A STUDY OF THE PERCEPTIONS OF HEALTHCARE PROFESSIONALS ABOUT COLLABORATION AND LEARNING IN ACADEMIC HEALTH CENTERS

Constance M. Filling

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Supervisor of Dissertation:

______________________________
Dana Kaminstein, Adjunct Assistant Professor of Education

Dean, Graduate School of Education:

______________________________
Pamela L. Grossman, Dean and Professor

Dissertation Committee:

Dana Kaminstein, Adjunct Assistant Professor of Education

Yasmin B. Kafai, Professor of Education

Donald Boyer, Assistant Professor of Clinical Anesthesiology and Critical Care, The Children’s Hospital of Philadelphia
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DEDICATION

Dedicated to all the educational institutions that I have been part of during the learning journey that this dissertation represents, especially, Cornell College, the University of Chicago, and of course, the University of Pennsylvania. These institutions and their faculty have been the true foundation of scholarship for which I, and many others, should be profoundly grateful.

This dissertation is also dedicated to the memory of my parents for their full support and belief in the power of education and lifelong learning to change our lives and our world for the better.
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ABSTRACT

A STUDY OF THE PERCEPTIONS OF HEALTHCARE PROFESSIONALS ABOUT
COLLABORATION AND LEARNING IN ACADEMIC HEALTH CENTERS

Constance M. Filling
Dana Kaminstein

In 2004, the Institute of Medicine (IOM) called for academic health centers (AHCs) to
adapt and change through collaboration between their many separate groups of healthcare
professionals. Research on collaboration in healthcare organizations to date has
concentrated on how collaboration impacts patient care and organizational efficiency.
Research has not focused on whether collaboration among healthcare professionals,
influences learning for individuals or the organization. Socio-cultural learning theory,
which takes into account the individual, the organization and the larger system,
emphasizes that “collaborative learning” is an important component of the learning
process. It also emphasizes that problem solving facilitates the development of insights
and solutions. On this basis, the link between collaboration and learning needs to be
explored. This research focused on exploring the association between collaboration and
learning as perceived by clinician educators and other healthcare professionals with
whom they have collaborated in AHCs. In-depth interviews were conducted with 21
healthcare professionals who had participated in collaborative activities in the past 18
months, and who had familiarity with relational coordination (RC) as a framework for
collaboration. Interview questions elicited interviewee descriptions of positive and
challenging collaboration experiences. Data were analyzed using an inductive analysis approach and coded to identify implicit and explicit learning outcomes from those experiences. Findings indicated that all participants had extensive experience of informal collaboration with professional colleagues and learning resulting from their collaboration experiences. Four categories of learning outcomes were identified; process and quality improvement, professional relationships with colleagues, emotional awareness, and growth in technical and adaptive knowledge and skills. The majority of learning outcomes in each of the four categories were implicit, indicating that participants did not recognize the learning that was occurring through their participation in collaborative activities. Learning appears as a currently invisible outcome of collaboration as described by the participants in this study. Further research is needed to determine the potential value of the learning for the individual and the institution.

Keywords: collaboration, socio-cultural learning, academic health centers, learning outcomes
TABLE OF CONTENTS

ACKNOWLEDGMENTS ........................................................................................................ iv

ABSTRACT .......................................................................................................................... vi

LIST OF TABLES ................................................................................................................. xiii

LIST OF FIGURES ............................................................................................................... xiv

CHAPTER 1:  INTRODUCTION .............................................................................................. 1

Justification for the Study .................................................................................................. 3

Collaboration as a Concept .............................................................................................. 4

Collaboration within Academic Health Centers ............................................................ 5

Conceptual Framework .................................................................................................... 8

Focus of the Research ....................................................................................................... 9

Research Questions ......................................................................................................... 9

Assumptions ....................................................................................................................... 11

Personal and Professional Considerations ....................................................................... 12

Conclusion ......................................................................................................................... 13

CHAPTER 2: LITERATURE REVIEW ...................................................................................... 15

Changes in Healthcare and the Mandate for Collaboration ........................................... 17

Academic Health Centers ............................................................................................... 18

Collaboration as a Concept ............................................................................................. 22
Frameworks Models and Empirical Studies of Collaboration in Healthcare 28

Relational Coordination ........................................................................................................33

Socio-cultural Learning Theory and Collaboration .....................................................38

Conclusions .............................................................................................................................44

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY .................................................47

Overview of Research Methodology ..............................................................................47

Qualitative Data Collection ...........................................................................................48

Participant Selection Strategy ......................................................................................49

Overview of Research Sample .......................................................................................55

Data Collection Methods ...............................................................................................56

Data Analysis ....................................................................................................................59

Validity ...............................................................................................................................60

Generalizability ................................................................................................................61

Conclusion ..........................................................................................................................61

CHAPTER 4: FINDINGS ......................................................................................................63

Finding 1: No Common Vocabulary to Describe Collaboration

Experiences ........................................................................................................................63

Summary ..............................................................................................................................70

Finding 2: RC Associated with Collaboration Experiences .........................................71

Positive Collaboration Associated with Elements of RC .....................................71
Learning ........................................................................................................................................... 138

Learning in AHCs ......................................................................................................................... 139

Learning Outcomes ..................................................................................................................... 140

Volume and Variety of Learning ................................................................................................. 141

Learning not Recognized ............................................................................................................. 142

Informal Learning ......................................................................................................................... 145

Value of Learning ......................................................................................................................... 146

Invisible Learning ......................................................................................................................... 147

Barriers to Learning Among Healthcare Professionals ......................................................... 148

Summary ........................................................................................................................................ 151

Implications .................................................................................................................................... 153

Theoretical Implications .............................................................................................................. 153

Practical Implications .................................................................................................................... 154

Study Limitations ........................................................................................................................ 155

Sample and Methodology Limitations ....................................................................................... 155

Data Collection and Analysis Limitations .................................................................................. 157

Researcher Limitations .................................................................................................................. 158

Considerations for Further Research .......................................................................................... 160

Conclusion ....................................................................................................................................... 162

APPENDIX A: CHARACTERISTICS OF ACADEMIC HEALTH CENTERS ..........165
<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Frequency of Participants Who Identified Learning Outcomes</td>
<td>85</td>
</tr>
<tr>
<td>2</td>
<td>Frequency of Participants Identifying Aspects of Process and Quality Improvement Learning</td>
<td>88</td>
</tr>
<tr>
<td>3</td>
<td>Frequency of Participants Identifying Aspects of Professional Relationships Learning</td>
<td>95</td>
</tr>
<tr>
<td>4</td>
<td>Frequency of Participants Identifying Aspects of Emotional Awareness Learning</td>
<td>103</td>
</tr>
<tr>
<td>5</td>
<td>Frequency of Participants Identifying Aspects of Technical &amp; Adaptive Knowledge and Skills Learning</td>
<td>109</td>
</tr>
<tr>
<td>6</td>
<td>Frequency of Participants Identifying Learning Outcomes in Positive and Challenging Collaborations</td>
<td>113</td>
</tr>
<tr>
<td>7</td>
<td>Frequency of Participants Identifying Learning Methods</td>
<td>115</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure 1. Relationship between Collaboration and Learning in Academic Health Centers ................................................................. 8,126
Figure 2. Academic Health Centers and Participant Clusters ................................................. 56
Figure 3. Continuum of Participant Familiarity with Relational Coordination ............... 65
Figure 4. Relational Coordination Elements Identified in Positive Collaboration Experiences .......................................................................................... 72
Figure 5. Elements Identified in Challenging Collaboration Experiences .................... 78
Figure 6. Frequency of Major Learning Outcomes Identified Explicitly and Implicitly ................................................................. 86
Figure 7. Frequency of Learning Outcomes Related to Aspects of Process & Quality Improvement .................................................................................. 88
Figure 8. Frequency of Learning Outcomes Related to Aspects of Professional Relationships .................................................................................. 95
Figure 9. Frequency of Learning Outcomes Related to Aspects of Emotional Awareness .................................................................................. 103
Figure 10. Frequency of Learning Outcomes Related to Aspects of Technical & Adaptive Knowledge and Skills ................................................................. 110
Figure 11. Frequency of Implicit Learning Outcomes in Positive and Challenging Collaboration Experiences .................................................................................. 113
Figure 12. Frequency of Participants Identifying How Learning Occurs .......................... 115
CHAPTER 1: INTRODUCTION

In 1978, the World Health Organization acknowledged that interdisciplinary collaboration was essential for solving the problems of primary health care. In the United States, the need for improving the overall healthcare system has been routinely included in political platforms and on the agenda for policy makers and legislators since at least the mid-1960s. The Institute of Medicine (IOM) issued reports on quality and 21st century healthcare (IOM, 1999; IOM, 2001) which provide evidence of the need for change in processes and performance across healthcare systems. In those reports, the IOM admonished healthcare systems to improve healthcare for all. Notably, both IOM reports include recommendations about the need for increased collaboration between healthcare professionals to resolve major healthcare system problems. Research on collaboration in healthcare organizations to date has concentrated on how collaboration impacts patient care and organizational efficiency. Very little research has focused on how collaboration among healthcare professionals influences the learning of individuals or the organization. This research focused on exploring the perceptions of healthcare professionals on collaboration and learning within AHCs.

While the identified need for improvements and increased collaboration has included many parts of the healthcare system, the IOM reports identified collaboration among healthcare professionals in academic health centers (AHCs) as critical to successfully implement change (IOM, 1999; IOM, 2001; IOM, 2004). The 2004 IOM report specifically spoke of the need for AHCs to lead the necessary changes. The changes the report described focus heavily on changes in the way AHCs conduct their
educational role and on the changes that are going to occur in patient treatments. The report sets out a number of strong recommendations in both areas; recommendations that will require learning by the healthcare professionals working in AHCs if they are to be successfully implemented. The recommendations include major changes in the way teaching (and so learning) occurs that require a much more collaborative approach. The recommendations regarding new patient treatments mirror that emphasis on collaboration as a means to enable the effective introduction of new treatments. Implementing each of the recommendations requires significant learning, both by individual healthcare professionals and by the AHC as an institution. Learning is an essential component of any successful change process, as without learning by those involved in making the changes, there is no change (McFarland & Goldsworth, 2013).

Socio-cultural learning theory (Vygotsky, 1978; Brown et al, 1989), which takes into account the individual, the organization, and the larger system, emphasizes that “collaborative learning” is an important component of the learning process. In addition, it emphasizes that problem solving facilitates the development of insights and solutions. On this basis alone, it is clear that the link between collaboration and learning should be explored further, especially in disciplines that rely on learning to save lives and in response to IOM mandates, which are very specific and directive regarding AHCs.

AHCs are highly complex, evolving environments with a tri-partite mission of providing patient care, driving the discovery of new therapies and treatments through research, and preparing competent healthcare professionals, most notably physicians, for the future (IOM, 2004). All three missions are intended to drive achievement of the ultimate goal, which is to provide excellent patient care. AHCs have learning as one of
the three pillars of their mission, as they train almost all new physicians and nurses and many other healthcare professionals. Learning is also vital for an AHC as it provides the basis for its being able to maintain its reputation as a center of excellence upon which its future existence as a complex patient care, educational, and research institution depends. All healthcare professionals working in AHCs are required to commit themselves to lifelong learning and participate in continuing education. This commitment enables them to continue to develop and evolve as healthcare professionals, and so to provide excellent patient care. Any process that can provide better or more effective learning is thus vital for an AHC. Further, without constant learning, an AHC would cease to be what it needs to be, a truly academic health center.

**Justification for the Study**

Learning is so much a part of the essence of an AHC and of all the healthcare professionals working in it that it may be being taken for granted. There is no body of literature that deals with how learning occurs, nor is there documented evidence that the collaboration specifically targeted by the 2004 IOM report is having an influence on how, where, and when learning actually takes place within the AHC. There is a serious gap between the recommendations being made and any evaluation of the influence that the recommendation to collaborate has on the learning that is part of the essence of an AHC. Further, there is no research focused on how healthcare professionals working in AHCs perceive their participation in collaborative activities or the association between participation in collaborative activities and learning. For these reasons, studying the perceptions of healthcare professionals on collaboration and learning in AHCs is important.
Collaboration as a Concept

The terms *collaborate* and *collaboration* have become widely used over the last four decades. In lay usage, *collaborate* has a definition that is quite simple and very broad: “to work jointly with others in some endeavor” (Merriam-Webster, 2016). However, this simple definition falls short of adequately describing *collaboration* as a construct or as a behavior within academic research and, consequently, researchers have devoted considerable time and attention to defining *collaboration* for their specific purposes in their particular studies.

The meaning of collaboration as a concept has been discussed by many researchers and theorists across disciplines (D’Amour et al, 2005; Bedwell et al, 2012; Gray, 1985; Henneman et al, 1995; Wood & Gray, 1991). The most recent effort to analyze and refine the meaning of collaboration was carried out by Bedwell et al (2012), who summarized the evolution of alternative definitions of the term. After extensively reviewing definitions and illustrations of the meaning of *collaboration* across a variety of research disciplines, Bedwell et al (2012) defined *collaboration* as “an evolving process whereby two or more social entities actively and reciprocally engage in joint activities aimed at achieving at least one shared goal” (p. 130). Researchers and theorists focused on collaboration consistently describe collaboration as a complex concept applicable in a complex environment where evolutionary change is required. The Bedwell et al (2012) definition is used in this study as it most clearly reflects the shared view of researchers and theorists.

In healthcare, studies focused on collaboration stress the need for formalizing arrangements among professionals (Sicotte et al, 2002; D’Amour et al, 2005) and raise
issues regarding how professionals from different healthcare professions collaborate, given the differences in status and educational background (Whitehead, 2007; Martin et al, 2010). The studies reviewed dealing with healthcare environments do not focus on learning as a potential outcome of collaborative activity. Rather, they consider potential impact and see improvements in patient care as a key outcome (Baggs et al, 1992; D’Amour et al 2005). Findings include improved patient care, which implies that learning must have occurred to enable the improvement to take place (Baggs, 1994; D’Amour, 2005).

There are parallels between key features of the definition of collaboration cited above and key features of the definition of learning from a socio-cultural learning theory perspective. Socio-cultural learning theory consistently includes a requirement for joint participation and implied reciprocity as part of the definition of learning (Boreham & Morgan, 2004; Brown et al, 1989; Wortham, 2003). Less explicitly stated is the need for a shared goal in collaboration. However, given the clear similarities between collaboration and learning, it appears important to explore how collaboration influences learning within the AHC environment.

**Collaboration within Academic Health Centers**

Research on collaboration in AHCs has shown potential or realized benefits arising from collaboration (Baggs, 1994; D’Amour et al, 2005; Gittell, 2016). These studies discuss collaboration within specific contexts and focus on activities that cross boundaries within the organization and that require some form of collaboration to be effective. AHCs house many different healthcare professionals with different traditions and cultures that must work well together and adapt to new circumstances and new
challenges that demand integration across functional or organizational boundaries (IOM, 2004). In such an environment, adapting to new circumstances and challenges requires that healthcare professionals are able to learn from one another as part of their everyday work, so that existing professional boundaries are moved to adapt to new circumstances. Existing professional boundaries were set many years ago, and over the years there has been a steady process of reinforcement of those boundaries (Whitehead, 2007; Anderson & Brown, 2010). Breaking down boundaries will require collaboration between healthcare professionals as they learn to work together in new ways.

Collaboration emerges as being a major consideration for improving patient care in an AHC (IOM, 2004). Research suggests an apparent correlation between the degree of collaboration and the perceived quality of patient care (Baggs et al 1992; D’Amour et al, 2005; Gittell, 2016). Where there is a high degree of collaboration, there is evidence of a higher perceived level of patient satisfaction, evidence of fewer problems and errors during patient stays, perceptions of higher resident and student satisfaction with their learning experience, and, among teaching faculty, who also have primary responsibility for patient care, a perception that a more optimal learning environment has resulted (Baggs & Ryan, 1990). Where there is a low degree of collaboration, levels of satisfaction are lower and there is evidence of an increased risk of errors and confusion over patient care (Baggs & Ryan, 1990). Clearly, this is of importance to anybody working to help AHCs maximize their performance both as providers of patient care and as trainers of physicians for the future.

Gittell (2002) developed a collaboration-based framework known as relational coordination (RC), which emphasizes resolving problems using relationships and
communication, and which has subsequently been used in an increasing number of healthcare environments, including AHCs. In the summary presentation of this framework (Research Coordination Research Collaborative, RCRC, 2017), learning is shown as an output of the RC process. However, in the numerous case studies that have been documented in the RCRC database (RCRC, 2017), there is no mention of learning being identified or tracked as an output of any of the studies.

Accordingly, none of the studies identified to date have specifically considered the role of collaboration in facilitating learning, which is of direct relevance to the role of an AHC both as a trainer of physicians as lifelong learners, and as a continuing center of excellence.

Both theorists and researchers have also identified potential barriers to collaboration in AHCs, many of them centered on the impact of hierarchies in the overall healthcare profession and within individual healthcare professional specialties (Brandt et al, 2014; Whitehead, 2007). The primary focus of such studies has been on the status of physicians, relative to all other healthcare professionals and, to some more limited extent, the hierarchies among physician groups (Whitehead, 2007). Most studies conclude that hierarchies are likely to represent barriers to successful collaboration and that there are likely to be issues with providing sufficient incentives for physicians to collaborate with other healthcare professionals (Whitehead, 2007). The possibility of such barriers existing in AHCs was specifically considered during the research for this dissertation as any such barrier was expected to impede the process of collaboration, and to reduce the positive outcomes, including the facilitation of learning.
Conceptual Framework

Conceptually, this study was designed to explore the potential relationship between participation in collaboration activities among colleagues at AHCs and individual or organizational learning. Figure 1 depicts the conceptual framework for this study.

Figure 1: Relationship between Collaboration and Learning in Academic Health Centers

![Conceptual Framework Diagram]

The simple conceptual framework above shows a direct relationship between effective collaboration, as practiced through participation in collaboration activities with healthcare professional colleagues, and both individual and organizational learning. The framework then illustrates that individual and organizational learning leads to better prepared healthcare professionals leading ultimately to higher quality patient care. To test the relationship, this study focused on healthcare professionals working in AHCs who had experienced participating in collaborative activities with colleagues. I asked a sample of healthcare professionals to describe collaborative activities they had participated in, including the collaborative behaviors that were exhibited as well as the nature of the collaborative activities themselves. I then asked participants for their
perception of the impact of this collaboration, noting specifically where instances of individual or organizational learning were provided.

**Focus of the Research**

Clinical faculty in AHCs are healthcare professionals who have a dual role as clinicians and educators. Almost all clinical faculty have qualified in their role as a healthcare professional before undertaking their role as educators. Physicians serving as clinical faculty typically have attending physician responsibilities within the AHC and are expected to meet their educator responsibilities within the context of their clinical responsibilities. Similarly, other healthcare professionals have clinical responsibilities and are expected to meet their educator responsibilities within the context of their clinical responsibilities. Most receive at least rudimentary training for their educator role and some obtain formal educational qualifications. Increasingly, however, they have a perceived need to benefit from interdisciplinary collaboration with professional educators to further develop their competencies in their teaching role (Stoddard, 2016). Their dual role is unique and the research for this dissertation focused on clinical faculty at AHCs as the initial source for perceptions about collaboration influencing learning in AHCs.

**Research Questions**

This research explored how different healthcare professionals perceive collaboration and learning in academic health centers. The research questions were:

**RQ1:** How is collaboration perceived by healthcare professionals in academic health centers?

**RQ2:** How do healthcare professionals working in academic health centers perceive the association between collaboration and learning?
An exploratory qualitative methodology was chosen for this research study because it allowed me to explore emerging themes as to the nature of collaborative activities within AHCs. It also enabled the identification of the perceived relationship between those collaborative activities and individual and organizational learning.

Clinical faculty play a crucial role in AHCs as teachers of residents and students and as attending physicians providing patient care. Clinical faculty at AHCs were the initial focus for this research as they were presumed to have a professional and personal interest in learning as a result of their teaching responsibilities. Accordingly, they were expected to be among the first to appreciate whether learning was being influenced by collaborative activities in which they participated.

I used a “snowball” sampling strategy to identify healthcare professionals who had participated in collaborative activities within an AHC (Ravitch & Carl, 2015) and who had some familiarity with RC. This strategy allowed me to explore the different perceptions of healthcare professionals who had been involved in similar, specific collaborative activities.

Structured interviews were the primary data collection technique. Based on the availability of identified healthcare professionals during the time period of this study, I conducted 45-60 minute interviews with 21 healthcare professionals working in AHCs. Interviews were primarily conducted via phone and included questions focused on interviewee descriptions of their experience working in collaboration with other healthcare professionals, descriptions provided as to the behaviors perceived to be important for collaboration, and perceptions about the outcomes of collaboration, with specific reference to perceptions about the learning environment and learning.
Assumptions

There is growing awareness and acceptance of the benefits of working collaboratively or in collaboration with other institutions and faculty within AHCs for purposes of achieving their mission goals of patient care, research, and education. AHCs dedicate significant resources to education and learning, most focused on their students, but additionally focused on healthcare professionals working within the AHC. However, there has been very limited focus on the potential opportunities that collaboration provides for learning among those healthcare professionals working in AHCs. The following assumptions informed my thinking:

- Healthcare professionals in AHCs increasingly are working in collaboration with colleagues although the overall AHC culture is still individualistic in its position and reward systems.
- Collaboration is a process that requires a shared goal and joint effort for success.
- Clinical faculty have a particular focus on and commitment to lifelong learning.
- Learning is an active and interactive process that occurs in a social context. Further, socio-cultural learning theory provides for a deep understanding of the process of developing new knowledge, skills, and attitudes both for the individual and for the organization.
- Collaboration among healthcare professionals at AHCs provides an opportunity for learning that is neither an explicit goal of the collaborative work nor viewed as a rationale for working in collaboration.
• Collaboration between healthcare professionals could be a catalyst for learning by those professionals within the environment or, more broadly, in the organization itself.

• Skills/behaviors consistent with collaboration can be taught.

Personal and Professional Considerations

I have been working with professional healthcare specialty associations for fourteen years and am now responsible for designing and delivering learning programs, including especially leadership development programs, for members of the Association of American Medical Colleges (AAMC) as their Chief Learning Officer (CLO).

The AAMC has a specific commitment to AHCs as part of its education mission to ensure that an optimal learning environment is made available to all learners in the medical environment. As CLO of the AAMC, the potentially vital role of collaboration in AHCs is of significant professional and personal interest to me. To date, AAMC has not designed or delivered any learning programs to its members which specifically address the issues related to identifying opportunities for collaboration, fomenting collaboration, successfully leading collaboration initiatives or, subsequently monitoring the results of collaborative activities. One of my personal objectives for this dissertation was to determine whether there was a potential need for the AAMC to dedicate resources to developing such new learning programs or designing systemic approaches for leveraging the learning as facilitated through collaborative activities.

Perhaps even more important than the professional environment within which I work, is my strong personal belief that learning is highly dependent on the social context within which it occurs. Collaboration and learning are mutually reinforcing, especially in
professional settings where expertise is critical for performance, and where socialization to the role both demands adherence to clear rules as to responsibilities and reinforces a strict hierarchy that potentially inhibits effective collaboration. My interest in collaboration as a concept, and as a process, stems from my conviction that, as socio-cultural learning theory espouses, collaboration is an essential and necessary part of learning, especially for adults. The more that I read about the theory of collaboration, the more concerned I became that none of the researchers had explored the relationship between socio-cultural learning theory and collaboration. I am personally deeply committed to exploring that relationship in the context of an AHC.

**Conclusion**

Healthcare is facing massive change over the next decade. AHCs are uniquely positioned to lead healthcare and healthcare professionals into the future. It is both essential for them to lead and a competitive advantage for them to do so. Much of their advantage lies in the quality and expertise of the healthcare professionals working in their organization, as the better prepared those healthcare professionals are, the more likely it is that the AHC will become known for providing exceptional patient care. AHCs have been urged to use collaboration as a vital tool to help them deal with change and, specifically, to help them adapt to rapidly changing treatments for patient care. There has been significant research on the theory of collaboration and a number of research studies have been published that discuss collaboration in healthcare settings. Neither the theorists nor the empirical studies have considered the learning that may, or indeed, should, result from effective collaboration between healthcare professionals. Yet none of the changes called for at AHCs can be effected without significant learning. This
research explored the relationship between collaboration and learning among healthcare professionals at AHCs.

In the chapters which follow, I review the collaboration and socio-cultural learning literature which shows how rarely learning has been considered as an outcome of collaboration, describe the qualitative methodology which I applied in gathering data for this research, present my findings focusing on the learning outcomes identified from the interview data, discuss the theoretical and practical implications of my findings, and present my recommendations for future research.
Chapter 2: LITERATURE REVIEW

Collaboration among healthcare professionals has been identified as critical to the future of healthcare (IOM, 2001; IOM, 2004; Leif & Yammarino, 2017). Research studies on collaboration in healthcare (D’Amour et al, 2005; Orchard et al, 2005; Martin et al 2010) have typically explored the theory of collaboration rather than the practice of collaboration and, consequently, little is known about how collaboration is related to specific outcomes or characteristics of the environment. Studies on collaboration between physicians and nurses show that better patient outcomes are generally perceived to occur where successful collaboration takes place (Corser, 1998) and yet very little empirical evidence has been provided to show the individual or organizational benefits of successful collaboration in healthcare environments. No studies have been identified that specify learning as an outcome of collaboration, whether for individuals participating in the collaboration or for the institution, and, although relational coordination (RC) does indicate “innovation and learning” as an outcome of RC (Relational Care Research Collaborative, 2017), none of the case studies showing RC being implemented in healthcare environments mention learning as a specific outcome. Within AHCs, there is even less empirical research on collaboration generally and still no evidence of research focused specifically on the relationship between collaboration and learning. This, despite the vital role that AHCs play in the training of new healthcare professionals, and in the acquiring of additional skills by qualified practitioners (IOM, 2004). The focus of this research is on the relationship between collaboration and learning in an AHC.
This literature review critically evaluates existing theoretical and empirical research to identify evidence that would support the relevance and need for the proposed study (Ravitch & Riggan, 2011). The literature review expands on the conceptual frameworks related to the socio-cultural theory of learning and related to collaboration by focusing on the two areas this research is intended to address: the nature of collaboration activities among colleagues in AHC organizations, and how collaboration influences learning in the context of an AHC.

I begin by reviewing literature calling for collaboration across healthcare, describing the vital role of AHCs within the healthcare environment and specifying the characteristics of AHCs as organizations. These sections set the context for this research. Collaboration as a concept is then defined and frameworks, models and empirical studies are identified with a focus on collaboration in healthcare environments, and particularly within AHCs. I summarize the conceptual frameworks and models that have been proposed to describe how collaboration occurs and highlight the focus within healthcare on inter-professional collaboration. I then review empirical studies that have been identified, and show how learning has not been identified as an anticipated outcome, nor has any attempt been made to measure what learning may have taken place during the course of them. I then specifically review the basis for RC, a collaboration-based framework that has become widely known and applied across healthcare institutions in recent years.

Socio-cultural learning literature is reviewed to identify the relationship between socio-cultural learning theory and collaboration that leads to the research questions for this study. This section shows that socio-cultural learning theory emphasizes the
collaborative nature of learning, especially for adults, and so for professionals such as healthcare professionals. Specific attention is then paid to the cultural barriers that impede collaboration between physicians and other healthcare professionals (including other physicians) as this has been the subject of research literature analyzing collaboration in healthcare. The research for this dissertation is focused on healthcare professionals at AHCs who have had exposure to RC concepts and methodology.

**Changes in Healthcare and the Mandate for Collaboration**

In 2001, following a highly critical 1999 report that had highlighted the number of unnecessary mortalities in hospitals, the IOM released a report describing the need to change patient care delivery (IOM, 1999; IOM, 2001). Five recommendations were put forward in the 2001 report. The first recommendation stated that delivery systems should be made more reliable. The second recommendation identified the need for clinicians to constantly be provided with new knowledge and to apply that knowledge in patient care. The third recommendation called for interdisciplinary teams to provide the complex treatments that many patients need. The fourth recommendation called for effective coordination across all resources being used to provide patient care, with an emphasis on settings that lie outside formal hospital treatment. The last recommendation stressed the need for performance and outcome measures. Two of these five recommendations specifically call for collaboration; interdisciplinary teams and coordination across resource providers; and a third specifically calls for continuous learning. In the IOM 2001 report, it was stated that clinical education revolves around professional roles and individual decision-making rather than patient needs. Clearly, the IOM had taken a strong stand on the importance of collaboration and learning in healthcare.
Going even further in their report entitled *Academic Health Centers: Leading Change in the 21st Century* (IOM, 2004), the IOM stated; “interdisciplinary teams are needed in healthcare” (p. 69). The report stressed the increasing complexity of treatment and also the change in the mix of personnel involved directly in patient care, where the ratio of physicians to total personnel moved from about one in three healthcare workers in the early 1900s to one in ten by 2001 (IOM, 2004). The report posits that collaboration is essential to the effective functioning of hospitals in these circumstances, especially in AHCs (IOM, 2004).

