

The Role of Trust in Creating Sustainable Change through Interorganizational  
Collaborations in Health Care Education

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## **Dedication**

To my mother, who always encouraged me to aim higher, and my father, who just encourages me. Your love and support have made all the difference.

To Reece and Riley - Though you probably have difficulty remembering a time when I wasn't in school, I hope your observation of my journey has instilled in you an appreciation of life-long learning and taught you that you are never too old to follow your dreams. If not that, then I hope you've learned the power of resilience and dedication. If not that, well, then I hope you've enjoyed experiencing the take-out fare from all of the local restaurants. I look forward to supporting both of you on your life journeys.

**Abstract**

The sectors of higher education and health care are experiencing increased calls for accountability regarding their outcomes and affordability. The elevated scrutiny and superimposed fiscal constraints create an opportunity for growth and redesign. Partnerships and collaborations have emerged as one approach to addressing challenges in both arenas.

The purpose of this study is to examine the impact of trust on the success of collaborations between institutions of higher education in the health care arena. A multiple case-study design is used to examine three partnerships created through the National Center for Complementary and Integrative Health (NCCIH) CAM Practitioner Research Education Project Grant Partnership (R25). The selected partnerships include three colleges of chiropractic, each paired with a university with very high research activity. The historical tension between chiropractic and traditional medicine, largely due to philosophically different approaches to health care, make the study of trust especially intriguing.

The mixed-methods study design includes qualitative data collection through interviews of 11 key participants from the chiropractic and research intensive institutions from all three partnerships. Qualitative interview data are used to provide description regarding the three partnerships and to explore the impact of trust on the formation of the collaborations. Quantitative data are collected through surveys of 101 faculty and administrators from the chiropractic institutions. Additional qualitative data are also

gathered through open ended survey questions. Quantitative data are used to examine the impact of trust on the perceptions of success of the collaborative efforts.

The qualitative findings suggest that interpersonal trust, specifically the role of boundary spanners, plays an important role in the formation of collaborations. The most significant themes related to partnership formation are generative capacity, defined as the willingness to partner with someone based on positive experiences of a past partnership, and transferability, or the transfer of trust to an unknown person based on trust of a third party known by both individuals. With regard to the willingness of individuals to participate in the activities of the collaboration, identifying, or the degree to which individuals perceive the priorities of the project as similar to their own, emerge as the most significant theme. Disclosing, or the willingness of individuals to disclose their weaknesses, trusting that the information will not be used against them, is the second most frequent theme. The most significant themes related to interorganizational trust are: reliability; personal connection; reputation; communication; and expertise.

Results of a multiple regression analysis indicate statistically significant findings for organizational trust ( $b = .60, t = 4.17, p < .001$ ), interorganizational trust ( $b = .30, t = 2.52, p = .01$ ), and interpersonal trust ( $b = .16, t = 2.74, p = .01$ ) as explanatory factors in perceptions of project success.

As health care institutions and health care delivery systems respond to the demands for improved services, better outcomes, and increased affordability, interprofessional education and collaborative practice will become the norm. Given the increased evidence for the effectiveness and cost effectiveness for chiropractic care in the

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treatment of musculoskeletal conditions, specifically spine pain, chiropractors should be considered as valuable contributors to integrated health care teams. As academic and health care administrators look to expand opportunities for collaboration between CAM and traditional medicine, they would be wise to consider the important role of trust on the success of these collaborations.

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## Chapter 1

### Introduction

The two sectors of higher education and health care are of increasing concern to policy makers, educators, and the public. In both areas, costs are rising, competition for resources is increasing, and public satisfaction is waning, as is illustrated by the following quote:

“Although regarded by many as collectively the best in the world, our research universities today confront challenges and opportunities that require systematic response. Their sources of revenue are unstable and contested. There is increasing competition for students and faculty abroad. Evolving technology requires institutions to improve administrative operations and enhance the education of their students. Students are increasingly diverse and will graduate into changing jobs and careers, powerful trends that push our universities to change the way we approach teaching, and learning” (Henderson, 2012, p. 1).

Founded in 1977, the Institute for Alternative Futures (IAF), a nonprofit research and educational organization, helps organizations and industries evaluate market trends and investigate options for future directions (<http://www.altfutures.org/>). In 2011, through interviews with individuals from health professions and health care organizations, as well as policy makers and academicians, the IAF developed a report on the future of primary care in the United States, in which four scenarios were outlined ("Institute for alternative futures. Primary care 2025: A scenario exploration," 2012). In September of that year, the IAF convened a workshop of leading health care experts to

explore the four scenarios and develop recommendations in five areas: health professional education; individual and community capacity and accountability for health; health information technology; population health; and political and cultural change. With regard to health professional education, the participants suggest implementation of team-based curricula as a way to meet the challenges of primary health care needs. They suggest that healthcare educators:

“develop and implement guidelines for a new, clarified model of care that covers leadership, roles, “boundary busting”, necessary skills and evidence-based competencies for interdisciplinary and patient-centric training approaches. The accreditation and standard setting organizations related to medicine, osteopathic medicine, chiropractic, nursing, and physician assistants must enable and require these approaches so that relevant deans can implement such a curriculum and get support from professional organizations.” (“Institute for alternative futures.

Primary care 2025: A scenario exploration," 2012, p. 21)

Eddy (2010) recognized that the world of higher education is no longer completely understood by considering the actions of individual organizations, thereby implying benefits of examining relationships between different types of institutions.

“Institutions of higher education are being challenged to shift out of historical patterns of operation and to explore partnerships as efficient means of avoiding duplicate services, providing creative solutions for the problems facing colleges, and becoming more accountable” (Eddy, 2010, p. 14). In the current environment, institutions of higher education are finding themselves in relationships with entities from business and

industry, communities, and other colleges and universities, and the terms “partnership” and “collaboration” are found with increasing frequency in descriptions of changes affecting higher education.

Similarly, forces affecting the health care environment are driving the formation of collaborations in health care and health care education. Health care costs in the United States have increased from \$6,354.50 per capita in 2004, and 15.7 % of GDP, to \$8,895.10, and 17.9% of GDP, in 2012 ("World development indicators: Health expenditure per capita (current US\$)," 2014; "World development indicators: Health systems," 2014). In comparison, the world average for health care expenditures was 10.1% of GDP in 2004 and 10.2% in 2012, with no country exceeding the United States. Canada spent 9.8% of GDP on healthcare expenditures in 2004 and 10.9 in 2012. Despite having the most expensive health care system in the world, the US ranks last on the dimensions of quality, access, efficiency, equity, and healthy lives, when compared to Australia, Canada, Germany, the Netherlands, New Zealand, and the United Kingdom (K. Davis, Schoen, & Stremikis, 2010). In addition, approximately 50 million, or 16 percent, of Americans are without health insurance (E. Smith & Stark, 2012).

The Patient Protection and Affordable Care Act (PPACA), enacted in 2010 and upheld by the Supreme Court on June 28, 2012, encourages collaborative health care models through the creation of patient-centered medical homes (PCMH) and Accountable Care Organizations (ACO) (M. A. Davis, Whedon, & Weeks, 2011). A PCMH creates a system whereby primary care providers act as managers of patient care, coordinating preventative services, treatment of acute and chronic illnesses, and end-of-life care.

ACOs represent communities of doctors, specialists, and hospitals working in collaboration to improve outcomes and lower costs (M. A. Davis et al., 2011). Section 2706, non-discrimination in health care of the Patient Protection and Affordable Care Act (PPACA), prohibits the exclusion of providers who are practicing within their scope and abiding by state law ("The patient protection and affordable care act," 2010). This clause ensures the opportunity for chiropractors, and other complementary and alternative medicine (CAM) providers, to participate in new health care models.

The National Center for Complementary and Integrative Health (NCCIH) defines CAM as “a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine ("Exploring the science of complementary and alternative medicine; NCCAM third strategic plan: 2011-2015," 2011). CAM approaches to health care include practitioner-based modalities, such as chiropractic care and acupuncture, as well as self-care approaches, such as meditation and yoga. A 2012 National Health Interview Survey (NHIS) found non-mineral vitamin supplementation, chiropractic or osteopathic manipulation, yoga, and massage therapy to be the four most commonly used CAM therapies by adults (Peregoy, Clarke, Jones, Stussman, & Nahin, 2014). Data from the 2007 NHIS reveal that back pain, neck pain, joint stiffness, and musculoskeletal problems represent the conditions for which patients most often seek CAM treatments (Patricia Barnes, Bloom, & Nahin, 2008).

Back pain is an extremely common condition, accounting for a major share of the nation’s healthcare expenditures. It is estimated that over the course of their lifetime, over 85% of adults will experience low back pain, and associated health care costs in

2008 were calculated at \$86 billion (Kosloff et al., 2013). The cost for back pain remediation has increased out of proportion to the number of office visits since 1990, largely due to the increased utilization of expensive diagnostic testing and treatment procedures, such as magnetic resonance imaging, injections, and surgeries. Data from OptumHealth revealed that patients with back pain who initiate care with a chiropractor or medical doctor see fewer health care providers for the episode of care than do patients who first consult a medical specialist or physical/occupational therapist (Kosloff et al., 2013).

The evidence for the effectiveness of chiropractic care for treatment of low back pain, neck pain, and headaches has been favorable and growing. Chiropractic care and spinal manipulation have been shown to be more effective than physician-directed usual care in the treatment of back pain (Bishop, Quon, Fisher, & Dvorak, 2010; "United Kingdom back pain exercise and manipulation (UK BEAM) randomised trial: Cost effectiveness of physical treatments for back pain in primary care," 2004). Clinical practice guidelines created by the American College of Physicians and the American Pain Society recommend spinal manipulation as the only non-drug treatment for acute low back pain (Chou et al., 2007). The Institute for Clinical Systems Improvement (ICSI), an independent, nonprofit organization of clinicians, health plans, employers, policy makers, and consumers in Minnesota and Wisconsin, also recommends spinal manipulation for treatment of acute, non-specific low back pain (Goertz et al., Updated November 2012). Multiple systematic reviews also support spinal manipulative and manual therapies for

the treatment of neck pain and headaches (Gross et al., 2010; Hurwitz et al., 2009; Racicki, Gerwin, DiClaudio, Reinmann, & Donaldson, 2013).

Despite the fact that back pain is one of the most common conditions seen by chiropractors and that back pain represents a large percentage of overall national healthcare expenditures, the costs associated with chiropractic care represent a small fraction of that total. It is estimated that spending for chiropractic care increased from \$6.2 to \$6.9 billion between 2002 and 2008, but represents less than one percent of national health care expenditures (M. Davis, Martin, Coulter, & Weeks, 2013). Davis et al. (2013) argue that given the low cost of CAM compared to total health care costs, some CAM providers should be included in ACOs. The small savings created by the exclusion of CAM providers could create greater expenses if those patients sought care from other, more costly, covered providers. They posit that the inclusion of CAM providers could improve communication between CAM and medical providers, which may result in improved care coordination and decreased costs. They state, “The inclusion of complementary and alternative medicine providers in traditional health care delivery teams has the potential to improve integration of care, ensure that all of the patient’s needs are met, and reduce dependency on more costly medical specialists” (p. 7).

Despite the well-reasoned arguments for inclusion of CAM into new health care models, existing barriers include: regulatory inconsistencies among some CAM professions; restrictive insurance reimbursement for CAM providers; and the need for expanded training of CAM providers to align standards with primary medical doctors, physicians assistants, and nurse practitioners (Goldstein & Weeks, 2013). CAM

providers need the skills to find and use relevant research to inform their patient care. An understanding of research evidence will also provide them a common language with which to communicate with other medical providers.

Evidence-based medicine (EBM) is defined as “the judicious application of best current knowledge to the condition and values of the patient” (J. A. M. Gray, 2004, p. 988). The term, as well as the concepts of evidence-based medicine originated at McMaster University in 1992. Placing a lower priority on clinical experience and authority opinion, EBM calls for clinicians to place greater weight on available evidence. The components of EBM, include the formulation of a focused question, performing a literature search, selecting the most valid and reliable studies, extracting the clinical message and applying it to the problem (“Evidence-based medicine. A new approach to teaching the practice of medicine. Evidence-Based Medicine Working Group,” 1992). Over the past two decades, the concept of evidence-based medicine has gained a strong foothold in the health care community and in the public arena.

As utilization of complementary and alternative medicine (CAM) continues to grow, and CAM practitioners participate in more integrated health care settings, there will be a need for those providers to participate in evidence-based medicine or evidence-based health care (EBH) (PM Barnes, Powell-Griner, McFann, & Nahin, 2004). NCCIH recognized a need for expanded training in evidence-based health care for CAM providers, resulting in the creation of the CAM Practitioner Research Education Grant Partnership (R25), as a way to help “medicine and CAM integration, by helping to change the culture” (“National advisory council for complementary and alternative

medicine: Minutes of the fifteenth meeting, September 8," 2003). The concept behind these grants was to enhance CAM practitioners' exposure to, and literacy of, biomedical literature through partnerships with institutions with very high research activity, which provide support for curriculum development and training activities. As chiropractors and other CAM providers become included in primary care teams, the evidence around the effectiveness of manual therapies can form a common language around which professionals from philosophically different perspectives can communicate.

In order to receive funding for the CAM Practitioner Research Education Grant Partnership (R25) grants, CAM institutions were required to partner with a university with very high research activity.

“This initiative proposes the use of an Education Project Grant (R25), which would support development and enhancement of lecture and methods courses in biomedical research. The grant would also support short-term faculty and student research projects, strengthen faculty research skills, and promote incorporation of research training components into the CAM training program. This would all be done in partnership with a research intensive institution, which would provide experienced mentors and teachers to support curriculum development, teaching, and other training activities. Research content in CAM practitioner curricula varies widely from school to school. The initiative would help introduce research-based information into a curriculum and expand existing research training at CAM professional schools. The result would be CAM schools with a stronger research component and with a relationship with a research institution”

("National advisory council for complementary and alternative medicine: Minutes of the fifteenth meeting, September 8," 2003).

Since 2004, this CAM Practitioner Research Education Project Grant Partnership (R25) award has been granted to nine CAM institutions and their partners. The CAM institutions include colleges of chiropractic, naturopathy, osteopathy, and oriental medicine. To date, research on the factors contributing to the success or failure of these partnerships is lacking. Considering the historical tension between CAM and conventional health care providers, the role of trust in establishing and sustaining collaborative relationships is especially intriguing.

### **Research Questions**

Past research on interorganizational relationships has focused on why partnerships are established, the potential benefits of these relationships, as well as challenges and costs (J. Smith & Wohlstetter, 2006). Research is lacking on the elements of creating successful partnerships, especially in the arena of health care education. What components are necessary to create success and longevity in relationships between two institutions? Greater understanding of the factors contributing to the success of partnerships will allow policy makers to structure effective incentives for interorganizational collaborations. Research is needed to understand the process of establishing interorganizational relationships, how they function, and what factors are necessary to sustain the relationships (Amey, Eddy, & Ozaki, 2007).

A comprehensive inquiry begins with a set of research questions designed to examine the components of the relationship. Whether the motivation for partnership

creation is intrinsic or extrinsic to the institutions, the organizational context becomes crucial to the success and sustainability of the partnership. This research will explore the impact of trust on the organization and implementation of collaborative efforts between CAM and conventional institutions of higher education. The study will seek to answer the following questions:

1. To what extent does trust impact the formation of a collaboration?
2. To what extent does trust impact the perceived success of a collaboration?

## Chapter 2

### Review of the Literature

This review of the literature on inter-organizational relationships will examine the often confusing variety of descriptors that are used to describe these relationships, along with the fact that there is no clear consensus on the definitions of the terms “partnership” and “collaboration”. The literature is replete with descriptions of a wide range of relationship pairings between higher education and communities, businesses, as well as between institutions of higher education. Although the literature is largely atheoretical, with most of the focus on descriptions of individual partnerships, or partnership types, this review highlights emerging organizational theory literature which is helpful in understanding partnerships and collaboration.

This review has eight sections. In the first section, the motivating factors behind the creation of interorganizational relationships and the importance of collaboration in the current higher education and healthcare environment will be discussed. The second section will discuss the lack of common nomenclature in describing relationships between institutions of higher education and other entities. The range of commonly used terms will be presented and, from those, one definition will be chosen for the purpose of this review. The third section will present existing typologies of interorganizational relationships. The fourth section will provide an overview of partnerships occurring today in the field of healthcare, especially in complementary and alternative medicine as the context in which the proposed research will be conducted.

The fifth section will discuss the advantages of collaboration and the factors leading to successful relationships, and the sixth section will discuss the challenges of interorganizational relationships and the factors that are ascribed to their failure or success. The seventh section will provide an overview of selected theoretical frameworks on organizational theory, interorganizational relationships, and a more detailed analysis of the role played by trust in organizations and collaborations.

### **Motivation Behind Collaboration**

In the past decade, there has been an increasing appreciation of the impact that collaborative relationships can have on institutions of higher education, their partner organizations, and students. Higher education has historically been slow to adopt change and many trends, such as Planning, Programming, and Budgeting System (PPBS) and Benchmarking, are often well established in other sectors before they made their way to the educational arena (Birnbaum, 2000). The same is true with interorganizational collaboration as well, and much of the literature on strategic partnerships focuses on the for-profit sector. The frequency and magnitude of collaborations in business increased during the 1980s and 1990s due to the increasing complexity of organizational tasks, acceleration of technology, and the globalization of markets (Arino & de la Torre, 1998), as described in the following quote:

“Under pressure from difficult financial times, changing demographics, globalization, and increasing complexity, “siloes” work with duplicative activities and a lack of communication and synergy across function is not working any more. Under these new conditions, organizations were forced to rethink their

work. In the business literature, the main strategy for addressing these many new challenges has been through collaboration and partnership” (Kezar & Lester, 2009, p. 8).

From an analysis of case research on interorganizational collaborations in corporate and governmental sectors, Wood and Gray (1991) described six motives for creating strategic alliances: resource dependence; corporate social performance and institutional economics; strategic management and social ecology; institutional or negotiated order; microeconomics; and political. Out of necessity, businesses found themselves partnering with each other in order to compete in the marketplace, a trend that has now reached higher education.

Institutions of higher education are presented with an expanding and diverse set of problems, and the strain on institutional resources can be a powerful motivator for partnership creation. Higher education is experiencing pressure from decreased funding and higher costs, technology growth, public scrutiny, changing demographics, competing values, and globalization, all of which provide the impetus to collaborate (Eddy, 2010; Kezar & Eckel, 2002b). Collaborative efforts between institutions can be used to leverage human, financial, and curricular resources.

Forces external to institutions are also exerting pressure for increased collaboration. Colleges and universities are experiencing pressure from external agencies, such as accrediting bodies and governmental agencies, to create and foster partnerships (Eddy, 2010). Higher education policy makers see partnerships as a way to reduce redundancies and conserve resources, as is articulated by Eddy (2010):

“Current trends in higher education point to an increased demand for partnerships, often with the expressed desire to save resources. Perceived duplication of services in an institution and among colleges and universities in a state push policymakers to create mandates requiring cooperation” (p.13).

Accrediting agencies, foundations, businesses, and governmental agencies recognize the benefits of collaboration on improved student learning, organizational functioning, and research, according to Kezar and Lester (2009): “The National Science Foundation (NSF) and National Institutes of Health (NIH) have been encouraging higher education institutions to create interdisciplinary research institutes to draw on the expertise across campuses and to create more innovative and holistic research” (p. 17). Commissioned by Congress to assess the competitive position of our research universities, the National Research Council (NRC) convened leaders in 2012 from academia, industry, government, and national laboratories. In their report, the committee concluded:

“It is essential that we as a nation reaffirm, revitalize, and strengthen substantially the unique partnership that has long existed among the nation’s research universities, the federal government, the states, and philanthropy by enhancing their individual roles and the links among them and also by providing incentives for stronger partnership with business and industry. In doing so, we will encourage the ideas and innovations that will lead to more high-end jobs, increased incomes, and the national security, health, and prosperity we expect” (Holliday et al., 2012, p. 6).

A report from the Chicago Council on Global Affairs, a non-partisan think tank, urged collaboration between Midwest colleges and universities in order to survive amidst state budget cuts. The report suggested that institutions should switch from competition to collaboration, to consider sharing facilities and programs as a way to conserve resources (Duderstadt, 2011). An example in health care education is the interdisciplinary collaboration proposed and funded by NCCIH, the CAM Practitioner Research Education Grant Partnerships (R25), designed to enhance the integration of CAM and conventional medicine through research literacy training of CAM practitioners (NCCAM, 1999, 2004).

The increase in accountability pressures, combined with the strain on financial resources, has placed institutions in a situation where they are forced to do more with less. Collaborations are occurring within and across organizational settings as a way to respond to an increasingly complex landscape. According to Eddy (2010), collaborative relationships allow institutions to pool talent and leverage resources for increased efficiency: “A key tenet of partnering is that a benefit comes from creating a collaboration based on the ideal that the individual partners cannot accomplish their goals on their own: the partnership creates the ultimate win-win situation” (p. 2).

Another external force creating pressure for traditional colleges and universities to collaborate is the rise of for-profit institutions. Between 1980 and 2009, enrollment at private for-profit four year institutions increased from 23,000 to 1.2 million (Aud et al., 2011). These institutions have changed the landscape of higher education, and colleges and universities find themselves competing for students under new and unfamiliar rules.

For-profit institutions are more nimble and better able to respond to market demands than are traditional institutions. They are service oriented and are able to provide an array of services and course delivery options to students. Shapiro (2002) notes, however, that these providers

“lack the kind of legislative or chartered authority that has underpinned the historic monopoly that traditional universities have exercised over the accreditation and certification of higher education degrees and diplomas, making it difficult for these new providers to do business at the premium end of the educational services market” (p. 3).

Shapiro (2002) suggests that traditional universities and e-providers find ways to collaborate to capitalize on the strengths of the other in order to create global e-education ventures.

Advancing technology and challenging economics are driving factors in another growing area of interinstitutional collaboration, library consortia. The availability of digital resources has created opportunities for institutions to join together to form digital library consortia, increasing access to journals and reference materials for students and faculty and decreasing the financial burden for individual institutions (Alberico, 2002). Another motivator for partnering is to provide technology or information transfer between institutions and business. Many college-business partnerships are created with the goal of developing the workforce. Recognizing the disconnection between research scientists and industry, the NSF developed an initiative called Innovation Corps, or I-Corps (Wiseman, 2011). The objective of I-Corps is to connect university researchers

with industry to help convert academic findings into marketable products and technologies.

Over the last few years, unprecedented attention and energy have been directed toward overhauling the healthcare system in the United States. The prospect of universal health care coverage is becoming increasingly real as the government strives to increase access to, and affordability of, health care. Regardless of the form the restructured system takes, to be included in the system health care providers will be required to demonstrate the cost and treatment effectiveness of their modalities. They will be expected to practice in an evidence-informed manner and will be held accountable for justifying treatment decisions based on evidence of effectiveness rather than clinical experience alone. Organizations such as the Centers for Medicare and Medicaid Services (CMS), Agency for Healthcare Research and Quality (AHRQ), National Committee for Quality Assurance, the Joint Commission, the American Medical Association and other professional organizations have developed numerous quality measures with the goal to improve the quality and value of patient care (Buys & Bursnall, 2007). As utilization of chiropractic and other CAM modalities continues to grow and those practitioners participate in more integrated health care settings, they will be expected to participate in evidence-based health care (EBH) or evidence-informed practice (EIP) (PM Barnes et al., 2004). As such, institutions of complementary and alternative medicine will need to model EIP and to incorporate EIP principles throughout the curriculum.

## **Defining Collaboration in Higher Education**

Regarding terminology of interorganizational relationships in higher education, the literature is diffuse and confusing. The terms partnership and collaboration are used interchangeably, with no standard definitions. This section will review some of the definitions found in the literature and will conclude by defining the term collaboration in the context of the present research.

B. Gray (1989) offered the following definition of collaboration: “Collaboration is a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible” (p. 11). Building on the work of others, and expanding on Gray’s definition, Wood and Gray (1991) created the following definition of collaboration: “Collaboration occurs when a group of autonomous stakeholders of a problem domain engage in an interactive process, using shared rules, norms, and structures, to act or decide on issues related to that domain” (p. 9). They noted that stakeholders have common and differing interests which may change or become redefined as the collaboration progresses. All parties need to appreciate the associated risks and perceive that they will gain from the collaborative efforts. While not all stakeholders need to participate in the collaborative effort, the extent of participation will likely impact the outcomes of the collaboration. Autonomy of the individual parties is a critical component of collaboration, though the individual parties typically agree to abide by shared rules. This definition views collaborations as temporary and evolving, though it

recognizes that some forms of collaboration, such as federations or joint ventures, may be intended as permanent arrangements.

Kezar and Lester (2009) also acknowledged that the terminology surrounding interorganizational relationships is not well defined. “Although these studies may not be clear about terminology, what is clear is that they are examining different ways of working together that involve a more collective and interactive approach” (Kezar & Lester, 2009, p. 6). They defined networks as relationships based on an exchange of information or ideas. Networks are neither deliberately designed, nor do the participants share goals. Cooperative arrangements are slightly more formal and involve coordination or shared information on work or tasks, without altering the tasks of the participants. Partnerships and collaborations are similarly defined to include relationships that have joint goals, a reliance on the other participant, joint planning, and power sharing. The process must be interactive and entail shared group norms, rules, and structures. Eddy (2010) makes a distinction between partnerships and collaborations, broadly defining partnerships as “organizational pairings that may range from the informal to more formal” (p. 3). By way of contrast, Eddy (2010) views collaborations as occurring at the unit level of a college or university, involving individual faculty working together.

For the purpose of this research, the terms partnership and collaboration will be used as defined by Kezar and Lester (2009):

“Partnerships and collaboration involve joint goals and a reliance on each other to accomplish the goal. Collaborators try to align goals and identify a similar

mission, such as student character development. They then try to work at a more fundamental level, which entails joint planning and power sharing” (p. 7).

