches | 28 (2) | 31 (1), 34 (1) | 33 (1) | 1, 25, 20 |
| Community | 36 (2) | 31 (1) | 33 (1) | 1, 3 |
| EENet | 28 (2), 36 (2) | 34 (1) | 11 (2), 33 (1) | 1, 25, 20 |
| External connections | 28 (2), 36 (2) | 31 (1) | | 3, 20 |
| Research Literacy | | | | 3, 25, 20 |
| Resources | 36 (2) | 31 (1), 34 (1) | 11 (2), 33 (1) | 1, 16 |

**KMb CONSTRAINTS**

| Anglocentrism | 36 (2) | | | 1 |
| Coaches | 28 (2) | 31 (1), 34 (1) | | |
| Existing knowledge | 36 (2) | 31 (1) | | |
| External groups | 28 (2), 36 (2) | | | |
| Formal Structure | | | | 1, 3, 25, 20 |
| MHLs | | | | 16 |
| Tension | | 31 (1) | | 16, 20 |