**Academic Health Centers**

AHCs play a vital role in the U.S. healthcare system. AHCs are highly complex, evolving environments with a tri-partite mission of providing excellent patient care, driving the discovery of new therapies and treatments through research, and preparing competent healthcare professionals, most notably physicians, for the future. As evidence of the vital role that they play, AHCs house a significant proportion of specialist units, such as burns units, transplant units, and neonatal units; they have been estimated to care for about one third of all uninsured patients in their hospitals; they produce some 16,000 medical school graduates and 15,000 nursing school graduates annually; and they have been estimated to account for one third of all health-related research and development funds (IOM, 2004).

All AHCs have three main missions: patient care; education and learning; and research. According to the Association of Academic Health Centers, an AHC consists of an allopathic or osteopathic medical school, at least one other health professions school or program, and at least one affiliated or owned teaching hospital (Association of
Academic Health Centers, 2002). The work of the Commonwealth Task Force on Academic Health Centers represents one of the most comprehensive analyses undertaken to better understand the functions of AHCs. That task force defined an AHC as the medical school and its affiliated or owned clinical facilities (The Commonwealth Fund Task Force on Academic Health Centers, 2002).

A simpler way to introduce the complex organization that is an AHC is to take what a representative AHC has to say about itself from its website. Here is what Oregon Health & Science University has to say about what an AHC is and what it offers: “an academic health center: provides patients and the community with health care for everyday needs and the most specialized services for complex diseases, illnesses and injuries; offers unique care not available anywhere else in the region; teaches generations of health care professionals with an eye on training the right mix of providers for tomorrow’s needs; develops technology and carries out research that improves lives” (Oregon Health & Science University, 2016).

Of the three roles performed by AHCs, the education role is expected to face the most profound changes in the coming decades (IOM, 2004). “AHCs will be expected to demonstrate leadership in the design and development of educational approaches for health professionals throughout the continuum of education” (p. 45). Healthcare professionals in training today will be at the peak of their careers in 25 years, in a health environment that is certain to be significantly different from that of today. Continuous learning is and will remain vital for all healthcare professionals. AHCs need not only to provide education for future healthcare professionals but also to ensure that continuous learning takes place for all the healthcare professionals that they employ.
Healthcare professionals who are well prepared to practice in the coming decades will collaborate across departments and across disciplines (IOM, 2004). Interdisciplinary education occurs when “faculty learn, work and teach together” (Gelmon et al., 1998, p. 218). Interdisciplinary education covers the working together of physicians, nurses, pharmacy and other disciplines as well as specialties within a given discipline such as internal medicine or cardiology.

The emphasis of much professional and academic literature has been on interprofessional collaboration (also called interdisciplinary collaboration) in healthcare (IOM, 2004; D’Amour et al., 2005; Interprofessional Education Collaborative, 2011 and 2016). The perceived importance of this concept can be seen from the work of the Interprofessional Education Collaborative (IPEC) set up by six groups of healthcare professional bodies in 2009. In a 2016 update to their original guidelines for interprofessional collaborative practice published in 2011, they stated that another nine groups of healthcare professional bodies had joined their initiative and that significant progress had been made in incorporating the original guidelines into defined competencies and professional teaching curriculums. The updated guidelines identify a separate domain of inter-professional collaboration, encompassing the topics of values and ethics, roles and responsibilities, inter-professional communication, and teams and teamwork (IPEC, 2016). The initiative itself is a clear example of collaboration between healthcare associations that is producing positive results for the long term. Agreement on inter-professional collaboration and on the core competencies that this represents is a major step towards enhanced team-based patient care.

However, inter-professional collaboration is only one type of collaboration
among colleagues. Collaboration in AHCs can also include individual physicians and other healthcare professionals working in a collaborative way with colleagues to develop better solutions for patient care, for teaching students and residents, and for elements of basic research being carried out at the AHC. Academic or professional literature dealing specifically with this level of collaborative activities is exceedingly limited. Yet it is at this level of collaboration that one could expect a relevant portion of the lifelong learning for all healthcare professionals to be occurring.

AHCs, by definition, have at least one medical school and either own, or are in close relationships with, one or more hospitals. The clinical learning environment and the role played by clinical faculty as educators is a vital element of the making of the future of the medical profession. The continuing, lifelong, learning of clinical faculty is equally vital as it is upon this that their ability to stay current with developing medical and educational practice depends, as required by the American Board of Medical Specialties program for maintenance of certification (American Board of Medical Specialties, 2017).

The role of clinical faculty is unique to AHCs. They act as attending physicians in the hospital and as educators for students and residents. Learning in the clinical learning environment includes absorbing the values, culture and language of the field (Accreditation Council for Graduate Medical Education, 2002). This research explored how collaboration influences learning and was centered on the experiences of clinical faculty as a vital learning and teaching population within AHCs. Clinical faculty play key roles in both the functioning of patient care in AHCs and in the production of qualified physicians for the future.
Collaboration as a Concept

Collaboration was rarely used as a term in academic scholarship until about 1980, after which time the use of the term began to grow rapidly (Wood & Gray, 1991). In the early years there was no shared, concise, definition of the term and its use was primarily focused on collaboration at the organizational level both across organizations and as an organizing principle for society. For example, Apply & Winder (1977) called for a collaborative value system as a new basis for social organization, one that would require participative decision-making and social networks and that would supersede the typical hierarchical structure prevalent in almost all organizations. However, their view of collaboration was clearly aimed at a major change in the way society organized itself and did not offer a clear definition of the requirements for “collaboration”.

Throughout the 1980s, the use of collaboration in academic scholarship continued to focus on collaboration across various sectors of society, such as businesses, government, communities, and labor (Gray, 1985). Towards the end of the 1980s, it became clear that there was a need for a consistent, shared definition of collaboration as various researchers had begun to include definitions of collaboration in their work. Wood & Gray (1991) wrote “we found a wealth of definitions, each having something to offer” (p.143).

The term collaboration has been used as a construct over the past 40 years in different social science disciplines to mean different things and to describe multiple types of interaction (Wood & Gray, 1991; Thomson et al, 2009; Bedwell et al, 2012). Over this time period, “collaboration” has moved from being described primarily as a goal towards achievement of a specific purpose to the description of a process to be implemented
through a relationship (Wood & Gray, 1991; D’Amour et al, 2005; Thomson et al, 2009; Bedwell et al, 2012). In most other aspects, the term still has a variety of meanings, as shown in the various definitions that have been developed and in the accompanying explanations of those definitions (D’Amour et al, 2005; Thomson et al, 2009; Bedwell et al, 2012). These shades of meaning differ between disciplines, and, especially relevant to this research, no definition has been developed specifically for healthcare environments (D’Amour et al, 2005).

Gray (1985) argues that collaboration involves a joint decision-making process in which all parties have input, although it is also clear that, for Gray, not all input is equal. What is crucial is that the activity is joint and that each party can and does provide input. It is this aspect that specifically allows joint activities across healthcare professionals to be considered as collaboration despite the difference in ultimate responsibilities between them. Having a shared goal is the one element included in the Bedwell et al (2012) definition that is seen as crucial and specifically named in all reviewed definitions of collaboration. It is what makes collaboration collaborative (Henneman et al, 1995).

Marlow et al (2005), writing in an educational context, defined collaboration as “a mutually beneficial relationship between two or more parties who work towards common goals by sharing responsibility, authority, and accountability for achieving results” (p.558). This definition speaks to the creation of a relationship that is perceived as being of benefit to all parties involved. These two specific aspects, relationship and mutual benefit, will be shown to be of specific relevance to successful collaboration between professionals.
The key factors emphasized by Marlow et al (2005) relate to the need to create a positive relationship between education professionals. Marlow et al (2005) argue that trust between the parties involved in collaboration is important for successful long-term collaboration and specifically relate the concept of trust to each party feeling some responsibility for understanding what is important to others involved in the collaboration, and, in so doing, feeling a strong commitment to support them in realizing their goals. While their research focused on education professionals, the work of Marlow et al (2005) is also relevant in considering collaboration between healthcare professionals.

In 2005, D’Amour et al carried out a literature review specifically looking for examples of inter-professional collaboration in healthcare. They determined that “the concept of collaboration is commonly defined through five underlying concepts: sharing, partnership, power, interdependency and process” (D’Amour et al, 2005, p.118). However, after discussing each one of these aspects of collaboration, D’Amour et al (2005) did not propose a definition of collaboration and no other study has been located that specifies a definition for collaboration in a healthcare environment.

D’Amour et al (2005), however, did identify key features of an interdisciplinary team in healthcare. They posit that the key features of an interdisciplinary team in healthcare are that it is a structured entity with a common goal and a common decision-making process that integrates the knowledge and expertise of each individual involved. D’Amour et al (2005) noted as a key feature of collaboration “the dynamic established between professionals” and stated that is was “as important as the context of collaboration” (D’Amour et al, 2005, p.128). Speaking specifically about collaboration in healthcare environments, D’Amour et al (2005) describe collaboration between
professionals as a human process as well as a professional endeavor. This reflection is important, as collaboration between professionals requires that they step outside the normal boundaries of their professional practice in order to collaborate. Consequently, there is a potential major challenge, that of dealing with how professional territories are carved out and distributed within a complex system and how the status quo may be affected by initiatives driven by any collaboration that crosses existing boundaries. Members of interdisciplinary teams are required to open up their territorial boundaries in order to ensure more flexibility in the sharing of professional responsibilities (D’Amour et al, 1999; Paicheler, 1995).

Dealing with professional and human relations between professionals has been the subject of specific research. According to Clark (1994), the capacity of professionals to practice in a multi-disciplinary environment depends primarily on their ability to understand and respect how each other conceptualize problems, as well as their respective professional values. He maintains that, as a result of the differing socialization processes during professional education between disciplines, different professionals have differing cognitive patterns and maps that hinder their ability to collaborate. He then calls for professionals to develop an ability to understand the specific differences in cognitive patterns when preparing to work with professionals from other disciplines. This work is a warning that collaboration across professional disciplines may first require that the practicing professionals wishing to collaborate dedicate time and effort to understanding each other and a failure to do so could limit the number and effectiveness of collaborations across disciplines.
Among healthcare professionals, there is a clearly established hierarchy, with physicians generally regarded, by themselves and by others, as having a special position in that hierarchy (Whitehead, 2007). It is for that reason that Corser (1998) talked about the need for power symmetry between physicians and nurses in collaborative activity, something that would not naturally exist. D’Amour et al (2005) concentrated their research on inter-professional collaboration in healthcare and stress the human element in such collaboration, emphasizing interdependency between participants in collaborative activities and the relative power of participants being based on experience and expertise rather than on position or title. It appears almost self-evident that tension between the individual and the collective (D’Amour et al 2005) would exist unless steps are taken to make the collaboration scenario attractive to all participants and to deal with potential issues regarding professional status. Thus, in collaboration between professionals, the concept of trust and respect as advanced by Marlow et al (2005) assumes particular relevance.

D’Amour et al (2005) state that inter-professional collaboration is a key factor in initiatives designed to increase the effectiveness of health services. They state that increasingly complex health problems create more interdependencies among healthcare professionals but that there is still limited knowledge of the complexity of inter-professional relationships. They highlight that healthcare professionals, throughout their education, are socialized to accept an individual discipline-based vision of their roles, with each discipline creating “professional jurisdictions that are often rigidly circumscribed” (D’Amour et al, 2005, p. 117). As a result, there is little knowledge of the “complex phenomenon” that is inter-professional collaboration (D’Amour et al, 2005,
The collaborative process requires that professional boundaries be transcended if each participant is to contribute to improvements in client care while duly considering the qualities and skills of other professionals (Henry et al, 1992; Liedtka & Whitten, 1998). Surprisingly, in this discussion, there is no mention of learning, yet positive outcomes from inter-professional collaboration should necessarily involve learning by those participating in the collaborative activities, as such learning is essential to be able to replicate results and sustain improvements.

Bedwell et al (2012) summarize desired collaborative behaviors as “unpacking the nebulous black box that was previously labeled “working together” (p.138) and identify six collaborative behaviors. The first of these is “adaptation” referring to any behavior that facilitates an ability to work in dynamic and uncertain situations. The second identified behavior is “leadership” defined as the ability to influence and coordinate. Both “adaptation” and “leadership” behaviors can be linked to an ability to apply emotional intelligence (“EI”) competencies that are generally found examined in leadership literature where the almost universal conclusion is that leaders with good EI skills are more effective than leaders who possess only technical skills (McKee et al, 2008).

According to research findings from a wide variety of studies across many sectors, the consistent demonstration of four EI competencies, self-awareness, self-management, social awareness and relationship management, is the critical difference between successful and less successful leaders (Goleman et al, 2013). The first two determine how well one understands and manages oneself and one’s emotions, the second two, how well one recognizes and manages the emotions of others, builds relationships and works
in complex social systems (Boyatzis et al, 2005). Clearly, in reaching in to the “nebulous black box” referred to by Bedwell et al (2012), two of the six behaviors, adaptation and leadership, are closely linked to EI competencies. It seems likely that all of the EI competencies could be included in the list of key collaborative behaviors and, if not essential for successful collaboration, then certainly would be positive elements in the overall phenomenon. In AHCs, which are full of experienced healthcare professionals, many eminent in their chosen specialty, who have been educated within rigidly defined professional fields, but not including specific training in EI until very recently, these two collaborative behaviors may not be commonly demonstrated (Whitehead, 2007).

Frameworks, Models and Empirical Studies of Collaboration in Healthcare

A focus on understanding how collaboration influences learning directs us to understand how collaboration occurs in the first place. Conceptual frameworks and empirical models provide insights into how the various researchers characterize how collaboration takes place. Most research reviewed related to healthcare environments provided conceptual frameworks with very little empirical support, although there were some examples of models based on empirical support.

D’Amour et al (2005) find examples of frameworks derived from organizational theory, organizational sociology, and social exchange theory for use in a healthcare environment. Using a framework drawn from organizational theory, a model of team effectiveness developed by West et al (1998) was used to study a large number of healthcare teams in the United Kingdom, looking for conditions conducive to efficient teamwork. The work showed that teams that work well together are both more effective and more innovative (D’Amour et al, 2005). Converting innovation into knowledge
requires learning; learning also occurs when teams are able to convert being more effective into institutional knowledge. However, nothing is explicitly stated to show that learning was considered as a potential outcome for the collaborative activities studied.

A second model was used in a survey of 146 health centers in the province of Quebec, Canada (Sicotte et al, 2002). They did not focus on measuring specific outcomes realized through the collaboration; they were primarily concerned with the intensity of the collaboration effort demonstrated. Consequently, there is no mention of learning as being a feature of the collaboration or as an outcome.

Baggs (1994) describes how researchers began to generate data supporting a positive relationship between collaboration and ICU patient outcomes (Mitchell et al, 1989; Baggs et al, 1992). Each study showed difficulties in measuring collaboration between nurses and physicians. Equally evident was the difficulty in defining collaboration in the context of the complex environment of an ICU. Baggs & Schmidt (1988) define collaboration as “ICU nurses and physicians cooperatively working together, sharing responsibility for problem solving and decision making to formulate and carry out plans for patient care” (p. 146). The results from the studies showed that collaborative effort was perceived as producing a higher degree of satisfaction with decision-making.

Gitlin et al (1994) developed a model for health education teams in gerontology based on exchange, negotiation, building trust, and role differentiation, using social exchange theory. The key assumption underlying their model is that interpersonal transactions underlie all social structures. The model focuses on the individual and posits that the cost/benefit relationship as perceived by each individual is critical to the
collaboration. The clear implication of this model is that each individual must perceive a net benefit as being likely to accrue from the collaborative process for them to participate fully. Applied to healthcare situations, this would imply that, as well as a general objective of improving patient care, specific potential positive outcomes for each individual healthcare professional involved in the collaboration should be identified. Given their requirement for lifelong learning, it is possible that potential learning opportunities could be motivators for successful participation in collaborative activities.

Orchard et al (2005) proposed a conceptual model for patient centered collaborative interdisciplinary practice but were unable to base this on empirical studies due to the “paucity of research around the processes teams must go through as they form and develop collaborative approaches” (Orchard et al, 2005, p. 1). Their model highlights the importance of power and value sharing among members of the team, after they have already been through role clarification between themselves and developed trusting relationships. This model emphasizes the need to break down existing potential barriers and stresses factors identified in education by Marlow et al (2005) and also the importance of power as identified in healthcare by D’Amour et al (2005). The model does not identify learning as an outcome of collaboration, rather emphasizing the need for substantial changes to be introduced in the way healthcare professionals are educated so that they may learn how to collaborate in interdisciplinary teams.

Corser (1998) proposed a model for collaboration between physicians and nurses focused on establishing and maintaining mutual respect across healthcare professions. This model also links back to D’Amour et al (2005) on the importance of power as a factor in inter-professional collaboration. The anticipated outcome of the collaboration is
a more consistent attainment of clinical patient goals. There is no identification of learning as being part of such an output, although attaining more consistency should be the result of specific actions taken and able to be synthesized into institutional learning, as well as learning on the part of the participants in the collaboration.

To further explore what is known about collaboration and learning in healthcare, empirical studies were identified. From the studies of collaboration that have been documented in healthcare, no outcomes called “learning” can be identified. Likewise, there was no outcome identified related to “knowledge” or “knowledge transfer”, which would be an alternative way of showing that learning had occurred. The limited number of studies carried out in AHCs focus on patient outcomes as the prime outcome to evaluate and then look at the degree of satisfaction of the participants in the study with the collaboration.

Martin et al (2010) searched two major public databases for articles with reference to inter-professional collaboration between nurses and physicians; out of 451 articles initially identified, only 22 appeared to concentrate on empirical studies and of those, 14 were selected for detailed review as they were studies based on randomized control trials. Most of those were then found to focus on care for the elderly. Reviewing the outcomes that were reported and analyzed in each of these studies shows that none of them specifically considered learning as an outcome. Improvements in mortality and in-patient care were among the most common outcomes reported. Although the acquisition of new knowledge, and so learning, can be inferred to have occurred when consistent improvements in patient outcomes are reported, there is no basis for ascertaining what
learning has resulted in any of the case studies identified, whether carried out in AHCs or in other healthcare centers, and still less for reviewing its relevance or importance.

The numerous documented case studies cited by the RCRC (Relational Coordination Research Collaborative, RCRC, 2017) shows a stream of quality outcomes (10 studies cited), patient and patient family engagement outcomes (3 citations), worker outcomes (4 citations) and efficiency outcomes (3 citations) in healthcare environments. However, although innovation and learning are specified as an outcome in the conceptual model for RC, no citations were offered for any study where innovation or learning had been identified and measured as an outcome.

The two healthcare case studies documented by Engeström on the application of expansive learning theory, in one of which he refers to RC as a possible alternative framework that could have been employed, describe outcomes in terms of organizational and process changes achieved and make no reference to the learning that may have taken place as a result (Engeström 2001, Engeström, 2007).

The limited empirical studies that have been identified do not specifically include learning as part of their focus and, further, make it very difficult to use the data to determine whether learning is perceived to have occurred, or to determine the potential value of learning to the individual or the organization. The lack of almost any mention of learning in connection with collaboration is of interest, among other reasons, because of the critical role collaboration plays in learning theories and learning practices associated with adult learning principles (Vygotsky, 1978; Brown et al, 1989). Based on learning theory and practices, adopting collaboration as an encouraged process within the institution may be especially relevant for adult learners and professionals working in
healthcare environments. Accordingly, it is critical to understand what has been investigated and reported regarding collaboration as a construct, collaboration as a process for achieving stated goals, and collaboration as a set of behaviors to be demonstrated by individuals, especially healthcare professionals.

**Relational Coordination**

As a direct result of my work, I have been introduced to RC, a collaboration-based framework that has been taught to, and then put into practice by, a growing number of healthcare professionals. This framework, now known as RC, has developed from the work carried out by Suchman and Gittell.

Suchman et al (2011) described relationship-centered Care (“RCC”) as a concern for healthcare. He traces the development of RCC back to a 1994 report from the Pew-Fetzer Task Force (Tresolini et al, 1994), which sought to develop a values foundation for the work of the healthcare professions. The key to this new foundation was relationships between all the participants in healthcare, including the patient, rather than technically appropriate transactions between all those involved, including the patient as object rather than as a person. The RCC concept was developed some twelve years later into four principles of RCC (Beach & Inui, 2006), which comprised relationship as including the dimensions of “personhood” as well as just roles, the importance of affect and emotion as part of relationships, the reciprocal nature of all relationships, and the ultimate moral foundation of all healthcare relationships. Suchman argues that the key feature of RCC is that it places relationships at the center of all healthcare activity and stresses emotional intelligence (EI) skills such as communication, relationship and self-awareness as crucial to those relationships (Suchman et al, 2004; Suchman et al, 2011). This focus can be
contrasted with the expert model that has prevailed in healthcare and which is exemplified by the special role that physicians have maintained as acknowledged experts. Suchman’s concept of RCC does not satisfy the definitions of collaboration previously examined as having been developed by D’Amour et al (2005) or Bedwell et al (2012) but has been applied and further developed in a healthcare environment. Suchman expanded his initial concept to include its application to organizational work and it is in that context that he and Gittell worked together as from 2011.

Gittell defines RC as “a mutually reinforcing process of interaction between communication and relationships carried out for the purpose of task integration” (Gittell, 2002, p. 301). She developed RC as a framework that promotes collaborative knowledge creation and innovation. This framework has seven key elements; it involves problem solving by groups of people using shared goals, shared knowledge and mutual respect and accompanied by frequent, accurate and timely communication (RCRC, 2017). In her discussion of the RC framework, Gittel stresses coordinating problem solving though relationships involving shared goals, shared knowledge and mutual respect (Gittell, 2016), thus embedding in her framework key aspects of collaboration highlighted by Bedwell et al (2012). She also strongly emphasizes the need for frequent, timely and accurate communication as essential elements of the framework (Gittell, 2016). Effective communication is not strongly emphasized in collaboration theory (D’Amour et al, 2005; Bedwell et al, 2012). However, given the warnings about potential problems in organizing successful collaboration between professionals, especially healthcare professionals (Whitehead, 2007), effective communication could be an important element in such collaboration activities. Gittel is primarily concerned with developing a
framework that can be applied in a wide range of circumstances to enable change and achieve improvements. She stresses the role of the framework in solving problems in business and other organizations.

The RC framework has been applied in a number of different organizations, including healthcare institutions (Leykum et al, 2011; Lee, 2013; Lieff & Yammarino, 2017). It has been specifically developed to be applied in practice rather than to serve as a theoretical model. There are a growing number of case studies of the application of RC as a framework and of the use of a seven-point item survey developed for measuring the impact of RC concepts on organizations. However, RC does not specifically seek to define any outcome beyond improvements in measurable performance, even though knowledge creation and innovation, in the contexts in which Gittell discusses them, involve learning by those participating in the projects. One of the key diagrams now used to explain the model for RC includes learning as an outcome of the application of the RC framework (RCRC, 2017) but the value of learning is not discussed further in the materials which then develop the discussion of the framework, nor is learning cited as an output of the application of the framework in any of the case studies presented in the RCRC database (RCRC, 2017).

Suchman applied relational concepts in a long-term project with the Indiana University School of Medicine that started in 2003, using the RCC concepts that he had earlier described, but which, as yet, were not codified into a formal framework (Suchman et al, 2004). The objective was to develop an informal curriculum that would serve to consistently reinforce the values embedded in the formal curriculum for students and residents, developing a mindfulness on the part of every faculty member, resident and
staff member about the values exhibited in everyday interactions (Suchman et al 2004). This required changing patterns of interaction across an entire medical school so as to embed a culture of collaboration. The emphasis of the reporting of this process was on successful organizational change brought about by informal contacts and active participation by individuals from a wide range of responsibilities and levels, noting the ability of organizational change agents to have success in achieving propagation of new and more desirable behaviors (Suchman et al 2004). There was, however, no consideration of the learning from contact with others that was occurring in order for this more desirable behavior to be propagated informally.

One of Gittell’s selected case studies involved an AHC, the Dartmouth-Hitchcock health system, where in 2013 the Department of Surgery embarked on a transformation of surgical care under pressure from a need to optimize both quality and efficiency (Gittell, 2016). Gittell (2016) states that the process applied helped the section chiefs (the heads of each of the eleven surgical specialties) achieve a sense of vulnerability that opened them up to learning from each other. The coaching program, that was introduced as part of the project, helped participants to develop a new way of leading, with section chiefs learning new leadership behaviors. RC became perceived as a framework that acted “like a catalyst to inform us where are the opportunities for change and what are the barriers we need to address to be successful going forward” as Richard Freeman, head of the Department of Surgery, said (p165). Gittell (2016) highlights learning that took place, but does not place any specific emphasis or value upon it as an outcome in itself, perhaps because her primary interest is in organizational change and the results that can bring, and not in learning.
In one of the few studies using the RC framework where learning is a key focus, Potts et al (2016) describes how the work done by rural primary care professionals is achieving success in improving patient care. They argue that the formation of Learning Health Systems, as advocated by the IOM as a way to “produce high-quality healthcare that continuously learns to be better” and reduce the cost of excellent care (IOM, 2013, p. ix), has resulted in better cure rates for the hepatitis C virus and a lower rate of serious adverse events. Potts et al (2016) conducted a series of interviews with a multidisciplinary group of clinicians at an integrated healthcare delivery system and, as a result, developed a set of six learning principles that are very similar to the seven RC elements. Based on that observation, Potts et al (2016) initiated several projects using the RC framework as a guide; a change effort in the ICU, an inpatient medical unit improvement team tasked with effectively targeting the care needs of patient transfers from one hospital to their hospital, and the implementation of Project ECHO, an approach to providing the benefits of specialty care to underserved populations through learning communities of primary care professionals and specialists. Given their experiences, Potts et al (2016) advocate for the importance of increased attention to the actual process of learning and encourage researchers to explore additional opportunities for fostering the creation of a learning culture in healthcare organizations.

The RC framework is increasingly being used in a number of healthcare centers and environments (Potts et al, 2016; Lee, 2013). However, while the RC framework continues to show learning as an output, the detailed explanations about how to apply the methodology do not specifically consider the potential value of learning as an output (RCRC, 2017).


**Socio-Cultural Learning Theory and Collaboration**

In all the research and popular literature reviewed, collaboration is consistently recommended as a “good thing” and, it is assumed, will yield significant positive benefits. At the highest levels in health care, collaboration is recommended as a suggested solution for major problems with the existing healthcare systems (IOM, 2001) and, in the form of inter-professional collaboration, as a “must” for all healthcare professionals, to the extent that “inter-professional collaboration” is now a defined competency for most leading healthcare professions (IPEC, 2016). The literature on inter-professional collaboration is found predominantly in the nursing and health services management literature (Costella et al, 2011; Yeager, 2005; Henneman, 1995) where it has been focused largely on operational outcomes, either for the patient or for the hospital. For example, Knaus et al (1986) reported on the benefits of collaboration for improved patient outcomes, Rubenstein et al (1984) reported on the relationship between collaboration and reduced length of stay, Barker et al (1985) reported on realized cost savings for the hospital, Baggs & Ryan (1990) showed increased nursing job satisfaction and retention as a result of collaboration and Abramson & Mizrahi (1996) demonstrated that collaboration led to improved teamwork. However, these studies were primarily conducted within the context of the hospital and were focused on identifying operational outcomes. The focus has generally been on who needs to be involved in collaboration and what conditions are required for collaboration to be successful (Bedwell et al, 2012) rather than on how collaboration actually happens and there has been no specific attention to learning in and through collaboration.
Socio-cultural learning theory, with its strong focus on participation in the social environment and cultural and contextual authenticity, is especially relevant when considering the potential benefits from collaboration among professional colleagues, such as may be anticipated to be occurring in AHCs. There is evidence to support the importance of learning in clinical settings such as in operating room teams where learning occurs more effectively throughout the group, and new techniques are more quickly adapted (Edmondson, 2003; Leykum et al, 2011). However, no evidence has been found of researchers making a direct connection between collaboration as part of learning theory and collaboration between professionals influencing learning. This apparent gap is the subject of the current research in AHCs.