The choice of this definition is intentional as it provides a broad platform for understanding the relationship, joint goals, joint planning, and power sharing.

### **Typologies of Collaboration**

There are many different ways to categorize interorganizational relationships. A review of the typologies of partnerships reveals two main types of classification systems: those focused on structural components and those on the interpersonal relationships. Some typologies describe only one facet of interorganizational relationships, whereas others explore multiple facets in an attempt to provide a finer level of description.

**Typologies based on structure.** From a structural viewpoint, partnerships can be classified by type, size, and scope (Dotolo & Noftsinger, 2002). In postsecondary education, those partnerships typically fall into one of the following categories: K-12 partnerships, economic development, community development, workforce development, technology partnerships, library cooperation, partnerships to serve the military, group purchasing, interinstitutional faculty collaboration, television partnerships, and international partnerships. Partnerships range from formal to informal, and the degree of structure impacts both the stability of the relationship and the degree to which roles need to be managed.

In their review of the literature, Barringer and Harrison (2000) identified six forms of interorganizational relationships in industry (see Table 1), many of which can be found in higher education. Barringer and Harrison categorized interorganizational

relationships as tightly coupled or loosely coupled. Tightly coupled organizations are linked through formal structures which may include joint ownership. Conversely, loosely coupled relationships are less formal and do not include the creation of jointly owned entities.

Table 1

*Forms of Interorganizational Relationships*

Interorganizational Form	Tightness of Coupling	Description
Joint Venture	Tightly coupled	Two or more firms pool resources to create a separate, jointly owned entity
Network	Tightly coupled	A local firm at the hub, organizing the interdependencies of an array of organizations
Consortia	Tightly coupled	A group of firms oriented towards problem solving and technology development
Alliance	Loosely coupled	An agreement between two or more organizations to participate in exchange, without joint ownership
Trade Association	Loosely coupled	Organizations from the same industry joining together to collect and disseminate information, provide training, provide legal advice, etc.
Interlocking Directorate	Loosely coupled	Occurs when an executive of one organization sits on the board of a second firm

Source: Barringer, B. R., & Harrison, J. S. (2000). *Walking a tightrope: Creating value through interorganizational relationships*. p. 383.

Relationships that involve tight coupling of the organizations are joint ventures, networks, and consortia. Joint ventures represent separate entities, apart from and jointly owned by two or more organizations. An example of joint ventures in higher education would be when a nonprofit college joins with an investor to create an independent entity, such as an online degree program (Lederman, 2010). In networks, a local firm acts as a

central hub to organize the interdependencies of multiple organizations. Examples in higher education would include organizations that pull together institutions, policy makers, and industry. Networks can be based on geographic location, such as the Texas Higher Education Network, or by domain, such as technology education ("ATHEN Access Technology Higher Education," 2013; "The Texas higher education network," 2011). Consortia are formed when firms organize around problem solving or technology development. These partnerships are voluntary and under member control. In higher education, consortia typically revolve around academic issues, such as cross registration or faculty exchange (Amey et al., 2007). Clear role definition is necessary, as is support at the highest level of leadership.

According to Barringer and Harrison (2000), loosely coupled arrangements include alliances, trade associations, and interlocking directorates. An alliance is an arrangement between two or more firms to exchange information or resources, without joint ownership. One example is the Alliance for International Higher Education Policy Studies, a collaboration between New York University, The Autonomous University of Puebla, and the University of British Columbia, designed to conduct policy research in Mexico, Canada, and the United States ("AIHEPS Alliance for International Higher Education Policy Studies"). Trade associations, such as the Association for the Study of Higher Education (ASHE), are created to collect and disseminate information for organizations in the same domain ("ASHE Association for the Study of Higher Education" 2014). Interlocking directorates occur when an executive of one organization

sits on the board of directors or a second firm. This type of relationship fosters information sharing and cooperation (Barringer & Harrison, 2000).

Grobe, Curnan, and Melchior (1993) developed a typology for K-12 partnerships involving six levels: partners in special services (level 6); partners in the classroom (level 5); partners in teacher training and development (level 4); partners in management (level 3); partners in systematic educational improvement (level 2); and partners in policy (level 1). This typology organizes partnerships by activity and partners involved in the relationship.

Partnerships that provide “special services” are designed to help with a specific problem or need. They are typically short-term or student-specific projects such as rewarding school attendance with a field trip or mentoring at-risk students. Partners in the classroom bring occupational expertise into the classroom or bring the classroom to the business. Partnerships in teacher training and development provide teachers with opportunities for professional development through assistance with industry mentors, opportunities to work on short term projects with industry through academic internships. Partners in management provide management support for school administrators through partnerships with business. Partnerships in systematic educational improvement result when business, education, and community leaders collaborate to address specific needs or problems in the educational system. Finally, partners in policy work at the local, state, or national level to shape policy and enact change through legislative efforts and healthcare. While described for K-12 partnerships, this typology could be applied to higher education and healthcare.

Though the objectives differ, partnerships between colleges and universities and industry exist in each of the goal areas. For example, the activities of the CAM Practitioner Research Education Grant Partnerships (R25) could be classified as partners in special services and partners in teacher training and development as they are designed to address the specific problem of research education in chiropractic and other CAM institutions through training of CAM faculty (Grobe et al., 1993).

J. Smith and Wohlstetter (2006) argued that the existing typologies of partnerships are lacking. Noting that prior attempts to classify partnerships places them along a hierarchical continuum from “insubstantial” to “meaningful”, the authors created a typology based on context and individual circumstances. Researching partnerships between charter schools and public organizations, these authors organized their typology across four dimensions: origin; content; form; and depth. Origin refers to the development of the partnership; whether it was formed by two independent organizations or if the charter school grew out of an organization that subsequently partnered with it. The content of the resources offered by each partner can be categorized as financial, human capital, physical space, and organizational support. Partnerships can be formed through either informal or formal agreements, each with its own advantages and disadvantages. Finally, the depth of partnerships can be one-level, involving only one level of employees, or multi-level, involving many members across different levels at each organization (J. Smith & Wohlstetter, 2006).

Beerkens (2001) developed a multi-dimensional typology for higher education, organizing international partnerships by size, scope (temporal and activity), and type of

integration (horizontal or vertical) (Table 2). With regard to size and scope, Beerken's (2001) model differentiates between partnerships that represent individual interests of the involved parties and those that represent a collective interest. In the former arrangement, institutions cooperate in reciprocal relationships in order to best serve the individual organizations. Membership is selective. Partnerships serving collective interest are typically long term in nature and have open membership. Organizations need only cooperate around the common interest.

Examples of this type of partnership include associations or coalitions. This model further classifies partnerships by scope-in time and activities. Project-based, task specific arrangements are designed to dissolve at the completion of the unifying activity whereas partnerships that are more strategic in nature will continue to exist as long as there is member support (Beerkens, 2001).

The nature of integration can be horizontal or vertical, depending upon whether the organizations provide the same services, or if one is the supplier for the other. Horizontal integration might involve the sharing of knowledge, technology, human resources, or financial resources. Vertical integration involves two organizations that provide input for each other but are not in direct competition. An example of this would include education-industry partnerships.

Finally, Beerkens (2001) subdivides the relationships by the intensity of the relationship: cooperation; coordination; or amalgamation. In cooperative relationships, there are no formal rules, little resource investment, and little threat to organizational autonomy.

Table 2

*Typology of Interorganizational Relationships in Higher Education*

Size	Temporal Scope	Scope of Activities	Classification According to Size and Scope	Vertical Integration	Horizontal Integration
Numerous	Long term	Thematic/disciplinary	Thematic/disciplinary associations	-Cross-sectoral associations	-Higher education associations
Numerous	Long term	Institutional	Institutional associations	-Cross-sectoral associations	-Higher education associations
Bilateral <sup>a</sup>	Short term	Thematic/disciplinary	Project partnerships	-One time contracts -Joint project agency -Joint project venture	-Cooperative project -Joint project agency -Joint project venture
Bilateral	Long term	Thematic/disciplinary	Thematic/disciplinary partnerships	-Long term contracts -Strategic alliance -Autonomous joint venture	-Loose cooperation -Strategic alliance -Autonomous joint venture
Bilateral	Long term	Institutional	Institutional partnerships	-Long term contracts -Strategic alliance -Vertical merger	-Loose cooperation -Strategic alliance -Horizontal merger
Multilateral	Short term	Thematic/disciplinary	Project networks	-Onetime contracts -Joint project agency -Joint project venture	-Cooperative project -Joint project agency -Joint project venture
Multilateral	Long term	Thematic/disciplinary	Thematic/disciplinary networks	-Long term contracts -Strategic alliance -Autonomous joint venture	-Loose cooperation -Strategic alliance -Autonomous joint venture
Multilateral	Long term	Institutional	Institutional networks	-Long term contracts -Strategic alliance -Vertical merger	-Loose cooperation -Strategic alliance -Horizontal merger

Source: Beerkens, E. (2001). International inter-organisational arrangements in higher education: Towards a typology. p. 16

<sup>a</sup> Most representative of the partnerships found in the CAM Research Education Project Grant Partnerships (R25)

Coordination involves formal rules, joint goals and activities, resource investment, and some element of threat to autonomy. Amalgamation occurs when autonomy of all partners is transferred to a new organization.

The Beerken's (2001) typology provides a framework for categorizing the motivation behind inter-organizational relationships but does not address factors impacting the success of those partnerships, nor does it allow for the evolution of relationships from short term and thematic to long term and institutional. This research will explore the elements, specifically trust, impacting the success and continuation of inter-institutional collaborations in the CAM Education Research Project Grant Partnerships (R25).

**Typologies based on relationships.** By definition, partnerships involve relationships between organizations and the people within them. The structural approach to categorizing partnerships overlooks the importance of interpersonal relationships. Kanter (1994) categorizes interorganizational business partnerships by their interpersonal relationships (see Table 3). Partnerships involving interaction of only the organizational leaders, through information or resource sharing, is described as "strategic integration". "Tactical integration" involves middle managers working together, across organizations, to plan specific projects. "Operational integration" is reached when those who carry out the tasks are involved to the point that they have access to information, people, and resources across organizations (Kanter, 1994). "Interpersonal integration" is reached when a network of relationships exists between members of both organizations and "cultural integration" occurs when the companies merge their organizational and cultural

differences and both parties work to sustain the partnership. Kanter (1994) suggests that the most successful relationships are those that are able to integrate in all five areas (p. 105-106).

Table 3

*Levels of Integration in Interorganizational Partnerships*

Levels of Integration				
Strategic	Tactical	Operational	Interpersonal	Cultural
Continuing contact among company leaders to discuss broad goals	Involvement of middle managers to develop plans for specific activities or to transfer knowledge	Ensuring that employees involved in the day-to-day operations have access to necessary resources and timely information	Expansion of the network of interpersonal connections between members of the partner organization	Ability to bridge differences through interpersonal skills and awareness of the culture of the partner organization

Source: Kanter, R. M. (1994). Collaborative advantage: The art of alliances. p. 106

Kanter (1994) also acknowledges the negative impact that stereotyping can have on relationships, diminishing partners and creating a polarizing dynamic. “Respect that builds trust begins with an assumption of equality: all parties bring something valuable to the relationship and deserve to be heard” (p. 105). The historical tension between the medical and CAM professions adds significance to this research on the role of trust in the success of the CAM Education Research Project Grants (R25).

Another way to view interorganizational relationships is through the level of partnership involvement. The three stages of involvement are defined as: support; cooperation; and collaboration. The support phase occurs typically in the beginning stages of the relationship and involves one partner providing support for the other partner

(e.g., financial support or resources for a program or activity) (Grobe et al., 1993).

Partnerships in the cooperation stage have greater communication and participation than those in the support phase, but one partner still receives more benefits than the other.

Partnerships in the collaboration stage have established long range goals, include resources from both partners, and have involvement of the top administrators.

Collaborative partnerships have widespread involvement from all partner institutions and the parties are thought of as equals.

In viewing interorganizational relationships as dynamic interpersonal relationships, it is important to evaluate process issues such as: who instigates the partnership; how individual members understand and interpret the relationships within the partnership; how the partnership changes over time; and how problems are resolved (Amey et al., 2007). Based on a review of the literature of K-20 partnerships, Amey et al. (2007) developed a multidimensional partnership model which considers antecedents, or issues surrounding each partner, the motivation behind each partner's involvement, the context, or environment, as well as the partnership itself. They noted that personal and professional connections often provide the intrinsic motivation to relationship development. When the motivation is extrinsic to the organizations and two institutions are mandated to collaborate, neither party may bring much trust or motivation to the table. B. Gray (1989) described three phases in the formation of collaborations: problem setting; direction setting; and implementation. Early stages rely on the social capital of the participants and the organizational capital committed to the project. Partnership

capital emerges as the participants develop trust, a shared meaning about the goals, and the project no longer hinges on the involvement of specific individuals (Eddy, 2010).

Though not a necessary precondition for the creation of a collaboration, the presence of a convener can be helpful in facilitating its formation. According to B. Gray (1989), a convener acts to bring the stakeholders to the table and must possess the following attributes:

- Convening power, or the ability to get stakeholders to participate (p. 71)
- Legitimacy (p. 71)
- Unbiased, even-handed approach (p. 72)
- Ability to appreciate the potential value of collaborating (p. 72-73)
- Ability to identify relevant stakeholders (p. 121-122)

Conveners do not need to possess formal authority but may hold informal authority with respect to their position, influence, or credibility. The type of authority needed may depend upon the factors driving the formation of the collaboration. From their analysis of nine research articles on collaborative alliances in corporate and government sectors, Wood and Gray (1991) formulated a matrix to describe the relationship between the convener and the intervention as described in Table 4.

Table 4

*Dominant Modes and Central Attributes of Conveners for Various Types of Intervention and Influence*

Type of Intervention	Type of Influence by Convener	
	Formal	Informal
Requested by Stakeholders: Convener is responsive	Legitimation: Convener is perceived as fair	Facilitation: Convener is trusted
Initiated by Convener: Convener is proactive	Mandate: Convener is powerful	Persuasion: Convener is credible

*Source:* Wood and Gray (1991). *Toward a comprehensive theory of collaboration*, p. 152

### **Partnerships in Complementary and Alternative Medicine**

The focus of research emerging from this review of literature is on the unique institutional pairings that exist in health care education through the CAM Practitioner Research Education Project Grant Partnerships (R25) (NCCAM, 2004). The goal of these grants is to increase the quality and quantity of research education at institutions that train naturopaths, chiropractors, and traditional Chinese medicine practitioners. A stipulation of these grants is that the CAM institutions must partner with research-intensive institutions to develop and implement their educational programs.

The National Center for Complementary and Alternative Medicine (NCCAM), one of the 27 institutes of the National Institute of Health (NIH), was created in 1999 to conduct and support research, disseminate health information, investigate, and validate complementary and alternative modalities (Engel et al., 2005). The purpose of NCCAM, as defined by Congress, is “the conduct and support of basic and applied research, research training, and other programs with respect to identifying, investigating, and

validating complementary and alternative treatment, diagnostic and prevention modalities, disciplines and systems." (Nahin & Harlan, 1999, p. 7). NCCAM grew out of the Office of Alternative Medicine (OAM), which was founded in 1992 with a budget of \$2 million dollars. The OAM budget grew to \$20 million by 1998, and jumped to \$48.9 million with the inception of NCCAM. In fiscal year 2013, appropriations for NCCAM were \$123.8 million ("NCCAM Funding: Appropriations history," 2010). In December, 2014, NCCAM was renamed the National Center for Complementary and Integrative Health (NCCIH) in an effort to emphasize the integrative approaches to health, encompassing conventional and complementary therapies ("NIH complementary and integrative health agency gets new name," 2014). The mission remains unchanged and the newly named agency will continue to operate under the guidance of NCCAM's 2011-2015 Strategic Plan.

One of the initiatives approved in the first meeting of NCCAM was the creation of a CAM Education Project Grant (R25). The purpose of the CAM Education Project Grant (R25) was to support medical, dental, and nursing schools as they incorporate CAM into their curriculum and continuing medical education (CME) offerings. The initial grants were to provide up to five years of renewable support, with an average annual award of \$200,000. The goal was to help traditional medical providers understand CAM therapies, not to train them as CAM practitioners (Nahin & Harlan, 1999).

Between 2002 and 2008, 14 U.S. medical and nursing schools and one medical school foundation received awards through this R25 mechanism, totaling approximately \$22.5 million (Pearson & Chesney, 2007). Ten main themes emerged in the stated

rationales of these initiatives: response to the growth of CAM use in the United States; response to US governmental, legislative, and other mandates; need for enhanced patient-provider communication about CAM; need to enhance safety of CAM uses, including reducing risks of negative interactions with conventional or other CAM treatments; CAM education's positive impact on enhancing cultural competencies for conventional health care professionals; CAM education's positive impact on enhancing cultural competency and patient-centered care; need for better communication between CAM and conventional providers; need to improve health care coordination through creating knowledgeable and culturally competent providers; CAM education's potential impact on increasing CAM research quality and capacity; and potential for enhancing quality of care through informed CAM use and integration with conventional care (Gaylord & Mann, 2007).

A survey of the 15 principle investigators of the grantee institutions explored specific barriers to implementation of the CAM educational initiatives and strategies to overcome them (Sierpina, Schneeweiss, Frenkle, Bulik, & Maypole, 2007). Common barriers among the fifteen projects were cited as: difficulty finding room for additional information in a full curriculum; difficulty disseminating information about the program; lack of familiarity among the faculty regarding CAM topics; unfamiliarity of CAM faculty with the academic setting; absence of organized information; and sustainability (Sierpina et al., 2007). Strategies to address the barriers included integration of the content into existing curriculum and increasing visibility through brown bag seminars, publications, and grand rounds. Faculty development included experiential activities and

evidence-based discussions about CAM therapies. Information regarding CAM was prepared in PowerPoint presentations and web based cases and made accessible to participants. Finally, development of human resources, commitment of leadership, participation by organizational members, and ongoing educational evaluation were identified as leading to sustainability following cessation of funding (Sierpina et al., 2007).

Those involved in the CAM Education Project Grant (R25) ventures recognized that successful integration of CAM into medical curricula required attention to both personnel and process issues (Lee et al., 2007). Strategies included focusing attention on the prestige of the grant and creating a sense of urgency through identification of integrative efforts at competing institutions. Faculty opinion leaders were targeted and placed on CAM curriculum committees, which helped to influence other faculty. CAM content was incorporated into the curricula by targeting specific courses that had a natural fit and through the introduction of elective courses. Electives offered a non-threatening way to insert this content into the curriculum. Interested students could self-select into the course and the institution could assess interest before inserting CAM content into the core curriculum. The original CAM Education Project (R25) grants were focused on providing allopathic practitioners information regarding CAM services, but did not address deficiencies in the training of CAM practitioners, especially in the area of evidence-based medicine (EBM). The training of CAM faculty, students, and practitioners was addressed in a second set of grants, the CAM Practitioner Research Education Project Grant Partnership (R25).

### **Advantages of Interorganizational Collaboration and Factors Leading to Success**

A review of the literature on interorganizational business relationships identifies the following benefits to collaboration: economies of scale; access to a particular resource; risk and cost sharing; access to a foreign market; product development; learning; speed to market; flexibility; collective lobbying; and neutralizing competitors (Barringer & Harrison, 2000). By partnering with others, organizations have the potential of accomplishing more and creating greater change than they can through their individual efforts and with their own limited resources.

The benefits derived from successful partnerships in higher education go far beyond the cost savings, improved efficiency, and added value (Eddy, 2010; Kezar & Lester, 2009). Subtle changes, such as expanded learning opportunities for students and faculty, increased knowledge, and increased organizational vitality are harder to measure, but are attributed to successful partnerships. In Northern New York, four small institutions formed the Associated Colleges of St. Lawrence Valley (ACSLV) as a way to pool resources to deliver programs to faculty, staff, and students that none of the institutions could provide on its own. One of the ACSLV's projects involved training by the American Council on Education (Aud et al., 2011) for faculty in administrative positions. Eighty faculty members from the four campuses attended a two-day training session, focused on the roles and responsibilities of department chairs, shaping mission and leading change, creating cultures of quality in academic departments, and conflict management. Though the metrics for success varied by institution and participant, the

end result was one of increased faculty effectiveness, expanded networking opportunities, and improved use of educational resources (Larrance, 2002).

Faculty commitment is vital in establishing long term sustainability of collaborations and ultimately, cultural change. In a case study of the Associated Colleges of the South (ACS), Anderson and Bonefas (2002) found that successful collaborations were those that were created from faculty ideas and that had strong faculty leadership, especially with regard to technology. The ACS is a consortium of 16 liberal arts colleges and universities, originally established to provide faculty opportunities to learn from each other. Interest quickly turned to technology, with faculty expressing a desire to learn more sophisticated methods of using technology in their teaching and research (Anderson & Bonefas, 2002). A study of faculty-community partnerships of seven faculty members, found enthusiasm and commitment on the part of team members as a necessary component of project longevity (Buys & Bursnall, 2007). Commitment can be sustained through clear definition of participant roles and regular communication, either electronically or in person.

Kezar and Eckel (2002a) used an ethnographic approach and a two-tiered framework to study change at six institutions: one research university; three doctoral-granting universities; a liberal arts college; and a community college. Data were collected from participating institutions over a four-year period and was analyzed through two conceptual frameworks of culture: Berquist's (1992) institutional archetypes; and Tierney's (1988) individual institutional culture. Berquist's (1992) institutional archetypes of culture describe four academic cultural archetypes: collegial; managerial;

developmental; and negotiating. The collegial culture values scholarly engagement, shared governance and decision making. The managerial culture focuses on the goals of the institution and values efficiency and fiscal responsibility. The developmental culture is based on the personal and professional growth of all members of the institution and the negotiating culture values equitable policies and procedures, mediation, and power.

Tierney's (1988) framework of individual institutional culture examines six categories: environment; mission; socialization; information; strategy; and leadership in order to understand an institution's culture. The study concluded that institutional culture impacts the way that change is enacted and that one approach to institutional change does not work for all. Change strategies must be molded to fit the individual institutions as they are not likely to succeed if they violate campus customs.

“These results have several implications for campus change agents. First, they need to attempt to become cultural outsiders, or as Heifetz (1994) suggests, they need to “get on the balcony” to see the patterns on the dance floor below.

Reading institutional culture in order to develop and match strategies for change are fundamental to an effective change process” (Kezar & Eckel, 2002a, p. 457).

The importance of interpersonal factors must be considered in any discussion of collaborative efforts. Using a qualitative design based on in-depth interviews with seven faculty members from three different colleges within an Australian university, Buys and Bursnall (2007) investigated the impact of community partnerships on university teaching and learning along with the key processes that facilitate and maintain the partnerships. They used Sargent and Waters' (2004) framework for academic collaborations as the lens

through which they viewed the partnerships. This framework suggests that collaborations move through the following phases: initiation; clarification; implementation; and completion (Sargent & Waters, 2004). The initiation phase centers on the motivation behind the collaboration, the participants define the scope of the project in the clarification phase, assign roles in the implementation phase, and rate the success in regard to achieving project outcomes in the completion phase. This framework also considers interpersonal factors, such as communication and respect, as well as contextual processes, such as institutional support, as important components to consider. Buys and Bursnall (2007) found that Sargent and Water's (2004) framework was helpful in describing the process of the relationships that they studied, though they suggested that it was too linear for the iterative nature of university-community partnerships. They identified interpersonal factors, such as open communication and transparency, and trust, as essential components of successful university-community partnerships.

“Trust, another vital ingredient in the university–community collaboration, is fostered through open communication, respect, delivering high-quality outcomes and spending time nurturing the relationship through social engagements.

Empathy and understanding of the community partners' frames of reference is important for fostering good relations and breaking down the barriers arising from different institutional contexts. Trust is also reinforced by the delivery of high-quality work, delivered in a timely and professional manner” (Buys & Bursnall, 2007, p. 82).

Kanter (1994) also highlights the importance of relationships as a factor for successful business collaborations. In a qualitative study of 37 companies and their international partners, Kanter (1994) conducted over 500 interviews with staff and leaders involved with intercompany, cross cultural, international relationships. The author concluded that three fundamental elements were present in successful relationships. First, the partnerships must be viewed as more than the specific business deal for which they were created. While they must yield benefits for all parties, they are most successful when they are recognized as living systems that evolve and progress over time. Second, partnerships must involve collaboration, instead of mere exchange, in order to be deemed as successful by those involved. Third, successful relationships cannot be controlled only by formal systems but must have a web of dense interpersonal connections that enhance partners learning.

Kanter (1994) also found that the most productive relationships were integrated on five levels: strategic; tactical; operational; interpersonal; and cultural. Strategic integration occurs through frequent interaction and strategic planning of top-level executives. Tactical integration brings middle managers together to develop plans for specific projects and to identify organizational changes that will better link the partners. Operational integration allows for employees who carry out the day-to-day work to have timely access to the information, resources, and people that they need to accomplish their tasks. Interpersonal integration involves creating relationships between members of the partner organizations through the creation of operating committees or joint conferences.

Finally, cultural integration requires that participants have the communication skills and cultural awareness necessary to bridge differences.

In their synthesis of early k-12 educational partnerships, Grobe et al. (1993) identified the importance of the commitment of top level leadership as one of the components of a successful partnership. Kotter and Cohen (2002) reached similar conclusions in their qualitative study involving interviews of over 400 people from 130 organizations. They noted the significant role that institutional leaders can play by creating a sense of urgency around a project in order to create buy-in. They identify trust as a key ingredient in team building for creating vision and group strategies. They note: “Teamwork, and the underlying feelings of trust and emotional commitment to others, can be undercut by many factors. Individuals who aren’t team players or who aren’t trustworthy can destroy a group” (p. 54).