While learning is not cited as part of any definition of collaboration and does not appear as a feature of any description of collaboration or as a potential outcome in any conceptual framework or empirical model of collaboration that has been reviewed, socio-cultural learning theory clearly sees learning as an ongoing, evolving process involving collaboration. Brown and colleagues (1989) identify “collaborative learning” as an important component of the learning process for the individual and for the organization and further posit that collective problem solving facilitates the development of insights and solutions in working in collaboration with others.

Socio-cultural learning theory as a term was used by Wortham (2003) to describe a set of learning theories focused on the social nature of the learning process. The primary assumption about the nature of the learning process for socio-cultural learning theorists is that learning is an active, social process. Socio-cultural learning theory consistently includes a requirement for joint participation and implied reciprocity as part
of the definition of learning. Boreham & Morgan (2004) describe learning as “embedded in social and cultural contexts and best understood as a form of participation in these contexts” (p. 308). Bichelmeyer & Hsu (1999) define learning as an active process of constructing knowledge through participation in the social environment, and Wortham (2003) asserts that learning is the increased competence that the learner develops as s/he uses tools and participates actively in social activities. From a practical point of view, socio-cultural learning theory is easily associated with adult learning, especially with the lifelong learning that is required of all healthcare professionals.

The foundational tenets of socio-cultural learning theory are most often attributed to Vygotsky (Brown et al., 1989; Barnard, 2002; Hutchins, 1991). Based on their attribution and summarizing across these authors, one of the primary contributions Vygotsky made to learning theory was his insistence that learning is situated in the social environment of the learner and that his/her development is contingent on participating in that social environment. How learning occurs is mediated through the use of tools and interactions between the individual learner and his/her social environment. It is Vygotsky’s (1978) argument that only through those interactions can the learner achieve a higher level of conceptual development than would be possible by his/her efforts alone.

A critical element of Vygotsky’s (1978) theory is the conceptual framework of the zone of proximal development (ZPD). The ZPD is “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (Vygotsky, 1978, p. 86). Coupled with the “scaffolding” metaphor first introduced by Bruner (1983), which defines how the learner
can progress through the ZPD with an expert or more capable peer, this concept of ZPD describes how socio-cultural learning theory can be practically designed into the learning practice (Barnard, 2002). Using Vygotsky’s ZPD as a frame, researchers have offered alternative mechanisms to characterize how learning occurs in practice; in communities of practice (Lave & Wenger, 1991), as a form of cognitive apprenticeship (Brown et al, 1989), as a form of experiential learning (Kolb, 1984) and, specifically in the healthcare environment, in mentoring relationships (Spouse, 2001).

Lave & Wenger (1991) focus on Vygotsky’s notion of participation in the social environment by introducing an approach to learning that they call legitimate peripheral participation, which they describe as “an analytic viewpoint or understanding of learning” (Lave & Wenger, 1991, p. 40). They assert that, “learning is an integral part of generative social practice in the lived-in world” (Lave & Wenger, 1991, p. 35). Their approach is useful in understanding how learning occurs within communities of practice. Communities of practice are typically defined as groups of colleagues that share a common interest and expertise and that often use the community of practice as a resource for their own work (Brown et al, 1989). In some instances, this includes working in collaboration with other members of the community on specific projects and in these instances, the linkage between collaboration among colleagues and learning is clear.

The process of learning as described by this research mirrors the process of collaboration as characterized by collaboration researchers where the context of the work is seen as critical to the collaboration process and yet there is no mention of learning as an explicit outcome or goal of the collaboration (Bedwell et al, 2012). This failure to consider learning as a potential explicit outcome or goal seems to be a missed opportunity to
identify a motivation or an additional ‘shared goal’ for those participating in collaboration. It is a potentially important consideration in understanding how collaboration influences learning.

Consistent with Lave & Wenger (1991), Brown et al (1989) argue that knowledge itself is “situated” and an integral part of the environment within which it is used. Consequently, learning and the acquisition of new knowledge are not only facilitated through contextualizing the learning activity, but, in fact, cannot occur without being embedded in the social environment. They go on to suggest a model for achieving “robust knowledge” using “cognitive apprenticeships that embed learning in activity and make deliberate use of the social and physical context” (Brown et al, 1989, p. 32). Brown et al (1989) convincingly make the argument that concepts are progressively developed through activity and, further, that learning must involve the activity, the concepts being taught, and the social environment, to become firmly fixed in the learner.

The Brown et al (1989) argument supports Kolb’s (1984) concept of “experiential learning” as a mechanism for mediating within a socio-cultural learning framework (Kolb, 1984, p. 20). According to Kolb (1984), experiential learning can be seen as a way to understand how humans adapt to the social and physical environment. Kolb’s (1984) view that learning occurs in all settings, at all life stages, is consistent with the overall framework of socio-cultural learning. It is useful to explore Kolb’s (1984) premise in light of how many organizations have integrated what they call experiential learning into their learning practices with the assumption that it will increase the pace and transferability of learning within the work environment. Clearly, the opportunities for experiential learning in the complex environment of an AHC, where multiple healthcare
professionals have commitments to lifelong learning, should be numerous. Equally clearly, experiential learning is totally compatible with concepts of collaboration and is a model to be followed by professionals working collaboratively.

Researchers in collaborative learning have studied the process of collaboration to determine which features of the interaction are likely to make learning more effective and efficient. Cognitive development theories, based on the work of Vygotsky and others, highlight the importance of learning mechanisms during collaboration that facilitate the development of new cognitive schemes (Fawcett & Garton 2005). Vygotsky’s work is often cited as evidence that collaborative learning is beneficial to learners, especially because the more capable learner can, and does, help the less capable learner to accomplish a task that s/he could not have completed alone. The general consensus of a very large number of research studies is that collaborative learning results in learning gains for all students (Janssen et al 2010) although there are also a number of studies which show that the learning gains vary between groups of students due to issues such as group composition of students’ social skills. Overall, group learning for relatively complex problems-solving tasks is superior to individual learning (Laughlin et al 2002; Laughlin et al 2006). The traditional mode of learning for almost all healthcare professionals is strongly oriented towards individual learning rather than collaborative learning in groups. These professionals have no cultural background for relating enhanced opportunities for learning with collaborative activities.

The relevance of Vygotsky’s concepts to healthcare was highlighted by Spouse (2001) in research identifying that mentoring is critical to the professional development of nursing students during their practice experiences. Spouse (2001) argued that
characteristics of successful mentorship are best explained using frameworks derived from socio-cultural theories; “socio-cultural theories are helpful to understand complex interactions associated with supervising and learning professional craft knowledge...learning to be successful in clinical settings requires effective social interactions between student and mentor” (Spouse, 2001, p. 515).

The analysis of key components of socio-cultural learning theory shows that learning for adults, and so professionals, is strongly associated with a collaborative learning environment. However, there has been no development of learning theory that has specifically examined what happens during collaboration between professionals and what learning outcomes may be anticipated to occur. The emphasis of learning theory has been on the context in which learning occurs, rather than on examining what learning occurs in a particular context. Socio-cultural learning theory leads me to posit that learning should result from collaborative activities between healthcare professionals in AHCs.

Conclusions

There are many voices calling for collaboration between healthcare professionals to help provide solutions to current problems with the health care system and to help assist meet future challenges (IOM, 2001; IOM, 2004; IPEC, 2011; IPEC, 2016). AHCs play a vital role in the American healthcare system and have missions that relate both to patient care and to education and learning. They are being called upon to lead collaboration between healthcare professionals (IOM, 2004). There is no identified academic research that has set out to determine the influence that collaboration may have on learning for practicing healthcare professionals in AHCs.
D’Amour et al (2005) carried out the only identified review of research on collaboration specifically in healthcare, and that study was completed a decade ago. Neither in that study nor in later more generic studies, such as Thomson et al (2009) or Bedwell et al (2012), is there any specific consideration of learning. Bedwell et al (2012) are specifically interested in human resource management, and consider training needs for participants in collaborative activities. Their concern is that potential participants learn how to demonstrate and practice collaborative behaviors, but they do not consider what learning may occur from participating in collaborative activities, nor how to capture and value such learning.

Suchman and Gittell have seen their RC framework, which embodies key concepts from collaboration theory, applied in a growing number of situations, a relevant proportion of which have been in healthcare institutions (Gittell, 2016). They have established formal group training programs to teach the applicability of their framework, one of which I have attended along with a number of experienced healthcare professionals. There is a strong emphasis on achieving change through the use of collaborative techniques, but the outcomes envisaged and documented in case studies all highlight improvements in processes or patient outcomes rather than demonstrating any specific interest in the learning process that must be occurring to enable results to be achieved and then consistently replicated from the improved processes.

To an educator, it appears almost inexplicable that so many researchers should seek to define collaboration, to construct theoretical frameworks and empirical models, and to observe collaboration taking place, without seeking to capture information about the learning that should be occurring. Where key outputs in healthcare include such complex
concepts as improvements in patient outcomes, capturing information about learning and attempting to value its impact would seem to be relatively (but only relatively) simpler. Given that AHCs have learning as one of their key missions, knowledge about what learning may be taking place has a high value for them, yet no evidence has been uncovered during the readings for this literature review that this has received any specific attention from researchers to date. This study was intended to partially fill this gap by exploring the perceived association between collaboration and learning in AHCs.
Chapter 3: RESEARCH DESIGN AND METHODOLOGY

In the sections that follow I summarize the purpose of my study and the logic for using an exploratory qualitative methodology design for this dissertation. I then provide further detail regarding the participant selection process, an overview of the research sample, the data collection methods, including an overview of the qualitative interview techniques, and the data analysis approach.

This study set out to consider the following research questions:

1. How is collaboration perceived by healthcare professionals in academic health centers (AHCs)?
2. How do healthcare professionals working in academic health centers (AHCs) perceive the association between collaboration and learning?

Overview of Research Methodology

To achieve the goals of this study, I conducted an exploratory qualitative study employing qualitative interviews of AHC healthcare professionals representing different backgrounds (e.g., clinical faculty, nurse, psychologist) all focused on the clinical care environment of a teaching hospital. Using interviews as a primary method of collecting data is common in exploratory qualitative research (Ravitch & Carl, 2015; Maxwell, 2013; Greene, 2007). Conducting interviews with a broad sample of healthcare professionals allowed me to gather data to better understand how collaborative activities are perceived by healthcare professionals in AHCs, and to obtain information about the perceived relationship between collaborative activities and learning in AHCs (Ravitch &
Carl, 2015; Maxwell, 2013). I specifically focused on including divergent perspectives to obtain a more complete understanding of the phenomena being explored.

**Qualitative Data Collection**

Very little work has been done in the area addressed by this research and I have not been able to identify specific research directly exploring the association between collaboration and learning. Consequently, this study has been exploratory as there was no earlier identified research to guide me. Therefore, qualitative data collection was an appropriate method with which to gather data to inform the research questions (Remler & Van Ryzin, 2010). Qualitative research techniques are effective in eliciting individual perceptions of a phenomenon and in capturing the words and language individuals use to describe the phenomenon being studied (Ravitch & Carl, 2015). I believe that identifying the language healthcare professionals used to describe their experiences of collaboration offered insights into the phenomenon within the context of an AHC. This approach also allowed me to better understand the meaning study participants assigned to their experience of participating in collaborative activities. As part of my research, I formulated interview questions that would elicit richly detailed examples of healthcare professionals engaging in collaboration and the perceived influence of that engagement on their learning (Maxwell, 2013). Given that there is no research evidence demonstrating how collaboration and learning were perceived by healthcare professionals working in AHCs, a qualitative research approach was appropriate to explore this important phenomenon.
As the researcher, I was the only person involved in collecting qualitative data. I conducted qualitative interviews with 21 individuals over the course of a three-month period to address the research questions set out above.

**Participant Selection Strategy**

This section includes a description of the strategy used to select participants, the sample size, and the criteria for selection. The participant selection strategy for this study was based on the methods of purposeful selection described by Ravitch & Carl (2015), Patton (2002) and Maxwell (2013). Purposeful selection is a strategy whereby particular settings, individuals, or activities are selected deliberately to provide information that cannot be obtained from other sources (Ravitch & Carl, 2015). More specifically, this study employed a snowball sampling approach.

A snowball sampling approach, also known as chain sampling, starts with one or a few relevant and information-rich interviewees and then asks them for additional relevant contacts, who can provide different and/or confirming perspectives (Ravitch & Carl, 2015, p. 134). A snowball sampling strategy is most effective in situations where there is a need to identify informal working teams or relationships such as those engaged in collaborative activities. In order to develop a deep understanding of the collaborative activities from the perspective of different healthcare professionals, I identified an initial sample of interviewees and subsequently asked each interviewee to identify colleagues with whom they had previously collaborated.

I used four criteria to guide me in the selection of sample participants: 1) the participant’s self-disclosed knowledge of RC and participation in collaborative activities within the previous 18 months; 2) the participant’s willingness to participate in the study
and to provide the names of colleagues from their professional environment with whom they had previously collaborated; 3) the participant’s role and the organization within which s/he works; and, 4) my ability to access the participant and their identified colleagues. Each of these criteria is discussed in greater detail below.

First, an important requirement for inclusion in the research sample was the participant’s role and the organization within which s/he worked. More specifically, the following criteria were used to select the sample participants: clinical faculty, who work in AHCs, and who have had clinical teaching responsibilities for at least two years. These criteria were based on the assumption that the perceptions of individuals who fit these criteria would provide me with the best opportunity to gain insight into the issues central to the study (Patton, 2002). I specifically sought out clinical faculty who had voluntarily chosen to work in collaboration with colleagues to achieve a shared goal. Including clinical faculty who had been in their role for at least two years ensured that collaborative activities associated with on-boarding or getting oriented to their role or institution were not included in the sample. I also specifically limited my selection to clinical faculty who indicated to me that they had some knowledge and/or experience of the RC framework, as I anticipated that knowledge of a common framework would facilitate the interview by providing some common vocabulary with which to describe collaborative activities.

Second, a requirement for inclusion in the research sample was my ability to access interviewees during the timeframe within which the study was planned. To source and recruit participants, I engaged my network within and beyond the AAMC to create a list of clinical faculty familiar with RC collaborative practices. I then worked to identify
approximately 20 potential interviewees for inclusion in the initial set of interviewees. Matching my expectations, 10 (50%) of the potential interviewees identified were available to participate during the interview timeframe.

I chose clinical faculty as the initial participants from which to draw the snowball sampling because I wanted to ensure I had the perspective of at least one clinical faculty member for each AHC. I selected the study sample to ensure representation from a diverse group of AHCs from different regions of the US and including AHCs in large metropolitan areas as well as those in smaller, more rural locations. Additionally, the sample included large, research intensive AHCs and smaller community-focused AHCs. A description of the characteristics of the AHCs included in the study is included in Appendix A.

The sample size was determined based on my objective, to study the phenomenon in the context of healthcare professionals who have actively participated in collaborative activities over the past 18 months. My assumption was that individual clinical faculty selected as initial participants would identify colleagues from their professional environment who were willing to consider participating in the study. Using this technique, additional healthcare professionals were identified to be included in the study. Of the ten clinical faculty initially included in the sample, six identified one colleague, three identified two colleagues and one identified three colleagues who agreed to participate in the study.

While the sampling strategy allowed for a richer comparative collection of data regarding shared activities, a snowball sampling strategy introduces an inherent bias in that the interviewee is the source of at least part of the sample and, further, that multiple
interviewees are the source of the overall sample. To mitigate this bias, the specifications for identifying potential sample participants were shared with the interviewee during the interview. Additionally, I conducted initial screening conversations with each identified sample participant to determine whether they met the specifications for inclusion in the research sample (Ravitch & Carl, 2015).

A second inherent bias of my sampling strategy was the inclusion of only healthcare professionals with RC familiarity. Sharing a familiarity with the RC framework may have resulted in narrowing the scope of collaborations described by sample participants. While RC is increasingly being discussed in AHCs, overall, RC is not yet widely used.

A total of 30 individuals agreed to participate in this study. However, not all 30 individuals were available to be interviewed during the time period of the study and, consequently, only 21 individuals were eventually included in the study. Of those, ten clinical faculty were identified based on responses to a brief introductory email (Appendix B) distributed to a population of AHC clinical faculty who have familiarity with RC as a collaborative practice. The invitational memo asked respondents whether they had participated in collaborative activities with colleagues over the past 18 months and, if so, if they were willing to be interviewed by the researcher. All ten of the selected clinical faculty were interviewed as part of this study. Fifteen additional research participants were identified by the initial clinical faculty interviewees, using a snowball sampling strategy, and eleven of these were available to be interviewed.

According to Patton (2002), there are no clearly defined requirements for determining sample size in qualitative inquiry. Patton (2002) contends that it is the richness of the information gathered in the cases selected as well as the skills of the
researcher that impact the validity, meaningfulness, and insights generated in the research. To ensure I was able to gather meaningful and rich information to address my research questions, I focused on selecting a sample of clinical faculty and other healthcare professionals from a diverse set of institutions (Maxwell, 2013).

Once potential participants were identified, I sent each an introductory email to establish their willingness to participate (Appendix C). The email clearly indicated the purpose of my research, its timing, and an overview of my requirements. Regarding this last point, I emphasized that I was seeking participants for my research who had actively participated in collaborative activities with AHC colleagues during the past 18 months and that I would be asking them to identify colleagues with whom they have collaborated as part of the study. For individuals who provided a positive confirmation of their participation in collaborative activities during the past 18 months and a willingness to participate, I sent a follow up email to schedule an interview to confirm their willingness to take part in the study and to confirm a date/time for the interview (Appendix D).

I maintained a list of individuals identified as participating in collaborative activities with each initial interviewee and, following each interview, sent an email to the identified colleagues to request their participation in the study. I provided the initial interviewees with an email to be sent to identified colleagues briefly describing the study and letting them know that I would be contacting them with a request to participate (Appendix E). As with the initial interviewees, I clearly indicated the purpose of the research, and its timing, and emphasized that I was seeking participants who had actively participated in collaborative activities with colleagues during the past 18 months. Using this technique, 11 additional participants were interviewed as part of the study.
In anticipation that some clinical faculty might not be comfortable sharing any difficulties they had experienced in establishing and sustaining collaborative activities within their institutions with someone so closely affiliated with AAMC, I focused interview questions on eliciting specific examples of situations where the faculty member worked in collaboration with another colleague. By explicitly asking interviewees to describe specific examples, I was able to stay focused on collaborative behaviors and their influence, if any, on learning.

Given my role as Chief Learning Officer and a member of the Leadership Team for AAMC, there was a slight risk that individuals felt that they were “required” to indicate a willingness to participate in the study based on the initial screening conversation. To mitigate this risk, clinical faculty invited to participate as interviewees were assured that any data would be treated confidentially. I also specifically assured interviewees that AAMC was not sponsoring the study, would have no access to interviewee data and, therefore, would not be able to take specific action on something as a result of the research.

Given my level of knowledge of academic medicine and of AHCs, it was important for me to identify external colleagues who did not share my biases and assumptions regarding collaborative practices in AHCs and the potential role of professional hierarchies in facilitating or constraining learning opportunities. To mitigate this risk, I purposively sought out sample participants that I had not previously worked closely with. Ongoing conversations with colleagues from the PennCLO program were helpful, as were discussions with other colleagues drawn from backgrounds outside of academic medicine to challenge my thinking and research in mitigating this risk.
Overview of Research Sample

Findings are based on interview data drawn from a sample of 21 healthcare professionals representing nine different AHCs. Two AHCs in this study were located in the northeast, two were located in the mid-Atlantic region, three were located in the south, and one AHC each was located in the southwest and the west. Three of the AHCs were in major metropolitan areas with populations over 450,000, three were in mid-size cities with populations between 100,000 and 250,000, and three were located in smaller communities with populations of less than 50,000.

Each AHC sample included participants who were serving as clinical faculty. All but one AHC in the sample included physicians as clinical faculty. In one AHC, the clinical faculty included three other healthcare professionals. Five of the AHCs in the study included only participants who were physicians. The remaining four AHCs in the study included a mix of physicians serving as clinical faculty and other healthcare professionals with whom the physicians directly collaborated. The other healthcare professionals included in the sample in those four AHCs represented the professional disciplines of nursing, occupational therapy, clinical psychology, organizational psychology, voice pathology, and research science. Of the different professional disciplines represented, 13 participants were physicians, 6 participants had earned PhD degrees, three had completed MA or MS level training, and one had completed BS level training. Nine Interviewees were female and 12 were male. Figure 2 shows the professional discipline and gender of study participants interviewed for each AHC.
Data Collection Methods

As described above, I collected qualitative data to achieve the goals of this study. In the following sections, I describe the qualitative data collection methods used.

To collect qualitative data, I conducted interviews lasting approximately 60 minutes with 21 participants utilizing a semi-structured interview process. This allowed me to elicit and analyze clinical faculty and other healthcare professionals’ perceptions of the nature of the collaborative activities that they had participated in, as well as their perception of the influence of those collaborative activities on individual and organizational learning within their professional environment. This section describes the interview approach, including details related to semi-structured interviewing techniques.

All interviews, except one, were conducted by telephone. I initiated each call from my personal cellphone and recorded each interview after receiving verbal agreement from the interviewee. One clinical faculty interview was conducted face-to-face.

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3 Grey boxes represent the primary contact of each AHC cluster. Dashed boxes represent female participants. Specific qualifications are included in parentheses after each code.
face at a meeting both the interviewee and I were attending. Previous research (de Leeuw & van der Zouwen, 1988) has demonstrated that there is only a marginal difference between in person and telephone interviews.

In preparation for each interview, I reviewed all publicly available biographical information about each participant, which allowed me to better understand each participant’s background and current professional role. This knowledge was useful as it allowed me to inquire about specific moments in the participant’s career and to solicit examples from these.

Interviews were treated as confidential and as private conversations between each interviewee and me (Lofland & Lofland, 2006). I specifically focused on establishing rapport with the interviewees and setting a tenor that would encourage participants to feel comfortable openly sharing their perceptions about collaboration experiences and the relationship between those collaborative activities and any individual or organizational learning that occurred. Throughout the data collection process, I followed the guidance of Ravitz & Carl (2015) and maintained a focus on the objectives of the study and my role to minimize the possibility of shifting my role to that of a colleague and friend rather than a researcher.

I designed a draft interview protocol intended to elicit responses to address the study’s research questions. Prior to commencing interviews, the interview protocol was tested via pilot interviews with two professional colleagues at AAMC who had previously served as clinical faculty in an AHC. This allowed me to experiment with the interview protocol and refine the questions. Based on feedback from my professional
colleagues as well as guidance from my dissertation chair, the draft interview protocol was revised. The interview protocol used in the study is attached as Appendix F.

I followed a semi-structured interview format, which is described by Remler and Van Ryzin (2010) as a set of open-ended questions accompanied by probes, which help guide or structure the discussion. Using this interview format allowed me to be systematic and comprehensive while still allowing the interview to be conversational and relatively informal. Eriksson & Kovalainen (2008) comment that maintaining a conversational and informal tone is advantageous for gathering rich, meaningful data. I used a standard questioning format in combination with an interview guide. Specifically, I asked the same open-ended questions in the same order of all interviewees. I also asked probing questions to follow-up on the information shared to better understand the specific situations described by the participant and to allow me to be responsive to issues raised spontaneously by the interviewee (Patton, 2002; Legard et al., 2003).

Additionally, I used an approach focused on gathering data about specific recent collaboration experiences as a means for structuring the interview, using questions and probes targeted toward obtaining rich descriptions of collaboration experiences (Spencer & Spencer, 1993). This approach to conducting interviews introduced the risk that participants could have remembered the situation inaccurately or have forgotten key incidents that may have affected their perceptions of the collaboration experiences (Boyatzis, 2008).

I diligently followed my interview protocol to ensure that the interview remained focused on my research questions to allow for comparisons across participants and to facilitate the development of themes (Patton, 2002). However, I also allowed
interviewees to determine the “path” of the interview in responding to my questions. In so doing, I allowed the interviewees to use their language to describe the collaboration experiences they were recounting. I asked probing questions that were tailored to responses from interviewees to elicit rich data to inform my study. To manage the risk that the participants were unduly influenced by the interviewer and the interview situation, I avoided asking leading questions (Maxwell, 2013). More importantly, I engaged a colleague with extensive qualitative interviewing experience to review each interview immediately after receiving the transcripts to identify situations where my comments as an interviewer could have affected the validity of the inferences I drew from the interview so that I could be sensitive to the risk and adjust my interviewing comments accordingly in future interviews. Additional data collection technical details are included in Appendix G.

Data Analysis

The primary goal of this study was to explore the association between collaboration and learning, as perceived by healthcare professionals describing their experiences collaborating with colleagues in AHCs. As such, a thematic analysis was conducted to identify themes and patterns that emerged as being important to the description of the phenomenon (Daly et al, 1997; Boyatzis, 1998).

More specifically, I have applied an inductive approach to the thematic analysis, where, as the researcher, I interpreted the meaning of the qualitative data after obtaining the findings (Boyatzis, 1998). Boyatzis (1998) proposes three stages to inductive data analysis, where stage one includes deciding on sampling and design issues, and selecting subsamples; stage two includes reducing the raw information, identifying themes within
subsamples, comparing themes across subsamples, creating a code, and determining reliability; and stage three includes applying the code to the remaining raw information, determining validity and interpreting results.

An inductive data analysis approach has required me to construct meaningful codes from the raw data to capture the qualitative richness of the phenomenon. I developed codes that had the maximum probability of producing validity by incorporating the following elements into each code: a) a label or abbreviated name for the code; b) a definition of what the theme concerns; c) a description of how to know when the theme occurs; d) a description of any qualifications or exclusions to the identification of the theme; and e) examples, both negative and positive, to eliminate possible confusion when looking for the theme (Boyatzis, 1998).

Validity

To increase the credibility of my conclusions from all methods, I worked to minimize biases and validity threats while analyzing my data. First, I minimized researcher bias by describing all biases associated with selecting data that fit personal preconceptions (Maxwell, 2013). These biases are identified as assumptions in Chapter 1 of this dissertation. Second, I asked two colleagues with significant qualitative expertise to conduct an analysis of two anonymized interview transcripts and associated field notes to check on my emerging analysis of the data. I then met with my colleagues to discuss their reactions to the emerging analysis. They identified no concerns with my analysis in progress. Third, to minimize validity threats involving the identification and analysis of discrepant data and negative cases, I asked my dissertation chair for feedback on my findings and interpretations to identify potential flaws in my logic and/or methods. For
example, I asked my chair for his reactions to my identification of the learning outcomes I identified from the data.

**Generalizability**

In research, generalization pertains to “extending research results, conclusions, or other accounts that are based on a study of particular individuals, settings, time or institutions to other individuals, settings, times or institutions than those directly studied” (Maxwell, 2013, p. 136). This study is not externally generalizable (i.e., generalizability beyond the group studied) (Maxwell, 2013), although some themes emerged that provided some level of internal generalizability (i.e., generalizability within the group studied). Findings provided rich descriptions and insights for a small group AHC healthcare professionals who were familiar with RC, rather than identifying externally generalizable phenomena.

**Conclusion**

The purpose of Chapter 3 was to describe my methods for examining the research questions presented in this study. As discussed, I used an exploratory qualitative data collection strategy. I conducted semi-structured interviews to elicit rich descriptive information from healthcare professionals who had engaged in collaborative activities with colleagues during the past 18 months to assess whether participation in collaborative activities was perceived to be associated with individual or organization learning.

Using a purposeful snowball selection approach, I identified and interviewed 10 clinical faculty who had actively participated in collaborative activities with AHC colleagues during the previous 18 months. As part of these initial interviews, I asked clinical faculty to identify colleagues with whom they had engaged in collaborative
activities. I then interviewed those individuals to obtain different perspectives on collaborative activities and their potential influence on learning. I conducted a total of 21 interviews with healthcare professionals.

I used an inductive approach to thematic analysis as the data analysis strategy. This approach to qualitative data analysis was aligned with my interest in wanting to understand, from interviewees’ perspectives, the research questions I was studying.
Chapter 4: FINDINGS

In the sections that follow, I describe my findings in detail. Findings are based on interview data drawn from a sample of 21 healthcare professionals representing nine different AHCs. Each finding description outlines key themes and subthemes of the finding, cites evidence for each theme and subtheme in the form of quotes (using blinded codes for institutions and interviewees), and provides interpretation of the evidence. Once all findings have been presented in this way, I close the chapter with a summary.

This study set out to consider the following research questions:

1. How is collaboration perceived by healthcare professionals in academic health centers?

2. How do healthcare professionals working in academic health centers (AHCs) perceive the association between collaboration and learning?

Finding 1: No Common Vocabulary to Describe Collaboration Experiences

Despite targeting healthcare professionals who had familiarity with relational coordination (RC) concepts, participants in this study generally describe collaboration informally, often describing it simply as working cooperatively with colleagues, and do not specifically identify any association between collaboration and learning. In many cases, participants did not describe collaboration as an intentional approach to a particular task or situation. Participants in the study evidence only minimal use of a common language to characterize collaboration. (See Appendix I for a coded list of the vocabulary used by participants in referring to collaboration.) Similarly, participants in
this study did not evidence use of a common language to describe learning. This section presents findings demonstrating the different perspectives that participants voiced regarding collaboration and any relationship between collaboration and learning.

Much has been written about the nature of collaboration and how collaboration is demonstrated in multiple healthcare environments (Corser, 1998; D’Amour et al, 2005; Orchard et al, 2005; Whitehead, 2007; Martin et al, 2010). However, there is no consensus on a definition of collaboration nor is there even agreement as to which observable characteristics provide evidence of collaborative behaviors. Inductive analysis of interview data indicates no shared understanding of the nature of collaboration.

Findings indicate that, despite selecting a sample where all participants had some familiarity with the RC framework, there was minimal use of a shared common language to characterize collaboration. Based on a review of screening conversations, self-reports, interview comments, and participant publications, study participants were ranked on their perceived level of familiarity with RC using an eight-point scale ranging from “Low Familiarity” to “High Familiarity”. Level of familiarity was coded based on background experience and exposure to RC framework in training sessions. Some had completed significant focused study on RC and had experience with implementing the framework in one or more teams within an institution. Others had been part of an implementation process but did not themselves have deep knowledge about RC, and some had been introduced to the framework but had not yet participated in an implementation of the framework in their institution. Variability in the relative level of familiarity with RC across participants is illustrated in Figure 3 below.
Several participants with high familiarity used RC language to describe collaborative activities. The comments below came from two participants with significant experience with RC. In both cases, a clinical faculty member describes a collaboration experience requiring the involvement and commitment of a multidisciplinary team to accomplish the identified goal. In the first example, the emphasis is on the need for a collaborative framework to enable the three leaders to pull together the diverse interests of different groups of healthcare professionals to achieve a common goal. The comments illustrate the absolute importance of establishing shared goals to drive successful collaboration experiences. The comments also show that while the interviewee used RC language in describing collaboration, there was still a need for extensive communication among the collaborators, demonstrating that not everyone in this situation shared a common understanding of RC language. Additionally, there was no reference to the association between collaboration and learning. In fact, as in many of
the interviews, this participant did not identify any association between collaboration and learning.

“…that by improving…a collaboration between inpatient nursing staff, the outpatient nursing staff, the orthopedic surgeons, a new local homecare agency, that we could improve care, and kind of reduce costs, prevent readmission….and then, the science has kind of pointed me to a series of frameworks and processes like relational coordination…and so, that involved a year’s worth of work between the three of us in our respective constituencies. A lot of meetings, a lot of communication, but there was a lot of trust amongst the three of us in terms of how to accomplish it and a lot of commitment on our part to make it successful. But…it fit all the elements (of RC) if we could find a way to structure a review process that included all.” (P3, non-physician, personal communication, February 2017)

Another participant with high familiarity described collaboration in the context of demonstrating leadership. Despite having high familiarity with the RC framework as did Participant 3, the participant above and despite responding to the same interview questions, the two participants did not use a common language to describe the nature of their collaboration experiences nor was there any mention of the association between collaboration and learning.

“And it’s because you’ve got to do this distributive leadership model and you’ve got to identify people that have potential. Then, everybody else has to lead to their gifts and then you just kind of minimize where they have deficiencies in. As the…grew, we grew into collaborative groups, so we have a medically complex team. We have a…team, we have a…team, and a…team. So, the impact of allowing these teams to have their own direction and leadership but to be supported collaboratively was a new model for the people working and recruited into the…” (P2, physician, personal communication, February 2017)

Additional examples from other healthcare professionals somewhat less familiar with RC reference RC elements specifically, here with respect to the need for timely communication. The quote clearly highlights that colleagues do not share a common
vocabulary or share a common understanding of the meaning of collaboration, even when there is exposure to the RC framework.

“I’m trying to facilitate this meeting about goals the other day and my goal was to help to facilitate this conversation about basically scope between those three disciplines… My goal was to help them and I didn’t, and it didn’t work as well as I had liked and so towards the end of the meetings, we had some practical things about RC. Like we decided for timely communication, our hospital still has pagers which is just so antiquated…so, we talked about frequency. And we talked about time placement…but then we got to shared knowledge and there were disagreements about…I’ve had lots of opportunities to talk in private with him and to talk about principles of relationship centeredness and how they are relevant to our group work. But also, to work groups throughout our institution and how those influence our performance and how we show up for our patients and families.” (P6, physician, personal communication, March 2017)

While participants with medium to high level of familiarity with RC used a number of RC elements in their responses during the interviews, they still only rarely referred to RC as a specific and intentional approach to collaboration. In the examples above, there is no evidence that the participants recognized the need for establishing and using a common language as a mechanism for achieving shared goals.

Participants with low familiarity characterized collaboration differently from those with high familiarity as well as differently from one another. In the first quote, a clinical faculty member and department chair is explaining the difficulties associated with meeting the demands of other physicians by expanding the genetic testing options available through the laboratory. This example shows that while the participant uses terms like “timely communication” and implicitly identifies mutual trust as important to the success of the collaboration, there is still no evidence of the consistent use of a common vocabulary in describing collaboration experiences.

“But it was absolutely constant, there was a lot of communication and we continued to have…timely communication…At the end, I had tremendous respect
to what they say, and they had respect, in a way, because not everything they said led to this…They had respect to my opinion too, that (this) maybe can wait. We (X department) have priorities….so we, it was like two-way communication with respect, absolutely.” (P4, physician, personal communication, February 2017)

Other clinical faculty members with limited exposure to the RC framework express different perspectives on collaboration. One clinical faculty member emphasizes the relationship among colleagues as critical to collaboration. Despite the value she finds in collaboration, she does not explicitly discuss relationships using any established framework such as RC. She describes the need for mutual respect, communication, and shared goals but she does not use explicit RC language. For her, collaborations are about relationships, and relationships are mostly developed organically rather than through any framework. She also does not comment on how learning is associated with the development of relationships.

“So, it’s a real relationship. We (the participant and her physician colleague) come from similar philosophies. But, that goal of having meaningful conversations…creating safe spaces to have meaningful conversations in our community and to make work more than just the behaviors in primary care, was something we shared.” (P19, physician, personal communication, April 2017)

A second clinical faculty member with limited exposure to the RC framework commented similarly about the importance of relationships in the AHC environment.

“I and one of the other docs were the ones that hired in all the physician assistants and nurse practitioners. And so, I think one of the things that we emphasized in hiring was relationship skills and communication skills because I mean it’s crucial in caring for patients but we also wanted to have a nice practice. So, I think partly for that reason, even though there were these challenges, I think people who were able to come towards the mean and understand what the other person has to offer that I don’t have.” (P20, physician, personal communication, April 2017)

The emphasis by these participants on relationships in overall terms and on communication skills in overall terms shows an appreciation of the need for these
elements for effective collaboration, but does not relate to any specific concept or methodology about collaboration. Their comments also do not evidence use of terms that are common to other participants in describing their collaboration experiences.

In addition to the lack of a common language with which to characterize collaboration experiences, participants did not reference common goals or expectations as to the outcomes of their collaborative activities with colleagues. This is distinct from colleagues working towards a shared goal associated with a particular collaboration experience, as will be described in the next section. Rather, it references the lack of a specific goal for participating in collaboration itself. The data indicate that while participants did not have any difficulty identifying examples of collaborative activities to share throughout the interview, no single interviewee commented on their goals or expectations of collaboration generally, nor did they comment that they had entered into the collaboration they were describing as an opportunity to learn. The expectations cited were all situated in their specific project contexts only.

In viewing the vocabulary used to characterize collaboration, no systematic differences were noted between physicians and other healthcare professionals with a similar level of familiarity with RC concepts. Both physicians and other healthcare professionals used phrases to describe collaboration that focused on identifying elements that led to a successful collaboration experience. For example, participants used the following phrases: “learning about how we work together” (P1, physician); “you should always look at the other players on the team” (P4, physician); “there is no problem with being inclusive” (P12, physician); “we learned something from the other healthcare professionals” (P3, non-physician); “we pull together and try to help each other” (P7,
non-physician); “we value each other and what we bring to the team so much” (P11, non-physician). These are all comments describing positive collaboration experiences, but the same sort of similarities occurred when describing challenging experiences with phrases such as: “I’m not sure they really have the shared goal” (P14, non-physician); and, “there’s no open and honest communication” (P17, physician). There were no systematic differences identified in the way in which physicians and other healthcare professionals expressed themselves about collaboration.

Summary

Participants who were selected for this study all had some knowledge and/or experience with the seven key elements and basic common vocabulary of the RC framework. There was no evidence of this leading to there being a common language used to characterize collaboration experiences, or a shared understanding of any single collaboration model. However, individual participants, who had deep experience with RC in practice, did use RC related terms in their responses. Clearly, collaboration as a concept has no shared meaning among this group of participants, as reflected in the widely different examples that they cited of their experiences in collaborating with colleagues. Collaboration theory defines collaboration in a much more formal way than what this group of experienced healthcare professionals consider collaboration to be. It was evident that participants entered into collaborations with limited, specific, expectations, which did not include any learning expectations, and without any specific goal in mind. This reflects how many of the collaboration experiences shared by the participants were essentially informal in nature and so that, for them, collaboration happens rather than is organized, planned and monitored for effectiveness.
Finding 2: RC Associated with Collaboration Experiences

To further understand the perspective of healthcare professionals about collaboration, each interviewee was asked to describe their participation in at least two collaboration experiences in the past 18 months. First, each participant was asked to describe a situation where they were working collaboratively with colleagues that they would characterize as an example of positive or successful collaboration. Each interviewee was then asked to describe a situation where they were working collaboratively with colleagues that they would characterize as an example of a challenging or unsuccessful collaboration. Analysis of the characteristics of the collaboration experiences evidences a clear association with six of the seven key elements of the RC framework in positive experiences. However, in challenging experiences, the only clear association was with the lack of two of the seven key elements of the RC framework.

The seven key elements of the RC framework are problem solving by groups of people using shared goals, shared knowledge, and mutual respect, supported by frequent, timely, and accurate communication (Gittell, 2016). In each interview, open-ended questions were asked which enabled participants to respond in ways that would explicitly or implicitly relate to each one of the seven separate elements.

Positive Collaboration Associated with Elements of RC

Examples of positive collaboration were coded in each of the 21 interviews, using the seven RC elements. Figure 4 presents specific RC elements referenced by participants at least once in their description of a positive collaboration experience. The
percentages in Figure 4 include both elements explicitly identified by participants and elements identified and coded as examples by the researcher.

Findings demonstrate that all participants referenced *shared goals* (100%, n=21) as part of their positive collaboration experience. A substantial majority of participants described examples that evidenced *mutual respect* (81%, n=17), *accurate communication* (76%, n=16), and *problem solving* (71%, n=15) while over half of participants also described examples possessing *frequent communication* and *shared knowledge* (62%, n=13). Only one-third of participants (33%, n=7) described positive collaboration examples where *timely communication* with their colleagues was referenced.

Figure 4: Relational Coordination Elements Identified in Positive Collaboration Experiences

The frequency of references to each of the seven elements of RC was identified through analysis of participant responses. However, analysis could not identify why certain elements were cited more often than others. What is clear, however, is that understanding, or operating under, the RC framework may allow relationships to function
much more effectively. Possessing relationship awareness encourages all stakeholders to align their visions, value each other’s contributions, and resolve any conflicts that may arise constructively according to participants with a greater familiarity of the RC framework. The five individuals who were most familiar with the RC framework, those placed on the top two points out of eight in the Continuum of RC Familiarity scale, explicitly used language referring to one or more of the seven RC elements (See Figure 3).

Participant 1, for example, was one of those individuals. His story typifies the value of RC in dealing with the challenges of emerging changes at AHCs and adapting to them. He had taken varying roles in academic medicine and subsequently became an expert in RC. Participant 1 pursued additional studies where he became aware of the RC framework for facilitating the development of positive relationships. He commented that he then realized that “communication and relationship skills work really well”.

“However, of short supply you think they [communication and relationship skills] might be clinically, they are even in greater, shorter supply, even rarer in the administrative world. So, after five years as an executive, I said, "Okay, I know this stuff works. And now I do feel like I have a basis and the personal experience and confidence in these methods in trying to create a relationship-centered administration." (P1, physician, personal communication, February 2017)

Participant 1 had relied on his understanding of key elements of RC in both his administrative role and in his role as a clinician. Some of the examples he shared demonstrate that awareness of the elements that account for effective relationships contributes to the success of a relationship. As an administrator, he realized that conflict arises when a shared understanding of the scope of the work is missing. Therefore, leveraging communication skills and establishing trust in relationships became essential.
“When there are disruptions in relationships, usually it is [because] of a lack of shared understanding about the goals, roles, or the process. Some of my favorite stories when I was first starting out in my administrative role, were just situations where there was a lot of conflict, and lot of mistrust. And I could draw upon my communication skills and establish trust, and instead break the patterns of conflict.” (P1, physician, personal communication, February 2017)

As a clinician, however, leveraging effective interpersonal skills may result in the life or death of a patient. During the conversation, Participant 1 shared an example in which the RC framework positively impacted his work with a patient and the patient’s psychiatrist. Participant 1 formed a working relationship (a collaboration) with the patient’s psychiatrist. The incident shared below demonstrates that maintaining accurate, frequent and regular communication with all of a patient’s health providers is crucial.

“I had a patient…She was very complicated…and she also had some really obscure and complicated medical conditions, too, and some things that were hard to diagnose…and at one point she was also seeing a psychiatrist. We (Participant 1 and the psychiatrist) really made an effort to communicate with each other and to coordinate, and it just felt so helpful to have a partner to think these things through together…Because there were decisions about medications that she (the psychiatrist) would prescribe that would have medical implications that she wouldn't necessarily know, I could provide information that could help her do better decision-making and vice versa. She (the psychiatrist) could help me understand what to do about this or provide some additional counseling backup if we were heading into a crisis situation. We just co-managed so much more effectively than either of us could do alone…We had a kind of trust and a willingness to listen to each other. I didn't feel like there were any challenges in the relationship. The challenges were in the difficult situations this patient could get herself into, or find herself in.” (P1, physician, personal communication, February 2017)

Participant 1’s story reveals his deep respect for his colleague. Although the two healthcare professionals in this relationship possessed no shared knowledge about their respective medical disciplines, they shared a goal to ensure their patient’s wellbeing and the openness to learn from each other’s perspectives. As a result of sharing this goal,
they used accurate, frequent, and regular communication, three of the seven elements of RC, to ensure that they achieved their shared goal.

Participant 5, a non-physician, described using the RC framework in several positive collaboration experiences. He specifically notes the importance of establishing a trusting relationship but also distinguishes between the practical application of the RC framework and an overall approach to cultural change. His description is a clear example of the association between elements of RC and positive collaboration experiences and, at the same time, describes how the RC framework can be used for essentially practical purposes.

“Our process worked across multiple disciplines...basically, we reorganized the way we ran and structured our ORs...a lot of meetings, a lot of communication but there was a lot of trust amongst the three of us in terms of how to accomplish it and a lot of commitment on our part to make it successful. It wasn’t as altruistic or as high level as stepping back and saying, okay, how do we educate for culture change.” (P5, non-physician, personal communication, March 2017)

Another participant very familiar with RC talked about his collaborative experiences from a leadership perspective. He focused on the importance of team members, who collaborate to provide patient care, speaking a common language and comments that he recognizes the need to spend significant time ensuring that the varying perspectives of team members are aligned to achieve goals. This is another example of the strong association between RC elements and positive collaboration experiences.

“As the XXX grew, we grew into collaborative groups, with multiple teams...so, the impact of allowing these teams to have their own direction and leadership but to be supported collaboratively was the new model for the people working and recruited into XXX.” (P2, physician, personal communication, February 2017)

While Participants 1, 2 and 5 had high familiarity with RC, another example from someone less familiar with RC implicitly associated RC elements with their collaboration
experience. Participant 4, a physician, emphasized the importance of communication, specifically noting timely communication and a need for mutual respect to ensure team success. This is a clear example of what individual participants perceive as the importance of RC elements in successful collaborations and demonstrates the importance of two-way communications.

“But it was absolutely constant, there was a lot of communication, and we continued to have, you know, timely communication about that. I continued to go and meet with the colleagues after work…and I had tremendous respect to what they say…they had respect to my opinion too, that this (the requested change), maybe can wait. We have priorities, because not everybody can have their wish list. So, it was like two-way communication with respect, absolutely. I think that made it a successful team.” (P4, physician, personal communication, February 2017)

From the quantitative findings in Figure 4, both shared goals and mutual respect were elements present in most of the participants’ stories (shared goals identified in 100%, or n=21, of the participants’ stories; mutual respect was identified in 81%, or n=17, of the participants stories).

**Elements Identified in Challenging Collaboration Experiences**

This section will focus on the challenges participants experienced working in collaboration with colleagues. Participants shared examples of collaborations that they perceived to have been challenging. Although some aspects of these collaborations worked well, in general the outcome and/or the experience did not. The findings, however, provide more specific insights on the challenges associated with collaborating in professional settings.

Inductive analysis of the challenging collaboration experiences yielded seven distinct elements, which were identified across the 21 interviews as shown in Figure 5.
Dealing with the egos of other collaborators, which was identified in 67% (n=14) of the challenging collaborations, is a challenge that has been highlighted in theoretical studies of collaboration between healthcare professionals (Corser, 1998; Paicheler, 1995; D’Amour et al, 2005; Whitehead, 2007). Dealing with professional egos is considered by these studies as a potential major issue to be considered when experienced healthcare professionals from different specialties seek to collaborate with each other or with professionals who are not perceived to be of equal standing.

The element disagreeing on procedures due to misaligned knowledge was present in 48% (n=10) of the challenging collaborations. This element suggests that there is a lack of the RC element shared knowledge. Another 38% (n=8) of participants identified issues with engaging collaborators and maintaining momentum, having ambiguous roles and responsibilities, and lacking infrastructural support. These elements were related to the ability to organize an effective collaboration experience between healthcare professionals who are already fully committed to their immediate direct responsibilities. Operating under different goals (29%, n=6)) and lacking effective communication (24%, n=5) were also reported. Two of these elements directly relate to the absence of major elements of RC, shared goals and effective communication.
Participant 18, a physician, described how a challenging experience was transformed by establishing a formal agreement as to how the group would work together going forward and maintain momentum.

“…he brought the two heads together to really talk about how we can be an effective group. And also, just understanding like we all have to be accountable to each other because everyone’s got busy schedules and you can’t discount somebody else’s time over yours. So, it’s really trying to show up…and so we did that…we had to write at that meeting, we each had to write ground rules for collaborating.” (P18, physician, personal communication, April 2017)

In summary, the elements most frequently reported reflect issues essentially related to setting up and maintaining the collaboration experience (n=34) and, the egos of the healthcare professionals involved (n=14). Interestingly, inductive analysis identified two elements, operating under different goals and lacking effective communication, that are the opposites of two of the seven RC elements (n=11).
The various elements listed that basically relate to organizing and maintaining the collaboration experience (disagreeing on procedures due to misaligned knowledge, lacking infrastructural support, engaging collaboration and maintaining momentum, having ambiguous role and responsibilities) are diverse, and vary from the mechanics of a lack of infrastructural support, to very personal issues for those collaborating, such as maintaining momentum. None of these elements are specifically mentioned in any of the conceptual discussions of collaboration or in the models for collaboration that have been identified and reviewed (D’Amour et al, 2005; Orchard et al, 2005; Martin et al, 2010). Additionally, none of these elements are specifically addressed in the seven elements of RC. However, RC as a framework used in practice has implementation steps and advice that specifically seek to ensure that these challenging elements are avoided. The element most often reported, dealing with egos of other professionals, is amply discussed in the literature on inter-professional collaboration, collaboration between healthcare professionals in general, and collaboration between nurses and physicians (Corser, 1998; Whitehead, 2007). The two key elements of RC that were reported as not being present (operating under different goals and lack of effective communication) directly relate to the lack of key elements required for collaboration as defined by D’Amour et al (2005) in their study of collaboration in healthcare.

Participant 4, a physician, described a challenging collaboration experience where both operating under different goals and dealing with egos came into play. In describing a situation where the institution was trying to build the case for additional services, he identified the tensions caused by failing to build rapport among those required to make a crucial decision.
“So, rather than synergizing and building, tying up all the resources and getting support for the different pieces, the conversation was very tense. There were accusations thrown around that you are not a team player, that just because you did it, you’re not willing to share and so I suddenly felt…the dynamic (among the collaborators) change.” (P4, physician, personal communication, February 2017)

From the evidence gathered, there are a significant number of issues (Figure 5) inhibiting effective collaboration among healthcare professionals in AHCs that are essentially practical in nature, are potentially related to how collaborations are organized and structured, and that have not been explicitly considered in collaboration theory. It also is clear that the concerns expressed about egos being potential barriers to effective collaboration, are supported by this research and require consideration. Lastly, certain key elements of RC are specifically identified as being missing in a relevant number of collaborations that were identified as being challenging.

Participant 17, a physician, shared struggles that fittingly illustrate some of the predominant challenges identified in this research. A physician by training, Participant 17, transitioned to a leadership role at her hospital, and she commented that she was not skilled at “being much of a team player” during collaborative situations. She then took a position as an administrator at another institution where she encountered challenges in collaborating effectively with a colleague. Commenting on her negative collaboration experience, she describes the interactions she had with her supervisor as totally lacking open and honest communication, which resulted in a lack of perceived mutual respect and trust. This is a key theme associated with challenging collaboration experiences.

“Working with the guy who was my immediate boss that really has probably been my biggest challenge. I came from a [leadership] position where I had a fair amount of autonomy and I was doing my own thing. And I've been doing it definitely for a long time. And I came into this job and I don't think there was a lot of transparency about some of the issues. There's no open and honest
communication. So, it was exceptionally challenging. This individual (her boss) was not used to somebody that functioned fairly independently (like myself)... There were specific things that I could go to him and say, "Look, I want to develop this program, and here's my plan," and he would say, "Great!" but he wanted somehow to have his hands in it. He wanted to be at all the meetings. And it diminished my ability to manage or to lead that.” (P17, physician, personal communication, April 2017)

Another challenge Participant 17 faced was the promotion of a colleague she did not see as being fit for promotion. Consequently, Participant 17 became disillusioned with her role in the institution and that then consequently caused her to question the institution’s commitment to patient care.

“I just find him an exceptionally challenging individual. And he's now being promoted, which I have to say is that well, we don't share some of the real core values. I think it's important to share [the values] about patient care and what is important and how to treat people. Some of it just made it exceptionally challenging with this promotion.” (P17, personal communication, April 2017)

Participant 17’s story demonstrates how the egos of others and how operating under different values and with different individual goals can influence the willingness and drive of healthcare professionals. The same negative factors, associated with professional egos and with individual values and goals that are not then seen as shared values and goals, are cited in terms of an inability to work in a given professional environment, as well as in terms of specific collaboration experiences.

Participant 10, a physician, described a similar lack of shared goals in recounting a challenging collaboration experience.

“That’s one of the things we were never taught very well early on... setting a vision and a mission and goals and these were things I’ve learned as I started to do XXX work.” (P10, physician, personal communication, March 2017)
Participant 10 also noted that dealing with professional egos was an ongoing challenge in a situation where she was asked to take on a task that another physician wanted to be asked to do.

“She had come from XXX and when she found out that they had asked me to do XXX, she had said, “That’s really interesting because I told our division director that I would love to do that because I’m already the chair of the YYY committee.” And, I was like, oh boy, this is awkward.” (P10, physician, personal communication, March 2017)

Participant comments raise the possibility that specific challenges frequently cited with respect to individual collaboration experiences could also be examples of more generalized challenges that exist in the everyday working lives of healthcare professionals in AHCs. These findings illustrate important insights into the world of healthcare professionals. For example, dealing with professional egos in AHCs is likely to be a challenge in situations where healthcare professionals are not engaged in collaborative activities, but it is even more of an issue where healthcare professionals are expected to collaborate.

**Summary**

Whenever participants described positive collaboration experiences, six of the seven RC elements were identified in a significant majority of the instances, with one, *timely communication* being identified only one third of the time. Although all participants had some knowledge or experience of RC as a methodology, and identified at least one element of RC, none specifically referenced the RC framework as a characteristic of their positive collaboration experiences. No direct association with each of the seven elements was evident in challenging collaboration experiences. Consequently, while the relevance of the seven RC elements to collaborations that were
reported as being successful is clearly established, there is no equivalent association established between a lack of these seven elements and unsuccessful collaborations.

Finding 3: Focused Learning Outcomes

A focus of this study was to understand how learning relates to collaboration, or most importantly, whether, and if so, when, learning is a product of collaboration. Learning occurs on many levels. In fact, all the conversations with the participants revealed that learning is a multi-dimensional outcome of professional collaborations. A very experienced clinical faculty member offered the following perspective.

“Learning is new ways of perceiving or making sense of something. Then, as a result of that, new possibilities for action that you didn't have before. So that's learning of that conceptual and thinking level. And then there's the kind of learning at the skills level. You know physical or procedural things, whether it's putting in a central line or learning how to deliver bad news in a way that's really helpful. The communication and relationship skills, among all the other types of medical procedures, but you could think of those as procedures, too. There's the learning about the work and just learning about how we work together. Learning about each other, and what you do, and, and what I do, and how, how all that comes together. Kind of learning the system perspective. And there's, there's sort of a generic level. What do nurse practitioners do? What do social workers do? What do task workers do? But then there's also the learning at the system level that each unique patient and what, what each different professional's perspective, and of course the patient and family caregiver's perspectives on about what's going on. And so, learning about each other and figuring out what are the most appropriate things to do to help this patient be healthy.” (P1, physician, personal communication, February 2017)

Thematic analysis yielded a total of four major learning outcomes across the 21 interviews that were associated with collaboration experiences among healthcare professionals. The findings to follow will suggest that learning happens both explicitly and implicitly. Regardless of how much participants were explicitly reflecting on their learning outcomes, learning was occurring and it was mostly observed in how they
viewed: 1) process and quality improvement; 2) professional relationships with colleagues; 3) their emotional awareness; and 4) their growth in technical and adaptive knowledge and skills.

Figure 6 presents these four major learning outcomes in order of frequency, or how often they were coded in the interviews. Two distinct stories are being conveyed in Figure 6. The graph demonstrates the percentage of times each learning outcome was identified overall and the findings also show the percentage of times each learning outcome was identified explicitly (learning that is reflective and thus identified directly by the participant) and implicitly (learning that is not reflective and thus not identified directly by the participant). Explicit learning, for example, is learning that participants identified when they were asked by the interviewer to describe learning from their experiences, or learning in which they directly state, “I learned XYZ.” Implicit learning, on the other hand, was identified through inductive analysis completed by the researcher. For example, Participant 20, a physician, commented that it was important to demonstrate collegiality and multidisciplinary care to work well collaboratively but she did not explicitly describe this as learning. I coded it as an example of implicit learning. Note that both explicit and implicit learning will be shown in the Figures that follow for each learning outcome. Appendix H includes a description for each learning outcome identified in the analysis.

Instances of learning were identified a total of 224 times across the 21 interviews. Some interviews yielded more learning than others and so the learning instances are not equally distributed across the 21 interviews. Figure 6 reveals that most of the identified learning occurred around the theme of Process and Quality Improvement (33%, n=77).
Learning about *Professional Relationships* and *Emotional Awareness* occurred equally; each were identified 26% (n=61) of the time. Lastly, 10% (n=25) of learning occurred with the participants’ perceived growth in their *Technical and Adaptive Knowledge and Skills*.

Slightly over half of the learning happened implicitly (56%, n=126) and three out of the four learning outcomes demonstrate greater instances of implicit learning. Relatively more explicit learning was seen in how participants discussed their *Technical and Adaptive Knowledge and Skills*. These differences in learning outcomes and reflection are, of course, purely descriptive. However, what is potentially significant is that explicitly identified *Technical and Adaptive Knowledge and Skills* learning is both the least identified by the responses and, overall, the most easily identified by the participants. Based on the findings shown in Figure 6, there was only limited conscious appreciation of the range of learning opportunities from participating in collaboration. Finding 1 has already identified that for most collaborations described, participants did not have specific goals of their own for the collaboration.