In their monograph reviewing best practices in collaborations and partnerships in higher education, Eddy (2010) identified administrative support as critical to the procurement of organizational capital. Though the initial champions of a partnership can come from any level of an organization, buy-in from organizational leaders is necessary for access to resources such as space, technology, money, and personnel.

Another key component of successful partnerships is a foundation of shared needs and values. Partners need clearly defined, and agreed upon, roles and responsibilities. Partners should work together to formulate a mission statement, articulate goals and outcomes, develop an implementation plan, and implement an evaluation process (Grobe et al., 1993). Successful partnerships create a system of shared decision making to give

participants a sense of ownership, which leads to commitment to the project. Grobe et al. (1993) pointed out that shared recognition and credit is an important incentive for participants. In their description of university-community partnerships at the University of Michigan, Brown et al. (2006) suggested eight principles for partnership creation:

1. Partners have an agreed upon mission, values, goals, and measurable outcomes for the partnership.
2. The partnership is based upon mutual trust, respect, genuineness, and commitment.
3. The partnership builds upon identified strengths and assets and addresses needs.
4. Power is balanced among partners, and resources are shared.
5. There is clear, open, accessible communication among partners.
6. There is feedback to, among, and from all stakeholders in the partnership.
7. Partners share credit for accomplishments.
8. Partnerships take time to develop (p. 15)

These principles were modified from partnership approaches developed by Community-Campus Partnerships for Health, a nonprofit organization focused on promoting physical, mental, environmental, and spiritual health through partnerships between communities and academic institutions ("Community-campus partnerships for health: Transforming communities & higher education," 2012). The continued success of collaborative efforts, beyond the cessation of funding or a shift in mandates, ultimately hinges on the creation of lasting relationships, trust, and shared goals.

In an extension of the literature, Butcher, Michael, and Moran (2011), distinguished between transactional and transformational partnerships in a case study of a relationship between a K-12 school and an Australian university. Transformational leadership is exhibited by those who are able to align the objectives and goals of individuals with a larger organization. Transformational leaders inspire followers to develop and grow to achieve more than they thought possible. Transactional leadership, by contrast, is described as a social exchange of rewards for productivity (Bass & Riggio, 2006). Butcher et al. (2011) extrapolated this concept to interorganizational relationships. In transactional relationships, partners are driven by the pursuit of individual goals. Each party has something to contribute and something to gain, resulting in an exchange of information. Transactional relationships do not typically leave either party changed, nor do they promote organizational growth (Butcher et al., 2011). Conversely, transformational partnerships occur when the organizations join together with a common purpose and the goal of creating growth and change through joint effort and shared resources (Butcher et al., 2011).

The authors identified five core principles to creating a transformational and sustained collaboration: working out of a shared purpose; having collaborative leadership; relating on a basis of trust; ensuring appropriate and adequate resources; and remaining open to learning and change (Butcher et al., 2011). At all levels of the collaboration, and from individual projects to the partnership as a whole, participants must have a mutual understanding and commitment to a shared purpose. Collaborative leadership means that partners have the ability to exert influence in their own

organization as well as in the partner organization. Trust is a key element of transformational partnerships and is developed through formal and informal interactions among the participants. Open and candid communications over time are the components necessary to build a trusting relationship. Partners must commit to providing organizational support to collaborative activities, as no partnership can effect sustainable change without adequate financial and human resources. Finally, all participants involved with the collaborative activities must be open to and willing to learn and change as new knowledge is obtained.

“Collaborative leadership is built upon genuine trust among those involved. Strong relationships and the development of trust are priorities in an engaged, transformational partnership. Honesty, reciprocity, and mutual respect are the building blocks that are created through the involvement of people across the partnership and its projects” (Butcher et al., 2011, p. 39).

### **Challenges to Collaboration and Factors Contributing to Failure**

In their review of the literature on interorganizational relationships, Barringer and Harrison (2000) concluded that disadvantages to interorganizational relationships in industry include: loss of proprietary information; management complexities; financial and organizational risks; dependency; loss of autonomy; "culture" clash; loss of organizational flexibility; and antitrust implications (Barringer & Harrison, 2000). This same list could likely apply to partnerships in higher education, as well.

Despite the forces driving the formation of partnerships and the many acknowledged advantages, it is reported that over half of collaborations fail (Barringer &

Harrison, 2000). A study of over 700 corporate alliances between 1988 and 1992 revealed a failure rate of 40% (Harbinson & Pekar, 1998). The initial context for formation sets the stage for success or failure (Eddy, 2010). Though the involved parties may gain from the expertise and resources of each other, barriers result from trying to work across organizational environments that may be quite dissimilar. Additionally, partner organizations may have at one time considered each other rivals.

Doz (1996) investigated the factors that fostered or blocked interpartner learning in business alliances and how that learning affected the partnerships. Using a case-study approach to evaluate three product-development alliances, Doz interviewed three levels of participants: front-line workers involved in day-to-day operations; senior executives involved in partnership creation; and senior managers. The model considered how the initial conditions (task definition, partners' routines, interface design, and expectations) facilitate or hinder learning along the dimensions of environment, task, process, skill, and goal (Doz, 1996). Doz identified factors leading to partnership failure, including separate, as opposed to joint, learning by partners. Failure to learn and adapt leads to decreased expectations which, if combined with heightened suspicions regarding partner motivations, leads to decreased commitment and ultimate failure. Successful partnerships are able to engage in an iterative process of evaluation and learning in order to build trust and flexibility as well as increasing levels of commitment to the partnership.

In an industry report on business alliances, Harbinson and Pekar (1998) identified seven commonsense traps to avoid in the formation of partnerships: focus on the percentage of shares owned by each partner; lack of trust; lack of clear and open

communication; wrong personnel; failure to take the time to select the right partner; failure to explicitly agree on objectives and goals; and imposition of the culture of one partner on the other. They note that “some alliances fail because of a lack of trust and overly rigorous documents that degenerate into discussions among lawyers and corporate staff, resulting in stagnation and often the alliance’s eventual demise” (Harbinson & Pekar, 1998, p. 7) and assert that “one must never forget that trust and understanding are the defining features of an alliance” (p. 8).

Huxham (1996) identified the following areas as sources of conflict within a collaboration: differences in aims, language, culture, and perceived power; lack of authority structure; and lack of time to manage logistics. After partnerships are formed by top executives, it is typically left to others in the organization to manage the details of the projects.

Barriers to implementation can sabotage widespread buy-in by members of the partnership organizations. Through more than 500 interviews of leaders and staff of 37 business partnerships, Kanter (1994) identified four main barriers to success. One potential barrier may be that the individuals working on the project are not likely to know each other. As employees may not have met others from the partner organization, they may not share the same attraction or commitment to the endeavor. A lack of vision or understanding by employees of the strategic context of the partnership is another potential barrier. Lack of time to dedicate to the project might present another barrier. As employees are typically working on multiple projects, they may give preference to those of their company over the partnership. While the above mentioned barriers might

lead to unintentional undermining of a project's success, employees may also actively undermine the relationship if they oppose the partnership (Kanter, 1994).

Partnerships in higher education come with another set of unique challenges to navigate. Universities and colleges are structured with inherent barriers to collaboration, even within their own walls, with departmental silos and bureaucratic administrative structures (Kezar, 2005). Factors such as competing institutional initiatives, mistrust of the process and lack of buy in from key constituents can have a negative impact on the success of the project. In order for partnerships to flourish and last, organizational forces must be considered and addressed. "Unlike corporations where collaboration can be mandated from the hierarchy, creating a collaborative context within higher education mirrors the process of inter-organizational collaboration where the parties need to be convinced of the importance of commitment." (Kezar, 2005, p. 846).

Used judiciously, trust can lead to decreased transaction costs and increased efficiency though excessive reliance on trust can lead to organizational dysfunction (McEvily, Perrone, & Zaheer, 2003). For instance, an over reliance on trusted individuals can lead to exclusionary networks, groupthink, and a decreased exposure to new ideas. Delayed reciprocity, or an assumption that inequities will equal out over time, can also work against an organization when the outstanding obligations limit the ability of one partner to leave a relationship that has ceased to create value. Role specialization and limited role redundancy, while decreasing cost and improving efficiency, come with the risk of lost information or external relationships if trusted individuals leave the organization. Free sharing of knowledge allows for organizational actors to trust the

information given to them by others. The risk to the organization is in accepting unreliable, inaccurate information from well-intentioned sources. Finally, the danger in over commitment and identification is organizational rigidity and limited thinking (McEvily et al., 2003).

### **Theoretical Frameworks**

**Frameworks based on organizational theories.** Considering existing organizational theories, Wood and Gray (1991) proposed six theoretical perspectives pertinent in examining collaborations: resource dependence; corporate social performance/institutional economics; strategic management/social ecology; microeconomics; institutional/negotiated order; and political. They noted a limitation of the existing theory as restricting focus on the individual organization and suggested that frameworks used for evaluation of collaborative efforts need to shift the viewpoint to include the organizational or problem domain. To do so requires a modification of the nature of the research questions (see Table 5).

In their synthesis of nine research articles and two overview articles on collaborations in industry and government, Wood and Gray (1991) noted four overarching issues for collaborations: the need for a common definition of collaboration; clarification of the auspices under which collaboration is created and the role of the convener; the implications of the collaboration for participants' control over the environment; and the relationship between the individual self-interests and the collective interest of the partnership.

Table 5

*Research Questions at the Organizational and Domain Levels*

Theoretical Perspective	Organization-Level Questions	Domain-Level Questions
Resource dependence	How can an environmental uncertainty be reduced without increasing dependence?	When do stakeholders adopt collaborative alliances?
Corporate social performance/institutional economics	How does a firm control and respond to its stakeholder network? What is the firm's role in solving social problems and issues?	What is the role of business as a social institution? How are responsibilities for solving social problems allocated among actors?
Strategic management/social ecology	How can firms reduce threats and capitalize on opportunities within their environment?	How do partners in an alliance regulate their behaviors so that collective gains are achieved?
Microeconomics	How can an organization achieve efficiency in its transactions with other organizations?	How can collectivities overcome impediments to efficiency in their transactions?
Institutional/negotiated order	Why do organizations adopt certain structural configurations? How do organizations achieve legitimacy with institutional actors?	How do alliances interact with institutional environments? Are alliances shaped by institutional environments or vice versa?
Political	Who has access to power and resources that affect the organization? Who does and does not benefit from the distribution of power and resources that affect the organization?	Who has access to power and resources that affect the domain? Who does and does not benefit from the distribution of power and resources within the domain?

Source: Wood and Gray (1991). *Toward a comprehensive theory of collaboration*. p. 41

Barringer and Harrison (2000) reviewed six theoretical frameworks that explain interorganizational relationship formation: transaction costs economics; resource dependence; strategic choice; stakeholder theory; learning theory; and institutional

theory. Transaction costs economics (TCE) focuses on the value of interorganizational relationships as a way to reduce production and transaction costs.

In addition to providing access to the resources of the partnering organization, the collaborative relationship minimizes the risk of competitive behavior between the organizations (Barringer & Harrison, 2000). This framework is limited as it restricts its view to economics, omitting interpersonal factors behind relationship formation and, therefore, does not fit well with this research on trust in inter-institutional collaborations.

Resource dependence theory (Pfeffer & Salancik, 1978) views organizations as open systems that must interact with the external environment in order to obtain resources. Organizations will enter interorganizational relationships to exert power over organizations with scarce resources or to obtain additional resources (Barringer & Harrison, 2000). Large companies might partner with smaller organizations to gain access to their cutting edge research, offering financial resources in the relationship exchange. A limitation of this theory is that it does not consider reasons for partnering beyond resource exchange.

Strategic choice theory (Child, 1972) views interorganizational relationships as a way to increase market power. Organizations will enter into a relationship with a competitor if the financial benefits outweigh the costs. An example of strategic choice theory would be when a group of small competing companies partner to produce a product in order to beat to market a larger, more resourced competitor. The main limitation of this theory is that its broad nature makes it difficult to study in a meaningful

way and not especially congruent with the CAM Education Research Grant Partnerships (R25) (Barringer & Harrison, 2000).

Stakeholder theory (Donaldson & Preston, 1995) views interorganizational relationships as a way for organizations to align themselves with the interests of their stakeholders. Stakeholders include any individuals who are affected by or can affect the organization. Stakeholder relationships may be formal, through written agreements, or informal, based on expectations. These relationships are useful to organizations as they help guide the direction of organizations, however, the relationships can be somewhat mercurial which puts them in a constant state of jeopardy. Additionally, all stakeholders are not all equal, and stakeholder theory requires organizations to determine which stakeholders matter most. Limitations of this theory are that it is not widely tested and it is difficult to use in a large organization with thousands of stakeholders (Barringer & Harrison, 2000). Despite the limitations, this theory might provide an interesting perspective on the CAM Education Research Grant Partnerships (R25) considering the numerous stakeholders at small private and large public institutions and the historical philosophical differences between CAM and conventional health care providers.

Organizational learning theory (March, 1991) views partnerships as a way for organizations to gain new knowledge. Organizations partner in order to acquire a technical skill, or knowledge of a procedure, in order to gain competitive advantage in the marketplace. This theory is limited in its lack of attention to the costs associated with the potentially expensive activities associated with skill development and knowledge transfer

but also fits some of the goals articulated for the CAM Education Research Grant Partnerships (R25) (Barringer & Harrison, 2000).

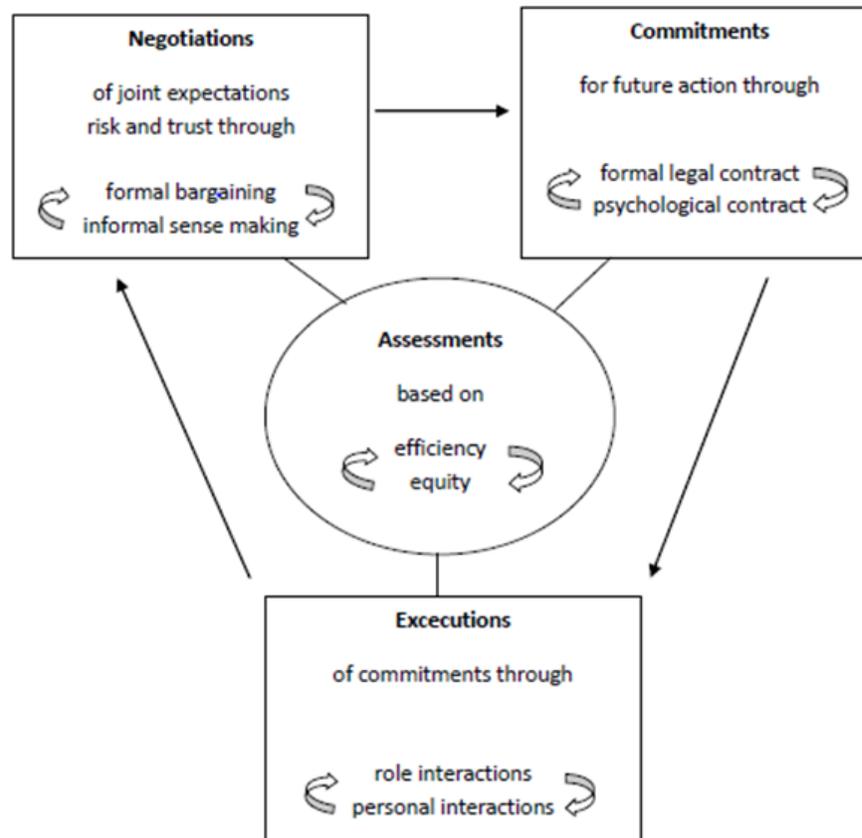
Institutional theory (DiMaggio & Powell, 1983) posits that institutional environments pressure organizations to conform to social norms and that interorganizational relationships are a way to obtain legitimacy. A small organization can increase its reputation and visibility through a partnership with a larger, more established company. It suggests that organizations need to conform with industry norms in order to survive. Companies may choose to partner because others in the industry are doing so. This theory is limited in usefulness due to its overemphasis on behavior. Additionally, it ignores competitive advantage by suggesting that organizations conform with, and imitate, each other (Barringer & Harrison, 2000). This theory fits for the CAM Education Research Grant Partnerships (R25) given the historical struggle by chiropractic and other CAM professions to gain cultural authority and legitimacy, as well as the potential opportunities afforded to CAM providers in the changing health care environment.

**Frameworks based on social theories.** Barringer and Harrison (2000) suggest that each framework is lacking in its ability to completely describe the formation of interorganizational relationships and that a blend of the frameworks would allow for more full understanding. Additionally, viewing relationships through a simple cost/benefit formula is insufficient and ignores the importance of the impact on relationships, both positive and negative (Barringer & Harrison, 2000).

Another theoretical framework, especially appropriate for higher education, views collaboration in evolutionary stages, with members moving from an individual perspective to group and ultimately toward a collaborative orientation (Amey et al., 2007). Leadership shifts from directive, to facilitative, to inclusive and servant-oriented. The development of common language and a shared understanding among participants, along with expectations, goals, and assessment measures, helps to make the partnership a part of the institutional culture. Ongoing feedback is important as the partnership evolves, as is the way in which the champion and organizational leaders frame the partnership. In this model, the champion is defined as someone who believes in the goals of the partnership, and needs support of the positional leader, but does not have to possess a formal position of power within the organization. Instead, this person contributes personal, cultural, and social capital to the partnership.

Recognizing a lack of research surrounding the unfolding of interorganizational relationships, Ring and Van de Ven (1994) developed a framework to explain how these relationships start, grow, and disband over time. They view interorganizational relationships as “socially contrived mechanisms for collective action, which are continually shaped and restructured by actions and symbolic interpretations of the parties involved” (Ring & Van de Ven, 1994, p. 96). Their framework, outlined in Figure 1, describes the evolution of alliances in stages of negotiation, commitment, and execution. The stages occur in sequences that may be concurrent or repetitive, and are all assessed with regard to equity and efficiency. The negotiations stage involves the establishment of joint expectations and formal bargaining regarding the partnership. Agreement on the

rules and obligations of the participants is reached in the commitments stage. In the executions stage, the participants implement the agreed-upon tasks and perform the established roles. This cycle is iterative in nature and as the relationship unfolds, roles may need to be renegotiated in order to maintain the relationship.



*Figure 1.* Process framework of the development of interorganizational relationships  
Source: Ring, P. S., & Van De Ven, A. H. (1994). Developmental processes of interorganizational relationships. p. 97.

Through investigation of the impact of initial conditions and evolutionary learning on the outcome of business alliances, Doz (1996) developed a process-oriented framework for describing the evolution of these relationships. The initial conditions are described as the tasks to be performed, the design for interface between the partners, and

the expectations about the performance of the partners and the alliance (Doz, 1996). This framework describes a cyclical process of learning, reevaluation, and readjustment.

Partners learn from each other and use that knowledge to evaluate each other for adaptability and equity, while also monitoring the efficiency of the relationship. The quality of the relationship impacts each partner's willingness to commit to the continued process.

Using a longitudinal case study of a failed international joint business venture, Arino and de la Torre (1998) constructed a theoretical framework for collaborations. Drawing on Ring and Van de Ven (1994) and Doz (1996), Arino and de la Torre's (1998) collaborative process model uses positive feedback loops to evaluate partner relationships. This model asserts that partners will assess the relationship and modify their behavior unilaterally or attempt to renegotiate the terms of the contract in an attempt to restore balance. This repositioning continues in an evolutionary process until the relationship is restored or the partnership fails. They concluded that positive feedback loops are critical, as are procedural issues for creating positive reinforcement and developing mutual trust in the partnership. Patterns of interaction between partners affect the goals (Doz, 1996; Kumar & Nti, 1998; Larsson, Bengtsson, Henriksson, & Sparks, 1998; Ring & Van de Ven, 1994). Understanding how partners assess the relationship for equity and efficiency and how that impacts partner response is critical in developing predictive insights into the collaborative process (Arino & de la Torre, 1998). Arino and de la Torre (1998) concluded that relational quality is both an input to the creation of partnerships and an output of the interactions between partners.

Kezar (2005) used a mixed-methods approach, consisting of interviews and document review, to study intra-institutional collaborations at four public comprehensive institutions and to create a model based on a collective understanding of events. The resultant model consists of three stages: building commitment; commitment; and sustaining (Kezar, 2005). Kezar (2005) compares the building commitment phase to Kanter's (1994) courtship phase. During this phase, the institution must convince members of the campus of the importance of collaboration. The development of a campus network was important for communication of ideas and remained crucial throughout the other two phases. "Relationships were much more important in the higher education setting than learning or formal assessments to the development of a context for collaboration. Learning was important to create commitment, but was virtually nonexistent after the initial phase. The key element to the development of the context was relationship development and the creation of campus networks" (Kezar, 2005, p. 846). The commitment phase is compared to Ring and Van de Ven's (1994) commitment phase. Campus administrators show support and re-examine the mission of the campus during this phase. Additionally, leadership emerges from within the network during the commitment phase. The third phase, sustaining, is compared to Ring and Van de Ven (1994) execution stage, or Kanter's (1994) taking the vows stage, but is more deeply-rooted than in those models. The sustaining stage include the creation of networks, and structures, as well as the creation of rewards (Kezar, 2005).

A new partnership requires institutional change if the relationship is to succeed, so the literature on organizational change is relevant to a discussion of theoretical bases

for examining partnerships (Greenwood & Hinings, 1996). In their review of the literature on institutional theory and change, Greenwood and Hinings (1996), proposed a theory of organizational change outlining three themes. The first theme identifies the degree of normative embeddedness of an institution within its own context as a major source of resistance to organizational change. In other words, organizational behavior is influenced by institutional expectations and pressures, in addition to market pressures. The second theme recognizes that the degree of organizational change and the rate at which it occurs varies across institutional sectors and is influenced by whether individual sectors are isolated from, or linked with, other sectors. The third theme notes that within institutional sectors, change is impacted by the internal dynamics of the organization.

Bolman and Deal (2003) identified four lenses through which change can be viewed: human resource; structural; political; and symbolic. From a human resource perspective, they note that barriers to change include anxiety and uncertainty, and suggest skill training, participation and involvement, as well as psychological support as strategies to address change. Barriers to change, from the structural viewpoint, revolve around loss of clarity, confusion, and chaos. Strategies to address these barriers include clear communication and renegotiating formal patterns and policies. From the political frame, disempowerment and conflict between winners and losers constitute the barriers to change. Essential strategies to address these barriers include creating opportunities for the formulation of new coalitions. Finally, a sense of loss of meaning and purpose represent the barriers to change from a symbolic perspective. This can be addressed through the creation of rituals to mourn the past and celebrate the future.

Lindquist (1978) identified the following as key components of change in organizations: interpersonal and informational linkage through bringing people together; an openness to actively searching out the opinions of others; initiating and guiding leadership; ownership of participants in the change process; and material and social rewards.

Kezar and Eckel (2002b) developed a framework for transformational change in higher education through case studies of six higher education institutions: one research university; three doctoral granting universities; a liberal arts college; and a community college. Using teleological models as the main conceptual lens, Kezar and Eckel (2002b) studied seven strategies for change: a willing president or strong administrative leadership; a collaborative process; persuasive and effective communication; a motivating vision and mission; long-term orientation; providing rewards; and developing support structures. Of these, they found three to represent core strategies at all of the institutions that made substantial progress towards change: senior administrative support; collaborative leadership; and robust design. They also identified staff development and visible action as additional core strategies. Core strategies were those that allowed members of the campus community to make sense of the institutional changes and provided opportunities for them to consider their roles in new ways. The authors found that change strategies are not likely to succeed if they violate campus cultural norms and that the institutions most successful in advancing change were those that created processes for stakeholders to engage in sense making. Finally, they noted that the five strategies are linked simultaneously, rather than sequentially (Kezar & Eckel, 2002b).

In another study using the same six higher education institutions, Kezar and Eckel (2002a) used an ethnographic approach to study change, using two conceptual frameworks of culture. The authors found that change strategies are not likely to succeed if they violate campus cultural norms. The study also concluded that institutional culture impacts the way that change is enacted and that one approach does not work for all. Those working to enact change must understand the culture of the institution in order to align efforts with the campus.

Eddy (2010) described the impact of trust on the cementing of relationships between collaborators as follows:

“It is in the intersecting overlay of the individual partners that partnership capital forms. When individual partners move past individual interests to common goals and mission, partnership capital forms. It is the strength of social networks that fosters the development of social capital among partners in these collaborations. Through the formation of partnership capital, a capacity is created that could not be obtained alone or by the mere sharing of resources. Over time, shared norms are created among partners that form as a result of negotiation, time together to build trust, and shared knowledge and meaning for ideas and visions regarding the joint venture. In the process of institutionalizing the partnership, it moves beyond the individual partners and organizations and becomes a different construct, namely partnership capital” (p. 49).

Considering trust as an organizing principle, or a way in which organizations address the challenge of balancing interdependence among individuals with behavioral uncertainty in order to attain goals, McEvily et al. (2003) created a framework connecting the psychological and sociological foundations of trust with the principles of organizational change. They explore trust as an expectation or intention in order to explain the influence of trust on organizing. The authors described two pathways through which trust influences organizations: structuring and mobilizing in the context of partnerships (see Table 6).

Table 6

*Influence of Trust on Organizing*

Causal Pathways	Organizing Principles
Structuring	Patterns
Transferability	Density
Generative Capacity	Multiplexity
Delayed Reciprocity	Stability
Role Specialization	Nonredundancy
Mobilizing	Processes
Disclosing and Screening	Knowledge Sharing
Identifying	Committing
Suspending Judgment	Safeguarding

Source: McEvily et al. (2003). Trust as an organizing principle. p. 94.