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process and Quality Improvement</td>
<td>21</td>
<td>100%</td>
</tr>
<tr>
<td>Professional Relationships</td>
<td>18</td>
<td>86%</td>
</tr>
<tr>
<td>Emotional Awareness</td>
<td>18</td>
<td>86%</td>
</tr>
<tr>
<td>Technical Knowledge and Skills</td>
<td>14</td>
<td>67%</td>
</tr>
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</table>
The sections to follow describe the identified learning outcomes in more detail. More specific aspects of each outcome are presented in graphs using the same two-pronged format of Figure 6, showing overall and reflective (implicit or explicit) learning. Narrative examples are also included in each section so as to convey the richness of the data.

Process and Quality Improvement

Process and Quality Improvement was described by one of the participants as being a “bad word” among medical practitioners because of its association with “business language”. Despite being tarnished with such a negative reputation, this theme was the most identified outcome of learning. When collaborating with colleagues, participants gained a renewed understanding and appreciation for work processes. Although most of the positive collaboration experiences refer to having included shared goals with colleagues, the initial process of achieving them was often elusive and was thus prone to
much refinement and learning. The following five aspects of *Process and Quality and Improvement* were identified from the responses given by participants:

- **Leveraging the contributions of others in the process:** Using the unique perspectives of other key players (e.g. colleagues, family, other institutions, tools) to augment the holistic understanding of an issue and so to problem-solve together.

- **Taking an evaluative approach:** Using feedback and other forms of data, collected both formally and informally (e.g. personal conversations, structured debriefs, focus groups), to highlight best practices and areas for improvement.

- **Investing in other collaborators:** Taking the time to find the colleagues with the right “fit” for the team, build rapport, and ensuring adequate compensation.

- **Having a shared understanding of the goal and how to accomplish it:** Being in-sync with colleagues on the vision and mission of the work and establishing the “ground rules” on proper collaborative decorum.

- **Prioritizing workloads and managing time:** Managing and balancing the responsibilities associated with multiple missions (e.g. patient care, research, education) and avoiding the “tyranny of the urgent”.

Almost half of the learning on *Process and Quality Improvement* revolved around the value of leveraging the contributions of other collaborators into the process (45%, n=35). This learning aspect happened both explicitly (23%, n=18) and implicitly (22%, n=17). Another 21% (n=16) of learning instances commented on the appreciation of taking an evaluative approach. Most of this learning was implicit (16%, n=12). The need for investing in other collaborators was more explicit and was identified 13%
(n=10) of the time, while 12% (n=9) of the learning aspects were attributed to the need for having a shared understanding of the goal and the collaborative approach. Finally, prioritizing workloads and managing time represented 9% (n=7) of the learning, most of which was identified implicitly (Figure 7).

Table 2: Frequency of Participants Identifying Aspects of Process and Quality Improvement Learning (n=21)

<table>
<thead>
<tr>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leveraging the contributions of other collaborators into the process</td>
<td>18</td>
</tr>
<tr>
<td>Taking an evaluative approach</td>
<td>10</td>
</tr>
<tr>
<td>Investing in other collaborators</td>
<td>8</td>
</tr>
<tr>
<td>Having a shared understanding of the goals and of the collaborative approach</td>
<td>5</td>
</tr>
<tr>
<td>Prioritizing workloads and managing time</td>
<td>7</td>
</tr>
</tbody>
</table>

Figure 7: Frequency of Learning Outcomes Related to Aspects of Process and Quality Improvement

The narratives below provide examples for each of the five learning aspects of Process and Quality Improvement.
Leveraging the Contributions of Other Collaborators

Data analysis indicated that a key learning outcome when collaborating with colleagues was the value of leveraging their multidisciplinary contributions to the collaboration. This type of learning, although widely identified across all of the interviews, proved to be more challenging for some participants. For example, when Participant 4, a physician, transitioned from the private sector to academia, he learned that collaborating was a struggle due to his natural inclination to be “territorial” and “possessive” about his work. However, when tasked with expanding a menu of drugs, the need to collaborate with pathologists, diagnosticians, oncologists, and cancer subspecialists was crucial. Participant 4 found that a “barrage of these requests started to come to the lab … becoming a big part of the business”:

“So, it was a success story built on collaboration. In a sense, you should always look at the other players in the team, get their input, and make sure that you're not alone trying to get somewhere where you look back and nobody's following you. So, we (he and the other clinicians) planned it right because clearly their input was crucial. They were seeing what's happening on their side in the clinical services and what they need from pathology. They were doing this rather than doing it the other way around and deciding on their own. On our own we make some wrong choices.” (P4, physician, personal communication, February 2017)

By witnessing this institutional enthusiasm, he reflected that he had learned that the success of this collaboration required both the individual input of each of the key players and the positive relationship established between them. This is a clear example of the need to integrate perspectives from all those involved in working together to solve problems.
Taking an Evaluative Approach

Learning about process and quality improvement also came from learning the value of evaluation, or using metrics and feedback to identify challenges and opportunities. Not all the evaluative approaches identified in the interviews were comparably rigorous. In fact, the term “evaluative” was used liberally to include any mechanism for collecting data or feedback about the process (e.g. debriefs, one on one conversations, focus groups, etc.). A much more rigorous evaluative approach was used by Participant 5, a non-physician, and his team. Participant 5 discussed collaborating with external researchers to evaluate how hospital staff were engaging with a new technology to learn how they could better maximize their experiences.

“So, in this implementation effort we recorded meetings. We conducted individual interviews with selected staff. Then our little research team would make sense of what we were hearing and seeing. So, it helped deepen our understanding of what was going on and what the issues and opportunities were. Then we fed back those findings to the group that came together to guide this effort. So, it was using active research methods in the change process … not for the purpose of doing research but to guide and inform this effort.” (P5, non-physician, personal communication, March 2017)

Participant 5’s comments illustrate that he learned the value of using what he calls “active research methods” in implementing changes in work processes. This finding provides evidence of the unexpected learning that occurs as a result of participation in collaborative activities.

Investing in Other Collaborators

Another learning aspect of process and quality improvement identified in the responses was the need to invest in other collaborators, either with time, compensation, professional opportunities, or training. Many of the participants described the importance
of an effective return on investment. One notable example was given by a medical geneticist. In this example, Participant 16 described his experience in resolving a very costly hospital issue by investing in a new staff position at the time genetic testing was becoming very popular in the diagnosis and treatment of neurological disorders. Consequently, multiple genetic tests were being ordered and costs for the hospital had risen considerably. Participant 16, a physician, proposed that the hospital fund a new position, someone with “experience in organizing genetic testing and interpreting it,” who would be able to help neurologists “figure out what test they really needed”:

“The neurologists like it because the counselors actually spend time talking to the patient to get consent and take care of all the paperwork and of the logistics of sending the test. The counselors have enjoyed it because they get pretty good at an area that they become sort of authorities in. The patients have liked it because somebody actually talks to them in detail about the test. And they don't get a surprise bill from their insurance that they weren't expecting. The hospital likes it because that SXXX cost leakage has stopped. And they don't mind paying a much more modest amount for a genetic counselor.” (P16, physician, personal communication, March 2017)

Although there were hesitancies at first about funding this position, all parties in the end were satisfied with the return. Participant 16 learned how to involve all the different groups to solve a problem in a way that also saved the institution money, and so learned that, identifying colleagues who are the right “fit” for the team and investing the time to build rapport and ensure their needs are addressed was an essential requirement for achieving positive outcomes.

*Having a Shared Understanding of the Goals and of the Collaborative Approach*

The need to share a common understanding of the goal and the approach in a collaboration is a recurring theme in this research. *Disagreeing on procedures due to misaligned knowledge and operating under different goals*, discussed in Figure 6, were
identified as elements directly related to learning about the need for having a shared understanding of goals and procedures. Not sharing any common approach can deter progress or altogether inhibit the outcomes of any collaboration. The example provided by Participant 13, a seasoned physician, fittingly illustrates the detrimental effects of not operating under a common vision. When asked to share an example of a collaboration that was challenging, he described the difficulties he faced when trying to establish a medical program. He shared that because his committee possessed “differing agendas” the attempts to start the program did not work for about six years:

“The initial attempts [of the program] sputtered and died, sputtered and died. We had differing agendas amongst people [and] on those who were in the committee. We probably had some of the wrong people, at least, in the beginning. So, we weren't coming from that structural position in earlier attempts at trying to establish the same program. So, then the planning was lame, the communication was lame. And it was just clear that it wasn't going to go anywhere and so the group just stopped meeting or just fell apart.” (P13, physician, personal communication, March 2017)

He learned that once they “got the right people on board” who shared a common understanding of the goal and the approach, they could succeed in making progress on the program. This is also another example of how investing in colleagues who are participating in the collaborative activities is associated with positive outcomes.

**Prioritizing Workloads and Managing Time**

Logistical hurdles such as work and time management can be difficult at the individual level but are even more of an art at the group level. Because those interviewed work in high-paced and multidisciplinary environments, learning to prioritize responsibilities and manage schedules is essential. Although this aspect was discussed mostly implicitly by one-third of the participants (33%, n=7), this component of process
improvement certainly played an important role in determining the success of collaboration. For instance, the example of a positively perceived collaboration shared by Participant 13, a physician, demonstrates how important it is to learn how to prioritize and manage workloads. Tasked with developing a fairer system for scheduling surgical operations, Participant 13 realized the time commitment this seemingly easy project would take. For over a year, Participant 13 researched the scheduling needs of all of the operating room stakeholders and developed a task force committed to representing their various voices:

“The schedule [before] had been run by nursing and so none of the surgical disciplines and anesthesiologists had a role in managing the day to day schedule. And that created a lot of animosity. They felt like they had no control over the timing and the caliber of the environment and when they could do cases and when they couldn't. So, we literally sat down and led the consultative process of managing the ORs. There was a lot of managing the tyranny of the urgent ...Okay what's today's disaster so to speak, but we also put function and structure together in terms of predictability if you will, and some policies and such. For instance, how the schedule was going to be structured, how the schedule would be managed.” (P13, physician, personal communication, March 2017)

Thus, for Participant 13, learning how to balance priorities and manage responsibilities across the healthcare team was integral to the effectiveness of the processes surrounding collaboration.

**Professional Relationships**

Collaboration is a highly social enterprise, and so it is not surprising that learning about *Professional Relationships* emerged as a major identified outcome. This theme focused on aspects of how the participants engaged with their colleagues. Working with others posed a number of challenges to the participants as was described in Finding 2 when analyzing examples of challenging collaboration experiences. Dealing with
egotistical colleagues, engaging colleagues to maintain the momentum of the work, and having frequent communication were amongst the most evident constraints. From experiencing these constraints and from leveraging the RC opportunities, much learning occurred on the following aspects of Professional Relationships:

- **Engaging stakeholders and fostering buy-in**: Maintaining the momentum and advancing the goals of the work by fostering enthusiasm about the process of the work, motivating colleagues, and generating buy-in about the importance of the work to the leadership and other crucial stakeholders.

- **Recognizing and valuing the humanity in others**: Understanding that other colleagues, or stakeholders (e.g. patients), are unique humans who need to be treated kindly, individually, and with respect.

- **Practicing empathy with collaborators**: Being aware of the different personalities and trigger points of colleagues and other stakeholders (e.g. patients) to increase understanding of their reactions to situations.

- **Maintaining clear and constant communication**: Communicating in a manner that is frequent and accurate via one-on-one conversations, debriefs, conference calls, etc. to update on progress, address professional “hiccups”, and ensure accountability.

- **Building trust with other collaborators**: Demonstrating professional capabilities (e.g. in discipline and interpersonal skills) to inspire respect as well as learning to trust the professional capabilities of others.

Much of what was learned about Professional Relationships was done implicitly; participants did not reflect, in their interviews, on 69% (n=42) of their learning.
Engaging stakeholders and fostering buy-in was the most commonly identified learning aspect (26%, n=16). The value in recognizing and valuing the humanity in others constituted another 22% (n=13) of learning, closely followed by the need for practicing empathy with collaborators (20%, n=12) and for maintaining clear and constant communication (18%, n=11). Building trust with others collaborated made up the remaining 15% (n=9) of learning (Figure 8).

Table 3: Frequency of Participants Identifying Aspects of Professional Relationships Learning (n=21)

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Figure 8: Frequency of Learning Outcomes Related to Aspects of Professional Relationships

The narratives below provide examples for each of the five learning aspects of Professional Relationships.
Engaging Stakeholders and Fostering Buy-in

Continuing to engage collaborators and fostering buy-in with leadership or other stakeholders is one of the aspects of professional relationships that participants, based on the findings, have most reported as giving rise to learning. Some participants suggested that engagement and buy-in are particularly challenging because many of their colleagues are either volunteering their time, overburdened with other responsibilities, or do not share a similar enthusiasm for the goals of the project. Despite these challenges, many of the participants shared unique and insightful approaches to engage their colleagues. The experience of Participant 18, a physician researcher, illustrates successful ways to motivate other collaborators. While working with researchers across the country, Participant 18 shared experiencing several challenges related to engagement. Communicating was difficult since the collaborators were scattered across the country and, because, as volunteers, with fulltime, demanding clinical jobs, they had less incentive to devote much time to this project. Participant 18 learned how to use an online community platform that would allow collaborators to have a clear picture of their responsibilities and work in their own time:

“Everyone in the last five years now has fully embraced this online community platform. That is because if someone is really busy they know that they can set aside the fourth Friday of every month and go into the site and get caught up to speed on what every single person has posted so that they can continue publishing. And the major thing for all of them is basically having publications so that if they are up for promotion or whatever the case may be, that they have that to show. So, we make sure that we do a pretty aggressive work plan and have these things in place so that their time is used wisely.” (P18, physician, personal communication, April 2017)

With greater flexibility, productivity increased and the number of articles published increased, which was a highly attractive incentive for the collaborators. Participant 18
learned that the provision of a tool that all could appreciate and use with very little effort resolved a major issue with dispersed participants in a collaborative activity and so enabled him to engage all the stakeholders in the project despite their differing individual priorities.

*Recognizing and Valuing the Humanity in Others*

Because medicine is fundamentally situated in the practical and clinical paradigm of “hard” science, many of the interviews alluded to the importance of learning how to recognize and value others as human beings and not as subjects or faceless patients/colleagues. One participant commented passionately on this learning aspect. Throughout the interview she underscored her need to develop “authentic” relationships with the people she worked with. Her need was so prevalent that for years she had worked in collaboration with a colleague to lead a course. This course was intended for “people to come and share the challenges of becoming a doctor” through the expression of art and poetry. Participant 19, a physician, shared that she had received pushback from her collaborator, which led to professional tension:

“I think I've learned how precious good relationships are. And when you have a relationship that has potential, it's so important to notice that, honor it, nurture it, and continue to cultivate it. And it is important to appreciate people for who they are, including their rough and craggy edges and the ways that make them human and unique. Also, to figure out a way in and a way through with people is learning for me the value of authenticity and of speaking my mind.” (P19, physician, personal communication, April 2017)

Despite the tension, she made it clear that the relationship she had formed with her colleague was very precious to her and so had learned just how important nurturing such relationships could be. The need for treating colleagues as unique individuals deserving
of respect was part of learning about the social dynamics at play in collaboration experiences.

*Practicing Empathy with Other Collaborators*

Although much of the learned behavior regarding how to recognize the humanity in others and demonstrate empathy was not explicitly reflected by the participants, it was clearly implicit in their responses. One participant characterized what she learned about empathy during her experience with a patient as a professional surprise. For months, she had been helping a patient strengthen her voice. The patient was making great progress up until three days before the performance, when the participant received a frantic text message stating that the performer had an urgent voice issue. After examination, the participant admitted that she hoped her diagnosis was wrong so as to avoid giving painful news to the patient.

“I’m looking at the screen and thinking, “I’m going to have to tell this woman that she can’t do this show.” So, I finished the exam and I put my hands on her shoulders and I said, “I’m afraid this is not good news.” And she of course burst into tears immediately. There was this part of me that for several minutes was wracking my mind to see, “Oh, there must be some way around this. There must be something we can give her. There must be some procedure we can do right now” when you know, I knew. I knew that wasn't the case. It was all about just wanting to avoid the amount of pain that I was about to inflict on her. So, I guess I was surprised at myself that I went there.” (P21, non-physician, personal communication, April 2017)

Participant 21 realized just how strong her personal bond with the patient had become through the strength of her empathetic response to her patient’s sudden problem and so learned the full value of empathy for her in her clinical practice.
Maintaining Clear and Constant Communication

The need to maintain constant and clear communication was also expressed by the participants. This aspect is directly associated with RC’s elements of frequent, accurate, and regular communication. When sharing an example of a positively perceived collaboration, one of the participants shared the importance of being honest and communicative with those in the team. As a psychologist, Participant 7 possessed an intuitive advantage in assessing the mental wellness of her colleagues. She was particularly concerned about one of the new physicians:

“One time we got a new surgeon, whom I absolutely adore now, but he was [then] fresh out of fellowship. I remember he had to go in and tell people they had cancer. He’s a surgeon and he didn't like that. He said, “I don't know what I'm doing and I don't like telling people they’re going to die.” I was worried about that patients weren't going to like him. He was really struggling. So, I was kind of working with him aside. I went to the director of and said, ‘So I’m a little worried about him and, you know, I think you need to mentor him a little bit and I think he needs a little help and if you think I can be helpful, you tell me. I can give him feedback. I can watch him. I can help him. I can coach him…so, there are those indirect [things] where we’re seeing a disruption on the team. We pull together and try to help each other.” (P7, non-physician, personal communication, March 2017)

By communicating her concern with the physician as well as her colleagues, Participant 7 was able to mentor the physician during the beginning of his journey as a physician. There were two examples of learning occurring in this situation. The new surgeon received the benefit of the insight of the more experienced psychologist in a collaborative manner. The psychologist learned that she could play an active role in the development of his colleague by seeking permission from the director to mentor the new surgeon.
Another essential learning aspect associated with professional relationships, was learning how to build and foster trust amongst those involved in the collaboration. Trust, on its own, is a very broad concept that some participants found challenging to foster (n=8). However challenging trust may be to build, it remains a key component of any relationship. In the workplace, trust may be more difficult to foster. Therefore, setting up an external environment that allows participants to be honest with one another without potential repercussions may serve as a constructive outlet for individuals to vent about frustrating work matters in a safe space. This safe space, however, cannot function without trust. For instance, one of the researchers in the study, Participant 18, a physician, shared an example of a safe space that was successful simply because trust was integral. Participant 18 described that during leadership trainings, the researchers in the group were encouraged to discuss their most pressing challenges with the guidance of external leadership consultants. Having these conversations with objective third parties allowed the researchers to learn to trust one another and feel comfortable in conveying their honest views on their professional challenges and at arriving to constructive solutions.

“We did a leadership training as a component of each of our annual meetings for several years. So, for several years we had the consultants coming and then we just started getting advice on some activities that we would do. But what worked out well and I think why this group kind of functions well is it's hard in your own institution to be vulnerable and say, "This isn't working for me." Or, "I wasn't successful at leading this group." But in this group, they feel safe doing that. And they all shared stories that they probably wouldn't want to share at their own institutions. And because they were all sharing stories to that degree, they felt comfortable. And then they, when the consultants were there, they gave them advice but they'd also just give each other advice and say like, "Oh, I blew up at
The amount of learning about empathizing with colleagues and patients that was implicit in the many responses from participants explaining how they interacted with both colleagues and other professionals reinforces the importance of including such skills in education for all healthcare professionals. Learning how to establish and maintain a professional relationship with patients is critical for healthcare professionals. This specific finding shows how learning about process and quality improvement, that could have been occurring through exposure to a different learning experience in medical school or as a resident, is only occurring through experience many years later.

**Emotional Awareness**

Participating in collaborative experiences also affected the way in which participants perceived themselves and this led to learning about being more emotionally aware. This learning was the one learning outcome that is more evident in challenging collaboration experiences (see Figure 8). Some participants found it more difficult to disassociate their work and professional interactions from their emotional reactions and described that, with increasing professional pressure to balance clinical and academic duties, their emotions were more susceptible to stress. One of the participants, for example, described feeling emotional “turmoil and distress” in the “uphill climb of difficulty” balancing clinical, academic, and leadership duties. Because he did not have much time to reflect on his professional and personal development, he stepped down from leadership positions. In the interview he reflected and asked himself, “was [he] becoming hardened or frustrated
because [he] was overextended”? Not all participants reflected in this manner but the following aspects of Emotional Awareness emerged from the data:

- **Being assertive and confident in spite of vulnerability**: Increasing confidence in professional abilities, expressing those expert opinions constructively and firmly while admitting mistakes or shortcomings.

- **Exercising resourcefulness**: Being at ease with ambiguity, embracing circumstances, findings solutions to problems with unclear solutions.

- **Setting egos aside and embracing the value of the team**: Being humble and accepting that others’ contributions were worthwhile and beneficial to the outcome of the matter.

- **Controlling emotions under stress**: Managing emotions when under stress so that they were not manifested in ways that might hurt working relationships.

- **Taking criticism professionally and not personally**: Understanding that feedback from other colleagues was a reflection of professional and not personal abilities.

Learning to be assertive and confident in spite of vulnerability (27%, n=17) and exercising resourcefulness (26%, n=16) combined made up over half of the learning attributed to Emotional Awareness (Figure 9). Both of these aspects were learned more implicitly. Learning about setting egos aside and embracing the value of the team occurred 23% (n=14) of the time and much of this learning was done explicitly (16%, n=10). Participants also reported learning about controlling their emotions under stress (13%, n=8) and about taking criticism professionally and not personally (10%, n=6).
Table 4: Frequency of Participants Identifying Aspects of Emotional Awareness Learning

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Figure 9: Frequency of Learning Outcomes Related to Aspects of Emotional Awareness

The narratives below provide examples for each of the five learning aspects of Emotional Awareness.

Being Assertive and Confident in Spite of Vulnerability

Although many of the participants learned the value of being assertive when working with other colleagues, Participant 7’s story illustrates exactly why this character trait is crucial when diagnosing patients. Participant 7, a non-physician, worked in a multidisciplinary environment attending to the mental health needs of patients prior to
and during any medical interventions (e.g. diagnosis, treatment, surgery). When she was working on a team with surgeons and other clinicians, there was one particular surgeon who “thought about surgery but didn’t think about most everything else” and did not think it was necessary for him to consult with Participant 7 for a psychological evaluation of a patient before surgery. Participant 7 expressed her displeasure and asserted that her professional expertise was particularly needed in these types of cases.

“I was pretty firm about my views. I said “this feels like discrimination based on mental health issues to me. I’m very concerned and I think to make that decision without having any mental health provider meet the patient is unacceptable. I just can’t believe that there was no involvement when you have a behavioral psychologist on your team … it’s discriminatory.” He got a lot of pushback. It was very intense. But in the end in a discussion he said, “I think you are right. Those kind of cases, we need to bring forward.” (P7, non-physician, personal communication, March 2017)

In this example, it required a passionate reaction and support from her colleagues, for the surgeon to learn to consult more and demonstrate respect for his professional colleagues.

The psychologist learned the benefit of being assertive and confident in shaping the behavior of a colleague.

*Exercising Resourcefulness*

The interviews illustrated that healthcare professionals frequently face challenges requiring more creative and resourceful mitigation than pure assertiveness. Participant 11, an experienced nurse, shared an instance when she had to coordinate with her team on how to approach a difficult colleague to provide the best care for a patient. She was tasked with dismissing a patient from the intensive care unit (ICU). The attending physician refused to acknowledge her, based on his view of the medical hierarchy suggesting that she should go through his personal assistant. This was not effective and
resulted in the patient’s extended stay at the ICU. The nurse worked out an alternate plan and talked with another physician who could speak to the attending physician directly and make it appear as if the attending physician was the one coming up with the idea for the discharge.

“This surgeon is probably one of the most difficult surgeons to work with based on his pride and attitude. I approached the physician about ideas or to rack his brain about what he was thinking but he would have me talk with his nurse and not directly to him. So, we got to this point where the patient has been here 30 something days at the ICU. And so, I and (the other physician) decided that we needed to start working on a plan. I would have (him) speak to (the attending physician). It just made more of a difference having it be a doc to doc relationship. [My colleagues] and I every day we would strive for (the patient’s) discharge and still tried to make (the attending physician) feel like it was his idea.” (P11, non-physician, personal communication, March 2017)

By playing to the attending physician’s ego, the nurse was able to move forward with the discharge of the patient. The nurse learned how to involve other healthcare professionals to resolve a problem that she could not have solved on her own. This is a clear example of resourcefulness and illustrates the steps involved.

Setting Egos Aside and Embracing the Value of the Team

Participants often indicated that the greatest lessons learned in terms of personal learning came from failure, or in the case of Participant 12, a physician, from rejection. It was this rejection, however, that humbled Participant 12 and prompted him to attend to the behavior of his colleagues prior to agreeing to collaborate with another colleague. When Participant 12 was searching to develop professional collaborations with colleagues working at the institution headquarters, he was met with indifference. He shared that he was “pretty sure they had zero interest in anything going on outside of [the headquarters] because of course [the headquarters] was the big house, and [my branch]
was a startup.” Participant 12 was forced to seek other relationships and ended up collaborating with colleagues locally.

“One of the things that I’ve learned is that it always pays to be kind to people. There is no problem with being inclusive. Once you are inclusive, you know, the people that you include appreciate you and sometimes they reciprocate by including you in things that they're working on. But when you don't do that, you develop your insular team. If you never fall off your high horse, if you happen to be a multi-billionaire, I guess you got nothing to worry about. Or if you happen to be a very strong research team in a very strong institution that's self-efficient, you may not have too much to worry about. But you know, one of these days, somebody may come along and knock you off that high horse or some other institution may come along, that poses a serious threat to everything that you stood for, and then it's kind of nice to have friends.” (P12, physician, personnel communication, March 2017)

Upon reflection, he reported that his collaboration with local colleagues eventually had real impact on his career and on the credibility of the institution. He learned it was possible to overcome the challenge of dealing with professional egos by identifying alternative resources that could still advance his career.

Controlling Emotions Under Stress

For some of the interviewees (n=8), controlling their emotions while experiencing the high stressors of academic health centers was a challenge and thus a potential learning opportunity. Although this challenge was not robust enough to be included in the challenges findings (Figure 5), those who struggled to control their emotions under stress discuss this at great length. One of the most notable stories around this issue lies with the examples shared by Participant 2, a physician. A successful specialist in his field, Participant 2 was very open on how his personal life significantly influenced his professional life. Participant 2 attributed much on his emotional vulnerability to past
personal traumas. He also feared that his emotional reactions to work-related situations would affect his professionalism.

“And I think that over time and with inner reflection I've gotten better with that [controlling emotions]. I think part of the success that I started having was in part due to me being able to control my frustration and learning how to channel it into a different direction. So, when I hire people for researcher staff, I'm always saying, "It's not that we can't do it. The question is how can we get to the same goal? You know we need to do this.” And so, if I keep my thoughts on the goal, then I don't get as emotionally distressed.” (P2, physician, personal communication, February 2017)

From years of experience and through constant reflection, Participant 2 learned how to control his frustrations and channel his emotions by focusing on the goal of the work.

_Taking Criticism Professionally and Not Personally_

The final aspect of the emotional awareness outcome was learning how to take criticism professionally and not personally. For reasons that are beyond the scope of this study, distinguishing between a professional and a personal rejection/criticism was difficult for some of the participants (n=6). It could be that part of the reason why participants had difficulty making this distinction is because of how tied their professional careers are to their identity. This, of course, is merely an inference and more research should be conducted to better understand these reasons. Whatever the reasons, the conversations reveal that learning to distinguish this type of criticism was part of the collaborative process. Participant 21, a voice therapist, shared her struggle with non-compliant patients. Despite her constant warnings, some of her patients ignored her medical advice and consequently stalled any improvement.

“You know when I have somebody come in and I'm saying the exact same thing to them week after week, I always try to put that on myself. How do I need to explain this differently? It's my responsibility to lead them but sometimes they're just not ready to be led…and I've learned to let go of that. I think earlier in my
career I felt like that [that] was a reflection on my skill. I would get frustrated with that patient. But that's not an uncommon thing particularly among you know, for example, college students.” (P21, non-physician, personal communication, May 2017)

The conversation revealed that Participant 21 learned that some things simply are beyond her control.

**Technical and Adaptive Knowledge and Skills**

The final learning outcome revolved around the participants’ enhanced *Technical and Adaptive Knowledge and Skills*. Despite being experts in the subject matter of their fields, when faced with new experiences, interviewees shared that they learned more about their roles and those of others. Yet, despite this, only 10% of identified learning centered on this theme. This outcome is the learning outcome that participants reflected about most.