From the structuring perspective, trust affects the position of individuals within an organization, shaping the structure of the network. The authors defined transferability and density, generative capacity and multiplexity, delayed reciprocity and stability, and role specialization and nonredundancy as pathways through which trust will impact the structure of an organization. Transferability refers to the phenomenon of extending trust

to an unknown person based on trust of a third party (person or organization) known to both. This trust-by-proxy approach increases the density of ties, expanding the individual or organizational network. Another way that trust influences the structure of an organization is through generative capacity. Generative capacity refers to the number of connections within the same link and, differing from transferability, it increases the thickness of individual ties. Individuals, or organizations, are able to transfer the trust gained in one interaction to a new endeavor, increasing generative capacity. The thickness of the tie necessary to extend trust to the new project depends upon the degree of difference in the dimensions of the projects.

Delayed reciprocity is another way that trust impacts the structure of developing organizations. As the degree of trust increases, the need for perfection in each transaction decreases. Trust provides stability in the relationship and allows for delayed reciprocity in that partners assume that balance will result over the span of the relationship (serial equity). Finally, by trusting others to perform their jobs, trust allows for the creation of differentiated roles and specialization. As the specialist often acts as a bridge between units or organizations, they must be trusted to convey accurate and timely information to all parties. From the structural perspective, this role specialization results in nonredundancy which increases the efficiency of the organization (McEvily et al., 2003).

Mobilizing refers to the process of completing the activities of the organization and, from this perspective, trust facilitates cooperation and motivates individuals to contribute toward the collective venture. McEvily et al. (2003) ascribed the following

benefits of trust on mobilization: disclosing, screening, and knowledge sharing; identifying and committing; and suspending judgment and safeguarding.

Disclosing, screening, and knowledge sharing refer to the willingness of organizational actors to share information and disclose potential weaknesses or faults. Trusting parties are more likely to share problems or weaknesses, trusting that the information will not be used against them. Likewise, those on the receiving end of the exchange are more likely to accept the information as accurate without feeling the need to verify. Trust also influences the mobilization of organizations through identifying and committing. As actors trust each other, they begin to identify with them and perceive their priorities and needs as similar to their own. This increased identification leads to increased cooperation and commitment to the collective endeavor. Finally, increased trust results in an increased tendency of participants to suspend judgment of each other, giving the benefit of the doubt and assuming that others have good motives. The decreased need for oversight and safeguarding allowed by trust reduces transaction costs and increases the amount of organizational flexibility. These factors allow organizations to exploit opportunities, increasing transaction value, which may provide competitive advantage (McEvily et al., 2003). The framework described by McEvily et al. (2003) will be used in this research to explore the impact of trust on the success of collaborations formed through the CAM Practitioner Research Education Project (R25) grants.

## **Chapter 3**

### **Methodology**

The purpose of this research study is to examine the role of trust on the formation and perceived success of collaborations between institutions with very high research activity and private health care institutions whose programs focus on complementary and alternative medicine.

This chapter describes the research design used for collection and analysis of data to understand how interorganizational, organizational, and interpersonal trust impacts the formation of collaborations, and the perceived success of such collaborations. This section describes the methodology used for the study and includes a description of the background, study design, research participants, instruments and variables, data collection procedures and data analysis.

#### **Background**

During the initial meeting in 1999 for the National Center for Complementary and Alternative Medicine, a proposal for a CAM Education Project Grant (R25) was introduced and unanimously approved by the members of the advisory council. The grant was designed to support medical, dental, and nursing schools as they incorporate content on complementary and alternative therapies into their core curricula and continuing education offerings. The goal was to provide allopathic practitioners with a greater understanding of CAM practices as an increasing number of patients are requesting and utilizing CAM therapies ("Minutes of the first meeting - August 31-September 1, 1999 - National advisory council for complementary and alternative

medicine (NACCAM)," 1999). Institutions could be awarded an average of \$200,000 of annual support, renewable up to five years. One requirement of the grant was that both partner institutions must have a CAM practitioner on its faculty.

From 2000 to 2003, 15 projects were funded, five per fiscal year (Pearson & Chesney, 2007). Awards of \$300,000 per year were granted to 12 medical schools, two schools of nursing, and the American Medical Student Association. Fourteen projects received funding for five years and one, for three years. Table 7 provides details for each of the 15 projects.

A proposal for a second iteration of the R25 Research Education Grants was introduced, and unanimously approved, at the September, 2003 NCCAM meeting. Whereas the first set of CAM Education Project Grants (R25) was aimed at the training of medical, dental, and nursing students, the second set focused on students, faculty, and practitioners from CAM institutions. The goal of this initiative, entitled CAM Practitioner Research Education Project Grant Partnership, was to increase the quality and quantity of research content at CAM institutions in order to prepare CAM practitioners who are able to critically evaluate biomedical literature, participate in clinical research, and seek advance research training. The grant stipulated that CAM institutions partner with research institutions with very high research activity that would provide mentors and teachers to support curriculum development and other training ("National advisory council for complementary and alternative medicine: Minutes of the fifteenth meeting, September 8," 2003). Nine CAM institutions and their research intensive partners received awards in three rounds of funding for this grant, as detailed in Table 8.

Table 7

*First Set: Recipients of R25 CAM Education Project Grants*

Project Title	Project number	Project Start Date	Project End Date	Organization Name	Organization City, State
Integrating CAM into Health-Professions Education	R25 AT00540	9/28/00	7/31/06	University of North Carolina, Chapel Hill	Chapel Hill, NC
CAM Curriculum Project <sup>a</sup>	R25 AT000556	9/28/00	12/31/05	University of Minnesota, Twin Cities	Minneapolis, MN
CAM Education Program for Nursing	R25 AT000559	9/28/00	7/31/07	Rush University Medical Center	Chicago, IL
Evidence-Based Curriculum in Alternative Therapies	R25 AT000586	9/28/00	7/31/07	University of Texas Medical BR Galveston	Galveston, TX
Center for Pediatric Integrative Medical Education	R25 AT000538	9/28/00	7/31/05	Children's Hospital Boston	Boston, MA
Integrating CAM into a Family Medicine Residency Program	R25 AT000677	7/15/01	12/31/04	Maine Medical Center	Portland, ME
Educational Initiative in CAM	R25 AT000419	7/15/01	4/30/07	Georgetown University	Washington, DC
Integrative Curriculum for Medicine and Allied Health	R25 AT000812	8/27/01	6/30/07	University of Michigan at Ann Arbor	Ann Arbor, MI
CAM Curriculum at the University of Washington	R25 AT000813	8/27/01	6/30/07	University of Washington	Seattle, WA
The Tufts Program in Evidence-Based CAM	R25 AT000714	8/27/01	6/30/08	Tufts University Boston	Boston, MA
Integrative Medicine Curriculum for Health Professionals	R25 AT000500	7/15/02	4/30/08	University of California San Francisco	San Francisco, CA
Oregon CAM Course <sup>a</sup>	R25 AT001173	7/15/02	4/30/09	Oregon Health and Science University	Portland, OR
AMSA CAM Education Initiative	R25 AT000529	8/15/02	5/31/08	American Student Medical Association	Reston, VA
Interdisciplinary CAM Curriculum Model	R25 AT000682	7/15/02	4/30/10	University of Kentucky	Lexington, KY
Integrating CAM: Nursing Emphasis	R25 AT001240	7/15/02	7/31/09	University of Washington	Seattle, WA

Source: [www.http://projectreporter.nih.gov/reporter.cfm](http://projectreporter.nih.gov/reporter.cfm)

<sup>a</sup> The R25 grant included a college of chiropractic medicine.

Table 8

*Second Set: Recipients of R25 CAM Practitioner Research Education Project Grant**Partnership*

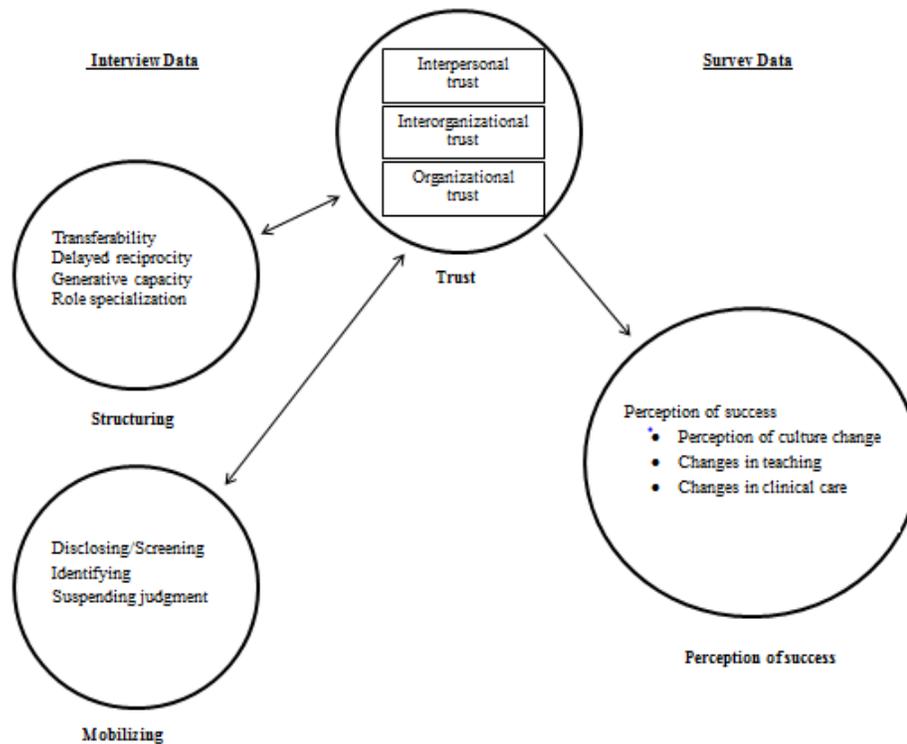
Project Title	Project number	Project Start Date	Project End Date	Organization Name	Organization City and State
Acupuncture Practitioner Research Education Enhancement	R25 AT002879	9/1/05	7/31/13	Oregon College of Oriental Medicine	Portland, OR
Sustainable EBP Program in a CAM Institution <sup>a</sup>	R25 AT002879	8/1/05	7/31/13	National University of Health Sciences	Lombard, IL
Competency in Research in Manual Medicine & CAM	R25 AT002877	8/1/07	4/30/12	University of North Texas Health Sciences Center	Fort Worth, TX
CAM Research Education Partnership Project <sup>a</sup>	R25 AT003582	9/1/07	8/31/15	Northwestern Health Sciences University	Bloomington, MN
Expanding EBM and Research Across the Palmer College of Chiropractic <sup>a</sup>	R25 AT003580	9/30/07	8/31/11	Palmer College of Chiropractic	Davenport, IA
Naturopathic Physician Research Education Project	R25 AT002876	8/15/06	11/30/12	Bastyr University	Kenmore, WA
Evidence-Based Practice II: Faculty & Curriculum Development <sup>a</sup>	R25 AT002880	8/1/05	7/31/14	University of Western States	Portland, OR
Curriculum and Faculty Development in Evidence-Based Medicine	R25 AT003579	9/30/06	9/29/14	A.T. Still University of Health Sciences	Kirksville, MO
Research Camp: Research in CAM Program Renewal	R25 AT002878	7/1/05	6/30/15	National College of Natural Medicine	Portland, OR

Source: [www.http://projectreporter.nih.gov/reporter.cfm](http://projectreporter.nih.gov/reporter.cfm)

<sup>a</sup>The R25 grant included a college of chiropractic medicine.

## Study Design

This research explores the impact of trust on collaborations between small, private, CAM institutions and research institutions with very high research activity, created through the CAM Practitioner Research Education Project Grant Partnership (R25). This study is guided by a conceptual framework, introduced by McEvily et al. (2003), which describes the role of trust in the creation and implementation of collaborations and their activities. The framework distinguishes between activities that provide the structure of the collaborative relationship (structuring) and those that put the initiative in to action (mobilizing) (McEvily et al., 2003). Figure 2 shows the conceptual framework for this study.

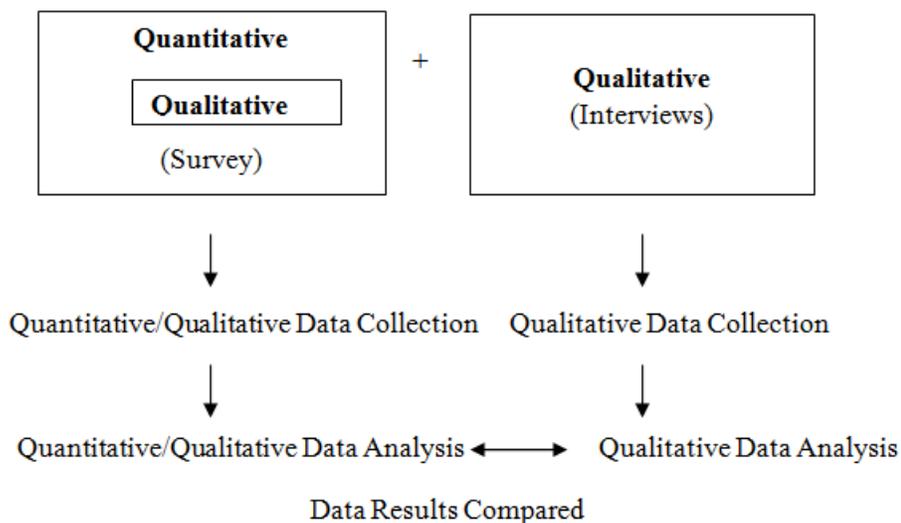


*Figure 2.* Conceptual Framework for the Role of Trust on the Formation and Perception of Success of Collaborations

A concurrent, mixed-methods design was used to collect survey and interview data from faculty, administrators, and key personnel from the three partnership pairings in the CAM Practitioner Research Education Project (R25) grants. The constructivist approach will provide the knowledge generation framework for this study. Social constructivism asserts that individuals create meaning and develop an understanding of their experiences in a subjective manner (Creswell, 2003, p. 8). This approach is chosen as this study seeks to understand participants' perceptions of the impact of trust on the success of the CAM Practitioner Research Education Project Grant Partnership (R25) collaborations in which they participated.

The subset of three CAM Practitioner Research Education Project Grant Partnership (R25) collaborations involving colleges of chiropractic were selected for this research as they represent pairings that have both similarities and differences. The similarity of the three pairs is that they each include a college of chiropractic as the small, private CAM institution and are likely to share some of the same organizational and cultural challenges. The institutional pairs are diverse from each other in organizational structure in that they represent collaborations between large, public and small, private CAM institutions. They also represent partners who differ in their philosophical orientation toward health care; the large public institutions are more likely to view health care through an allopathic lens, and the small private institutions focus more on CAM therapies. The decision to use chiropractic institutions was made because of the increasing utilization and visibility of chiropractic, as well as to narrow the focus of this research.

Figure 3 is a visual model of the data collection procedures. The study design included collection of qualitative data through interviews of individuals from both the CAM and partner institutions. Quantitative, and additional qualitative, data were collected through surveys of individuals from the CAM institutions only, since the training activities involved only individuals from the CAM institutions.



*Figure 3.* Visual Model – Concurrent Triangulation Strategy

**Interview component.** Qualitative data regarding the partnerships were collected through semi-structured interviews with 11 key participants, including principal investigators, partners from the research institution, and key faculty from the CAM institution. Four interviewees were chosen from each partnership pairing through consultation with the principal investigator of each of the selected CAM Practitioner Research Education Project (R25) pairings. The interview questions were semi-structured, allowing both the respondents the flexibility to explain their viewpoint, and the researcher the ability to provide additional follow-up questions (Merriam, 1998).

Interviews were conducted by telephone, recorded on a digital recorder, and transcribed for analysis.

**Survey component.** Quantitative and qualitative data were gathered through the use of surveys administered to faculty and administrators at the three selected CAM institutions. Survey design was chosen as surveys are a convenient and cost-effective way to collect data from a large number of people in a reasonably short amount of time (Creswell, 2003, p. 154). The survey was cross-sectional in nature, capturing information at one point in time and was created using Qualtrics, a web-based survey software program.

**Data collection.** A concurrent triangulation strategy for data collection was used to confirm or corroborate findings, using qualitative methods to offset the weaknesses of quantitative, and vice versa (Creswell, 2003, p. 217). Data were mixed at data collection in the form of open-ended questions on the survey, and at data analysis and interpretation as the qualitative themes were compared to the quantitative results.

**Ethical considerations.** This research adhered to ethical practices with regard to data collection and dissemination, in order to protect the participants. This research was granted exempt status from the University of Minnesota's Institutional Review Board (IRB), number 1410E54361. Participants were informed of the purpose of the study, were told that their participation was voluntary, and were reminded of their right to withdraw at any point. They were assured of their privacy and were informed of their right to ask questions or to request a copy of the results (Creswell, 2003, pp. 64-65). The request for participation did not stipulate that involved institutions would not be

identified but, to protect institutional identity in the results, there are no attributions to specific institutions. In the reporting of data, partnerships are referred to as A, B, and C in no particular order.

Survey participants received an introductory e-mail introducing the researcher and explaining the purpose of the study. Four subsequent e-mails provided links to the survey and requested their participation. The first page of the survey contained an informed consent statement that concluded by saying their decision to complete the survey indicated their agreement to participate in the research study.

Interview participants were contacted by e-mail, requesting an interview. Once they had agreed to participate, they were sent an electronic version of the consent form which they were asked to sign and return prior to the interview. In addition to the signed consent, participants were asked to verbally consent at the start of the recording. Appendix A includes the informed consent for interview participants. The recordings were saved to CD and were transcribed. The CDs are kept in a locked file in the researcher's office and digital voice files and transcripts are stored on secure servers and on password protected computers. All files will be deleted, and the CDs destroyed, at the conclusion of this research.

### **Selection of Institutional Research Participants**

Deliberate selection of research participants at the selected institutions provided the greatest opportunity to explore the specific questions of interest to this study (Merriam, 1998, pp. 61,62). Purposive sampling was used to select three collaborations from the CAM Practitioner Research Education Project Grant Partnership (R25) project.

Table 9 notes key institutional characteristics of the three partnership pairs selected for study. Although there were four partnerships that included colleges of chiropractic, the CAM Research Education Partnership Project (R25) between Northwestern Health Sciences University and the University of Minnesota was deliberately omitted from this study due to potential conflict of interest by the researcher.

Table 9

*Research Grant Participants*

Project Title	Project number	Partner Institution	Project Start Date	Project End Date	Organization Name	Organization City and State
Sustainable EBP Program in a CAM Institution	R25 AT002879	U of IL, Chicago	8/1/05	7/31/13	National University of Health Sciences	Lombard, IL
Expanding EBCP and Research Across the Palmer College of Chiropractic	R25 AT003580	U of IA and Thomas Jefferson University	9/30/07	8/31/16	Palmer College of Chiropractic	Davenport, IA
Evidence-Based Practice II: Faculty & Curriculum Development	R25 AT002880	Oregon Health and Science University	8/1/05	7/31/14	University of Western States	Portland, OR

Source: [www.http://projectreporter.nih.gov/reporter.cfm](http://projectreporter.nih.gov/reporter.cfm)

In multiple case-study design, the researcher selects multiple cases to demonstrate different perspectives on an issue (Creswell, 2013, p. 99). This study selected only those CAM Practitioner Research Education Project (R25) partnerships that included colleges of chiropractic because chiropractic has historically been considered outside of mainstream medicine and the shift toward evidence-based practice will likely be a greater cultural shift in chiropractic than in osteopathic colleges or nursing programs.

**First partnership.** The first partnership, “Evidence-Based Practice II: Faculty & Curriculum Development” is a CAM Practitioner Research Education Project Grant

Partnership (R25) project between the University of Western States, a CAM institution in Portland, OR, and Oregon Health & Science University, which is the only academic health center in Oregon. Initially funded as “Evidence-Based Care: Faculty & Curriculum Development”, the project received \$726,553 during 2005-2008. From 2009-2012, the project was funded for \$864,448 (“Evidence-based practice II: Faculty & curriculum development,” 2014). The first round of funding focused on training faculty and students on evidence-based practice and inserting those concepts into the chiropractic curriculum. The objective of the second grant was to “build upon and improve the new EBP curriculum and to integrate it more seamlessly into the institutional and cultural fabric of the College so that gains made during the first grant cycle are sustained.” (“Evidence-based practice II: Faculty & curriculum development,” 2014). During the two R25 grant cycles, approximately 50 full-time clinicians and classroom faculty have received training in evidence-based practice (R. LeFebvre, personal communication, August 7, 2014).

**Second partnership.** The second partnership is a collaboration between Palmer College of Chiropractic, in Davenport, IA, the University of Iowa, and Thomas Jefferson University, a private health sciences university, in Philadelphia, PA. The involvement from Thomas Jefferson University was mainly in the form of data collection and analysis. From 2007-2010, this partnership received \$758,142 in R25 grant funding through NCCAM. The partnership did not receive funding for the 2011 fiscal year, but received approval for funding from 2012-2016. The collaboration has received \$423,307 in the first two years of the second grant. The goal of the project, titled “Expanding EBCP and

Research Across the Palmer College of Chiropractic”, is to “successfully incorporate research and evidence-based clinical practice (EBCP) concepts into the culture and curriculum at Palmer in a manner that is both meaningful and sustainable” (“Expanding EBCP and research across the Palmer College of Chiropractic,” 2014).

Palmer College of Chiropractic has campuses in Davenport, IA, San Jose, CA, and Port Orange, FL. It is the largest chiropractic college in the world, with more than 200 faculty and more than 2,000 students. Over the course of the CAM Practitioner Research Education Project (R25) grant, 94 faculty and administrators have received training in EBCP across three campuses (C. Long, personal communication, August 14, 2014).

**Third partnership.** The third partnership, “Sustainable EBP Program in a CAM Institution”, is a collaboration between National University of Health Sciences (NUHS), a CAM institution in Lombard, IL, and the University of Illinois at Chicago (UIC) School of Public Health (SPH). The partnership received \$739,277 in funding from an initial CAM Practitioner Research Education Project (R25) grant from 2005-2008 for a project entitled “Curriculum Development in Evidence-Based Practice”. From 2009-2012, during the second CAM Practitioner Research Education Project (R25) grant, the partnership received \$848,281 in funding from NCCAM (“Sustainable EBP program in a CAM institution,” 2014). The focus of the first grant was on the creation of a comprehensive evidence-based-practice core curriculum for the students in the chiropractic, acupuncture, naturopathic, and massage therapy programs, the thrust of the second grant was on faculty development and on expanded opportunities for faculty and

students to participate in research. One of the grant initiatives involved the creation of a DC/MPH degree between NUHS and UIC-SPH. Since 2005, the CAM Practitioner Research Education Project (R25) collaboration between NUHS and UIC-SPH has trained approximately 76 faculty (J. Pocius, personal communication, May 30, 2014).

### **Instrumentation**

**Interview design.** The qualitative data for this study were collected through semi-structured individual telephone interviews with the principal investigators at the chiropractic institutions and three others from each partnership pair, either from the chiropractic or the partner institution. Questions were grouped around the themes of structuring and mobilizing (ie. formation of the collaboration and implementation of the projects) and expanded on the questions from the survey. The 20 questions were intended to elicit information about prior personal or professional relationships, the perception of trust between collaborators, and the perception of trust from participants. Additionally, questions about the overall success of the project and the project's impact on campus culture provided additional information for further understanding of the individual projects. Open-ended questions allowed participants an opportunity to elaborate on their answers and provide qualitative information. Initial interview items were reviewed by two principal investigators of Northwestern's CAM Practitioner Research Education Project Grant Partnership (R25), not included in this research. Their suggestions were incorporated into the final version of the interview questionnaire, shown in Appendix B.

**Survey design.** The literature on trust in organizations has been largely theoretical in nature, although there is a diverse set of instruments to measure dimensions of organizational trust. In a review of the organizational trust literature, spanning 48 years, McEvily and Tortoriello (2011) identified 171 empirical studies on trust, utilizing 129 different instruments. Of the 129 instruments, they found that only 22 had been used more than once; of the studies using the same instrument, most instruments were modified in the subsequent studies. They suggested that the fragmented state of trust measurement may be due to the fact that trust is being studied across disciplines and that trust itself is context specific. Additionally, they found little information on the construct validity of the different instruments. Construct validity refers to the extent to which an instrument is able to accurately measure the concept that it is intended to measure (Gall, Gall, & Borg, 2003). McEvily and Tortoriello (2011) narrowed their examination to psychometric studies of trust, specifically examining studies that measured the extent to which one person places trust in another person or group/organization. They noted that there is increasing acceptance of two key elements of trust: the willingness to be vulnerable and the expectation of favorable treatment by another party. They recognized, however, that there is wide diversity in the range of instruments used to measure trust.

McEvily and Tortoriello's (2011) review of the trust literature identified five instruments that they considered noteworthy in terms of their analysis of item content, statistics on the reliability of the scales, and discussion of the validity evidence. The five instruments vary in the type of organizational relationship examined. The Managerial Interpersonal Trust instrument (McAllister, 1995), an 11-item questionnaire, was created

to measure trust in peer relationships among managers. The Boundary Role Persons' Trust instrument (Currall & Judge, 1995), a 25-item questionnaire, was created to measure trust between boundary-spanning individuals in interorganizational relationships. Cummings and Bromiley's (as cited in McEvily & Tortoriello, 2011) 14-item Organizational Trust Inventory measures trust in relationships that involve negotiation and exchange. Mayer and Davis's (1999) 21-item Organizational Trust instrument measures a variety of organizational relationships, from manager-subordinate to customer-vendor. Gillespie's (as cited in McEvily & Tortoriello, 2011) 10-item Behavioural Trust Inventory also measures a variety of organizational roles from authority to peer.

As none of the five measures fit perfectly the framework for this study, individual items were selected to create the survey instrument (Appendix C) that provided the quantitative data for this study. Survey questions all were structured with five-point response scales, with four open-ended qualitative questions to allow respondents the opportunity to explain their viewpoints.

**Cognitive interviews.** Prior to dissemination of the survey instrument, cognitive interviews were conducted with five faculty from Northwestern Health Sciences University, the CAM institution that was excluded from the study due to potential researcher conflict of interest. Two of the faculty members had little involvement with Northwestern's CAM Practitioner Research Education Project (R25), and two had moderate to high levels of involvement. The fifth faculty member had no involvement with Northwestern's project, but had moderate involvement with Palmer College of

Chiropractic's CAM Practitioner Research Education Project Grant Partnership (R25)

while she was employed at that institution.

Cognitive interviews allowed the researcher to identify potential sources of response error by assessing individual's comprehension of the questions, their ability to retrieve relevant information, and their decision and response processes (Caspar, Lessler, & Willis, 1999). Face-to-face interviews were conducted with the five recruited participants. The "think aloud" approach was used in which participants were instructed to read the survey aloud and articulate their thoughts regarding their interpretation of each question (Caspar et al., 1999).

Several changes were made to the survey as a result of this interview process, including: expansion of the introductory paragraph to provide greater explanation about NCCIH's goals of the CAM Practitioner Research Education Project Grant Partnership (R25); inclusion of a category of "administration" in the demographic area; and slight editing of a few trust items.

**Independent variables.**

*Interorganizational trust.* The following questions asked survey participants questions related to their level of trust in their partner institution in the CAM Practitioner Research Education Project Grant Partnership (R25).

1. My level of trust in our partner institution positively affected my willingness to accept the goals of the R25 project.
2. Our partner institution in the R25 is trustworthy (Zaheer, McEvily, & Perrone, 1998).

***Interpersonal trust.*** This set of four questions asked survey participants about their level of trust with key personnel, or project champions, on their campuses:

1. I feel comfortable sharing my areas of weakness related to the expectations of the R25 project with my institution's project champion(s) (Currall & Judge, 1995).
2. I think carefully before telling my university's project champion my opinions related to the R25 project (Currall & Judge, 1995).
3. I have faith in my university's project champion(s) to look out for our faculty interests (Zaheer et al., 1998).
4. If I had my way, I would not let our project champion(s) have any influence over issues related to my program (Mayer & Davis, 1999).

***Organizational trust.*** The following questions asked survey participants about their level of organizational trust in their own institution:

1. I felt comfortable asking for help from someone at my institution, when needed, with the activities of my institution's R25 project.
2. My level of trust in my institution positively affected my willingness to accept the goals of the R25 project.

**Dependent variables.** Table 10 specifies the four questions from the survey that were used to create the dependent scale variable to be used in the data analysis. Although there were six questions related to the perception of success, only the four forced-choice type questions were used to create the scale. The two open-ended questions allowed participants to provide additional information regarding their perceptions of success or

the type of changes that they made in their teaching or clinical care. No statistical analysis was performed on the open-ended items though they were reviewed for common themes.

Table 10

*Dependent Variable Questions of Project Success Included in the Survey*

Perceived Success	Survey Item
Perceived success of collaboration	My institution has been successful in achieving its goals related to the R25 project.
Perception of culture change on CAM campus	My institution's R25 project has resulted in culture change regarding evidence-based practice on our campus.
Curricular changes resulting from R25 project	I have changed my teaching as a result of my institution's R25 project.
Clinical changes resulting from R25 project	I have changed my clinical care as a result of my institution's R25 project.

Note: Responses were obtained on the following five-point scale: Strongly disagree (1), Disagree (2), Neither agree nor disagree (3), Agree (4), Strongly agree (5)

**Control variables.** In order to more accurately specify the effects of interorganizational, interpersonal, and organizational trust on the perceptions of success, culture change, and incorporation of EIP into clinical care and CAM curricula, the following personal and demographic variables were included as control variables: gender; time in service; faculty rank; level of awareness of R25 project; level of involvement with R25 project; and willingness to participate in the R25 project and its initiatives (Creswell, 2003).

The following set of seven variables constituted the probable control variables for the multiple regression analysis:

1. Institution: National University of Health Sciences; University of Western States; Palmer College of Chiropractic. If analysis of variance (ANOVA) results indicated differences between groups, dummy codes would be created.
2. Gender: For the variable of gender, females were coded as 0 and males were coded as 1. Those who indicated transgender and who chose not to answer were not included in the regression analysis.
3. Academic rank: lecturer/instructor (1); assistant professor (2); associate professor (3); professor (4); administrator (5). If ANOVA results indicated differences between the groups, dummy codes would be created.
4. Awareness of R25 project and its initiatives: no awareness (1); little awareness (2); some awareness (3); high awareness (4); very high awareness (5).
5. Level of involvement with R25 project and its initiatives: No involvement (1); little involvement (2); some involvement (3); high involvement (4); very high involvement (5).
6. Initially willingness to participate in R25 project and its initiatives: reluctant (1); somewhat reluctant (2); neutral (3); somewhat willing (4); willing (5).
7. Currently willingness to participate in R25 project and its initiatives: reluctant (1); somewhat reluctant (2); neutral (3); somewhat willing (4); willing (5).

### **Data Collection**

**Interviews.** The 12 potential interview participants, as identified by the principal investigators from each of the selected CAM Practitioner Research Education Project

Grant Partnerships (R25), were contacted by e-mail, requesting an interview. Eleven participants responded within a couple of days and 10 consented to participate. One declined the interview request, citing health issues. The researcher contacted the principal investigator from that CAM Practitioner Research Education Project (R25) and was given the name of another key participant in that project. An e-mail was sent to that individual and she immediately agreed to the interview. A follow up e-mail was sent to the twelfth interview candidate and she replied that she was quite busy and indicated that she might have time in the new term. The researcher reached out to the interview candidate in January 2015, and she agreed to schedule an interview. On the evening before the scheduled interview, the candidate cancelled due to a family emergency.

The 11 interviews took place over the span of five weeks, from November 13, 2014 to December 15, 2014. The length of the interviews ranged from 18 to 56 minutes. For two of the partnerships, the principal investigator and one key participant from the CAM institution were interviewed, along with two key participants from the partner institutions. For the third partnership, the principal investigator and two key participants from the CAM institution were interviewed.

**Survey.** The survey was sent to 262 chiropractic faculty and administrators at the three CAM institutions, the e-mails of which were obtained from the principal investigators of the CAM Practitioner Research Education Project (R25) pairings. For one institution, the list of faculty was substantially larger than expected because the institution submitted the names of all faculty, rather than only those who had been trained through the CAM Practitioner Research Education Project (R25), so there was no way the

researcher could exclude those who had not been trained from the e-mail requesting completion of the survey.

Survey participants were contacted by e-mail five times over nine weeks, between December 2014 through January 2015, a technique that Dillman (2007) describes as more effective than any other technique for influencing survey response rates (p. 149). An introductory e-mail was sent to all 262 potential survey participants on December 1, 2014, explaining the study and asking for their participation. The initial contact consisted of a pre-notice message, introducing the researcher and the research project, and informing the participants that they would be receiving another e-mail with a link to the survey in a couple of days. A second e-mail was sent two days later, on December 3, 2014 explaining the importance of their participation and including a link to the electronic survey. On December 10, 2014, a follow-up reminder went to all participants, with a second reminder on January 5, 2015. The delay between the first and second reminders was due to the timing of religious holidays and it was assumed that most participants would have been out of the office. A final request was sent on January 12, 2015 and the survey was closed on January 21, 2015. Though messages were not personalized, participants were addressed as “Dear colleague” in an effort to establish a professional connection. Communications were positive, and appreciation to those who had completed the survey was expressed in each of the follow-up messages. The fourth and fifth messages had a slightly more serious tone and appealed to their professional responsibility (Dillman, 2007, pp. 151-153). In addition, the researcher contacted

acquaintances at each of the institutions requesting their support in encouraging their colleagues to complete the survey.

Of the 262 contacts, 148 individuals opened the survey from the e-mail link. Thirty two people did not provide any responses and one person responded with the following comment: “I do not teach at any institutions. I am a practicing PT and also serve as a CI for area PT students. Most, if not all of this questionnaire does not apply to me at all.” Those 33 responses were removed from the data set, bringing the total to 115. Of those 115, 13 respondents from the institution that had submitted all faculty names indicated that they had no awareness of the project. For the question asking respondents to describe their involvement, six of the 13 indicated that they were unaware of the project, two answered “none”, and five did not answer. Because there was reason to believe that this institution had submitted names of individuals who should not have received the survey, those 13 cases were removed from the data set. Another respondent, who did not provide a university affiliation, indicated that they no longer worked at the university and only answered the survey because of the repeated requests. They asked that their information be disregarded. Removal of these 14 cases brought the final number for statistical analysis to 101. Of the 101 remaining cases, two indicated that they had no awareness of their institution’s CAM Practitioner Research Education Project (R25), and three did not provide an answer to that question. Those cases were not removed from the data set as they were from institutions that provided contact information only for those faculty who had been trained. Table 11 displays the gender,

rank, and years of employment for the survey respondents on which the data analysis was based.

Table 11

*Gender, Years of Service, and Rank of Survey Respondents (N=101)*

Question Response	%
Gender	
Male	48.5
Female	38.6
Transgender	1.0
Prefer not to answer	8.9
Years of Service	
less than 5	13.9
more than 5, less than 10	23.8
more than 10, less than 15	11.9
more than 15, less than 20	12.1
more than 20	36.6
Did not answer	2.0
Academic Rank	
Lecturer/Instructor	7.9
Assistant Professor	17.8
Associate Professor	36.6
Professor	16.8
Administrator	16.8

***Response rate by institution.*** Because of the different approaches to identifying participants in faculty training, response rates are most meaningful when considered by institution. One institution provided considerably more faculty contacts than they indicated had experienced training. When questioned about the longer list of e-mail addresses, they indicated that they did not receive consent from faculty during training and were not comfortable identifying them specifically. For that institution, the number of faculty that were reported to have participated in the CAM Practitioner Research Education Project (R25) was the number used in calculating the response rate. Response

rates for the other institutions were calculated based on the number of e-mail contacts provided by the institution. The response rates for Institutions A, B, and C were respectively 50%, 61%, and 69%.

### **Analysis**

The dependent variables that the quantitative component of the research investigated are the perception of success of the CAM Practitioner Research Education Projects (R25), the perception of culture change on the CAM campuses as a result of the CAM Practitioner Research Education Project (R25) collaboration, and change in teaching and clinical care as a result of the CAM Practitioner Research Education Project (R25) initiatives. The independent variables that were used to explain the variation in the outcomes are interorganizational trust, interpersonal trust, and organizational trust. The trust measures were further organized into structuring and mobilizing components.

**Interview data analysis.** Recordings of the interviews were transcribed and reviewed for accuracy. Additionally, interview transcripts were sent by e-mail to the interviewees for review and verification. None of the interviewees provided any clarification to their interviews. Interview data were used to provide descriptive detail about the CAM Practitioner Research Education Project (R25) partnerships, and the transcripts were coded to identify themes across the pairings.

Coding was facilitated with the use of a qualitative software program, QDAMiner Lite, v1.3. Transcripts were coded across the set of responses to the 20 questions, rather than on a question-by-question basis. The researcher started with a set of prefigured codes from the framework, such as structuring and mobilizing, and allowed other codes

to emerge so that the emerging themes would not be limited (Creswell, 2013, p. 185).

Coding was an iterative process, involving multiple reviews of the interviews. Using a constant comparative method, the researcher applied newly emergent codes to all prior transcripts (Creswell, 2013, p. 86) This process continued until saturation of the data was reached and no new codes were evident. The codes were then grouped into exhaustive, mutually exclusive, and conceptually congruent themes (Merriam, 1998, p. 184). To ensure consistency with coding, the researcher recoded two randomly selected interviews and compared findings.

No names of individuals or institutions were used in the selected quotes, in order to preserve anonymity of the interviewees. Interviewees are indicated by number from 1 to 4 in the analysis. The researcher included quotes from each individual in order to allow all participants to have a voice. Information gathered through the interviews was used to triangulate the data from the surveys and to better understand the impact of trust on the CAM Practitioner Research Education Project (R25) collaborative efforts.

**Survey data analysis.** Quantitative data from the Qualtrics surveys were exported to SPSS statistical software, version 22, for analysis. Descriptive statistics were used to describe the means and standard deviations of each of the items in the survey. ANOVA was used to test for statistical differences between institutions. Correlation and multiple regression were used to study the relationship between the continuous dependent and independent scales, along with selected control variables.

**Construction of scales.** Table 12 indicates the scales, number of items, range in scores, and Cronbach's alpha used in the statistical analysis. Cronbach's alpha is a

measure of internal consistency of a scale, or the extent that individual items in a scale measure the same construct (Tavakol & Dennick, 2011).

Table 12

*Scales Used in the Regression Analysis*

	Number of Items	Scale Range	Cronbach's alpha
Independent scales			
Organizational trust	2	2-10	.71
Interorganizational trust	2	2-10	.86
Interpersonal trust	4	4-20	.78
Dependent scale			
Perception of success	3*	3-15	.74

\*This three-item scale reflects the combined single item reflecting changes in teaching and clinical practice.

**Construction of the independent variable scales.** The two questions “I felt comfortable asking for help from someone at my institution, when needed, with the activities of my institution’s R25 project” and “My level of trust in my institution positively affected my willingness to accept the goals of the R25 project” had five possible responses and “don’t know/not applicable”. For each question, 8.9% of respondents said “don’t know/not applicable”. Those two questions were recoded so that answers of “don’t know/not applicable” were given a score of three, in order to retain those responses in the final data set. The recoded questions, “I felt comfortable asking for help from someone at my institution, when needed, with the activities of my institution’s R25 project” and “My level of trust in my institution positively affected my willingness to accept the goals of the R25 project” were combined to form a two-item scale on organizational trust. The resulting two-item scale had a Cronbach’s coefficient alpha of .71.

The same process was used to create a two-item scale for interorganizational trust, using the questions “My level of trust in our partner institution positively affected my willingness to accept the goals of the R25 project” and “Our partner institution in the R25 is trustworthy”. For the question “My level of trust in our partner institution positively affected my willingness to accept the goals of the R25 project”, 25.7% of respondents said “not applicable/don’t know”. For the question “Our partner institution in the R25 is trustworthy”, 24.8% said “not applicable/don’t know”. Both questions were recoded to give answers of “not applicable/don’t know” a score of three. The recoded questions were combined to form a two-item interorganizational trust scale, with a Cronbach’s coefficient alpha of .86.

Though the two independent scales for organizational trust and interorganizational trust were moderately correlated (.615,  $p < 0.01$ ), they were not combined to form one independent scale on trust in organizations as they represent theoretically distinct constructs. Subsequent analyses were conducted to determine if multicollinearity problems were present in the multiple regression.

A third independent scale on interpersonal trust was created with the items: I feel comfortable sharing my areas of weakness related to the expectations of the R25 project with my institution’s project champion(s); I think carefully before telling my university’s project champion my opinions related to the R25 project; I have faith in my university’s project champion(s) to look out for our faculty interests; and, If I had my way, I would not let our project champion(s) have any influence over issues related to my program.

The resulting Cronbach's coefficient alpha for the four-item interpersonal trust scale was .78.

*Construction of the dependent variable scale.* The four dependent variables related to perception of project success and self-reported behavior change were combined to form one, three-item scale indicating overall project success.

Some redefinition was required due to the nature of two of the four items. First, the questions "I have changed my teaching as a result of my institution's R25" and "I have changed my clinical care as a result of my institution's R25" were combined to form one variable. This was required because 9.9% said "does not apply" for teaching and 31.7% said "does not apply for clinical care". If respondents answered only one question related to behavior change, the new variable reflected that number. If an individual indicated that they changed both teaching and clinical care as a result of their institution's CAM Practitioner Research Education Project (R25), the score for the new variable reflected a mean of the teaching and clinical scores. The new variable was combined with the items "My institution has been successful in achieving its goals related to the R25 project" and "My institution's R25 project has resulted in culture change regarding evidence-based practice on our campus" to form a three-item scale indicating overall success of the R25 project. The resulting Cronbach's coefficient alpha for this three-item scale was .74. The decision not to create one scale for recoded variable related to behavior change and another scale for the two variables related to perception of success was made because the three variables were felt to conceptually represent success, which is the focus of this research.

Multiple regression analysis was used to evaluate the relationship between the three independent scales related to trust, the dependent scale, and two selected control variables. Regression analysis was used to help explain variability in perceptions of project success explained by: interpersonal trust; organizational trust; interorganizational trust; level of involvement; and initial willingness to participate in the R25.

***Qualitative survey data.*** Finally, participant responses to the three open-ended survey items were analyzed for recurring themes or trends. Seventy three individuals provided written responses to the item “Please describe any changes that you have implemented in your teaching, clinical care, or work related activities as a result of your participation in your institution’s R25 project”. Sixty nine respondents provided written responses to the item “Please provide any examples of attitudinal or culture change that have resulted on your campus as a result of your institution's R25 project.” Thirty two individuals provided additional comments. Responses were organized and analyzed by institution.

## Chapter 4

### Results

This chapter presents the findings of the interviews along with the analysis of the faculty surveys. It begins with a description of the following components of the three selected CAM Practitioner Research Education Project (R25) partnership pairings: methodological approach; administrative support; perceived successes; perceived shortcomings; and efforts toward sustainability. This will be followed by an analysis of the structuring, mobilizing, and trust themes which emerged from the analysis of interviews (McEvily et al., 2003). The chapter concludes with an analysis of the quantitative and qualitative data from the surveys.

#### Interview Results

In this section, the three partnerships are noted by the letters A, B, and C, in no particular order. Interview subjects are noted by the numbers 1, 2, 3, and 4 and the letter that corresponds to their partnership.

**Description of the CAM Practitioner Research Education Project Grant Partnership (R25) pairings.** The aim of the CAM Practitioner Research Education Project Grant Partnerships (R25) was to increase the quality and quantity of research content at CAM institutions in order to prepare CAM practitioners who are able to critically evaluate biomedical literature, participate in clinical research, and seek advanced research training ("National advisory council for complementary and alternative medicine: Minutes of the fifteenth meeting, September 8," 2003). The main thrust of the three CAM Practitioner Research Education Projects (R25) examined in this

research entailed developing curricula and training for students, faculty, and clinicians.

The findings from the interviews of key participants at each of the three partnerships revealed that each partnership had distinct and different approaches to faculty and student training in evidence-based practice.

***Partnership A.***

*Project design.* During the initial years of their CAM Practitioner Research Education Project Grant Partnership (R25), Partnership A directed their focus toward student education by creating courses for the chiropractic program and a research mentorship program for their students at the partner institution. Students involved in the research mentorship program, one per year, would step out of the chiropractic program for one semester so they could take two courses at the partner institution and work 20 hours per week with an active researcher. Six students participated in this program and four were accepted into the partner institution's Master of Public Health program. Three of those students received their MPH degrees and all are currently in PhD programs at that same institution. The research mentorship program subsequently evolved into a Doctor of Chiropractic-Master of Public Health collaborative degree program between the two institutions.

Faculty development activity was deliberately pushed to the second four years of the grant and was offered to the faculty through voluntary training sessions. "I just knew that the faculty would not go for being told 'here's a new program and you need to infuse it in to your curriculum'" (Interviewee A.3).

“... it was all voluntary. And so to make it all voluntary, we had to make it attractive. So we put a lot of work into it to make it as attractive as possible. And we had one-day workshops and did attract a large number of faculty. But then, and then we had a series of six workshops over the entire grant period. Faculty were not required to go to all of them. They could pick and choose what they wanted to do or not want to do.” (Interviewee A.3)

A core group of approximately 10 faculty attended all of the sessions and there were about 20 to 30 faculty in attendance at each session.

*Administrative support.* Support by administration for Partnership A at the CAM institution came largely in the form of verbal support and positive morale, rather than support through personal involvement or administrative mandates. While administrators supported the curricular changes they did not otherwise get involved with the activities of the partnership. “They were very supportive as long as it wasn't going to cost the institution much money. But they were very supportive of the educational effort.” (Interviewee A.7). “I think they did kind of minimum what was required for the grant. They spoke highly of it, but as far as institutional support, minimum, minimum.” (Interviewee A.1)

*Perceived successes and culture change.* The three interviewees from both institutions in Partnership A all identified curricular changes as the key success of their CAM Practitioner Research Education Project (R25). The student courses and curricular components that were created as a part of the grant are embedded in the curriculum and “there’s no discussion of removing it”. (Interviewee A.1) One interviewee described the

attitudinal change surrounding evidence-based practice as a result of the CAM

Practitioner Research Education Project (R25):

“I suppose that EBP is now just a given. I mean everybody here just knows that that's just part of who we are and what we do. It's part of our curriculum in all of the programs. And so we are at the point now where people are – students, faculty- are surprised to learn that other institutions don't have the same level. And to me that's a success because they see it as necessary and important and something that truly benefits the profession. So, it's become comfortable. It's become kind of an obvious entity.” (Interviewee A.7)

Another interviewee summed up the culture change in this way:

“I think it's just a part of us now. As I mentioned, we were always open to evidence. Our faculty are all inquisitive and interested in science and learning and all that. And so, it was a good place to start. I think they embraced the concepts of evidence-based practice, certainly the terminology. I think it's just a part of the terminology that we use here now and it's just an accepted part of who we are.” (Interviewee A.3)

*Perceived shortcomings.* Key participants in Partnership A talked about the lack of widespread faculty involvement as the main shortcoming of their CAM Practitioner Research Education Project (R25). One participant attributed the lower than anticipated faculty participation to the timing of the faculty development efforts and to the heavy emphasis toward student education. Another participant chalked it up to the lack of motivation to participate in a voluntary activity. “The problem is that the core faculty

that were involved were fine, but there has been no edict or mandatory involvement from administration to get faculty involved.” (Interviewee A.1)

*Efforts toward sustainability.* The three interview participants felt as though the institution is committed to continued support of the CAM Practitioner Research Education Project (R25) efforts, especially as it relates to student training. All participants acknowledged that the CAM institution has provided support for faculty to teach the evidence-based courses.

“In the past, our department has been responsible truly for doing research and now they understand that we also need to be teaching. And so just the support that they understand we may not have as many grants or as many projects going but it's because we're also teaching now.” (Interviewee A.7)

There was concern about the lack of a program manager and the impact that it might have on maintaining the mass of online resources created through the grant.

“Due to our lack of having a program manager all of our resources outside of what's actually in my courses, you know all of resources like the binder that we put online and all that stuff. All those things, if you look through them, they really haven't been updated, touched, in eight years.” (Interviewee A.1)

It was also acknowledged that the loss of financial support through the CAM Practitioner Research Education Project (R25) for students to participate in the DC- MPH collaborative degree might make that degree less attractive, or financially feasible, for interested candidates.

“The problem now is that we don't have the promotion on campus to keep the number of students going through and because we also don't have the funding to send students. Under the grant, they didn't have to pay for those extra classes. They also got a small stipend to help pay for the travel and books. But now we don't have that capability so there's a lot fewer students that are even interested.”

(Interviewee A.7)

***Partnership B.***

*Project design.* Partnership B took a faculty-first approach regarding evidence-based practice training. Teaching and clinical faculty attended mandatory training sessions and some were also required to attend journal clubs on campus. “So, instead of making it available to a few faculty members and then it would branch out from there, we took the broad approach and let it, you know interact.” (Interviewee B.9) “We required all the clinical chiropractic and clinical faculty to take the initial seminars, you know the faculty training. And then some were required to do our later journal clubs.” (Interviewee B.9) An interesting note is that Partnership B deliberately included the librarians in the training and teaching:

“Another side issue that I think turned out to be very useful, it was from the very get go, we brought the librarians in on the planning of the grant projects. We made sure that they had input. We made sure that when we did workshops librarians were there to deal with the search components. And as result of that, librarians, as opposed to being kind of segregated off into just the library, are much more likely to come in and do mini lectures in a course, especially if a

course does have a lit search assignment. The librarians become a part of doing some of the debriefing or some of the prep conversation. We've really integrated the librarians much more into the standard curriculum than had been the case before.” (Interviewee B.2)

*Administrative support.* Administrative support for Partnership B’s CAM Practitioner Research Education Project Grant Partnership (R25) was demonstrated through faculty release time to participate in training and to modify courses and through expectations placed on faculty to participate in development sessions.

“And I would have to say that their willingness to carve out time both for the faculty and for the students to do this probably showed a lot of support. Time is just so - there's so little of it in curricula these days and to have carved out so much of it for this project did show a lot of support.” (Interviewee B.4)

The clinic director was specifically singled out as a strong supporter throughout the grant cycle.

“In the clinic system, we had very strong support there. Even though the grant is coming to an end we're still doing training workshops for the clinicians and that's scheduled in on a quarterly basis by the head of our clinics. He's been a very strong supporter.” (Interviewee B.2)

*Perceived successes and culture change.* Successes for the CAM Practitioner Research Education Project (R25) of Partnership B fell into three areas: curriculum development; faculty development; and integration in the clinics. Participants described inclusion of evidence-based practice principles throughout the curriculum, not just in a

few discrete courses. Faculty are now including assignments in their courses related to evidence-based practice and have increased their expectations of students. Another success is the development of a core of trained faculty who possess a relatively sophisticated grasp of the concepts of evidence-based practice. The ultimate goal of evidence-based practice training is to influence clinical practice and improve the care of patients. To that end, one participant described the integration of evidence-based principles in the curriculum as the greatest success of their CAM Practitioner Research Education Project (R25).

“One- and the one that we cared most about ultimately, is I think there has been relatively good penetration into our clinic system. I think that most of our clinicians are much more savvy about how to find good research, and about how to assess it. How to read/understand the results and outcomes and kind of translate it into something that they could tell a patient.” (Interviewee B.2)

One interviewee considered the behavioral changes in clinical care to represent some of the most important cultural changes resulting from the CAM Practitioner Research Education Project (R25):

“My understanding is that this has filtered down into the clinics, which is especially what we had hoped. That there has been a little bit of a cultural shift. That people are open to searching for answers ‘on the fly’ to clinical questions during their care.” (Interviewee B.4)

Another described the penetration of the language of evidence-based practice across all divisions of the college, including in the basic sciences.