Participants shared learning a number of things: developing curriculums, adapting to new bureaucracies, using new technologies, leveraging data, facilitating courses, etc. Several of the participants mentioned that when appointed into leadership positions, they learned how to apply the leadership characteristics they had heard about through participation in collaborative activities. Participants also learned how to apply what they learned to appease rising professional challenges. The following aspects are the major components that describe how this theme was identified in the interviews:

- **Applying conceptual knowledge and/or underutilized skills to attain tangible outcomes:** Using abstract concepts previously learned (e.g. leadership traits) to enhance role, achieve goals, and/or mitigate concerns.
• **Gaining a deeper understanding of their role and others’ roles**: Understanding how their own role can grow and improve as well as understanding what is involved with the roles of others.

• **Adapting and coping to new role and/or environment**: Adapting to the intricacies, procedures, and bureaucracy of a new role or a new environment in a different department or institution.

Slightly less than half of the aspects on *Technical and Adaptive Knowledge and Skills* involved *applying conceptual knowledge and/or underutilized skills to attain tangible outcomes* (40%, n=10). This learning aspect was observed more implicitly. *Gaining a deeper understanding of their role and others’ roles* as well as *adapting and coping to new role and/or environment* were also observed in 32% (n=8) and 28% (n=7) of cases, respectively. Both of these learning aspects occurred mostly explicitly (Figure 10).

Table 5: Frequency of Participants Identifying Aspects of Technical & Adaptive Knowledge and Skills Learning (n=21)

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The narratives below provide examples for each of the three learning aspects of Technical and Adaptive Knowledge and Skills: applying conceptual and/or underutilized skills to attain tangible outcomes, gaining a deeper understanding of their role and others’ roles, and, adapting and coping to new role and/or environment.

**Applying Conceptual and/or Underutilized Skills to Attain Tangible Outcomes**

Although conceptual knowledge may not necessarily fit neatly under the umbrella of technical and adaptive knowledge and skills, the process of how it is learned, measured, and applied resembles that of the process of acquiring technical knowledge. Participants shared stories of how they applied what they had learned theoretically into their work lives. Participant 8’s story merits mention due to his unique role in the process of applying conceptual knowledge. Participant 8, an organizational development practitioner, was asked to develop a leadership program for medical faculty and residents. This program evolved into what is now a 10-year curriculum as a well as a rite of passage for residents.

“I put those programs together with [the physician] and we would co-facilitate them together because I was not a physician and [had] not done any direct work...
with physicians. I knew how to provide this training, but for non-physician leaders who are managing and leading departments in a hospital, but not directly for physicians. So, by co-facilitating and collaborating with him, I really learned how to apply these kinds of concepts and methodologies. And making notions, theories, and concepts more applicable to the life of a physician, say with patients or in supervising groups of residents.” (P8, non-physician, personal communication, March 2017)

Participant 8 learned that to complement his leadership expertise, to successfully achieve his objectives, he needed to collaborate with a physician to develop and co-facilitate this program.

**Gaining a Deeper Understanding of their Role and Others’ Roles**

A number of participants explicitly identified how they gained a deeper understanding of their roles. This increased understanding resulted in a deeper knowledge of their disciplinary subject matter, work place processes, and/or the role network around their work. For many of the participants, individual roles and responsibilities evolved. Physicians became administrators and leaders, needing a different set of knowledge and skills. In the case of Participant 15, his role as a physician specializing in cancer research, changed when he assumed more research responsibilities.

“I'd say I learned a lot about NIH grants. I’m the chairman of my division with [many] docs. I’m always involved with recruitment, often to other departments. And so, having a deeper understanding of what's involved with grants and working with the office of sponsored projects that’s been really helpful for my other job as an administrator. Then there are financial things. So, we’re gonna get a grant. We’re gonna spend money. How are we gonna divide the money? Who does what? Who gets what resources? That’s always challenging.” (P15, physician, personal communication, March 2017)

Collaborating in a multidisciplinary environment (e.g. researchers, specialists, physicians, etc.) forced Participant 15 to learn more about the grant process, project development, and the administration of funds and responsibilities.

111
Adapting and Coping to New Role and/or Environment

Learning occurred not only from gaining a richer understanding of an individual’s own role but also of how the roles of others contribute to that role. The interviews revealed that some participants struggled with adapting to a new role, environment, and/or to new collaborations. Although they understood the depth of their role and how it might impact the team, they shared that there was much to learn about how others’ roles affected them. This is illustrated in the example given by Participant 3, an occupational therapist. The learning she described stresses the need to be open to learning how other colleagues operate. While working with a patient with breathing and mental health issues, she and her colleague were struck by his care. According to Participant 3, the patient was kept on his bare “minimals”, or barely breathing, which she found dangerous and problematic. She had never been exposed to this approach before. In conversation with another healthcare provider, she discovered that this approach was in fact safe.

“[A colleague] and I are not used to coming in and having the person be on minimals. And so, by bringing in the [another healthcare professional] and having them explain, "Well, this has an alarm [that goes off] if …”. So, we're like, "Oh, okay. Well, I didn't know that. I didn't know you can set an alarm like that. Could we shorten that time so that…I think you should always be…is the bottom line. But if that's right for you, you know?” We learned something from the [other healthcare professional] about the settings and we'll carry that forward to the next time we work with a patient like that.” (P3, non-physician, personal communication, February 2017)

From this example, Participant 3 learned the value of asking her colleagues the reasons behind their approaches and to trust their judgment.

Implicit Learning and its Importance

Implicit learning outcomes were tracked to see where they primarily occurred, either in positive or in challenging collaborations. This was done to assess if the way...
participants perceived their collaboration experiences influenced their degree of implicit learning. The findings in Figure 11 suggest that slightly more learning occurred during experiences participants perceived positively (16% more). These findings suggest that key elements of RC (e.g. communication, shared goals, mutual respect, etc.) may be influencing how healthcare professionals learn about process and quality improvement, professional relationships, and technical and adaptive knowledge and skills.

Table 6: Frequency of Participants Identifying Learning Outcomes in Positive and Challenging Collaborations (n=21)

<table>
<thead>
<tr>
<th></th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td>Percentage</td>
</tr>
<tr>
<td>Process and Quality Improvement</td>
<td>18</td>
<td>86%</td>
</tr>
<tr>
<td>Professional Relationships</td>
<td>14</td>
<td>67%</td>
</tr>
<tr>
<td>Emotional Awareness</td>
<td>8</td>
<td>38%</td>
</tr>
<tr>
<td>Technical and Adaptive Knowledge and Skills</td>
<td>6</td>
<td>29%</td>
</tr>
</tbody>
</table>

Figure 11: Frequency of Implicit Learning Outcomes in Positive and Challenging Collaborative Experiences
There are opportunities to change implicit learning to explicit learning, primarily when setting up a collaboration, using learning as a desired output and as a way to foster engagement and buy-in. This was shown to be a major element of Professional Relationships above (Figure 8). When learning is generally implicit, it is not a focus for setting up collaborations and an opportunity could be missed both for motivating potential participants in any collaboration and for making explicit learning an output to be desired, realized, and evaluated.

**How Learning Occurs**

Simply tracking where learning is occurring is not enough to understand the method of learning among health professionals. Figure 12 demonstrates that the various types of implicit learning occur differently in either positive or challenging collaborations. According to Participant 1, a physician, learning occurs when the status quo is disrupted or when a new element is introduced into the learning equation.

Learning is continuous.

"So, when I think about learning it's about those ongoing patterns being disturbed, in a constructive way hopefully, and changing. You know, when you encounter something different, whether it's from a teacher imparting a fact, or it's from something that doesn't work. And you figure out something new for yourself, or you read something, or an article, TV show, video, whatever. So, something comes along and introduces a new thing that sort of alters the pattern or sets a new pattern going forward that then gets sustained for a while, until it changes or evolves again." (P1, physician, personal communication, February 2017)

For this section, both explicit and implicit learning were assessed. Six major methods of learning were identified across all of the 21 interviews. About one-third of learning occurred simply by doing, experiencing, and failing (30%, n=20). Relying on evaluative techniques, particularly from continuous feedback, allowed participants to
reflect on how they worked and areas for improvement (25%, n=17). Because they generally worked in multidisciplinary environments, participants also learned by leveraging the experiences and the insights of their colleagues (19%, n=13). Having that constant communication with their colleagues (10%, n=7) especially in moments of rising conflicts was important. Finally, only 7% (n=5) of learning occurred by leveraging formal methods of learning like trainings and professional development opportunities. These findings suggest that most of the learning that is occurring is happening informally.

Table 7: Frequency of Participants Identifying Learning Methods

<table>
<thead>
<tr>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>By doing, experiencing, failing</td>
<td>14</td>
</tr>
<tr>
<td>By relying on feedback and reflection to evaluate areas of opportunity</td>
<td>12</td>
</tr>
<tr>
<td>By leveraging the experiences and insights of others</td>
<td>10</td>
</tr>
<tr>
<td>By continuously communicating with others</td>
<td>7</td>
</tr>
<tr>
<td>By having conflicts with others</td>
<td>5</td>
</tr>
<tr>
<td>By leveraging training and professional development opportunities</td>
<td>5</td>
</tr>
</tbody>
</table>

Figure 12: Frequency of Participants Identifying How Learning Occurs

- By doing, experiencing, failing (n=20) | 30%
- By relying on feedback and reflection to evaluate areas of opportunity (n=17) | 25%
- By leveraging the experiences and insights of others (n=13) | 19%
- By continuously communicating with others (n=7) | 10%
- By having conflicts with others (n=5) | 7%
- By leveraging training and professional development opportunities (n=5) | 7%
Informal learning is a significant part of all professional learning. The evidence from this research is that there is substantial learning occurring informally. Participation in training and development opportunities is only the base level for much learning, which comprises learning how to put into practice concepts and knowledge obtained through formal learning opportunities. There is a long tradition of learning from experience among healthcare professionals. All qualified physicians have passed through their years of residency, where almost all of their learning was essentially informal and from experience.

The way in which the participants expressed explicit learning outcomes was very similar, whether they were physicians or not. Taking short extracts from the quotations shown in this section demonstrates this clearly: “being able to control my frustration and learning how to channel it” (P2, physician); “we learned something from the other healthcare professionals” (P3, non-physician); “I really learned how to apply these kinds of concepts and methodologies” (P8, non-physician); “I’ve learned that it always pays to be kind to people” (P12, physician); “I’d say I learned a lot about NIH grants” (P15, physician); “I think I’ve learned how precious good relationships are” (P19, physician); “and I’ve learned to let go of that” (P21, non-physician). For implicit learning, the same conclusion is applicable, but as the learning is implicit and not directly expressed by each participant, this conclusion relies on the analysis of the coding and cannot be illustrated by direct quotes from participants.

Summary

Participants all reported multiple instances of learning through collaboration experiences. There was no common definition of learning, but one participant offered a
succinct practical definition: “learning is new ways of perceiving or making sense of something” (Participant 1, physician, personal communication, February 2017).

Learning outcomes were almost always reflected as instances of informal learning, with only 7% of learning outcomes resulting from leveraging formal learning.

Four distinct categories of learning outcomes were identified; Process and Quality Improvement; Professional Relationships, Emotional Awareness; and Technical Knowledge and Skills. Process and Quality Improvement was reported as a learning outcome by every participant, and, in total, these outcomes represented 33% of the total learning outcomes reported. Within this category, 45% of the total reported examples of learning outcomes came from leveraging the contributions of other collaborators into the process with a total of 35 reported learning outcomes. No other individual aspect across the four categories of learning was identified even half as often, with the aspect of being assertive, from the Emotional Awareness category, having 17 reported learning outcomes and three other aspects having 16 each (taking an evaluative approach from Process and Quality Improvement; engaging stakeholders from Professional Relationships; and exercising resourcefulness from Emotional Awareness). Every participant reported at least one learning outcome from Process and Quality Improvements and 18 of 21 participants reported an example of leveraging the contributions of other collaborators into the process. Although 18 of 21 participants reported at least one example of a learning outcome for Professional Relationships and Emotional Awareness, the most common aspect referenced within each of these two categories was reported by only 12 and 9 participants respectively. While 14 participants reported a learning outcome in the fourth category, Technical Knowledge and Skills, only 8 participants reported a learning
outcome on the aspect in this category with the most reported learning outcomes.

*Process and Quality Improvement*, along with *improvements in patient outcomes*, is the most frequently reported outcome of collaborations that were reviewed by Martin et al (2010) and are shown as desired or achieved outcomes in other reported examples of collaboration in healthcare environments. This is an essentially practical outcome to be sought and documented and, where limited evaluation of outcomes is involved, as with Baggs (1994), is clearly an outcome frequently measured.

Learning outcomes were reported implicitly rather more than explicitly, with implicit learning outcomes representing 56% of the total reported. Only in the least frequently reported category, *Technical Knowledge and Skills*, was learning more frequently reported as being explicit than implicit, with 68% of the reported learning outcomes being reported as explicit. The category with the highest percentage of implicit reported learning outcomes was *Professional Relationships*, where 69% of learning outcomes were implicit. The high incidence of implicit learning outcomes probably reflects that learning, as shown in Finding 1, was not perceived by any of the participants as being a specific goal for the collaboration experience. Something that is not set as a target or objective has much less chance of being identified and then measured as an outcome. Learning has not been thought of as a potential outcome and so is much harder to identify explicitly in interviews.

Learning was experienced in essentially practical and individualistic ways, in 30% of instances by doing experiencing or failing, and in 25% of instances by relying on feedback and reflection to evaluate areas of opportunity. Again, this reflects that learning
was not planned for and essentially, just occurred. In summary, almost all learning was informal, personal, and unstructured.

Findings Summary

Three significant findings emerged from this study: (1) healthcare professionals working in AHCs do not share a common vocabulary to describe collaboration experiences and do not explicitly recognize collaboration as an opportunity to learn; (2) six of the seven elements of the RC framework, problem solving by groups of people using shared goals, shared knowledge, and mutual respect, supported by frequent, timely, and accurate communication (Gittell, 2016), are frequently identified as being associated with positive collaboration experiences but not with challenging collaboration experiences; and (3) focused learning occurred in four specific areas as a result of collaboration.

This research has shown that experienced healthcare professionals working in AHCs do not share a common vocabulary with which to describe collaboration. They frequently use this term very loosely, as in simply working with a colleague. They do not recognize any formal collaboration concept. They do not recognize RC as a collaboration framework, with its own vocabulary and definitions, even when they have been exposed to it, have formally participated in training courses or have participated in implementation of projects using the framework. The work that has been done to develop definitions of collaboration, to develop models for collaboration, and to study evidence of collaboration in practice, does not reflect the informal way in which the experienced healthcare professionals who participated in this study view the concept of
collaboration. Furthermore, there is an association for many between collaboration and improvements in work processes, which is expected to result in improved patient outcomes, and the success or failure of the outcome appears to be more important to the participants than analyzing what happens during the collaboration experience.

The research has shown that positive collaboration experiences contained many examples of the application of the seven key elements of RC, while challenging collaboration experience examples identified other issues, including two that were specifically opposite to the RC elements, operating under different goals, and lacking effective communication. Challenging experiences were seen more often to be associated with almost mechanical problems related to the establishment and organization of collaborations or, worse possibly, with human problems of dealing with the egos of fellow professionals.

Participants referred to learning from collaborations frequently, with the 21 participants identifying a total of 234 learning outcomes. Analysis has identified four distinct categories of learning that occurred in these 234 outcomes. These four categories of learning relate to Process and Quality Improvement, Professional Relationships, Emotional Awareness, and, Technical and Adaptive Knowledge and Skills. In total, 56% of the outcomes referenced implicit rather than explicit learning. This was particularly noticeable when referring to Professional Relationships, where implicit learning accounted for almost 70% of the reported learning outcomes. However, Technical and Adaptive Knowledge and Skills, possibly the most straightforward of the four types of learning outcomes identified, reported only 32% of learning outcomes as
being implicit, but it was also the category with the lowest number of total reported learning outcomes.

Healthcare professionals are expected to be continuously learning throughout their professional careers, and most of that learning is informal. Taking part in collaborations gives rise to numerous opportunities for such informal learning. Most learning outcomes identified by participants reflected informal learning. Only 7% of the total outcomes were associated with leveraging training and professional development opportunities, a formal process intended to result in learning. However, 30% were associated with doing, experiencing or failing, an informal process with no shared learning outcome identified. A lot of learning also came from feedback and from leveraging the insights of others, both of which can also be described as informal learning processes. There was no evidence that any participant had noted any effort at his/her AHC to specifically encourage collaborations as a basis for expanding learning, and no formal record of any learning taking place.

All of the participants identified learning opportunities classified as Process and Quality Improvements. These learning outcomes represented 33% of the total number of learning outcomes reported across all four learning categories. Process and Quality Improvement is the most clearly observed of the four categories of learning outcomes identified. Improvements in processes and in quality are outcomes associated with studies of successful collaborations in healthcare as reported, for example, by Martin et al (2010), who did not report any findings related to learning. Improvements in process and quality are also associated with examples of implementation of projects using the RC framework shown in the research findings database maintained by the Relational
Coordination Resource Collaborative (RCRC) (RCRC, 2017). Within this learning category, 45% of the total reported examples of learning outcomes came from leveraging the contributions of other collaborators in the process, with a total of 35 reported learning outcomes. No other individual aspect across the four categories of learning was identified even half as often. The most common learning outcome is directly associated with individuals being exposed to other healthcare practitioners and, in almost all cases, these were healthcare practitioners from other specialties or disciplines. This reflects the importance of collaboration in inter-professional activities and the importance of learning taking place through such activities, as has been called for by the IOM in its 2004 report on AHCs (IOM, 2004). Whether such collaborations are formal or informal, their frequency is attested by the number of times this learning outcome was referenced by this group of participants drawn from AHCs.

A significant proportion of the total learning outcomes came from a small number of identified aspects of learning. Apart from the most frequently reported aspect previously discussed, there were four aspects that were mentioned with much more frequency than any others; taking an evaluative approach from Process and Quality Improvement, engaging stakeholders from Professional Relationships, and, being assertive and exercising resourcefulness from Emotional Awareness. Of the learning outcomes most reported, the two from Emotional Awareness are more commonly found in experiences of challenging collaboration rather than positive collaboration. This is the only learning category where challenging experiences led to more learning than positive experiences.
In Finding 1, it was noted that participants frequently did not set goals for themselves for their collaborations, and certainly did not set learning as an expected outcome. Throughout the literature reviewed (Martin et al, 2010 D’Amour et al, 2005), learning as an outcome of collaboration is not mentioned, except in a summary presentation of RC which appears on the RCRC website (RCRC, 2017). That more learning outcomes were referenced implicitly rather than explicitly is therefore not surprising, as this supports the concept of learning as both occurring and as not being defined as an expected or reported outcome of a collaboration.

A significant number of instances of learning were found to come from collaborative experiences, both positive and challenging. More of those learning instances were implicit in the responses of participants than explicit. None of the participants reported a collaborative experience where learning was an anticipated outcome. This is consistent with the lack of evidence found in the literature (D’Amour et al,2005; Martin et al, 2010) for learning being neither a predicted outcome from collaboration nor a measured outcome.

That much of the learning was implicit and that almost all of it was informal shows that the opportunity for learning has not been used to encourage participation in collaborations. Further, the findings indicate that there is no mechanism in place, in any of the AHCs with which these participants have been associated, that would attempt to gauge the amount or value of learning that has been taking place through collaboration activities.

In analyzing the challenging collaboration experiences in Finding 2, many of the challenges resulted from insufficient attention to and preparation for the collaboration, or
insufficient efforts invested to maintain it, once started. Insufficient preparation would potentially include not looking for potential outputs other than a primary one. In the examples of collaboration reviewed (Martin et al, 2010; RCRC, 2017; Engestrom, 2001; Engestrom, 2007), almost all evaluated outcomes in terms of improved patient care or improved work processes. None of the examples of collaboration reviewed documented learning as an outcome.

Unless learning is defined as a potential output and then looked for and measured, it is unlikely to be reported. Yet the many instances of learning referenced in this research show that learning is occurring, almost despite its not having been predicted or planned. There are opportunities for increasing the amount of learning occurring in collaborations, were it only to be predicted as an output and measured as the collaboration proceeds.
Chapter 5: Implications and Conclusions

In this chapter, I discuss my interpretations of the study’s results with reference to the conceptual framework presented in Chapter 1 and to my research questions. I specifically discuss the meaning that I have made of the findings in light of the study’s research questions. I also discuss findings that go beyond the RQs and add relevance to the understanding of other issues linked to collaboration and learning in AHCs. Following a discussion of my interpretations of the study’s findings, I discuss the limitations of this study and present implications for further research and implications for practice.

Research Questions

This study set out to consider the following research questions:

1. How is collaboration perceived by healthcare professionals in academic health centers?

2. How do healthcare professionals working in academic health centers perceive the association between collaboration and learning?

The discussion included in this chapter focuses on interpretations from the analyses of data presented in Chapter 4.

Conceptual Framework

This study explored the association between collaborative activities among healthcare professionals in AHCs and individual and organizational learning. My assumption was that collaborative activities are associated with learning outcomes. The conceptual framework was based on theoretical models from two areas of study; (1)
collaboration theory (D’Amour et al, 2005; Bedwell et al, 2012), and the RC framework developed by Gittel (2016) to address collaborative activities and work processes in organizations, and, (2) socio-cultural learning theory where learning is seen as an ongoing, evolving process involving collaboration (Brown et al, 1989; Wortham, 2003; Vygotsky, 1978; Lave & Wenger, 1991). The conceptual framework upon which this study was based is illustrated below.

Figure 1: Relationship between Collaboration and Learning in Academic Health Centers

The first component of this study was determining whether healthcare professionals participating in the study were actively participating in collaborative activities and, if so, what did they consider to be the key features of their collaboration experiences, both positive and challenging. After establishing that the participants had actively participated in numerous collaborations, this study sought to establish whether there was an association between collaboration and learning, both learning for the individual and for the institution. This association was not established in any of the
models of collaboration reviewed in Chapter 2, except that, in an outline of the RC framework, learning was shown as a performance outcome of the collaboration process (RCRC, 2017). However, RC literature and RC case studies (RCRC, 2017) do not elaborate on the outline showing learning as a performance outcome, nor do the case studies show learning as either a goal or as an outcome of projects where the RC framework was employed.

The basis for positing learning as a possible outcome from collaboration is found in an analysis of social-cultural learning theory, where learning is seen as an ongoing, evolving process involving collaboration. Brown et al (1989) identify “collaborative learning” as an important component of the learning process for the individual and for the organization, and further posit that collective problem-solving facilitates the development of insights and solutions in working in collaboration with others. Finding 3 of this study provides evidence of learning outcomes occurring frequently as a result of the collaborative activities in which the participants took part.

This study was conducted with participants associated with AHCs, many as clinical faculty and most as physicians, all of whom had some degree of familiarity with RC. RC is a framework developed by Gittel to facilitate the solving of problems by groups of people using shared knowledge, shared goals and mutual respect accompanied by frequent, timely and accurate communication (Gittel, 2016). It has been used in numerous projects in healthcare and in other sectors, as documented in the RC database (RCRC, 2017). The key elements of the RC framework are closely linked both to key elements of collaboration as defined by Bedwell et al (2012) and to the concept of “collaborative learning” as posited by Brown et al (1989). Accordingly, I posited that
conducting a study using experienced healthcare professionals associated with AHCs, who had at least some theoretical and/or practical knowledge of and familiarity with RC, would best give me the opportunity to explore whether there was an association between collaborative activities and learning.

Findings reported in Chapter 4 provided evidence in support of my initial assumption but also provided observations regarding the lack of a shared language with which to describe collaborative activities, the elements required in successful and challenging collaborations, the types of learning that occurred in association with collaborative activities, and, the extent to which the participants were aware of the learning that occurred. My interpretations of the findings regarding the nature of collaborative activities in AHCs, and with regard to learning outcomes are discussed below.

**Collaboration in AHCs**

Collaboration is part of daily work activities within AHCs as has been observed in this study. All 21 of the participants in this study were easily able to describe examples of their involvement in collaborative activities and to provide examples of both positive and challenging experiences. However, there were fewer consistencies in how the participants described the collaboration experiences than were anticipated and less focus on the potential advantages of collaboration for individual participants and their institutions.

Collaboration theory has identified many specific elements that should form part of collaboration, and, even though there has been no specific definition of what collaboration is in a healthcare environment (D’Amour et al, 2005), there are many
common elements in the definitions offered (D’Amour et al, 2005; Bedwell et al, 2012). However, there are few examples of the application of collaboration theory in practice in healthcare environments. The examples of work in intensive care units reported by Baggs (1994), showed how much work had to be done to achieve any results. The examples of models being applied that were quoted by D’Amour et al (2005) showed limited results, largely due to practical organizational issues in the implementations. The search by Martin et al (2010) for empirical studies of collaboration between nurses and physicians revealed only a small number of such studies. There are more examples of the application of the RC framework in healthcare environments (RCRC, 2017). However, all of the examples reviewed showed formally organized projects in which collaborative activities played an important role.

Several interpretations can be made based on the findings from this study; (1) the lack of a shared vocabulary to describe collaboration significantly decreases the likelihood that systematic collaboration practices will be implemented in AHCs, (2) the identification of elements that are present in positive and challenging collaboration examples provides a starting point for developing consistent collaboration practices, and (3) the lack of systematic planning and initiation of collaborations among healthcare professionals, or in the AHCs where they are employed, decreases the overall effectiveness of the collaboration itself.

**RC and Collaboration Experiences**

Finding 1 of this study indicates that the participants had no shared vocabulary to describe collaboration and that they did not directly associate any collaboration methodology in their descriptions of their collaboration experiences. This finding was
surprising given that all the participants had some formal knowledge of RC and some had practical experience of participating in projects where the framework was applied. Based on their familiarity with RC, I assumed that participants would have a common understanding or definition of collaboration and would use a common language to describe their experience with collaborative activities.

Based on their familiarity with the RC framework, I was also expecting to find examples of the seven RC elements described in both the positive and challenging collaboration experiences recounted by participants. Finding 2 of this study shows that the seven elements of the RC framework can be associated with the responses about positive collaboration experiences. These are associations that were made as a result of analyzing the responses given by the participants and detecting implicit references to each of the seven elements of the RC framework.

The RC framework envisages problem solving by groups of people using shared goals, shared knowledge, and mutual respect, accompanied by frequent, accurate, and timely communication (Gittel, 2016). One of the elements, shared goals, was referenced by all 21 participants, mutual respect was referenced by 18 participants and accurate communication by 17 participants, showing that key elements of RC were able to be detected in most of the responses about positive collaboration experiences. The importance of sharing goals and knowledge was evident in many of the examples of successful collaboration recounted by participants. The sharing of knowledge across specialties as against the hoarding of specialized knowledge was particularly noted as a positive element of collaboration experiences, while the lack of sharing was acutely felt by one participant describing a challenging experience. Interestingly, while analyses
identified shared goals in all cases, participants did not explicitly indicate that they had either set goals for the collaborative activity or recognized that there were shared goals among collaborators. The exception to this was highlighted by a physician leader working in collaboration with a physician-researcher to develop a new service for patients.

The lack of mutual respect had a very negative impact on some of the participants, specifically as they related examples of challenging collaboration. Examples included a lack of respect demonstrated across healthcare professions, between a central unit and its branches, and even between experienced physicians with different specialty focus areas. Although potentially expected, it was not possible to detect the absence of the seven elements of the RC framework when analyzing challenging collaboration experiences.

Effective communication appears to be important for making collaboration work effectively. Collaboration theory does not emphasize effective communication (D’Amour et al, 2005; Bedwell et al, 2012). Effective communication proves to be vital to successful use of collaboration in practice. RC as a framework for solving problems using collaborative techniques emphasizes communication, as having to be frequent, timely and accurate, as three of its seven elements. Successful communication is emphasized in many of the positive experiences recounted by participants in this study, while a failure in some aspect of communication is evident in many of the challenging experiences recounted by them, as for example; “There’s no open and honest communication. So, it was exceptionally challenging.” (P17, physician, personal communication, April 2017).
The RCRC implementation database (RCRC, 2017) contains numerous examples of the use of the RC framework in healthcare environments. The cases described all relate to examples of collaboration, which were more formal in nature than almost any of the experiences described by participants in this study. The results of this study indicate that there are many examples of informal collaboration taking place in AHCs which are not following any established theory or methodology of collaboration, but where many of the seven elements of RC can be identified as having existed in positive collaboration experiences.

The lack of these same seven elements of RC in challenging collaborations could not be established. The single most common issue reported with challenging collaborations has to do with the issue of professional egos, being cited by 67% (14) of participants. This is an issue that was identified by Corser (1998) as a professional status issue between physicians and nurses, and again by Whitehead (2007) as a major potential issue for collaboration between different types of healthcare professionals. One instance recounted by a participant showed the existence of deep-rooted hierarchical assumptions in a specific situation regarding patient discharge orders. In another instance, a physician noted barriers between herself and her colleague based on their individual professional backgrounds, saying; “It was really about leadership styles. It was really about personalities” (P17, physician, personal communication, April 2017). The force with which some of these problems were described, and the painful memories that they evoked, would indicate that the issue of dealing with professional egos is a major issue. What was postulated as a theoretical issue has been demonstrated in this study to be a
significant practical issue that requires addressing if collaboration is to be successful between different healthcare professionals in AHCs.

The Informal Nature of Collaboration Activities

The lack of systematic planning and initiation of collaborations, clearly highlighting the informal nature of participant collaboration experience, was a surprising finding. There are many collaborations taking place in the AHCs with which the participants are associated, and they are taking place in each of the three mission areas of AHCs; research, education, and patient care. Almost every instance cited by the participants related to an informal collaboration. Participant descriptions of their positive collaboration experiences notably failed to mention formal objectives or goals for the collaboration, or to mention any specific leadership or organization structure for it. Analyzing the responses about challenging collaboration experiences showed that many collaborations of this type also suffered from a lack of organization, infrastructure, or resources. One vivid example confirmed that poor planning combined with poor communication was fatal; “So then, the planning was lame, the communication was lame. And it was just clear that it wasn't going to go anywhere and so the group just stopped meeting or just fell apart” (P13, physician, personal communication, March 2017). None of the participants referred to any formal arrangements for organizing or monitoring either positive or challenging collaborations being in place at their AHC. The importance assigned to collaboration in the emerging healthcare environment by the IOM (IOM, 2001) and specifically for AHCs to discharge effectively their role in the future development of healthcare (IOM, 2004) is not being reflected by any institutional measure to encourage and monitor collaboration in the AHCs with which the participants
were associated. Collaboration as a potential solution to change and development issues within healthcare driven by AHCs, as advocated by the IOM (IOM, 2004), appears to be a concept that is very different from the reality of informal collaborations taking place.

The formality of the definition for collaboration by Bedwell et al (2012) and of the key elements required for collaboration in healthcare identified by D’Amour et al (2005) contrast sharply with the informal reality shared by the participants in this study. Collaboration theory, as described by D’Amour for healthcare (D’Amour et al, 2005) and by Bedwell more generally (Bedwell et al, 2012), includes specific defined requirements for collaboration. Many of these defined requirements were missing from the collaboration experiences, both positive and challenging, as recounted by the participants.

Collaboration theory started primarily with examining collaboration between institutions (Gray, 1985) and postulated that the structure of the collaboration was important as well as the existence of common goals. D’Amour et al (2005) identified key features of an interdisciplinary team in healthcare positing that the key feature of a successful collaboration was that it was a structured entity with a common goal and a common decision-making process that integrated the knowledge and expertise of each individual involved. In many of the experiences recounted by participants, there was little or no structure in place and little evidence of a common decision-making process.

**The Dynamics of Informal Collaboration**

D’Amour et al (2005) also noted as a key feature of collaboration “the dynamic established between professionals” and stated that it was “as important as the context of collaboration” (D’Amour et al, 2005, p. 128). They described collaboration between professionals as a human process as well as a professional endeavor. The importance of
this statement was demonstrated in the way the participants in this study recounted their collaboration experiences. A key factor underlying positive collaboration experiences appears to be successful interpersonal relationships between the healthcare professionals involved. In many of the positive examples, the responses showed the perceived value of relationships established between the participating professionals. As one participant expressed it; “So, it was a success story built on collaboration. In a sense, you should always look at the other players in the team, get their input, and make sure that you're not alone trying to get somewhere where you look back and nobody's following you” (P4, physician, personal communication, February 2017). It also appears that the theoretical barriers to collaboration between healthcare professionals based on hierarchy and different professional traditions are very much real issues when collaboration experiences are seen as being challenging. In 67% of the examples of challenging collaboration experiences, a key problem encountered was dealing with professional egos. Analysis of the examples of collaboration experiences provided by the participants did not demonstrate the existence of many of the components of collaboration as defined by Bedwell et al (2012) but certainly did confirm that the dynamic established between the healthcare professionals involved was absolutely vital.

In many of the challenging experiences recounted, there were also issues related to a lack of organization, resources and/or infrastructure, showing that problems clearly arose when collaborations were not well planned and prepared. In a number of the responses regarding positive experiences, the responses indicated how lack of organization, resources or infrastructure had been successfully overcome by developing good relationships between the participating professionals. The almost mechanical issues
of planning and organization are frequently not addressed in advance and so result in problems to be overcome in positive experiences and problems that make the experience challenging where they are not overcome. This apparent lack of organization and planning for the collaboration was also reflected by the fact that none of the examples recounted by the participants included collaborations with a formally established goal or specific projected outcomes. This reflected the essentially informal character of the experiences recounted by the participants, but also precluded there being any anticipation that specific learning would be an outcome of the collaboration activity.

Only a small number of examples have been documented showing the practical application of collaboration theory. Martin et al (2010) searched two major public databases for articles with reference to inter-professional collaboration between nurses and physicians; out of 451 articles initially identified, only 22 appeared to concentrate on empirical studies. The 14 best documented empirical studies did not show the application of any specific conceptual definition of collaboration or of any specific model for collaboration. Using his theory of expansive learning, Engestrom (2001) describes a study carried out to seek to resolve problems with healthcare for children with complex medical problems in Helsinki and its surrounding area as an illustration of this in practice. Engestrom’s theory posits that “…people and organizations are all the time learning something that is not stable…”, but that must be learned as they are being created. This is in his words, a need to “…learn new forms of activity which are not yet there” (Engestrom, 2001 p. 137). He noted that he considered the possibility of using RC as a framework to guide his study, but opted to use his own processes. His study described the practical problems of getting numerous participants in a complex healthcare
process to come together and to overcome their personal and professional barriers. Later, he described three different studies, one of which was in a healthcare environment, and many similar problems arose (Engestrom, 2007). The practical issue of getting participants to work together occupied a significant proportion of the description of these studies.

The human aspects of collaboration appear to outweigh the formal aspects emphasized in collaboration theory when implementation of the theory or the theoretical model is required. Collaboration theory does not emphasize the very issues that make collaboration in practice succeed, the human elements that enable collaboration.

**Lack of Institutional Involvement**

In none of the interviews was there any evidence of the institution acting to foment, encourage or monitor collaborative activities. There was also no mention of any process to help train healthcare professionals to collaborate. There is evidence of training on the effective implementation of processes requiring that healthcare professionals work together in delivering quality patient care (O’Toole et al, 2014). However, there appears to be no formal process in place, at any of the AHCs represented by the participants, to ensure that steps are taken to foment effective collaboration, nor to monitor what collaborative activities are taking place within the institution.

**Summary**

There are a lot of collaboration activities taking place in AHCs, almost all of them informal and, based on this study, without any active intervention or facilitation by the institution. Participants in collaborations were not using a common vocabulary nor were they conscious of applying a specific collaboration methodology, even where they are
familiar with one such framework, RC. The seven elements of RC were shown to be associated with positive experiences in collaboration, so the use of a common framework could likely improve the probability of experiencing more positive collaboration and less challenging collaboration experiences. In challenging experiences, the most common issue cited is that of professional egos, and that occurs with such frequency that it seems to be an issue that AHCs should specifically address so as to maximize the number of positive collaborations. There is no evidence from participants of their organizing collaborations, setting up formal structures for them or setting specific goals for them. There is much that could be done to enhance the quality and effectiveness of even informal collaborations in AHCs and still more that could be done to foster collaboration as a tool to help the institution adapt to the changing demands of the healthcare environment as strongly recommended by the IOM (2004).

**Learning**

The association explored between collaboration and learning in this study was based on socio-cultural learning theory. Socio-cultural learning theory has its foundation in the writing of Vygotsky (1978), and focuses on the relationships between social interaction, such as that found when working in collaboration with others, and individual cognitive change, where the basic unit of analysis is social activity from which individual mental functioning develops (Brown et al, 1989). Socio-cultural learning theory is particularly well suited to our understanding of adult learning and, by extension, to learning among professionals. Socio-cultural learning theory was further developed by theorists in the situated cognition tradition (Brown et al 1989; Lave & Wenger, 1991). This view sees the environment as an integral part of cognitive activities associated with
collaboration where knowledge (and learning) is co-constructed through interactions among collaborators (Lai, 2011). Additionally, studies of joint ventures noted that American managers found that the benefits of collaboration served as a legitimate basis for fostering learning (Inkpen, 1996). Consequently, based on socio-cultural learning theory, collaboration activities occurring in AHCs are likely to lead to learning among the healthcare professionals participating in those collaboration activities.

**Learning in AHCs**

AHCs represent the most learning intensive environment in healthcare. Education is one of the three missions of every AHC. It would be logical to expect that AHCs would be the healthcare institutions most likely to be interested in the learning of healthcare professional staff and would track learning of all kinds that is occurring, including learning from collaborative activities. Based on the findings from this study, there is no evidence that the AHCs were actually interested in whether learning was associated with participation in collaborative activities either for the individual or for the institution. None of the participants made any reference to learning from their collaboration experiences being shared, documented or monitored. Accordingly, there was no documentation of what was being learned that could have been used by the institution to uncover and then monitor what learning was occurring. Learning from collaborative activities thus appears to be highly individual and neither documented nor monitored.

Based on their responses to my interview questions, it seems nobody had ever asked any of the participants about potential learning outcomes from their collaboration experiences. When asked about what they had learned from their collaboration
experiences, the 21 participants reported a total of 234 learning outcomes, with 44% of those outcomes being referenced explicitly, while 56% were referenced implicitly. The number of learning outcomes identified is evidence that, when asked about what they had learned, the participants were able to cite instances of learning. Finding 3 in Chapter 4 describes the learning outcomes identified in detail.

As indicated earlier, all participants shared examples of both positive and challenging collaboration experiences in the interview. The collaboration experiences recounted in all cases dealt with collaborations that were more informal than had been anticipated. They lacked clear goals and established outputs, and so none identified learning either as a goal or as an anticipated output.

**Learning Outcomes**

The large number of learning outcomes identified has enabled a detailed analysis to be made from which five distinct interpretations can be drawn: (1) there is a significant volume and variety of learning occurring associated with collaborative activities that has not been recognized in collaboration theory; (2) learning in each of the four areas of learning identified in analysis (*Technical & Adaptive Knowledge & Skills, Process and Quality Improvement, Professional Relationships, Emotional Awareness*) has not been recognized and may not be fully appreciated; (3) almost all learning was informal and so simply not on the map for most participants; (4) the lack of awareness of the implicit learning potentially reduces its value as learning; and (5) learning is not being documented and is not being incorporated into the continuous learning process required of every healthcare professional to comply with increasingly rigorous CE/CME
requirements. These five interpretations indicate that there are multiple opportunities for AHCs to take advantage of the learning associated with collaborative activities.

**Volume and Variety of Learning**

The first interpretation arose from observations of the volume and variety of learning outcomes that were documented in the detailed analysis of the responses from the participants. All participants were able to describe examples of learning from both their positive and negative collaboration experiences. In total, there were 234 learning outcomes identified from the interviews with the 21 participants. In the analysis, these learning outcomes were classified into four areas of learning, and were separately identified as having been explicitly mentioned by the participant or implicitly identified by the analysis. The area of learning with the fewest identified learning outcomes was *Technical & Adaptive Knowledge and Skills*, where 14 participants generated only 25 of the total learning outcomes, of which 17 were identified explicitly and 8 implicitly. All 21 participants identified at least one learning outcome related to *Process and Quality Improvement*, which generated 77 of the 234 total learning outcomes, of which 26 were identified explicitly and 44 implicitly. The area of learning with the highest ratio of implicit to explicit learning outcomes was *Professional Relationships*, where 18 participants generated 61 of the total learning outcomes, of which 19 were identified explicitly and 42 implicitly. *Emotional Awareness* was also referenced by 18 participants and generated 61 of the total learning outcomes, of which 29 were identified explicitly and 32 implicitly.

In none of the definitions or models of collaboration reviewed (D’Amour et al, 2005; Bedwell et al, 2012) was learning mentioned as a component of the collaboration
process or as a possible output of collaboration. In case studies on collaboration and on the implementation of the RC framework reviewed there was no specific mention of learning as an output (Martin et al, 2010; Engeström, 2001; Engeström, 2007; RCRC, 2017). Gittel (2016) included learning and innovation as a performance outcome of the RC process in her overall framework, but the performance outcome is not developed in the descriptions of RC and its implementation process which follow (RCRC, 2017). The volume and variety of the learning outcomes documented in Chapter 4, as summarized above, show that multiple learning outcomes were directly associated with collaborative activities. The areas of learning included aspects that were of value to the individual, and could, or even should, be of value to the institution where the collaborative activities were taking place. This perspective should be considered in future studies of the collaboration process. For me as an educator, it opens a new perspective on the potential value of collaboration as a source of learning for those taking part in collaborative activities.

**Learning not Recognized**

The second interpretation is based on analysis of the learning outcomes identified in each of the four areas of learning. This analysis indicated a majority of the identified learning outcomes were not recognized as learning by the participants and therefore, were also not recognized by the institution, leading to missed opportunities for taking advantage of the learning. Details of the observations for each of the four areas of learning are provided below.

The area of learning least reported by the participants was *Technical and Adaptive Knowledge and Skills*. Interestingly, however, that is where the highest proportion of
explicit references was recorded. This is the area where participants were most easily able to identify something specific that they had learned. Any increase in knowledge and skills for the participants should likely lead to benefits for the institution. Fomenting continuous learning by all its healthcare professionals is also an important role for an AHC (IOM 2001; IOM, 2004). That there are learning outcomes associated with participation in collaborative activities which directly reflect increases in their technical knowledge and which are not being encouraged in any way by the institution reflects the existence of a lost opportunity. That opportunity is to encourage their healthcare professionals to participate in collaborative activities so as to enhance the process of continuous learning by healthcare professionals in AHCs.

*Process and Quality Improvement* is the area of learning most commonly identified from interview data. Improvement in processes and quality is where the most emphasis is placed on benefits from collaboration cited by Martin et al (2010) and is also the most common outcome reported by case studies in the RCRC database (RCRC, 2017). Improvements in processes and in quality are commonly thought to lead to improved patient care, a key objective for all AHCs (IOM, 2001; IOM, 2004). The learning about *Process and Quality Improvement* associated with collaborative activities was not explicitly identified as learning and was not likely being used as an incentive for participation in collaborative activities. It was also not being captured as an incentive for others to learn so as to sustain process and quality improvements for the benefit of the institution. The learning related to *Process and Quality Improvement* would likely be of great interest to the institution and should be documented and shared across the institution to encourage continued improvement.
Detailed analysis of the identified learning outcomes related to Professional Relationships and Emotional Awareness demonstrated significant learning occurring that involved the acquisition of skills that enhance self-awareness and awareness of others. These two areas of learning were focused on skills in which participants learned more about themselves and their interactions with other professionals. Identified learning outcomes in these two areas of learning represent 122 of 234 learning outcomes reported and were reported by 18 of the 21 participants. Not surprisingly, 70 of the 122 learning outcomes were reported as implicit learning. Many of the specific aspects of each of these two areas of learning relate to personal skills that are complementary to the professional skills that have formed the basis for the past education of the healthcare professionals concerned. They include aspects related to self-awareness and awareness of others that have increasingly become part of the curriculum for medical schools but which, previously, were more notable for their absence from the curriculum. The need to develop “collaborative skills” is specifically considered in the recommendations for preparation for inter-professional collaboration produced by IPEC (IPEC, 2011; IPEC, 2016). These skills are being increasingly emphasized as the IPEC recommendations are now embedded in the curricula for many healthcare professionals in training. This finding confirmed the relevance of the skills being advocated by IPEC as being required for successful inter-professional collaboration.

Learning outcomes related to Professional Relations and Emotional Awareness were more directly targeted to the individual than to the institution and they focus on learning that helps the individual relate more to other healthcare professionals and to better control their own reactions when confronted with challenges. However, individual
As shown by the particularly high ratio of implicit to explicit learning outcomes for *Professional Relations*, these types of learning were less likely to be recognized by the individual and are not likely to be easily measured. It has been stated that healthcare professionals need to be more self-aware and that they have potential issues with relating to other professionals caused by their attention to individual professional traditions and respect for hierarchy (Whitehead, 2007). Analyzing the specific elements of learning within each area and noting detailed responses from participants identified a potential gap in learning for individuals. There has been increasing emphasis in the education of healthcare professionals generally, and clinical faculty specifically, on the importance of aspects of emotional intelligence and the value that enhanced self-awareness and awareness of others brings to professional practice. The findings from this study call attention to a potential need for additional dedicated time and resources to help experienced healthcare professionals improve their skills in this area.

**Informal Learning**

The third interpretation is based on findings about the kind of learning that was occurring in association with collaboration. Analysis of the ways in which learning occurred as identified by the participants, showed that only 7% of the outcomes arose from any relationship between the collaboration experiences and formal training programs or professional development programs, as reported by 5 of the participants. In contrast, 30% of the identified outcomes came from doing, experiencing or failing, as reported by 14 of the 21 participants. A further 25% of the learning outcomes came from
feedback, mainly informal in nature, as reported by 12 of the 21 participants. Each of these factors showed a strong bias towards informal learning taking place. Based on study findings, it is evident that most learning was informal, and was probably neither planned nor expected as an outcome from collaboration. Interview data did not describe experiences where specific learning goals were established as part of the collaboration activities. Learning was simply not on the map in the minds of most individuals participating in collaborative activities. This is an area where there is significant opportunity to identify options to make learning more purposeful, more appreciated, and more likely to occur in collaborations.

Informal learning is also not likely to be documented as an outcome of collaboration unless specifically searched for. It is also learning that has not been previously documented, as it has not been recognized. From the frequency with which it is being reported in this study, these learning outcomes could be occurring with high frequency across all AHCs but may not be fully valued or appreciated by individual healthcare professionals. Further, these learning outcomes are currently invisible to the institution. Further study exploring the frequency of this outcome of collaboration is important to better understand the potential opportunity to increase the achievement of learning outcomes for the institution.

Value of Learning

The fourth interpretation applies to the same population of implicit learning outcomes. Socio-cultural learning theory argues that learning occurs in a social context. While not commenting directly on whether such learning is recognized by the learner, socio-cultural learning theory does cite the benefit of learning in a social context such as
that provided by participation in collaborative activities. Following from socio-cultural learning theory, it seems reasonable to assume that learning which is implicitly recognized, rather than being explicitly recognized at the time of the learning, may be less likely to be retained and much less likely to be propagated by the learner. In these respects, it may be of lesser quality or value as its full potential is less likely to be realized. Further research is needed to examine whether the ratio of implicit to explicit learning outcomes reported in this study is common across the AHC population and whether it would be advantageous to convert as much as possible of that implicit learning into explicit learning. Such steps would include consideration of learning as a potential measurable outcome and as a goal of collaborative activities.

**Invisible Learning**

The fifth interpretation was also focused on evidence from the findings indicating that the majority of identified learning outcomes are implicit, and, that almost all learning outcomes reflect informal learning. Based on findings from this study, learning outcomes were not cited as potential opportunities for individual participants to demonstrate compliance with professional CE/CME requirements. Documentation of participation and, increasingly, documentation of outcomes are required to earn CE/CME credit requirements for practicing healthcare professionals. As examples of informal learning activities, the learning outcomes identified in this study do not meet professional continuing education requirements. However, participation in collaborative activities could be modified to meet the CE/CME credit requirements if they were organized, and established specific learning goals and measurable outcomes that were systematically documented and reported. Taking steps to convert informal learning into more formal
and explicitly recognized learning opportunities could serve as an incentive for healthcare professionals to participate in collaborative activities. Capturing learning outcomes from informal collaborative activities is likely to be difficult and may not be seen as sufficiently productive by the participants in collaborative activities to merit the effort required. However, without capturing and documenting the learning, it will remain invisible, unappreciated and undervalued. For a professional educator, the dilemma is obvious. The amount and variety of learning that was previously invisible is a very positive discovery. The inability to be able to encourage such learning is frustrating. The inability to measure and evaluate the learning outcomes as they occur and so to take steps to maximize future learning opportunities is a handicap.

**Barriers to Learning Among Healthcare Professionals**

Given that AHCs are environments that place such a high value on education, it is surprising that there is so little explicit recognition of the learning embedded in collaborative activities among the healthcare professionals that work in AHC institutions. As has been indicated previously, none of the participants had ever been asked about what they had learned through participating in collaborative activities. Their AHCs appear to have shown no interest in their potential learning. While this study does not provide specific evidence to explain this data, it is important to consider whether there is some conscious or unconscious bias that might be inhibiting the recognition of learning from collaborative activities. I offer three speculative observations that would benefit from further exploration; (1) the lack of continuing education requirements targeted to identified, individual learning needs, (2) resistance to admitting vulnerability based on
professional expectations and, (3) the lack of a language to describe learning inhibits integration into professional practice. I discuss each speculation below.

*Lack of targeted continuing education requirements.*

Healthcare professionals complete rigorous, lengthy training prior to certification for practice. Once completed, there is tremendous emphasis on demonstrating confidence and the ability to make life and death decisions with speed and accuracy. There may be a great deal of resistance to admitting that one needs to keep learning, or that ongoing learning is important except in controlled situations (e.g., continuing education).

Highly qualified and experienced healthcare professionals submit to CE/CME requirements for documented continuing learning. Board-certified physicians must also demonstrate Maintenance of Certification to retain their practice privileges but many other healthcare professionals are not subject to additional overt professional pressures regarding other continuing learning they may be experiencing. Their professional standing is assured based on their qualifications and their experience. Admitting a need to learn, seeking additional informal learning of technical or process and quality knowledge, might well represent needing to admit to a deficit of knowledge, a negative statement, rather than a willingness to acquire new knowledge, a positive statement. When considering a willingness to acquire more self-awareness or awareness of others, this effect could be multiplied, as it could appear that it is among the most senior and most experienced healthcare professionals that the risk from misuse of professional egos is the strongest. Although at this point this is speculative, there could even be an association between experience, seniority and unwillingness to look for opportunities to
learn informally. Some of the experiences recounted by participants could be interpreted as positing that as a possible hypothesis to be investigated in the future.

Admitting professional vulnerability.

From a personal professional point of view, admitting a need to learn may well be perceived as admitting professional vulnerability. Physicians especially, who are responsible for life or death decisions and actions daily, have a reputation to protect as absolute experts in their specialty field, highly technically adept and, consequently, almost incapable of making professional mistakes. Other healthcare professionals may be in very similar situations. In extreme situations, healthcare professionals may be in the position of needing to continue to apply existing knowledge and procedures knowing that there are better alternatives that they are not yet sufficiently trained to apply. There could be some real professional inhibitors in place regarding an ability to plan for informal learning in particular. Although this study does not offer and data to support this assumption, it would make sense given the pressures on those in academic medicine and is worth exploring. The possible psychological aspects that could be associated with potential vulnerability would merit attention as part of further research.

Inhibiting practice integration.

Findings discussed earlier indicate that there is little recognition of the learning that is taking place in conjunction with participation in collaborative activities and the potential benefits that could be realized if this learning was documented. Bakhtin and other theorists have long argued for the importance of having learning by the individual integrated into their future thinking (Morson & Emerson, 1990). I would wonder if having a language to recognize and describe the learning that is occurring as part of
collaborative activities is an example of Bakhtin’s thinking. Until something is named, it remains unknown, hidden, and ignored. Speculating further, it seems reasonable to assume that without identifying what has been learned, it would be exceedingly hard to integrate the learning into one’s practice.

Each of my three explanations comes from my interest in how healthcare professionals learn, and, more particularly, in how experienced and senior healthcare professionals can be motivated to participate in the informal learning associated with taking part in collaboration experiences. Collaboration between healthcare professionals requires that formal professional boundaries are broken down, that power ceases to be associated with experience, seniority, and hierarchy. Mutual respect generated by the participation in the collaboration becomes the source of power. Participating in collaboration experiences can then be seen as a risk by the experienced healthcare professional rather than as an opportunity. To change this perception, I consider that a new way of expressing the positive values from informal learning, coupled with institutional pressure to increase learning through participating in collaborations, is the route that I, as an educator, should follow. Additional research is needed in order to evaluate whether these assumptions and ideas are well-founded.

Summary

The first research question was answered by the findings discussed in Chapter 4. The findings showed that all 21 participants in the study had taken part in numerous collaborations, both positive and challenging. These collaborations were, however, much more informal than had been anticipated, and did not satisfy many of the considerations for collaboration previously reviewed in Chapter 2 (D’Amour et al, 2005; Bedwell et al,
Finding 3 showed that the 21 participants reported a total of 234 learning outcomes, most of which were informal, all of which were individual, and none of which had been planned or foreseen as potential outcomes from collaboration. Learning was an invisible outcome of collaborative activities, an outcome that was not documented and so neither fully appreciated by the participants until questioned nor visible to the institution for which they worked.

The data related to the second research question indicated that there were no differences between healthcare professionals in the learning outcomes that were reported. However, as participant examples of both positive and challenging collaboration experiences were highly individual and did not overlap with the experiences of others from their institution, it was impossible to determine a definitive answer to this research question. Future research conducted using a design where co-collaborators were interviewed about the same collaboration experiences could provide more robust data to address the research question.

The experience of the participants in this study showed that learning was not being seen as an objective, not being used as a goal, not being used as an incentive for participation in collaboration, and not being monitored or measured either by the individual or by the institution. Almost all of the learning analyzed in Finding 3 happened without benefit of conscious learning objectives being established and without ongoing monitoring and measurement. None of the participants stated that they had entered into a collaboration activity with learning as a goal; not even as a subsidiary goal. It is not surprising that learning failed to be identified as an explicit outcome in any of the case studies reviewed for this study, as an outcome was unlikely to be detected unless it
had been set as a goal or objective. There are many opportunities for individuals and AHCs to derive value from the learning that is occurring without its being noted. There is a need for additional research to further clarify these opportunities.

**Implications**

The findings from this study give rise to both theoretical and practical implications.

**Theoretical Implications**

There are theoretical implications that arise from this study both for collaboration theory and for learning theory. As described earlier, collaboration theory focuses on collaboration as a process. It has not emphasized the human element that is vital to effective collaboration. Much of the focus on implications in collaboration theory references outcomes of collaboration that impact the individual dynamics occurring between those participating in the collaboration and outcomes that drive process improvements, especially in healthcare. There is an opportunity to further develop collaboration theory by looking more closely at the human interactions and relationships that are vital to successful collaboration.

Additionally, in Gittel’s work, learning is referenced as a performance outcome of the collaboration and is not focused on the benefits of learning for the individual or the institution. Based on the findings from this study demonstrating a strong association between learning and collaboration, there is an opportunity to adapt collaboration theory to include learning as a key element or benefit.

In socio-cultural learning theory, it is asserted that learning is social and that learning occurs in the social interactions between individuals such as the kind of
interactions that can happen when healthcare professionals participate in collaborative activities. Findings from this study indicated that learning was clearly associated with collaboration. This finding is consistent with socio-cultural learning theory. The findings also indicated that while the learning outcomes that were identified were both explicit and implicit, the majority of outcomes were implicit. These findings have implications for further clarifying the tenets of socio-cultural learning theory to include assumptions regarding distinctions in learning that may exist between explicit and implicit learning.

**Practical Implications**

This study has demonstrated that collaborative activities, even informal ones, produce a large number of learning outcomes that are not being captured in any way. It is positive that participants are able, when questioned, to identify learning that has occurred. It was clear that such learning has a value to the participants. However, the study also shows that the opportunities for learning through collaboration are not being used as an incentive to collaborate and the learning that results is not being captured to maximize its value both for the individual and the institution. The clearly demonstrated association between collaboration and learning, collaboration as a source for learning, and learning as an outcome from collaboration, is a clear advance in our knowledge about the potential benefits of collaboration. However, having established the association with this exploratory study, there is now an opportunity to expand the study of the learning that is arising from collaborative activities to identify learning outcomes and help people label and integrate different types of learning. This would also help determine whether there
are examples of where this is leading to the sharing of that learning between individuals and the incorporation of that learning into work processes.