“I would say by most measures and by anecdotal report and just by gross observation, it’s had a huge effect on the institution. I think that's it's been a very positive effect and I think that at both the student and faculty level we are so much more sophisticated about the pluses and minuses of clinical research - its weaknesses, its biases, what it can and can't do for you. I think we're just infinitely more sophisticated as an institution than we were at the beginning of the decade.” (Interviewee B.2)

*Perceived shortcomings.* While the four participants identified implementation of evidence-based concepts in the clinics and in clinical care as a component of project success, this also emerged as a shortcoming by one interviewee.

“It was hard to implement things in the clinics because clinics were reorganized, they were moved off campus, and then there were site changes and fine tuning with all of the programs there. So that made it more difficult to implement the EIP component.” (Interviewee B.9)

Another participant described the lack of training of younger faculty as a shortcoming.

“We haven't done a good enough job of creating a second generation. So, a lot of the expertise that was built is around older faculty that are going to be retiring pretty soon.” (Interviewee B.2)

*Efforts toward sustainability.* Participants felt as though sustainability of the efforts of the CAM Practitioner Research Education Project (R25) was demonstrated by the infusion of evidence-based principles throughout the curriculum and in discrete courses. Additionally, efforts toward sustainability were more organized around the area

of perceived shortcomings. Participants described the creation and maintenance of online courses, in lieu of the original face-to-face workshops, for training of new faculty. There is administrative support for required training for new faculty, and the head of clinics is committed to ongoing training for all faculty clinicians through quarterly workshops. Finally, one participant identified the need for a curriculum coordinator who would be responsible for tracking where the elements of evidence-based practice throughout curriculum:

“It needs to be managed. It's not something that you can wind up and walk away from. It needs constant management because the way we have it set up. We've got, for example, lit search assignments and other types of EIP assignments spread throughout the entire curriculum. Not simply tied to core EIP courses. Which means someone has to manage the big picture as assignments disappear or new faculty decide to put in an assignment. And trying to keep that orchestrated so that all of the assignments coalesce into skill building requires for someone to run that or oversee that.” (Interviewee B.2)

### ***Partnership C.***

*Project design.* Partnership C focused their early efforts on training of a select group of 12 faculty members. One interviewee described the early training efforts as almost secretive. “So during those first two years, we didn't talk about the R25 initiatives at all. They were like under wraps essentially. It was almost secretive.” (Interviewee C.11) During the second year, they introduced the concepts to faculty as a whole through 10-minute presentations at a faculty development day training session.

“The whole idea of diffusion theory is the innovators. Who you need to get involved are the people that are going to be the champions, but they have to have the respect on campus by other faculty. I think that's what happened there. If your champions are sort of misfits, and don't have the respect of their colleagues, nothing's going to happen. But I think with this group, they were smart enough to identify those faculty who would not only be a champion of evidence-based practice, but also had the respect of their colleagues. And I think that was the key.” (Interviewee C.5)

Another interviewee described their approach in this way:

“Yes, we identified individuals who we thought would engage in the activity and who could influence other faculty. So, there are some individuals who tend to be trend setters or who other faculty kind of look up to, or follow. Those were identified first and brought in as early adopters to the process. By doing that—that's how we, I think, pretty much influenced the culture. The early adopters took this on, got excited about it and then all of those in between, who could go either way, just kind of leaned toward what the early adopters were doing. And so the laggards behind, or the resistant, were silenced, essentially.” (Interviewee C.8)

Once opened to all, individual faculty members had the opportunity to apply to attend workshops sponsored by the CAM institution as well as to receive funding to attend an annual evidence-based clinical practice workshop at McMaster University, in

Ontario, Canada. They tried to include librarians from the start, as early adopters, but they were not “up to the task”. (Interviewee C.11)

*Administrative support.* Interviewees reported meaningful support from the senior administrators for the CAM Practitioner Research Education Project (R25) initiatives with regard to curriculum and faculty development. Faculty were afforded release time to attend meetings and workshops, and two senior administrators co-chaired the advisory committee for the grant.

“This was made a priority by administration and so that allowed release time to go to meetings once every couple of weeks to learn about this stuff. To go to (the workshop), and for selected faculty to go to McMaster. So, yes, it was a lot of administrative support.” (Interviewee C.8)

*Perceived successes and culture change.* All four participants identified the cultural shift as the greatest success of their CAM Practitioner Research Education Project (R25). There is a sense that more and more faculty and students are embracing the concepts and that the campus has embraced an evidence-based approach to care over a philosophical approach. “I think we've actually had a fairly significant cultural shift at the institution. It's there's nobody in here who feels at this point that we need a more philosophical approach rather than a scientific approach. It's just not coming up any more.” (Interviewee C.8) Another participant described his sense that the initiative is still gaining momentum, even as the grant is nearing the end:

“I've seen lots of evidence-based medicine efforts across the country start with a flash and then fizzle. You know, the great surprise is related to the -- my

perception of their success, which is it's still gaining momentum, and that's a pleasant surprise.” (Interviewee C.10)

One interviewee summed up the cultural changes resulting from the CAM Practitioner Research Education Project (R25) in this way:

“They've gotten more and more faculty on board and it seems to be taking. It seems to be that there's been a cultural change on campus. I think that's the big thing. It appears now, that six, seven years ago, it was new and sort of a nasty word sometimes but I think there has been truly a cultural change on campus with regards to evidence-based practice.” (Interviewee C.5)

*Perceived shortcomings.* Participants identified faculty competencies and dissemination as the main shortcomings of Partnership C's CAM Practitioner Research Education Project (R25) initiative. Though faculty have embraced the concepts of evidence-based practice, there has been some sense that they do not yet possess the skills that they need to be completely proficient in its use, or to teach the concepts: "They've said “you know, I wish I had more skills, more research skills. If I'm going to teach research, or teach statistics, I don't have the skills to do that”. (Interviewee C.5)

Additionally, one participant felt as though faculty still have not developed consistent habits with regard to the use of evidence-based practice:

“Because, even though we've changed the attitudes quite a bit, we still need to change the habits because it's very easy to become very excited about all of this stuff. But you do what you do on a day-to-day basis so there's the tendency just to sink back into what you've been doing all along. So although there is a lot

more involvement in getting the evidence, using it to make decisions, it still hasn't become the mode of practice. It isn't the habit yet.” (Interviewee C.8)

Another shortcoming that was discussed by two of the participants was the lack of dissemination of information through publications.

“I do think, since a part of the R25 and part of the aspirations of the group is to continue to make strong contributions that change chiropractic education across the country, I think relatively there've been fewer manuscripts that have come out of the effort so far.” (Interviewee C.10)

*Efforts toward sustainability.* One way that Partnership C has demonstrated an effort toward sustainability is through the student curriculum: “We've basically embraced the concept of evidence-based clinical practice and it's been inculcated into our curriculum in a variety of different ways and in different places and will likely influence how our clinic requirements are revamped.” (Interviewee C.8) Additionally, there is a commitment at the administrative level to continuing to fund faculty attendance at evidence-based workshops. Finally, a couple of interviewees mentioned that the CAM Practitioner Research Education Project (R25) grant has been woven into policy decisions at the institutional level: “It is all over our strategic plans, the R25 and its initiatives.” (Interviewee C.11)

**Themes related to structuring, mobilizing and trust.** In addition to providing descriptive data about the three partnership pairings, the interview data allowed exploration of factors impacting the success of the collaborative initiatives. Data were coded using a priori, or preexisting, themes and codes from the “trust as an organizing

principle” framework of McEvily et al. (2003). McEvily et al. (2003) assert that trust impacts both the formation of collaborations and the willingness of individuals to support the initiatives of the partnership. As the use of preexisting codes alone can limit the study, the researcher allowed new codes to emerge during analysis (Creswell, 2013, p. 185). The data were organized along the following themes: structuring; mobilizing; and interorganizational trust. Additionally, subcodes were created for the preexisting codes under the structuring and mobilizing themes. Table 13 displays the themes, codes, and subcodes.

**Structuring.** McEvily et al. (2003) define structuring as the pathway by which partnerships are created. It is the process of creating the social structure of the organization or collaboration. The structuring theme was illuminated with the following codes: transferability; delayed reciprocity; generative capacity; and role specialization. The code related to generative capacity emerged as most significant, appearing 35 times, followed by transferability, which appeared 10 times. Role specialization and delayed reciprocity did not emerge as significant codes, with only two references to role specialization and one to delayed reciprocity.

Answers to the three interview questions below provided most of the data for the theme, though coding occurred across the set of responses to other questions, as well.

1. Please describe the professional connections at your partner institution, prior to the initiation of the R25 collaboration.
2. How do you think that prior connections between the institutions impacted the formation of this R25 collaboration?

3. Have any other collaborative efforts between your institution and your partner institution resulted from the R25 project?

Table 13

*Summary of Codes from Analysis of Interview Data*

Theme	Code	Subcode
Structuring	Transferability	
	Delayed reciprocity	
	Generative capacity	Formation of grant Outcome of grant – faculty opportunities Outcome of grant – student opportunities Outcome of grant – institutional opportunities
	Role specialization	
Mobilizing	Disclosing screening	
	Identifying	
	Suspending judgment	
Interorganizational trust	Personal connection	
	Communication	
	Expertise/competence	
	Reliability/dependability	
	Reputation	

***Transferability.*** Transferability refers to the concept of extending trust to an unknown person based on trust of a third party (McEvily et al., 2003). In turn, this extension of trust to a new contact increases the density of ties, thus expanding the individual or organizational network. Some interviewees from each partnership expressed the importance of having a personal connection with someone from the partner institution and credited that relationship as having an integral role in the creation of the

collaboration. This sentiment was expressed from interviewees from both the CAM institutions and the research institutions.

“We took a chance, we trusted -- well, I use that word honestly. We trusted that \_\_\_\_\_, who recommended him, who we had some relationships with, wouldn't have suggested he come in as the partner if it wasn't that he believed it would work.” (Interviewee C.11)

Another interviewee expressed the early relationship forming stage in this way: “So, you know, if we/I didn't know them well but people I worked with did. And so the trust, if you will, was sort of transitive.” (Interviewee B.6)

Most often interviewees identified one boundary spanner from each institution as the contact points for the relationships. “Boundary spanners are more closely involved with the interorganizational relationship than other members of the organization, and tend to act with their counterparts to a greater extent.” (Zaheer et al., 1998, p. 143) One partnership described the important role that the boundary spanner at the research institution played in setting up connections.

“Thanks to Dr. X. Whoever we needed to talk to Dr. X would set up the meeting, attend the meeting, and do the introductions. I can remember several meetings with really busy people and they said they were meeting because Dr. X wanted them to.” (Interviewee A.3)

***Delayed reciprocity.*** Delayed reciprocity refers to the willingness of individuals to accept slight inequities in individual transactions, knowing that things will balance out over the course of the relationship (McEvily et al., 2003). While this code did not

emerge as an important theme, one participant described a situation where the lack of delayed reciprocity had a negative impact on their project:

“We also had issues with their faculty doing anything for us without making sure that there was - that they were getting paid. And so, even though they were a percentage on the grant, some of the faculty that were involved on the grant were a percentage time, we did not track that. They did not always follow through.”

(Interviewee A.7)

***Generative capacity.*** Generative capacity is described as the transfer of trust from one activity to another, thus increasing the thickness of ties between individuals (McEvily et al., 2003). This code was divided into the subcodes related to relationships that were attributed to the formation of the grant and activities that were outcomes of the grant. The outcome activities were organized into those that afforded opportunities for students, faculty, or the institution.

Individuals from each of the partnerships attributed prior working relationships as having an important and positive impact on the formation of the CAM Practitioner Research Education Project (R25) partnership. “My department's previous relationships had been fruitful and had really created a relationship of trust so I think that was very helpful in the collaboration this time, as well. And probably helped move the project forward more quickly.” (Interviewee B.4) Specifically, interviewees talked about the importance of personal relationships, often attributing the additional collaborative opportunities to one key boundary spanner.

“Like so many things in life, and academics in general, I think it is the people that you can connect with that can make all the difference. That was the case here.

Without Dr. X, it would not have happened, or certainly wouldn't have happened as well.... I think we would have needed to take another year to develop the relationship before submitting the grant, at a bare minimum. And it may not have happened.” (Interviewee A.3)

In addition, the CAM Practitioner Research Education Project (R25) partnerships created additional opportunities for students, faculty, and the institutions. One institution has worked with their partner research university to create a collaborative DC/MPH degree. Faculty collaborations have also resulted from the CAM Practitioner Research Education Projects (R25). One interviewee from a research university reported that one of the CAM faculty was working with them on a project of mutual interest. Another interviewee described the connections that were formed through introduction by one of the librarians at the partner institution. Another acknowledged how participation in the project created an opportunity for their own personal development:

“As I became exposed to them, what it afforded me was the opportunity to submit an administrative supplement to our grant. I actually was able to take some additional coursework at our partnering institution in public health, eventually leading to a Master's in Public Health. It helped me personally by making those connections and investigating the program and opportunities that were kind of related to the project.” (Interviewee A.1)

A more broadly-based effort, intended to help faculty at all of the CAM Practitioner Research Education Project (R25) CAM institutions as well as CAM institutions who were not a part of the R25 mechanism, was the formation of a Consortium of Evidence-informed Practice Educators (CEIPE). This was created by the faculty of each of the four CAM Practitioner Research Education Project (R25) chiropractic institutions so that they could share curricular content related to evidence-based practice with each other and with the CAM education community.

Only one of the interviewees indicated that additional collaborations between the institutions had resulted from the CAM Practitioner Research Education Project (R25) partnership, resulting in the submission of another grant. “We've also written a grant together. Another grant that was not funded, but they were very encouraging and open to writing the grant. So there are a lot of opportunities that have been developed.” (Interviewee A.3) The other interviewees said that while there were no current collaborative initiatives between the institutions, they would be open to future partnerships.

***Role specialization.*** Role specialization allows for individuals to perform specific jobs, and to convey information across units or organizations, which allows for reduced redundancies but also exposes the organizations to some risk. The specialist must be trusted to convey accurate information to all parties (McEvily et al., 2003). This concept arose from just one interviewee in the following manner: “Every member of a team has certain responsibilities and you gain the trust by completing those responsibilities in a timely manner.” (Interviewee C.5)

**Mobilizing.** McEvily et al. (2003) define mobilizing as the process of converting resources, in the form of time, effort, attention and knowledge, into activities performed by individuals. The meaningful implementation of projects requires buy-in of the organizational actors who are needed to carry out the tasks. The mobilizing theme was elucidated by the codes: disclosing; identifying; and suspending judgment. Answers to the six questions below provided most of the data for this theme, though coding occurred across the set of responses to the other questions, as well.

1. What was your perception of willingness of individuals to share knowledge across both institutions?
2. Tell me about your comfort in sharing knowledge about the project, or exposing areas of weakness, with colleagues at your partner institution.
3. How would you describe the willingness of the faculty at the CAM institution to support the efforts of the R25 project?
4. How would you characterize the willingness of your administrators on the CAM campus to support the efforts of the R25 project?
5. Tell me about times, if any, when misunderstandings between individuals at the partner institutions occurred during the R25 partnership?
6. In what ways has your organization demonstrated long-term commitment to the R25 project?

The code related to identifying emerged as most significant, appearing 33 times. The code related to disclosing appeared 16 times, and the code related to suspending judgement appeared 11 times.

**Disclosing.** Disclosing is defined as the willingness of organizational actors to share information and disclose potential weaknesses or faults. Interviewees from all institutions reported a real openness of individuals across the partnerships to share information freely. One interviewee credited the design of the CAM Practitioner Research Education Project (R25) for the open dynamic: “The set-up of the R25 was such that it was a unique type of grant and arrangement and there was really no reason to keep cards close to the vest.” (Interviewee A.3) For the most part, interviewees felt as though faculty felt comfortable exposing their areas of weakness, though one of the interviewees from the CAM institution offered this response about faculty resistance:

“On the part of us as a group of individuals there seemed to be quite a bit more hesitancy to engage. I think there was a fear on the part of individuals that, if I fully engage in this that means what I was doing all along, what I was teaching, is wrong. And I'm not willing to state that or own up to that.” (Interviewee C.8)

Another interviewee from the partner institution with very high research activity gave this response: “But I've always loved the willingness that's been manifest by folks I've met through this project, to be vulnerable and to openly and ego-stably (sic) share what they know and what they don't know.” (Interviewee C.10) Another interviewee from a research university felt as though the transfer of information went both ways:

“Yes, but it went both ways. I think having done what I did with them helped inform what I do here better. So, you know, it went both ways. But it was phenomenal. For me, there was never a trust issue at all.” (Interviewee B.6)

**Identifying.** McEvily et al. (2003) assert that as participants gain trust, they begin to identify with each other and perceive their priorities and needs as similar; this increased identification leads to increased cooperation, commitment, and loyalty to the collective endeavor. Interviewees described both challenges and successes in getting faculty to own the concepts of evidence-based practice. One interviewee suggested that the lack of a mandate from administration at the CAM institution made it easy for faculty to avoid participating in the project's initiatives:

“When we started to do a lot of faculty development and we were developing the faculty piece, implementing the faculty piece, there was kind of a core handful of faculty who were involved. Go to all the meetings, attend all of the trainings. Beyond that, there was very little interest...I don't think it was trust. It was more of ‘this may be great, but unless you are going to mandate me to do this, I'm not doing it’”. (Interviewee A.1)

This same interviewee expressed disappointment with the lack of faculty engagement:

“There was a surprise that more faculty didn't embrace it on a volunteer basis. I think our PI was surprised with that. If you're not going to mandate them to do it, meaning embed activities in their courses, they're not going to do it.” (Interviewee A.1)

Another interviewee from the partner institution wondered if the lack of engagement by some faculty was related to a mistrust of allopathic medicine and a perception that evidence-based practice was being forced upon them:

“And I think there was probably on the part of some, not all by any means, let's say sort of a semi-vocal true minority of people who felt a little bit like well, the allopathic people can't possibly understand what we do anyway.” (Interviewee B.6)

Another interviewee from a partner institution summed it up this way:

“I think I ran in to some, as the project unfolded, a little bit of resistance and mistrust from some of the faculty outside of the research section. Although, you know, as an outsider, I'm not 100 percent sure where that came from or what it was all about. If it was about participating with an allopathic college clinician or if it was more, a little bit of resistance to having to learn new things. The resistance having to do with so much time, squeezing blood out of a turnip.”

(Interviewee B.4)

Interviewees from the CAM institutions of each project felt as though there had been a cultural shift on their campuses with regard to evidence-based practice and that most faculty were on board.

“I suppose that EBP is now just a given. I mean everybody here just knows that that's just part of who we are and what we do. It's part of our curriculum in all of the programs. And so we are at the point now where people are -students, faculty- are surprised to learn that other institutions don't have the same level. And to me that's a success because they see it as necessary and important and something that truly benefits the profession. So, it's become comfortable. It's become kind of an obvious entity. ” (Interviewee A.7)

One interviewee from an institution with very high research activity felt that faculty recognized the importance of evidence-based practice to the future of the chiropractic profession:

“But I think it's just a sense that you get from talking to people that no longer is this sort of an outlying idea. This is part of the thinking that this is part of the need to be part of chiropractic. And they're not going to survive. They're not going to have any respect in the scientific or medical community unless they do that.” (Interviewee C.5)

One interviewee at a CAM institution described how the project had inspired some longtime faculty:

“And they're smart people but they've kind of been isolated in their own ways. There were three of them that were there (workshop), and they went wild. One of them is going to McMaster, the other one saying maybe he'll go next year... These are people that are good, but you never think that they are going to grow in this way. And this is the remarkable thing - we got them to apply. They're certainly not sure. But after two days -- one guy that's never talked to me in 20 years I've been here, I mean I'm like running into him all over the place and he's chatting me up. I'm like this is very interesting.” (Interviewee C.11)

Another interviewee from a CAM institution summed it up this way: “There are some faculty who have been here for decades who basically have done not much who are all of a sudden engaged in different scholarly activities to improve their teaching and it's good to see.” (Interviewee C.8)

Finally, one interviewee from a partner institution with very high research activity described how identification with the goals of the project provided motivation for wanting to be involved:

“I think I wanted to be a part of, just like in my own field, better understanding how best to deliver the things that are going to help our patients get better as opposed to get worse.” (Interviewee B.4)

***Suspending judgment.*** Suspending judgment occurs when partners give each other the benefit of the doubt and make positive assumptions about the other’s motives. With regard to the CAM Practitioner Research Education Projects (R25), faculty needed to suspend judgment of administrators, project champions, and the activities themselves. Interviewees described experiencing some elements of mistrust and suspicion in the early phases of the grant.

“I think that the faculty in general kind of had to trust that what we were doing was worth their time because this stuff is actually kind of difficult to learn and a lot of older faculty weren't necessarily interested in it.” (Interviewee B.2)

Another interviewee from a CAM institution also expressed that they experienced hesitation on the part of some faculty with regard to workload: “I think there was quite a bit of ‘this is going to be lot of work for very little outcome’ I think there was a lot of that feeling too.” (Interviewee C.8) Another interviewee from that same partnership described early hesitation due to mistrust of administration:

“I think there were some trust issues initially on the campus, and some of them were in the silos. Like there may have been one department that kind of isolated

itself and did not engage, that type of thing. And I think that was a trust issue, more with administration, who were in a sense driving this, than with partner institutions or research.” (Interviewee C.8)

**Interorganizational trust.** The following questions were intended to capture a sense of participants’ thoughts around interorganizational trust:

1. When you think about a collaboration with another institution, what does it mean from your perspective for the institution to be trustworthy?
2. Tell me about your trust of your partner institution at the onset of the collaboration.

Overwhelmingly, the interviewees indicated that they considered personal relationships, rather than official connection to the partner institution, to be a key component of interorganizational trust. The codes that emerged for this theme were: personal connection; reliability; expertise; reputation; and communication. The code related to reliability appeared with the greatest frequency, with 12 references. Communication, personal connection, and reputation each appeared eight times and expertise appeared seven times.

***Personal connection.*** When asked about interorganizational trust, no interviewees spoke about feeling an official connection with the partner institution, as an organization.

“Institutions are big, often big, structures and sometimes a little nebulous and hard to define. So, whereas I might say that I had a great deal of the trust in the research section, I’m not sure that I fully understand – even now – the leadership

structure and network and how much all of the hierarchy can be trusted.”

(Interviewee B.4)

Rather, participants emphasized the importance of personal relationships in creating the connections across institutions:

“It's the people, it always boils down to people. Individuals that can be trusted that can expand into a department or a working group, but I really don't think of an institution as being a trustworthy institution, or not.” (Interviewee A.3)

and

“I really don't think of it in terms of institutions but I think of it more in terms of the individuals...there's usually a face to that trust... That it's, there's certain institutional construct, but it's really a face. And the interpersonal relationships that have developed between individuals that ultimately constitute the level of trust between the institutions.”

(Interviewee C.8)

and

“I never went into this thinking I was going to be working with or developing a relationship, necessarily, with an institution. I was going into this thinking that I would develop relationships and work with people and colleagues that are trying to do something audacious. That may be influenced by my upbringing, where the institutions don't matter, it's the people that are in them.” (Interviewee C.10)

**Reliability.** The importance of follow-through emerged as a condition for trust between collaborators. Six interviewees, from all three partnerships, identified dependability as a condition for partnership trust.

“The originating group, the three of us that put together the grant, needed to trust that each of us would carry our weight... There was a great deal of trust. You could count on them – they would do what they said. They made themselves available; they were very, very helpful. You could e-mail them and they would respond quickly, they seemed genuinely and sincerely wanting us to succeed.”

(Interviewee B.2)

and “Yea, I think it (trust) was good. Along the way they've done pretty much everything we've asked them to do.” (Interviewee A.1) One interviewee described how trust between partners has grown over time through consistent, dependable behaviors.

“It (trust) was high. I think the point is that we've worked together for so long. I wouldn't have worked with them if we didn't trust each other – I mean, if I didn't trust them. And I think it comes about primarily as a result of people doing their job.” (Interviewee C.5)

Another interviewee offered this comment: “But to me, trust is something that grows over time and is based on relationships and deliverables.” (Interviewee C.10)

**Expertise.** There was a strong sense from interviewees that expertise and competence were important components to developing trust in a collaborative relationship. “You meet the people and you have to make judgment on whether or not

they themselves have the expertise that you want, and then will they, so that's one aspect of being trustworthy.” (Interviewee B.9)

**Reputation.** Interviewees indicated that they look at the results of prior collaborative efforts and to the body of work of individuals and institutions when considering their trustworthiness: “Past ability to work with other institutions, I think is very important.” (Interviewee A.1) One interviewee described the impact that reputation had on the decision to participate as a partner with the CAM institution in the CAM Practitioner Research Education Project (R25):

“The folks that I ended up working with were, if you will, sort of known entities already in my neck of the woods. And they came to us saying we'd really like to do this, would you like to do it with us? And there was enthusiasm all the way around to do it.” (Interviewee B.6)

Two interviewees attributed institutional reputation as a reason for choosing them for their CAM Practitioner Research Education Project (R25) partner: “We trusted that they would be able to help guide us because they've had so much funding in the past. And we trusted them because we had prior relationships with them.” (Interviewee A.7) and “One thing is that they -- they look at our research track record.” (Interviewee C.11)

**Communication.** Though it was not a prominent code, four interviewees from two of the partnerships identified communication as an important component of developing and maintaining trust: “A lot of effort went into cultivating good relationships with anyone we contacted at (partner institution).” (Interviewee A.3) and “We were in

pretty close contact and we talked all the time. If there was something it got ironed out quick.” (Interviewee B.6)

One interviewee acknowledged that poor communication on the part of their team resulted in misunderstandings and lack of trust: “But within the co-investigators there wasn't the trust that needed to be there to have the honest conversations about things such as survey development and data collection and then data analysis.” (Interviewee A.7) In the opinion of that interviewee, those issues negatively impacted the overall success of their CAM Practitioner Research Education Project (R25).

### **Survey Data**

This section will present the findings obtained through the use of a Qualtrics survey to faculty and administrators at the three CAM institutions. Participants were queried on their level of awareness of and involvement in the CAM Practitioner Research Education Project (R25) initiatives and the degree to which they had changed their teaching or clinical care practices. The survey then posed questions related to interpersonal, organizational, and interorganizational trust, along with perceptions of success of the CAM Practitioner Research Education Project (R25) project and culture change regarding evidence-informed practice principles.

The first set of results of the statistical analysis are statistics for the following set of items and scales: descriptive statistics for the scales; questions about awareness and involvement in the CAM Practitioner Research Education Project (R25) initiatives; questions and scales relating to the construction of trust and perceptions of success of the CAM Practitioner Research Education Project (R25) collaboration. The second set of

results presents the correlations among the variables considered for inclusion in the multiple regression analysis. The final statistical analysis presents the results of the multiple regression analysis.

**Descriptive statistics and comparisons among institutions.**

*Scale score statistics.* Table 14 contains the means and standard deviations for the four-item scale on interpersonal trust, the two-item scales on organizational and interorganizational trust, and the three-item scale on perceived project success.

Table 14

*Descriptive Statistics of Scales*

Scale	Number of items	Mean (SD)	Range
Interpersonal trust	4	15.0 (3.20)	8-20
Organizational trust	2	8.13 (1.62)	2-10
Interorganizational trust	2	7.75 (1.71)	2-10
Project success	3	12.14 (2.14)	3-15

*Survey items related to project awareness and involvement.* Table 15 provides descriptive statistics for items related to the control variables related to level of awareness of the CAM Practitioner Research Education Project (R25), level of involvement with the project, and willingness to participate in the project initiatives. Results of the one-way ANOVA comparing responses across the three institutions indicated statistically significant between group differences for variables related to participant awareness of the CAM Practitioner Research Education Project (R25) and level of involvement with the CAM Practitioner Research Education Project (R25). Items related to initial or current willingness to participate did not reveal significant between group differences.

*Post hoc* Scheffé comparisons revealed statistically significant differences between Institutions A and C, and B and C for the items related to awareness of project and level of involvement. The mean scores and standard deviations for level of awareness of their institution's CAM Practitioner Research Education Project (R25) were 3.88 (1.24), 3.47 (1.31), and 4.48 (.61) for Institutions A, B, and C, respectively. For the item related to level of involvement with the CAM Practitioner Research Education Project (R25), mean scores and standard deviations for institutions A, B, and C were 3.00 (1.23), 2.80 (1.11), and 3.76 (.91).

Table 15

*Control Variable Survey Responses by Institution*

Question	Total Mean (SD)	Institution A Mean (SD)	Institution B Mean (SD)	Institution C Mean (SD)	F-ratio
How aware have you been of your institution's R25 project and its initiatives on your campus? <sup>a</sup>	4.13 (1.04)	3.88 (1.24)	3.47 (1.31)	4.48 (.61)	8.69*
Rate your level of involvement with your institution's R25 and its initiatives on your campus. <sup>b</sup>	3.37 (1.11)	3.00 (1.23)	2.80 (1.11)	3.76 (.91)	8.43*
Initially, how would you rate your willingness to participate in your institution's R25 project? <sup>c</sup>	4.31 (.96)	4.36 (.91)	3.95 (1.2)	4.42 (.85)	1.80
Currently, how would you rate your willingness to participate in your institution's R25 project? <sup>c</sup>	4.35 (.96)	4.56 (.77)	4.05 (.97)	4.35 (1.07)	1.45

<sup>a</sup> Responses were obtained on the following scale: no awareness (1), little awareness (2), some awareness (3), high awareness (4), very high awareness (5)

<sup>b</sup> Responses were obtained on the following scale: no involvement (1), little involvement (2), some involvement (3), high involvement (4), very high involvement (5)

<sup>c</sup> Responses were obtained on the following scale: reluctant (1), somewhat reluctant (2), neutral (3), somewhat willing (4), willing (5)

\*  $p < .0001$

*Scale score and survey items related to interorganizational trust.* Table 16

provides descriptive statistics for items related to interorganizational trust, by institution.

Table 16

*Interorganizational Trust Scale Score and Item Responses by Institution*

Scale/Item	<u>Total</u> Mean (SD)	<u>Institution A</u> Mean (SD)	<u>Institution B</u> Mean (SD)	<u>Institution C</u> Mean (SD)	F-ratio
Interorganizational Trust Scale	7.77 (1.71)	7.28 (1.90)	6.60 (1.19)	8.43 (1.47)	11.86*
Our partner institution in the R25 collaboration is trustworthy. <sup>a</sup>	4.04 (.93)	3.84 (1.07)	3.40 (.75)	4.37 (.76)	7.54*
My level of trust in our partner institution positively affected my willingness to accept the goals of the R25 project. <sup>a</sup>	3.73 (.90)	3.44 (.96)	3.20 (.52)	4.06 (.86)	9.75*

<sup>a</sup> Responses were obtained on the following scale: strongly disagree (1); disagree (2); neither agree nor disagree (3); agree (4); strongly agree (5)

\*  $p < .001$

Results of a one-way ANOVA comparing the three institutions and the two interorganizational trust items and the interorganizational trust scale indicated statistically significant between group differences for both items and the scale. *Post hoc* Scheffé comparisons indicated statistically significant differences between Institutions A and C and Institutions B and C for both of the items and the scale.

Mean scores and standard deviations, for Institutions A, B, and C, for the item related to trustworthiness of the partner institution were 3.84 (1.07), 3.40 (.75), and 4.37 (.76). The item “My level of trust in our partner institution positively affected my willingness to accept the goals of the R25 project” had mean scores and standard

deviations of 3.44 (.96), 3.20 (.52), and 4.06 (.86) for Institutions A, B, and C. Mean scores and standard deviations for the interorganizational trust scale, for Institutions A, B, and C, were 7.28 (1.90), 6.60 (1.19), and 8.43 (1.47).

***Scale score and survey items related to interpersonal trust.*** Table 17 provides descriptive statistics for the scale and the four items related to interpersonal trust, by institution. Results of the one-way ANOVA comparing the three institutions on the four interpersonal trust items and the interpersonal trust scale did not indicate a statistically significant between group difference for the four items related to interpersonal trust or the four-item interpersonal trust scale. *Post hoc* Scheffé comparisons indicated no statistically significant differences between the items related to interpersonal trust, the interpersonal trust scale, and the institutions.

Interpersonal trust scores were relatively high for all items, across the three institutions. Mean scores and standard deviations for the item related to “faith in the university’s project champion to look out for our faculty interests” were 4.20 (1.16), 3.65 (.93), and 4.07 (.89) for Institutions A, B, and C, respectively. Mean scores and standard deviations for the item related to comfortable level sharing their areas of weakness related to the expectations of the CAM Practitioner Research Education Project (R25) with their institution’s project champions were 3.84 (1.11), 3.75 (.85), and 3.93 (1.04) for Institutions A, B, and C, respectively. The mean score and standard deviation for the reverse coded item related to thinking carefully before telling the project champion opinions related to the CAM Practitioner Research Education Project (R25) was 3.32 (1.14), 3.10 (1.12), and 2.98 (1.19) for Institutions A, B, and C.

Table 17

*Interpersonal Trust Scale Score and Item Responses by Institution*

Scale/Item	Total Mean (SD)	Institution A Mean (SD)	Institution B Mean (SD)	Institution C Mean (SD)	F-ratio
Interpersonal Trust Scale	15.04 (3.19)	15.48 (3.14)	14.50 (2.98)	15.04 (3.31)	0.52
I have faith in my university's project champion(s) to look out for our faculty interests. <sup>a</sup>	4.02 (.98)	4.20 (1.16)	3.65 (.93)	4.07 (.89)	1.97
I feel comfortable sharing my areas of weakness related to the expectations of the R25 project with my institution's project champion(s). <sup>a</sup>	3.87 (1.02)	3.84 (1.11)	3.75 (.85)	3.93 (1.04)	0.23
I think carefully before telling my university's project champion(s) my opinions related to the R25 project. <sup>b</sup>	3.09 (1.61)	3.32 (1.14)	3.10 (1.12)	2.98 (1.19)	0.72
If I had my way, I would not let our project champion(s) have any influence over issues related to my program. <sup>b</sup>	4.06 (.96)	4.12 (.93)	4.00 (.86)	4.06 (1.02)	0.09

<sup>a</sup> Responses were obtained on the following scale: strongly disagree (1); disagree (2); neither agree nor disagree (3); agree (4); strongly agree (5)

<sup>b</sup> Responses were obtained on the following scale: strongly disagree (5); disagree (4); neither agree nor disagree (3); agree (2); strongly agree (1).

Mean scores and standard deviations for the reverse coded item related to letting project champions have influence over issues related to curriculum for Institutions A, B, and C were 4.12 (.93), 4.00 (.86), and 4.06 (1.02), respectively. Finally, the mean scores and

standard deviations for the interpersonal trust scale were 15.48 (3.14), 14.50 (2.98), and 15.04 (3.31) for Institutions A, B, and C.

***Scale score and survey items related to organizational trust.*** Table 18 provides descriptive statistics for items related to organizational trust, by institution.

Table 18

*Organizational Trust Scale Score and Item Responses by Institution*

Scale/Item	<u>Total</u> Mean (SD)	<u>Institution A</u> Mean (SD)	<u>Institution B</u> Mean (SD)	<u>Institution C</u> Mean (SD)	F-ratio
Organizational Trust Scale	8.12 (1.62)	7.72 (1.93)	7.50 (1.64)	8.54 (1.36)	4.26*
I felt comfortable asking for help from someone at my institution, when needed, with the activities of my institution's R25 project. <sup>a</sup>	4.18 (.86)	3.92 (1.04)	4.00 (.92)	4.37 (.71)	3.01
My level of trust in my institution positively affected my willingness to accept the goals of the R25 project. <sup>a</sup>	3.94 (.98)	3.80 (1.08)	3.50 (.95)	4.17 (.89)	3.96*

<sup>a</sup> Responses were obtained on the following scale: strongly disagree (1); disagree (2); neither agree nor disagree (3); agree (4); strongly agree (5); not applicable/don't know (3)

\*  $p < .05$

Results of a one-way ANOVA comparing the three institutions on the two organizational trust items and the associated scale indicated statistically significant between group differences only for the item “My level of trust in my institution positively affected my willingness to accept the goals of the R25 project.” *Post hoc* Scheffé comparisons on the organizational trust scale and individual items indicated statistically significant differences between Institutions B and C for the organizational trust scale and

the item related to level of trust in institution positively affecting willingness to accept the goals of the CAM Practitioner Research Education Project (R25).

Mean scores and standard deviations for the item related to comfort in asking for help were 3.92 (1.04), 4.00 (.92), and 4.37 (.71) for Institutions A, B, and C, respectively. Mean scores for level of trust for Institutions A, B, and C were 3.80 (1.08), 3.50 (.95), and 4.17 (.89). Mean scores and standard deviations for the organizational trust scale were 7.72 (1.93), 7.50 (1.64), and 8.54 (1.36) for Institutions A, B, and C.

*Survey items related to dependent variables.* Table 19 provides descriptive statistics for the specific items and scale related to the dependent variables of perceived success and culture change, as well as self-reported changes in behavior.

Because of the high number of “not applicable/don’t know” responses to the items related to changes in teaching or clinical care, likely due to the fact that few respondents engage in both teaching and clinical care, the two items “I have changed my teaching as a result of my institution’s R25” and “I have changed my clinical care as a result of my institution’s R25” were combined to form one variable. If respondents answered only one question related to behavior change, the new variable reflected that number. If an individual indicated that they changed both teaching and clinical care as a result of their institution’s CAM Practitioner Research Education Project (R25), the score for the new variable reflected a mean of the teaching and clinical scores. The new variable was combined with the items “My institution has been successful in achieving its goals related to the R25 project” and “My institution's R25 project has resulted in culture

change regarding evidence-based practice on our campus” to form a three-item scale indicating overall success of the R25 project.

Table 19

*Perceived Project Success Scale Score and Item Responses by Institution*

Scale/Item	Total Mean (SD)	Institution A Mean (SD)	Institution B Mean (SD)	Institution C Mean (SD)	F-ratio
Perceived Project Success Scale	12.14 (2.15)	11.70 (2.88)	11.89 (1.60)	12.41 (1.95)	0.98
My institution has been successful in achieving its goals related to the R25 project. <sup>a</sup>	4.10 (.90)	4.08 (1.15)	3.85 (.67)	4.20 (.83)	1.15
My institution's R25 project has resulted in culture change regarding evidence-based practice on our campus. <sup>a</sup>	4.03 (.94)	3.92 (1.04)	4.00 (.73)	4.09 (.98)	.30
I have changed my teaching as a result of my institution's R25 project. <sup>a</sup>	3.67 (1.48)	3.28 (1.57)	3.35 (1.66)	3.96 (1.32)	2.47
I have changed my clinical care as a result of my institution's R25 project. <sup>a</sup>	2.59 (1.96)	1.75 (1.82)	2.79 (1.84)	2.89 (1.98)	3.07
Combined teaching/clinical care variable	3.99 (.81)	3.67 (1.00)	4.20 (0.66)	3.83 (0.79)	4.11*

<sup>a</sup> Responses were obtained on the following scale: strongly disagree (1); disagree (2); neither agree nor disagree (3); agree (4); strongly agree (5); not applicable/don't know (3)

\*  $p < .05$

The results of a one-way ANOVA comparing the three institutions on the four items related to perceived project success, the combined variable related to teaching and

clinical care, and the three item scale on project success indicated statistically significant between group differences for only the combined variable on teaching and clinical care.

*Post hoc* Scheffé comparisons on the three-item dependent variable scale, the individual items, and the combined variable revealed a statistically significant difference between Institutions A and C for the combined variable related to changes in teaching and clinical care. The mean score and standard deviation for the combined variable was 4.20 (.66) for Institution C, compared to 3.66 (1.00) for Institution A, and 3.83 (.79) for Institution B.

There were relatively high levels of perceived project success across the institutions with mean scores and standard deviations ranging from 3.85 (.67) for Institution B and 4.20 (.83) for Institution C. The mean score and standard deviation for Institution A was 4.08 (1.15). Similarly, there were relatively high levels of perceptions in culture change across the institutions with mean scores and standard deviations of 3.92 (1.04), 4.00 (.73), and 4.09 (.98) for Institutions A, B, and C, respectively.

**Correlational and comparative analysis.** This next statistical analysis consisted of a series of Pearson-product moment correlations and other statistical tests as a prelude to the multiple regression analysis.

Table 20 displays the correlation matrix for the scale and the control variables that were considered for inclusion in the regression analysis.

Moderate positive correlations were indicated between: organizational trust and awareness ( $r = .39, p < .01$ ), involvement ( $r = .38, p < .01$ ), and current willingness to participate in the CAM Practitioner Research Education Project (R25) ( $r = .32, p < .01$ );

perceived success and awareness ( $r = .31, p < .01$ ), and involvement ( $r = .31, p < .01$ ); and current willingness to participate in the CAM Practitioner Research Education Project (R25) and involvement ( $r = .39, p < .01$ ) and initial willingness to participate ( $r = .39, p < .01$ ).

Table 20

*Pearson's Product Moment Correlations Among Quantitative Variables*

Variable	Variable							
	1	2	3	4	5	6	7	8
1. Awareness	--							
2. Involvement	.66**	--						
3. Initial willingness	.24*	.28*	--					
4. Current willingness	.29**	.39**	.39**	--				
5. Interpersonal trust	.21*	.21*	.23*	.43*	--			
6. Organizational trust	.39**	.38**	.17	.32**	.52**	--		
7. Interorganizational trust	.46**	.42**	.13	.18	.25*	.62**	--	
8. Perceived success	.31**	.31**	.18	.43**	.53**	.71**	.56**	--

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

There were weak positive correlations between interpersonal trust and awareness ( $r = .21, p < .05$ ), involvement ( $r = .21, p < .05$ ), and initial willingness to participate ( $r = .23, p < .05$ ). The interorganizational trust and interpersonal trust scales were also weakly correlated ( $r = .25, p < .05$ ), as were the items initial willingness to participate and awareness ( $r = .24, p < .05$ ) and initial willingness to participate and involvement ( $r = .28, p < .05$ ).

The second set of statistical comparisons explored differences in the perceived project success scale as a function of gender, length of employment, position, and institution. Independent sample t-test comparisons between males and females indicated

no statistically significant difference between perceptions of project success between males and females  $t(79) = .22, p = .59$ .

Comparisons among the five length-of-employment categories indicated no statistically significant differences between the groups. Comparison among the five position categories indicated no statistically significant differences between the groups. Similarly, there were no statistically significant differences between institution of employment and perception of project success.

An analysis of standard residuals identified cases 40 and 71 as outliers, with standard residuals of -3.38 and -3.09, respectively. Subsequent analysis of those two cases did not provide sufficient reason for their removal from the data set.

Multicollinearity diagnostics on the three different trust scales did not indicate evidence of multicollinearity (interpersonal scale, tolerance = .67, VIF = 1.49; organizational trust scale, tolerance = .45, VIF = 2.20; interorganizational trust scale, tolerance = .59, VIF = 1.69). The data met the assumption of independent errors (Durbin-Watson = 1.74), indicating no evidence of autocorrelation. The histogram of normal distribution of errors, along with the P-P plot of standardized residuals indicated approximately normally distributed errors. Finally, the scatterplot of standardized predicted values indicated that the data met the assumptions of homoscedasticity and linearity.

### ***Regression analysis.***

The interpersonal, interorganizational, and organizational trust scales, along with initial willingness to participate in the activities of the CAM Practitioner Research Education Project (R25) and level of involvement were used in a standard regression

analysis to predict perceived project success. The control variables for gender, rank, and time of service were not included in the regression model as the results of the ANOVA suggested no statistical differences of these variables on the dependent variable. The variable related to current willingness to participate in the activities of the CAM Practitioner Research Education Project (R25) was not included in the regression model as it demonstrated a strong positive correlation to the dependent variable ( $r = 0.43$ ,  $p < 0.01$ ). The variable related to institution was not included as Scheffé analysis did not reveal statistically significant between group differences between institutions and the dependent scale. Listwise deletion removed all cases including missing data, resulting in the elimination of 11 cases. The total number of cases included in the final regression was 90. Table 21 contains the results of the multiple regression analysis.

The overall regression was statistically significant ( $F(5,84) = 22.91$ ,  $p < .001$ ,  $R^2 = .58$ ). The effect is moderately strong, with the model predicting 58% of the variance in perceptions of project success. The effect of organizational trust was statistically significant ( $b = .60$ ,  $t = 4.17$ ,  $p < .001$ ), as was the effect of interorganizational trust ( $b = .30$ ,  $t = 2.52$ ,  $p = .01$ ), and interpersonal trust ( $b = .16$ ,  $t = 2.74$ ,  $p = .01$ ). Level of involvement and initial willingness to participate in the activities of the CAM Practitioner Research Education Project (R25) were not statistically significant.

Table 21

*Multiple Regression Analysis of Variables Related to Perceived Project Success (n = 90\*)*

Model <sup>a</sup>	b	SE	$\beta$	t	Lower 95% CI	Upper 95% CI	p
(Intercept)	2.51	1.05		2.39	.42	4.60	.02
Interpersonal scale	.16	.06	.24	2.74	.04	.27	.01
Organizational trust scale	.60	.14	.44	4.17	.32	.53	.00
Interorganizational trust scale	.30	.12	.05	2.52	.06	.53	.01
Involvement	.09	.16	.05	.55	-.23	.41	.58
Initial willingness	-.07	.13	-.03	-.37	-.42	.29	.72
R-square	.58						

<sup>a</sup> Dependent variable: Three-item scale on perceived project success

\* Listwise deletion resulted in the removal of 11 cases from data set for regression analysis

**Qualitative data on perceived project success.** The following two survey items allowed respondents an opportunity to elaborate on their experiences or feelings related to their institution's CAM Practitioner Research Education Project (R25) grant:

- Please describe any changes that you have implemented in your teaching, clinical care, or work related activities as a result of your participation in your institution's R25 project.
- Please provide any examples of attitudinal or culture change that have resulted on your campus as a result of your institution's R25 project.

Additional qualitative data related to the effects of the R25 project are summarized by institution, as follows.

***Institution A.*** Thirteen respondents answered the question "Please describe any changes that you have implemented in your teaching, clinical care, or work related

activities as a result of your participation in your institution's R25 project" though one person answered "none" and another answered "not applicable". Six respondents provided descriptions of how they discuss research in the classroom as it relates to their topic. Another described "Frequently reviewing the literature in my area to update power point presentations." One person credited the CAM Practitioner Research Education Project (R25) with their professional growth: "I have become much more interested and involved in clinical research. I have published two case studies and committed myself to learn research methodology."

The question asking for description of attitudinal or cultural change on campus as a result of the CAM Practitioner Research Education Project (R25) prompted 12 responses. The bulk of the responses can be grouped into increased faculty scholarship and greater sophistication of faculty and students regarding the use of research evidence. A few of the responses are as follows:

"As a result of the R25 project, there has been noticeable evidence of more faculty participating in evidence-based activities (scholarly activities, course design and classroom presentations). Students, especially in the clinic settings, exhibit more comfort and familiarity in the use evidence-based practices in their decision making processes as they relate to patient care."

and

"Evidence for full acceptance and embrace of these concepts is found in the daily language of both research concepts and evidence-based practice and education. It has become part of our fabric. More faculty and students are engaging in

research, faculty are citing research in classrooms, and students are demanding it.

Courses have been developed specifically to teach EBP and other courses have been developed around EBP.”

and

“Students are more likely in class to volunteer questions and ideas from research they have read outside of class. It is clear that they are applying principles from the R25 changes in the curriculum. Students and faculty have a much higher level of familiarity and use of search strategies through PubMed, My NCBI, and other methods.”

While it is clear that some faculty and administrators have perceived significant changes in themselves and others, there does not appear to have been widespread knowledge of the CAM Practitioner Research Education Project (R25) initiatives on Institution A’s campus. Of the 12 respondents, one replied “not applicable” regarding attitudinal or culture change.

Additional comments, provided by eight participants, included the following:

“A very positive project in which there was a lot of cooperation, including seminars for faculty and a lot of continuing education to promote awareness. The leaders in the Research Department were motivated and excited about the project and did a great job of motivating the rest of the faculty.”

and

“The R25 project was not just symbolic, but it generated many tangible results in both the short- and long-term. I would hope that our institution could garner other such grants to further the success of the R25 project or something similar.”

***Institution B.*** The 14 responses to the question “Please describe any changes that you have implemented in your teaching, clinical care, or work related activities as a result of your participation in your institution’s R25 project” reference the inclusion of citations and articles in course notes and discussion of evidence-based principles with interns in the clinic. One participant reported using skills learned through the CAM Practitioner Research Education Project (R25) to “researching more teaching and educational best practices through the literature and wanting to incorporate EIP into my lab courses.”

The question regarding evidence of attitudinal or culture change on campus as a result of the CAM Practitioner Research Education Project (R25) garnered 11 responses. One respondent reported changes in both faculty and student knowledge and behaviors: “Both faculty and students have a heightened awareness of the importance of research literacy. Students seem to know when evidence presented is of high quality or not, and seem to improve their own skills as they move through the curriculum.” One respondent expressed frustration with lack of time to incorporate desired changes and another described a varying degree of acceptance among students: “It seems like the EIP training receives mixed acceptance from the students. Some crave evidence-based biomechanical/biomedical validity to diagnostic procedures or therapy. Others simply do enough to survive and focus on other course content.” Another described the institutional changes in this way:

“Significantly greater awareness of tools available for critical analysis of various facets (diagnostic, therapeutic, risk assessment) of clinical care. Astronomical increase in understanding the terminology, utility and application of principles of evidence-informed practice in clinical interns. Some changes in clinical behavior of students and clinical faculty.”

The five additional comments provided by participants were all in support of the project, with two people expressing a desire for having more time to work with the material: “It is difficult to work on skills with usual faculty requirements.” Another summed up the CAM Practitioner Research Education Project (R25) in this way: “The concepts that the project attempts to instill are vital to the sustainability of the chiropractic profession and its integration within contemporary medical healthcare system framework. The challenge is delivering this content clearly and in a way that does not overwhelm the student.”

*Institution C.* There were 46 responses to the question “Please describe any changes that you have implemented in your teaching, clinical care, or work related activities as a result of your participation in your institution’s R25 project”, with one person saying “none”. Comments related to the classroom included better reference lecture materials and class assignments related to searching the literature. One faculty member summed it up this way: “I am more aware of the importance of incorporating evidence-based materials into my classroom and increasing the depth of student knowledge on such concepts.” The majority of comments related to changes made in clinical training and included the following:

“1. As a clinical faculty member, I routinely require my interns to search the literature and incorporate research findings into their patient care plans, integrating EIP into the culture of patient care in my module. 2. I model rapid searching of the literature routinely to my interns. 3. I utilize EBM routinely in my clinical decision making. 4. I have incorporated EBM, or EIP, into the syllabus and teaching of the three elective courses that I teach.”

and “I immediately have interns research questions posed by patients through our data bases or through the use of ‘smart phones’.” Another describes how they model an evidence-based approach to patient care with interns:

“In addition to regular (and more efficient) literature scanning I routinely access the literature to inform my patient care. I tutor other faculty and students in the process and regularly engage in discussions on how to interpret the literature with students.”