As learning has been shown to be an outcome from collaboration in this study, it would appear that it could also be projected as a goal and a desired output from future collaborative activities. If so, then the incentives to participate in collaborations could include the opportunity to learn and this would be of interest to healthcare professionals, all of whom have a commitment to lifelong learning. Further work is required to determine whether this hypothesis is valid.

**Study Limitations**

This study has limitations related to research design and methodology, data collection and analysis of findings. This section describes each of these limitations. The section also highlights how my background and positionality has been a limitation in the research.

**Sample and Methodology Limitations**

*Sample Limitations.* Both the size of the sample and the selection of the sample were limitations in this study. In terms of sample size, I had identified 15 clinical faculty as initial interview participants. As I was using a snowball sampling strategy to identify healthcare professionals working in collaboration with each clinical faculty participant, I anticipated that the sample would include 30-35 interviews. Based on the time requirements for data collection, I was only able to interview a total of 21 healthcare professionals. While the small sample size constrains the generalizability of the findings, as this was an exploratory study, it was not expected to be generalizable across all AHCs. Additionally, I selected the initial sample of clinical faculty based on a population of
clinical faculty that I know and who were willing to participate in the study. While I set
criteria for inclusion in the study and did my best to identify a broad sample of AHCs
from which to draw participants, my selection of initial clinical faculty may not have
included a balanced representation of the perspectives of healthcare professionals
working across the 167 AHCs in the United States and Canada. I may have missed
important insights from clinical faculty from other AHC institutions.

**Methodology Limitations.** To address the research questions this study set out to
answer, a longitudinal study that included interviews with those participating in
collaboration activities, observation of collaborative activities as they happened over
time, and observations and reflections of identified learning that occurred in association
with the collaborative activities would have been an ideal design. However, that would
have required a significant time span for each individual AHC included in the study and
would have made it difficult to identify comparable AHC situations to include in the
study. The lengthy time span would also likely have brought with it a high risk of
distortion in the data due to continually changing healthcare environmental factors. A
longitudinal study that included observations and multiple interviews with healthcare
professionals would also have reduced the risk of reliance on self-reported insights
regarding collaborative activities and learning. Identifying RC as the collaboration
practice framework also introduced a potential risk for the study by not including
potential collaboration practices that may have demonstrated a strong direct association
between collaboration and learning. Consequently, I may have missed important insights
arising from AHC involvement with other collaboration practices.
Data Collection and Analysis Limitations

Data for this study included 45-60 minute telephone interviews with 20 participants and an in-person interview with one participant carried out over a period of four months. Because most interviews were conducted by phone, I was unable to take note of additional data that could come from non-verbal expressions during the interviews introducing the risk that I might have missed important data that would have been useful to include in my analysis. Further, while every attempt was made to ask the same questions of each participant, the nature of qualitative, exploratory interviewing is to gather as much rich data as possible from each participant by asking them to describe in their own words, positive and challenging experiences with collaboration and to offer personal insights as to the learning that was associated with the collaboration experiences. Probing questions, therefore, were very different across the 21 interviews, introducing the risk that the findings across interviews would not be comparable and that analysis of the interviews as comparable may yield erroneous findings. To mitigate this risk, I asked a knowledgeable qualitative research colleague to review the interview protocol and to review the transcripts of all interviews to check for consistency in the questions asked of all participants.

In completing the analysis of the data across interviews and AHCs, there is also the risk that real differences between AHCs could have resulted in similar patterns of behavior regarding collaboration and learning that were caused by very different elements. To mitigate this risk, I have been careful to characterize the patterns identified only as patterns in the data and not to speculate on the elements driving those patterns without clearly identifying any comments on the cause of the pattern.
Researcher Limitations

In qualitative research, the researcher is an instrument of research (Patton, 2002). Therefore, researcher limitations are critical to examine. The primary researcher limitations in this study were driven by my professional experience as a healthcare professional educator, and my professional identity as a senior leader within a professional association focused on academic medicine and AHCs. The two limitations are difficult to separate entirely but there are unique risks associated with the two different limitations that I describe below.

First, in my professional life as an educator, I have worked closely with healthcare professionals across multiple disciplines and have developed a deep understanding of the general daily work practices of healthcare professionals within AHCs. My experience as an educator was a rich source of data and insights, which I used as a researcher as I conducted the interviews with healthcare professionals.

In studying how healthcare professionals participated in collaborative activities with their colleagues, and how they described the learning that occurred as a result of participation in those collaborative activities, I was able to draw on my deep experiences in the AHC environment. This allowed me to establish rapport, use a common language about AHC structure and healthcare practices, probe with precision, and have productive conversations with the healthcare professionals that were part of the sample. However, in collecting and analyzing data, my experience as an educator also introduced risks to the research. Because my research focused on learning, an area where I have great passion and strong biases developed over many years of providing educational opportunities to healthcare professionals, I may have applied cognitive and perceptual filters that arose...
from my experience rather than staying neutral and open to the interviewee perception of collaboration or learning.

Second, my position as a senior leader of the AAMC introduced distinct risks to the study. Membership of the AAMC includes all of the AHCs in the United States and Canada. My role as a member of the senior leadership team of the AAMC may have influenced the willingness of sample participants to participate in the study in the first place, to respond to interview questions, and when answering my questions, to offer more socially desirable responses. Second, in my role at the AAMC, I am responsible for identifying potential learning opportunities for healthcare professionals working in AHCs. There is a natural tendency and potential professional benefit for me to identify opportunities for AAMC to meet identified needs of healthcare professionals in AHCs. For purposes of this study, it was critical that I be able to maintain my role as a researcher only.

I employed specific strategies to mitigate these risks. To select a sample that included clinical faculty beyond my own personal network of colleagues, I asked four other senior colleagues for participant recommendations. This yielded a list of 40 potential sample participants, including the clinical faculty that I had identified as potential participants. To maintain my role as researcher and ensure I was focused on the responses of interviewees and not on achievement of personal professional goals, I had all interviews taped and transcribed verbatim using a transcription service. I also wrote personal notes regarding my reactions to each interview upon completion of the interview itself. These notes were in the form of short hand-written jottings (Ravitz & Carl, 2015) that I kept separate from the transcribed interview data. I shared the transcribed
interview data with a knowledgeable qualitative researcher, and asked that she review all interviews to help identify any potential sources of bias in the conduct of the interview. Additionally, the qualitative researcher worked with me to identify, summarize, and label key findings from the data. Also, I had the benefit of my dissertation chair to challenge my thinking and point out biases in my data collection, analysis, and interpretation.

**Considerations for Further Research**

Two primary areas for further research are suggested by the findings from this study: (1) assessing the scope, frequency, and perceived degree of success of both collaborative activities and learning activities occurring in AHCs; and (2) exploring the degree to which the explicit recognition of learning from participation in collaborative activities impacts the overall learning of healthcare professionals working in AHCs. Both areas for further research could augment current understanding of collaboration and learning both at the theoretical and at the practical level.

Assessing the nature and the extent of collaborative and learning activities currently occurring in AHCs could provide important insights into the current AHC healthcare environment and, in so doing, provide potential data leading to the identification of practical options for improving how collaboration and learning, both formal and informal, impacts the achievement of individual and organizational goals. As noted previously, collaboration has been identified as critical for providing quality healthcare (IOM, 2004) and there is limited evidence for improved patient care resulting from the initiation of collaborative work processes (Baggs, 1994; D’Amour et al, 2005; Martin et al, 2010). Much of the evidence is focused on process and quality improvement, typically an organizational goal. Based on the results of this study
showing a strong association between collaboration and learning, there are also
opportunities for learning focused on the achievement of individual goals (e.g.,
professional relations, emotional awareness). Further research focused on the observed
association between collaborative activities and learning may provide new evidence
regarding the overall effectiveness of collaboration in driving positive outcomes in AHCs
as well as in driving new awareness of the benefits of collaboration for the individual
healthcare professional.

There is also an opportunity to identify characteristics of successful collaboration
practices. Findings from this study indicate that AHCs do not plan, structure, and
organize collaborative activities. Further research focused on the effect of implementing
a systematic approach to collaborative activities could identify practical options for
achieving individual learning and patient care improvement goals, which could then be
shared and implemented systematically in AHCs.

There is fertile ground for future research in exploring what explicit learning is
associated with collaborative activities and whether this is a deeper form of learning than
implicit learning. Such research should also explore whether monitoring and
documentation of explicit learning facilitates retention and propagation of that learning.
It is important to study whether deeper reflection and awareness of individual learning
actually drives deeper learning.

While this study provides useful conclusions that contribute to the bodies of
knowledge related to collaboration and learning, there are several important
considerations for future research: (1) future studies would benefit from the use of a
more robust research design using multiple data collection techniques that would include
direct observation, interviews (both self-reported and other reported), and surveys, (2) future studies would benefit from the use of a longitudinal research design that allows data collection at the initiation of collaborative activities and then is able to follow those collaboration activities through to their completion, assessing the learning that occurs throughout the experience, and, (3) to be generalizable to the broader AHC population, future studies should include many more individuals and institutions in the sample.

Conclusion

This dissertation set out to explore whether there was, as anticipated, an association between collaboration and learning among healthcare professionals in AHCs. It produced findings that confirm the research question, based on socio-cultural learning theory, that collaboration gives rise to learning by participants in collaborative activities in AHCs. This confirmation advances our knowledge about the outputs from collaboration and, more specifically, is of use to professional educators who wish to advance learning by healthcare professionals, who are committed to lifelong learning by their respective professions.

The first objective of this study was to demonstrate that collaborative activities between healthcare professionals are commonly found in AHCs. All participants in this study had multiple examples of both positive and negative collaboration experiences. Almost all of these experiences were of informal collaborations, which lacked formal planning, structure, goals and anticipated outputs. The participants, all of whom had some experience of the RC framework, did not share any common vocabulary about collaboration, did not directly relate to any collaboration theory or methodology, and did not refer to any role of their AHC in fomenting collaboration activities. There are clearly
multiple opportunities for AHCs to take steps to foment collaboration, to use a framework or methodology to guide collaborative activities, and to monitor what outputs are produced by collaborative activities, all in order to better implement the strong recommendations regarding the use of collaboration in AHCs made by the IOM (IOM, 2004).

All participants were able to give multiple examples of learning from participating in collaborative activities. Learning occurred in both positive and challenging collaborations. However, none of the participants reported having learning as a goal or a desired output from collaborative activities. Almost all of the learning reported was informal, all was individual and the major part of the learning was recognized implicitly, rather than explicitly, by the individual. Consequently, the learning was not recorded in any way. Learning appears as an invisible, but potentially valuable, output from collaboration. There is a need for more research to better determine the types of learning, the areas of learning and the nature of learning, as being explicit or implicit, that is occurring across a much broader range of AHCs through collaborative activities.

As a professional educator, the confirmation that collaborative activities are common in AHCs and that learning is occurring as an output from all such activities is important. It enables new areas of focus for me as an educator. First, the findings about the nature of collaborative activities, their apparent lack of planning and organization, the number of challenging collaboration experiences where professional egos caused the challenge, and the lack of any common vocabulary to describe collaboration, all provide opportunities for educating healthcare professionals to better work together. Second, and
much more challenging, the evidence that learning is an output of every collaborative activity, although currently an invisible output, stimulates ideas for capturing that learning more effectively for the individuals involved and starting to capture at least some of that learning as institutional knowledge that can be propagated to other healthcare professionals.
Appendix A: Characteristics of Academic Health Centers Included in the Study

<table>
<thead>
<tr>
<th>Geographical Region</th>
<th>Primary Mission Focus Areas</th>
<th>Community Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHC1</td>
<td>South</td>
<td>Research/Clinical Care</td>
</tr>
<tr>
<td>AHC2</td>
<td>South</td>
<td>Research/Clinical Care</td>
</tr>
<tr>
<td>AHC3</td>
<td>West</td>
<td>Clinical Care</td>
</tr>
<tr>
<td>AHC4</td>
<td>Northeast</td>
<td>Clinical Care/Education</td>
</tr>
<tr>
<td>AHC5</td>
<td>South</td>
<td>Education/Clinical Care</td>
</tr>
<tr>
<td>AHC6</td>
<td>Northeast</td>
<td>Education/Clinical Care</td>
</tr>
<tr>
<td>AHC7</td>
<td>Southwest</td>
<td>Specialist Clinical Care</td>
</tr>
<tr>
<td>AHC8</td>
<td>Mid-Atlantic</td>
<td>Clinical Care</td>
</tr>
<tr>
<td>AHC9</td>
<td>Mid-Atlantic</td>
<td>Education/Clinical Care</td>
</tr>
</tbody>
</table>

Description of categories:

- Geographical Regions specified: Northeast, Mid-Atlantic, Midwest, South, Southwest, West
- Mission Focus Areas specified: Clinical Care, Education, Research
- Community Size specified: Major metropolitan area = population greater than 450,000; Mid-sized city = population of 100,000-250,000; Smaller community = population less than 50,000. AHC size based on 2016 census reports for each identified community.
Appendix B: Introductory Email to Clinical Faculty

From: Constance Filling [mailto:cfilling@aamc.org]
Sent: Monday, February 20, 2017 9:48 AM
To: XXXX
Subject: Interview Possibilities

Good morning fellow XXXX travelers,

Hope all is well with you this morning. It has dawned sunny and bright in DC and is expected to be near 70 again today. This is the most unusual winter but I’ll take the sunshine today as we celebrate President’s Day!

I am sending this note to ask each of you if you would be willing to be interviewed about your experience working in collaboration with others in your organization. As you all know, I am currently working on completing my doctoral work at University of Pennsylvania and my research is focused on collaboration and learning in academic health centers. I am specifically interested in exploring how working in collaboration with colleagues influences learning in academic health centers. I am using relational coordination as an example of a structured collaborative practice that is being used by academic health centers. I have attached a Penn Study Information Sheet that describes my research further and addresses any specific questions that you might have.

As clinical faculty members, you are ideal participants for my study and I am hoping that you might be willing to be interviewed as a participant in the study. The interview can be conducted via phone and will last no longer than 60 minutes. At the end of the interview, I will ask if you would be willing to identify 1-3 colleagues with whom you have worked closely so that I can also interview them about their experience working collaboratively within an academic health center, if they are willing. There is no preparation required for the interview and your comments and identity, as well as of the identity of the institution, will be kept entirely confidential in all analysis and reporting.

I am hoping to be able to complete data collection sometime before the end of March. I am doing all I can to be flexible even while working and am happy to speak at any time, including evenings and weekends if that is more convenient for you. Please let me know if you are willing to be part of the study and if so, if there is someone who I should work with to identify a good time for us to speak. And, please know that I completely understand if you would prefer not to be included.

Thanks, as always, to all of you for your insights and friendship and willingness to share your experiences with me as a fellow XXXX traveler.

Warm regards,

Constance
Appendix C: Willingness to Participate Email

From: Constance Filling <cfilling@aamc.org>
Date: Tuesday, February 7, 2017 at 1:54 PM
To: 
Subject: Follow-up Interview Possibilities

Good morning XXXX,

Hope all is well with you this morning. It has dawned sunny and bright in DC and is expected to be near 70 today. From what I saw on the news, you will not enjoy such weather in your neck of the woods but spring will come eventually I am sure.

Thanks again for your participation in the leadership program last week at the AAMC. Your willingness to share your experience at YYYY was powerful and several participants specifically commented on how useful it was to hear about your experience. My strong suspicion is that you will receive lots of requests for additional information. Sincere thanks from the whole team here at AAMC.

In the spirit of requests, this note is in follow-up to our conversation, in the hopes of identifying possible times for us to speak further by phone sometime over the next few weeks. I have read the documents that you left for me and they only further piqued my interest in speaking with you. As I mentioned last week, I am currently gathering data for my dissertation which is focused on collaboration and learning in academic health centers. I am specifically interested in exploring how working in collaboration with colleagues influences learning in academic health centers. I am using relational coordination as an example of a structured collaborative practice that is being used by academic health centers. I have attached a Penn Study Information Sheet that describes my research further and addresses any specific questions that you might have.

As a clinical faculty member and the Chair of the Department of ZZZZ, you are an ideal participant for my study and I am hoping that you might be willing to be interviewed as a participant in the study. The interview can be conducted via phone and will last no longer than 60 minutes. At the end of the interview, I will ask if you would be willing to identify 1-3 colleagues with whom you have worked closely so that I can also interview them about their experience working collaboratively within an academic health center, if they are willing. There is no preparation required for the interview and your comments and identity, as well as of the identity of the institution, will be kept entirely confidential in all analysis and reporting.

When we spoke, you indicated that we might want to look at times/dates beginning the week of February 13 but I am very flexible and will do all I can to accommodate your availability. I am happy to speak at any time, including evenings and weekends if that is more convenient for you. Is there someone who I should work with to identify a good time for us to speak?

Thanks again XXXX, for your interest in my research and for your willingness to be interviewed. I look forward to learning more about how you used relational coordination in your collaborative activities at YYYY.
Appendix D: Confirmation of Participation Email

Dear XXXX,

Thanks for your speedy response and for introducing me (electronically) to YYY. I am so glad that you enjoyed the course and look forward to learning more from the evaluations of all the participants once they come in. Thanks again for being part of it.

I am pleased to meet you, YYY, and happy to work with you to find a good time for XXXX and I to talk. I am hoping that we might be able to find a time later in the week next week or the week after. As my schedule is probably much less packed than XXXX’s is, maybe it would be easiest for you to suggest several times that would work for XXXX and then I can do everything I can to accommodate one of those times. Do you think that would be a good place to start? If not, please feel free to suggest another approach.

I look forward to working with you both and learning much.

Best regards,

Constance

From:
Sent: Tuesday, February 07, 2017 9:54 PM
To: Constance Filling <cfilling@aamc.org>
Subject: Re: Follow-up Interview Possibilities

Dear Constance:
I will be thrilled to participate.
Next week will work.
I tremendously enjoyed the course and certainly benefited from the material and the speakers.
I am copying YYY who will help arrange a time.
XXX

XXX
Professor and Chair of ZZZZ
AAAAA School of Medicine
Appendix E: Collaboration Partners Email

Hi XXXX,

Hope that you have had a wonderful week and are enjoying a much deserved weekend break.

Thanks so much again for speaking with me a little more than a week ago. You have such an interesting story and such an insightful perspective on your experience collaborating with colleagues at YYYY and the ZZZZ. I learned much during our conversation. As promised, I will be happy to provide you with a summary of the themes that come out of my research once the analysis and writing is completed.

Thanks also for your willingness to ask several colleagues if they would consider serving as interviewees in my study. You mentioned four colleagues that might be willing to talk with me, AAAA, Ray BBBB, CCCC, and DDDD. I thought it might be useful for you to have something to send to them that would explain the study and that is what I provided below for your use should it be helpful. I tried to provide all the details that might be needed for people to consider participating in the study. I also included the University of Pennsylvania Study Sheet that provides additional details about the study. Please let me know if I can provide additional materials/information. I truly appreciate your willingness to introduce me to your colleagues. I’m interested and intrigued to learn more about their experience.

If it is easier, please just provide me with contact information and I can reach out to your colleagues directly.

Thanks again,
Constance

Dear AAAA,

I recently had the opportunity to participate in a research study being conducted by Constance Filling, a colleague who is currently the Chief Learning Officer at the AAMC. I was introduced to Constance through a mutual friend. Constance is currently completing her doctoral work at the University of Pennsylvania and her research is focused on collaboration and learning in academic health centers. She is specifically interested in exploring how working in collaboration with colleagues influences learning in academic health centers.

As part of our conversation, Constance asked if I could recommend others who might be willing to talk with her as part of her research. I immediately thought of you as I know that you have thought deeply about collaboration and would give her another perspective for her study. I told Constance that I was willing to share information about her research with several colleagues to ask if they were willing to be interviewed about their experience working in collaboration with others in their organization and that is the purpose of this note.

The interview can be conducted via phone and will last no longer than 60 minutes. There is no preparation required for the interview and your comments and identity, as well as the identity of the institution, will be kept entirely confidential in all analysis and reporting. I have attached a Penn Study Information Sheet that describes Constance’s research further and addresses any specific questions that you might have.

Provided below is Constance’s direct contact information. I have not shared your contact information with Constance but am happy to make the introduction via email if you are willing to consider participating in her research study. Please also feel free to contact her directly if you prefer.

Constance Filling
constancefilling@comcast.net
847.224.0330

Best regards,
Appendix F: Interview Protocol

Research Questions:

**Question 1:** How is collaboration perceived by healthcare professionals in academic health centers?

**Question 2:** How do healthcare professionals working in academic health centers perceive the association between collaboration and learning?

Interview Questions:

The following interview questions are intended to elicit participants’ thoughts, feelings, and actions in order to answer the research questions above.

*General instructions*

Before we get started, let me tell you about the interview format.

- The interview should last approximately 60 minutes. I will keep an eye on the time to make sure we do not run over. Is that ok for you?

- I have some questions to get us started, but we do not have to stay within these questions. We will keep our conversation pretty open-ended.

- Also, I want to re-emphasize, as stated in the Invitation to Participate, that all interviews I conduct for the study will be rendered anonymous and no names will be disclosed. I will only use generic references in all direct quotes.

- I would like to ask for your permission to record the interview in addition to taking notes. It will help ensure that I do not lose any information. Would that be ok with you? OK, I will turn on the recorder.

- Do you have any questions for me, before we get started?
**Opening**

Dr. (name), tell me a little about yourself. How did you come to be the (xx title of xx organization)? How did you decide to go into academic medicine and become a (xx, clinical faculty member, etc.)?

I am interested in exploring the collaboration activities of healthcare professionals working in AHCs. In particular, I’d like to understand……..

**Interview questions**

1. What do you think of when you think of professional collaboration?

2. Tell me about a time when you worked really well with a colleague?
   a) What was the situation?
   b) What goals did you hope to achieve working together?
   c) What made it work well?
   d) What challenges did you face in working in collaboration with this individual?
   e) What preparation did you have for working in collaboration with this colleague?
   f) How would you describe the impact of this collaboration?
   g) What kinds of learning did you notice based on this experience?

3. Tell me about a time when you had difficulty collaborating with a colleague?
   h) What was the situation?
   i) What goals did you hope to achieve working together?
   j) What challenges did you face in working in collaboration with this individual?
   k) What preparation did you have for working in collaboration with this colleague?
1) How would you describe the impact of this collaboration?

m) What kinds of learning did you notice based on this experience?

4. Are there specific skills or personal abilities that enable you to work in collaboration with your AHC colleagues? What are they? How do they impact your collaboration success?

5. Probe questions to use throughout:
   a) Can you provide more detail?
   b) Tell me more about that?
   c) How so?
   d) Give me an example of that

Closing

- Thank you for your candor and time.

- Is there anything else you would like to share with me, perhaps something I did not think to ask?
Scheduling and Preparation for Interviews

Interviews were scheduled directly with the participant or via his or her personal assistant, following the participant’s approval. To schedule the interview, I sent the participant an Outlook meeting invitation with the time of the interview and the dial-in instructions. Participants did not incur any costs for the call, and I sought to make access as easy as possible. A few days prior to the scheduled appointment, I sent a reminder email, including my professional bio as an attachment to help the participant feel more familiar with me. My intention was to build rapport prior to the interview so the individual would be willing to share rich information.

Conducting the Interviews

At the start of the interview, I turned on the recorder and informed the participant of the interview format. I let him or her know that we would not exceed 60 minutes and asked for his or her permission to record the interview. I emphasized that the interview recording would be destroyed and that the transcript would be rendered anonymous so that no one would be able to identify them. Additionally, I emphasized that only themes will be included in my research, and any direct quote would not be linked to a specific individual. I allowed the interviewee the opportunity to ask questions before getting started.

Capturing Interviewee Comments

All interviews were captured digitally via web-based audio recording software. I also used a digital hand-held audio recorder as a back-up and took handwritten notes
during the interview. Immediately following each interview, I password protected and saved all digital files on my personal laptop. I anonymized all recordings before sending the files to a third party for transcription. Transcriptions were returned to me on an ongoing basis over the estimated three-month data collection period. Once received, I also password protected all transcriptions.
Appendix H: Learning Outcomes Coding Definitions

- **Explicit Learning**: Learning that is reflective and thus identified directly by the participant. This is learning that participants identified when they were asked by the interviewer to describe learning from their experiences, or learning in which they directly state that they learned.

- **Implicit Learning**: Learning that is not reflective and thus not identified directly by the participant. Implicit learning was identified through inductive analysis completed by the researcher.

- **Process and Quality Improvement**: Major learning outcome regarding the refinement of the means and the ends of any given project.
  - **Leveraging the contributions of others in the process**: Using the unique perspectives of other key players (e.g. colleagues, family, other institutions, tools) to augment the holistic understanding of an issue and so to problem-solve together.
  - **Taking an evaluative approach**: Using feedback and other forms of data, collected both formally and informally (e.g. personal conversations, structured debriefs, focus groups), to highlight best practices and areas for improvement.
  - **Investing in other collaborators**: Taking the time to find the colleagues with the right “fit” for the team, build rapport, and ensuring adequate compensation.
- **Having a shared understanding of the goal and how to accomplish it:**
  Being in-sync with colleagues on the vision and mission of the work and establishing the “ground rules” on proper collaborative decorum.

- **Prioritizing workloads and managing time:** Managing and balancing the responsibilities associated with multiple missions (e.g. patient care, research, education) and avoiding the “tyranny of the urgent”.

- **Professional Relationships:** Major learning outcome regarding the social dynamics of collaboration.
  
  - **Engaging stakeholders and fostering buy-in:** Maintaining the momentum and advancing the goals of the work by fostering enthusiasm about the process of the work, motivating colleagues, and generating buy-in about the importance of the work to the leadership and other crucial stakeholders.

  - **Recognizing and valuing the humanity in others:** Understanding that other colleagues, or stakeholders (e.g. patients), are unique humans who need to be treated kindly, individually, and with respect.

  - **Practicing empathy with collaborators:** Being aware of the different personalities and trigger points of colleagues and other stakeholders (e.g. patients) to increase understanding of their reactions to situations.

  - **Maintaining clear and constant communication:** Communicating in a manner that is frequent and accurate via one-on-one conversations, debriefs, conference calls, etc. to update on progress, address professional “hiccups”, and ensure accountability.
o **Building trust with other collaborators**: Demonstrating professional capabilities (e.g. in discipline and interpersonal skills) to inspire respect as well as learning to trust the professional capabilities of others.

- **Emotional Awareness**: Major learning outcome regarding the participant’s emotional development and understanding pertaining to their collaboration experiences.
  - **Being assertive and confident in spite of vulnerability**: Increasing confidence in professional abilities, expressing those expert opinions constructively and firmly while admitting mistakes or shortcomings.
  - **Exercising resourcefulness**: Being at ease with ambiguity, embracing circumstances, findings solutions to problems with unclear solutions.
  - **Setting egos aside and embracing the value of the team**: Being humble and accepting that others’ contributions were worthwhile and beneficial to the outcome of the matter.
  - **Controlling emotions under stress**: Managing emotions when under stress so that they were not manifested in ways that might hurt working relationships.
  - **Taking criticism professionally and not personally**: Understanding that feedback from other colleagues was a reflection of professional and not personal abilities.

- **Technical and Adaptive Knowledge and Skills**: Major learning outcome regarding the development of a new or improved knowledge and/or skills in a pertinent subject area.
o Applying conceptual knowledge and/or underutilized skills to attain tangible outcomes: Using abstract concepts previously learned (e.g. leadership traits) to enhance role, achieve goals, and/or mitigate concerns.

o Gaining a deeper understanding of their role and others’ roles:
Understanding how their own role can grow and improve as well as understanding what is involved with the roles of others.

o Adapting and coping to new role and/or environment: Adapting to the intricacies, procedures, and bureaucracy of a new role or a new environment in a different department or institution.
Appendix I: Vocabulary Codes for Collaboration

The list below includes codes I assigned to the vocabulary participants used in describing collaboration experiences that they recounted during our interviews. The numbers in parentheses indicate the number of participants that used vocabulary coded into each category.

- Balance (x1)
- Collegial (x2)
- Committee/Taskforce (x1)
- Communication (x4)
- Community (x1)
- Coordination (x2)
- Different Stakeholders (x5)
- Gathering and Organizing the Staff (x1)
- Group (x3)
- Leadership (x7)
- Multidisciplinary Teams (x3)
- Mutual Need (x1)
- Relational Coordination (x3)
- Relationships (x2)
- Roles (x1)
- Shared Goal (x2)
• Shared Interest (x1)
• Similar Philosophies (x1)
• Team (x3)
• Together (x3)
• Units (x1)
REFERENCES