Two respondents described using concepts from the CAM Practitioner Research Education Project (R25) to improve communication surrounding patient care and professional advocacy:

“I have always been aligned with evidence in my clinical approach to diagnosis and treatment, so EBCP was not an alien concept for me to learn. What I have taken away and now use to teach my students is using the evidence to better examine and diagnose pathologies, use research to communicate to other health professionals and to communicate treatments to patients using an EBCP approach.”

and “I am able to communicate with other professionals more confidently. Just having the knowledge enhances my ability to communicate regarding healthcare, public health policy, our profession, etc.”

There were 46 responses to the question related to culture change on the CAM campus as a result of the CAM Practitioner Research Education Project (R25) project. The vast majority of comments related to an increased awareness of evidence-based practice as well as an attitudinal change on campus. Many referenced that evidence-based concepts are the common language on campus. The following represents a few of the positive comments related to the culture change resulting from the CAM Practitioner Research Education Project (R25):

“A critical mass of faculty have embraced EBP concepts and have begun integrating them into courses and clinical practices, changing the dialogue among the student body as to approaches to clinical practice. Faculty reflection and introspection on teaching EBP concepts have resulted in significant changes in instruction, both formal and informal. EBP practices have opened new doors to seeking and using research findings in clinical decision-making. Students question certain practices more; less apt to simply accept certain practices as supported by the literature. At the same time, there is a more evolved sense of where the literature supports practices and does not exist with regard to others, balanced with clinician experience and patient values.”

and “An increase in student and faculty awareness to evidence-based clinician decision making and practice as well as a cultural shift towards a patient centered, research based

clinic.” One person noted that those who are resistant to evidence-based care are becoming the exceptions rather than the rule:

“I think that when we started the R25 grant a significant percentage of our faculty and clinicians did not care about this issue and had little to no knowledge of basic evidence-based practice, critical appraisal of the literature etc. It has certainly become more and more expected that EBP concepts will be used in the classroom and clinic. Now, a faculty member who resists using evidence to back up their teaching/practice is the outlier on our campus. It has been a big culture change. Our students seem to appreciate the culture change and most are positive about it.”

A couple of respondents acknowledged their own attitude changes as a result of the CAM Practitioner Research Education Project (R25): “I am more open to EBCP, because I was under the assumption that evidence-based meant research only. I now realize it encompasses patient preference.” and “I don't know that the R25 project is correlated, but I do feel a less hostile reception to using evidence in teaching and in pointing out when evidence doesn't exist.”

Not all were enthusiastic regarding culture change and the CAM Practitioner Research Education Project (R25) initiatives. One person replied “no changes” and another offered this response:

“NONE! If anything, it's worse. This is our biggest problem. The consensus on our campus is that we are only doing this to look good on paper and roll their eyes whenever it is brought up. Through unfortunate events, faculty now feel highly

pressured to do research (which is not the goal of the grant) to publish to keep their job or get promoted. This results in very poor science because it is being conducted by untrained individuals who don't know that they don't even know that they don't know. Some equate EBCP (consumerism) with doing research (production) for promotion (so they are missing the basic concept). We have a handful of trained people because of the grant but faculty do not see it as a priority, especially when they are overloaded anyway. A few even view it as hypocritical to incorporate EBCP into the curriculum when there is little to no evidence to support what they are charged to teach (in fact, there is evidence to the contrary to what they are charged with teaching). Faculty need to feel less pressured to produce to keep their job or get promoted and more encouraged to incorporate EBCP into their courses.”

Another respondent, while personally embracing evidence-based concepts, feels as though there is still a strong philosophy based faction on campus:

“Yes, absolutely. I have been identified as one of those people that only care about research. The main culture on my academic institution is still subluxation based and on the surface we talk and teach about EBCP but in reality I feel that philosophy still dominates.”

Nineteen people offered additional comments regarding the CAM Practitioner Research Education Project (R25). Overall, the comments were largely positive and reinforced earlier responses. One person indicated a concern with “elitism” among the project champions. Another reference to elitism is as follows: “I feel it has had an overall

positive effect. There have been some charges of elitism, which might apply to certain individual presenters, but even elitism does not discredit the truth.” One person expressed challenges related to the additional travel and training:

“I have found the course and the travel demands to be challenging to complete with the other demands of my position. Although I value this EBCP knowledge and culture shift I have at times felt very stressed by my participation in this endeavor and I would have appreciated more support for those of us who have committed so much time and energy to this work.”

One person summed up the challenges in this manner:

“I have really enjoyed, and have been excited by, our campus's participation in the R25 grant. I think there could be greater administrative support for faculty training on campus, and for programs (such as journal clubs) for student participation. Release time for faculty to participate in and develop programs would be helpful. Also, there needs to be discussion of how EIP fits into chiropractic care, and allowance for differences of opinion in an open and accepting environment. Benefits and limitation of EIP/EBM in the context of chiropractic care needs discussion in an open and nonjudgmental environment. My experience has been that some of the biggest proponents of EBM become judgmental and slightly arrogant, without consideration of some of the limitations of EBM in our type of clinical care, which turns off some of the faculty, further widening the gap between the "science" faculty and the "philosophy" faculty. We, as a profession and as a faculty need time and space to not only learn about

EBM, but to process it, and begin to integrate it, in a deep and meaningful way.

Which means that administration needs to provide the time and space for that to occur on an ongoing basis.”

## **Chapter 5**

### **Conclusion**

The CAM Practitioner Research Education Project Grant Partnership (R25) mechanism created a unique opportunity for CAM institutions to partner with research universities with very high research activity in order to advance the research training of students, faculty, and clinicians in the CAM disciplines. The partnerships were unique in that they provided a chance for educators and practitioners from philosophically different orientations toward health care, CAM and traditional medicine, to create curricula around evidence-based practice. The purpose of this research was to explore the impact of trust on the perception of success of collaborations resulting from the CAM Practitioner Research Education Project (R25) initiative.

Three CAM Practitioner Research Education Project (R25) partnerships were deliberately selected for inclusion in this study because they included colleges of chiropractic. Because the focus of this research is on trust, the historical mistrust between chiropractic and medical practitioners added an interesting dimension. This research used a mixed-methods approach to collect qualitative and quantitative data. Interviews with 11 key participants provided detailed description of the individual partnerships and provided qualitative data regarding the impact of trust on the formation and perceived success of the CAM Practitioner Research Education Projects (R25). Survey data from 101 faculty participants at the CAM institutions provided quantitative data regarding perceptions of success. Responses to open-ended survey questions

provided additional qualitative data regarding specific examples of behavior or culture change as a result of the CAM Practitioner Research Education Projects (R25).

The first section of this chapter will compare the approaches to student and faculty training among the three partnerships. The second section will explore the answers to the two questions posed through this research regarding the impact of trust on the formation and perception of success of the collaborations. The next section will compare the findings of this research with those of the first round of CAM Education Project Grants (R25) in traditional medical institutions. This will be followed by a discussions of the implications of this research on health care institutions and academic administrators. The sixth section will address the limitations of this study, followed by sections exploring areas for future research and offering concluding remarks.

### **Comparison of Methodological Approaches Between CAM Practitioner Research Education Project Partnerships (R25)**

Though not the focus of this research, one interesting finding that emerged was the unique approach to student and faculty training taken by each institution. Each CAM institution, operating within the confines of the CAM Practitioner Research Education Project (R25) grant mechanism, chose different approaches to integrate evidence-based practice into faculty training and program curricula. Institution A chose to focus the majority of initial effort on the development of student curricula and to create dual-degree opportunities for a few, select students. Institution B opted to create mandatory training sessions for all faculty, and Institution C deliberately trained a few key faculty early on, with the intent of having these faculty act as champions with which other

faculty would identify and want to emulate. Each of the principal investigators spoke about the deliberate decision to choose the method for their institution, and the impact of those decisions on perceptions of project success will be discussed in the commentary on research question two.

### **Answers to Research Questions**

This next section will address the following research questions: 1) To what extent does trust impact the formation of a collaboration? 2) To what extent does trust impact the perceived success of a collaboration? Qualitative data obtained through interviews with key participants from the CAM and research intensive partner institutions will be used to answer the first question. The second question will be answered with both quantitative data from the survey, along with qualitative data from the interviews and survey.

**Question 1: To what extent does trust impact the formation of a collaboration?** This question is best addressed through the responses of the following two interview questions:

1. How do you think that prior connections between the institutions impacted the formation of this R25 collaboration?
2. When you think about a collaboration with another institution, what does it mean from your perspective for the institution to be trustworthy?

McEvily et al. (2003) describe generative capacity as the expectation of trustworthy interactions with a partner based on previous trustworthy interactions. The generative capacity code appeared in all 11 interviews in response to the question “How

do you think that prior connections between the institutions impacted the formation of this R25 collaboration?" Each of the interviewees acknowledged the importance of prior working relationships between individuals at the partner institutions on the formation of the CAM Practitioner Research Education Project (R25) partnerships.

"Like so many things in life and academics in general I think it is the people that you can connect with that can make all the difference. That was the case here. Without Dr. \_\_\_\_\_, it would not have happened, or certainly wouldn't have happened as well." (Interviewee A.3)

and

"I'd say we had pretty good trust. Again because I had worked with these people either on their grants, my grants, or other people's grants. You know, on committees that were work groups that each of these grants had. So, basically, I trusted them, I sought them out." (Interviewee B.9)

The success of prior endeavors not only impacted the willingness of individuals to collaborate on new initiatives, but may have helped to speed up the process involved with the formation of the collaboration. "I think we would have needed to take another year to develop the relationship before submitting the grant, at a bare minimum. And it may not have happened." (Interviewee A.3) This increased speed to partnership formation may decrease the financial and human resource costs associated with initiating a new endeavor, supporting the transaction costs economics view of interorganizational relationships (Barringer & Harrison, 2000). Additionally, and perhaps more importantly, the ability for institutions to act quickly on new projects or endeavors affords them a

competitive advantage in the rapidly changing environments of both education and health care.

Even those interviewees not personally involved in prior relationships with the partner institution recognized how those connections contributed to the willingness of individuals to work with each other. Two individuals from universities with very high research activity, who were not directly involved in prior relationships with their partner institution, described a willingness to participate in the CAM Practitioner Research Education Project (R25) based on their trust of a third party. Examples of this transference of trust are shown in the following quotes:

“I guess there probably were comments that (colleague) had made that acknowledged that, wow, first of all, I didn't know what (CAM institution) was. Secondly, I had had very little interaction with the chiropractic tradition. So, you know, I had to, you know, probably through (colleague's) comments he had mentioned things like, you know, they've got some strong clinical epidemiologists who are attempting to do strong clinical research related to chiropractic practice. So I'm sure that helped me know that the folks there were serious and also had the potential to move things ahead.” (Interviewee C.10)

and

“I had heard wonderful things about them and was really looking forward to it and I just loved it. I had a great time. They are phenomenal people, they are very thoughtful folks. It was fascinating to learn and to see the differences in their

educational process compared to what we have here in allopathic medicine, if you will.” (Interviewee B.6)

Beyond the CAM Practitioner Research Education Project (R25) grant, one interviewee attributed the overall success of their institution’s research department to the formation of collaborations with trusted partners:

“From the beginning, collaborations were how we built ourselves. And in particular, once NCCAM had a lot of different initiatives, they forced us to partner. And so it's sort of been interesting and this is part of our strategic plan, too, is the whole collaboration. And it's interesting because not all of -- I don't think all of those relationships ended up being trusted; but the ones that have continued are trusted, good relations.” (Interviewee C.11)

Regarding the second question “When you think about a collaboration with another institution, what does it mean from your perspective for the institution to be trustworthy?”, interviewees were very clear that their trust of another institution was derived completely by their personal relationships with members of that institution. The four themes that emerged from this question were: personal connection; communication; expertise; reliability; and reputation. Of these, personal connection, reputation, and reliability were identified as key components to the formation of the CAM Practitioner Research Education Project (R25) partnerships.

The personal connection between boundary spanners at the partner institutions helped to create each of the CAM Practitioner Research Education Project (R25) partnerships. One boundary spanner from a CAM institution describes how her personal

relationship with a faculty member at the research intensive partner institution impacted the formation of their CAM Practitioner Research Education Project (R25) partnership:

“My major advisor was the individual that we mainly collaborated with their R25. So, I worked with this woman as my academic advisor and then my dissertation advisor and it then carried over into her being our co-investigator for the study. I do not think the collaboration could have happened if we didn't have that connection.” (Interviewee A.7)

Another interviewee describes the connection between interorganizational trust and personal relationships in this way: “There's a certain institutional construct, but it's really a face. And the interpersonal relationships that have developed between individuals that ultimately constitute the level of trust between the institutions.” (Interviewee C.8)

One individual from a research intensive institution described how the reputation of their CAM partner's impacted the formation of their CAM Practitioner Research Education Project (R25) partnership:

“I, we've always been impressed with the research section at (CAM institution), in that they are truly looking to answer those questions. And I strongly felt that this project, trying to present the evidence-based practice techniques to the college, was a really great step on the road to that. So, I had a great deal of trust in the research section and the people who I was collaborating with on that.”  
(Interviewee B.4)

The influence of reliability of partners on the formation of the CAM Practitioner Research Education Project (R25) partnership is expressed in the following quote:

“I think the point is that we've worked together for so long. I wouldn't have worked with them if we didn't trust each other – I mean, if I didn't trust them. And I think it comes about primarily as a result of people doing their job.”

(Interviewee C.5)

Personal connections and the success of prior relationships appear to be the two largest factors impacting the formation of the three CAM Practitioner Research Education Project (R25) partnerships studied in this research. In these pairings, trust of institutions did not emerge as an important theme. Rather, individuals were more motivated to collaborate if they had a personal relationship with someone at the partner institution or they were encouraged to collaborate by a third party that knew both parties.

These findings align with the findings of McEvily et al. (2003), identifying trust as an organizing principle. Specifically, the structuring components of generative capacity and transferability emerged as factors in the formation of the CAM Practitioner Research Education Project (R25) partnerships. Generative capacity refers to the transfer of trust from one interaction with a partner to another with the same partner. This form of trust transfer results in increased thickness of the ties connecting the two partners and emerged as the most prominent theme for the CAM Practitioner Research Education Project (R25) partnerships in this research. Delayed reciprocity, or the need for partners to accept early inequities with the understanding that there will be serial equity over time did not emerge as an important theme for this research. Similarly, role specialization did not appear to have any bearing on the formation of the CAM Practitioner Research Education Project (R25) partnerships (McEvily et al., 2003).

**Question 2: To what extent does trust impact the perceived success of a collaboration?** The quantitative and qualitative data from the survey of faculty at the CAM institutions will be used to answer this question. The dependent scale of perception of project success represents the combination of the following three variables: perception of overall project success; perception of culture change on the CAM campus; and a combined variable on self-reported behavior change in teaching and self-reported behavior change in clinical care. This research explored the impact of organizational trust, interorganizational trust, and interpersonal trust on the perception of CAM Practitioner Research Education Project (R25) success. After controlling for involvement in CAM Practitioner Research Education Project (R25) and initial willingness to participate in the activities of the CAM Practitioner Research Education Project (R25), organizational trust, interorganizational trust and interpersonal trust emerged as having statistically significant explanatory power.

Related to interpersonal trust, a couple of survey respondents referenced the important role that project champions played in the success of the CAM Practitioner Research Education Projects (R25):

“A very positive project in which there was a lot of cooperation, including seminars for faculty and a lot of continuing education to promote awareness. The leaders in the Research Department were motivated and excited about the project and did a great job of motivating the rest of the faculty.”

and “My institution has the right people in place who are running and developing the R25 activities on our campus.”

A couple of individuals expressed pride in his/her institution for their commitment to the CAM Practitioner Research Education Project (R25):

“The R25 project was not just symbolic, but it generated many tangible results in both the short- and long-term. I would hope that our institution could garner other such grants to further the success of the R25 project or something similar.”

and “I am proud of the direction that (my institution) is moving.”

Another participant expressed gratitude for the faculty development opportunities afforded by the project: “I am grateful for the time spent on developing the faculty in EBCP, and it will become exponentially relevant to all of our students.” Another faculty member provided this comment: “Our institution has been very supportive and also understanding. When we need assistance the school supports us in helping us learn.”

The written responses noted above most align with the McEvily et al. (2003) mobilizing theme component of identifying, in which participants are more likely to commit to an endeavor if they feel aligned with others and recognize the priorities and needs as similar to their own. Viewing these partnerships through the framework provided by Bolman and Deal (2003), the survey responses most align with the human resource frame which emphasizes skill training and psychological support as important factors in implementing change. Faculty acknowledged the importance of professional development and administrative support in the success of their CAM Practitioner Research Education Projects (R25).

Though institutional affiliation was not used in the regression model, it was interesting to note that each of the three partnerships chose a completely different design

for their CAM Practitioner Research Education Project (R25). Despite these very different approaches to training, respondents from all three partnerships indicated an overall perception of project success. One possible explanation for this finding could be that highly satisfied faculty were more motivated to complete the survey than were faculty who were either dissatisfied. Another explanation might be that the design of the initiative matched the culture of the individual institution. For instance, the principal investigator for Partnership A noted that the decision to focus on student training first was deliberate and due to the fact that faculty had just been asked to participate in a major mandatory curricular initiative. “I was very sensitive to not push the faculty through another big change, so we intentionally started with the student education part of the program.” (Interviewee A.3)

A key participant from Partnership B explained their approach to faculty training in this way:

“We required all the clinical chiropractic and clinical faculty to take the initial seminars, you know the faculty training. And then, some were required to do our later journal clubs. People showed up, they did what they needed to do, and some of them were extremely enthusiastic about it. So, instead of making it available to a few faculty members and then it would branch out from there, we took the broad approach and let it, you know interact. You know, if anything, we had some trouble early on, I would say, trying to tell faculty in the first year when they were getting trained they weren't supposed to make a course until a little bit later on in the process. For the first year in the grant, the students were the control group so

we wanted the faculty to revise the curriculum behind them. As they went through then they would change their class for the next group coming through. So, what I'm saying is that some people were very enthusiastic.” (Interviewee B.9)

One of the key participants from Partnership C described the deliberate approach to faculty training:

“There are a few people, in any program of change, or any major program of change, you're going to get different groups that are going to have an impact on. And there are groups, that are really innovators, that will chime in early. And with (CAM institution), the first couple of years of the grant, we knew that was the case. There were people that were champions of evidence-based practice and there were going to be people that were early adopters and there were going to be people that were wait and see and there were going to be resisters. So you had the whole spectrum. And it really turned out that's what we had.” (Interviewee C.5)

These comments suggest that one important key to the engagement of faculty in new initiatives is an understanding of the institutional climate and culture. This supports the findings of Kezar and Eckel (2002a) and Tierney (1988) who assert that in order for change strategies to succeed, they must align with campus cultural norms.

### **Comparison of Challenges Between the First and Second Set of CAM Education Project Partnerships (R25)**

This next section will draw comparisons between the 15 medical institutions included in the first set of CAM Education Project Grants (R25), and the three CAM institutions from this research included in the CAM Practitioner Research Education

Project Grant Partnerships (R25). The emphasis of the CAM Education Project Grants (R25) focused on the inclusion of content regarding CAM modalities in medical education, whereas the CAM Practitioner Research Education Project (R25) grants were intended to increase the research literacy skills of CAM students, faculty, and practitioners. Though the two R25 projects had different aims, they experienced similar challenges.

A survey of the 15 institutions involved in the CAM Education Project Grants (R25) revealed the following challenges to the incorporation of CAM content: overcoming faculty resistance; finding time in an already full curriculum; presenting a balanced yet evidence-based approach to assessing the efficacy of CAM therapies; providing accessible and reliable reference resources; and developing appropriate teaching and assessment methods (Sierpina et al., 2007). Some of those same challenges can be applied to the findings of this research on the training of students, faculty, and clinicians of evidence-based practice.

Faculty resistance to embrace the concepts of evidence-based practice did not emerge in this research as a prominent theme. A few survey responses identified early hesitation by faculty to adopt an evidence-based approach: “Initially there was a good deal of hesitation about incorporating EBM into curricular change. In some cases there was vocal resistance. That is no longer the case and it is an accepted part of education at this point.” and

“I think that when we started the R25 grant a significant percentage of our faculty and clinicians did not care about this issue and had little to no knowledge of basic

evidence-based practice, critical appraisal of the literature etc. It has certainly become more and more expected that EBP concepts will be used in the classroom and clinic.”

One respondent noted that evidence-based practice is now the norm:

“Now, a faculty member who resists using evidence to back up their teaching/practice is the outlier on our campus. It has been a big culture change. Our students seem to appreciate the culture change and most are positive about it.”

Though finding time in an already full curricula did not specifically emerge in this research, finding time in a full faculty schedule did. One faculty member provided this comment connecting faculty resistance to workload:

“We have a handful of trained people because of the grant but faculty do not see it as a priority, especially when they are overloaded anyway. A few even view it as hypocritical to incorporate EBCP into the curriculum when there is little to no evidence to support what they are charged to teach (in fact, there is evidence to the contrary to what they are charged with teaching). ”

Another respondent offered this comment:

“I have found the course and the travel demands to be challenging to complete with the other demands of my position. Although I value this EBCP knowledge and culture shift I have at times felt very stressed by my participation in this endeavor and I would have appreciated more support for those of us who have committed so much time and energy to this work.”

The above faculty member clearly appears to have embraced and supported the initiatives of his/her institution's CAM Practitioner Research Education Project (R25), though the participation took a personal toll. This same observation was made by interview participants from each of the three partnerships, as demonstrated in the following quotes: "In every chiropractic institution, there is a fairly high workload placed on the faculty. And, release time is not easy to get." (Interviewee 8.C);

"And so our faculty, you know, they teach all day long. It's not like faculty (from the research intensive institution) where they might have two or three classes scattered throughout the week. Our faculty are teaching all of the time. So even if there was a lunch hour that they had off, that absolutely wasn't enough time to drive down to (research institution), attend a seminar and then drive all the way back and not miss any of their own teaching. So our modes of what a faculty looks like very, very different between the two institutions." (Interviewee A.7);

"They (CAM institution) also have a structure that is different than mine. They have a lot of faculty who are paid by the hour or paid by the course, so that they come in, they teach in the clinic and then they leave. As far as I can tell, no administrative time before or after. So with us asking them to do something additional, which was harder for them to do. I come from slightly a different kind of system. Which is more salaried so it's a slightly different thing." (Interviewee B.6)

Administrators at the CAM institutions will need to address the impact on workload that participation in these activities create in order to engage more than the purely self-motivated faculty members.

Paralleling the challenge of finding a balanced evidence-based approach to the inclusion of CAM content in traditional medical curricula, as noted by Sierpina et al. (2007), one survey respondent eloquently articulated the challenges with the move toward an evidence-based approach in chiropractic curricula:

“There needs to be discussion of how EIP fits into chiropractic care, and allowance for differences of opinion in an open and accepting environment. Benefits and limitation of EIP/EBM in the context of chiropractic care needs discussion in an open and nonjudgmental environment. My experience has been that some of the biggest proponents of EBM become judgmental and slightly arrogant, without consideration of some of the limitations of EBM in our type of clinical care, which turns off some of the faculty, further widening the gap between the "science" faculty and the "philosophy" faculty. We, as a profession and as a faculty need time and space to not only learn about EBM, but to process it, and begin to integrate it, in a deep and meaningful way. Which means that administration needs to provide the time and space for that to occur on an ongoing basis.”

Two other challenges noted by Sierpina et al. (2007), providing reliable reference and resources and developing appropriate teaching and assessment methods, did not

appear as major themes in this research, likely due to the fact that these questions were not the focus of this research.

The survey of principal investigators of the 15 CAM Education Project Grants (R25) also asked respondents to identify key strategies for including CAM into traditional medical curricula. The six themes that emerged are as follows: incorporate CAM content into existing required curricula; create visibility for CAM content in the academic center's overall mission; provide ongoing opportunities for faculty development; develop champions and support from administration, faculty, and students; provide access to accessible and reliable resources; and institutional support for long-term sustainability. Ten years later, nearing the conclusion of the second iteration of CAM Practitioner Research Education Project Grant Partnerships (R25) aimed at training CAM students, faculty, and clinicians in evidence-based practice, these themes remain relevant and critical to the advancement of evidence-based health care and interprofessional collaboration.

### **Implications for Health Care Institutions**

It is projected that by 2020, the US will have a shortage of 20,400 primary care providers. After accounting for an increased number of nurse practitioners and physician's assistants, the projected shortfall of primary care providers is anticipated to be 6,400 ("National Center for Health Workforce Analysis. Projecting the supply and demand for primary care practitioners through 2020," 2013). In addition, there is an expectation for increased demand for primary health care due to the combination of an aging population and an increase in insured individuals due to the Affordable Care Act.

Patient-centered medical homes (PCMH) and integrated care teams are emerging as potential solutions to the increased demand for primary care and as a way to improve the quality of care ("Institute for alternative futures. Primary care 2025: A scenario exploration," 2012; "Lessons from the field: Promising interprofessional collaboration practices," 2015). Kreitzer, Kligler, and Meeker (2009) and Goldstein and Weeks (2013) astutely note that current suggested solutions for the addressing the primary care shortage overlook the licensed CAM professions of chiropractic, acupuncture, and naturopathy. Kreitzer et al. (2009) also included discussion of the important role that nurses and massage therapists can play in addressing health care needs, and Goldstein and Weeks (2013) argued for the inclusion of direct-entry midwives on health care teams.

Recognizing the need for delineation of competencies in interprofessional collaboration and education, six national organizations, representing nursing, osteopathy, pharmacy, dentistry, medicine, and public health, convened an expert panel, the Interprofessional Education Collaborative (IPEC) to create a report on collaborative practice ("Core competencies for interprofessional collaborative practice: Report of an expert panel.," 2011). The report identifies four competency domains for interprofessional collaborative practice: values/ethics; roles/responsibilities; interprofessional communication; and teams and teamwork. In the domain of values and ethics, they specifically call out the importance of trust:

“Mutual respect and trust are foundational to effective interprofessional working relationships for collaborative care delivery across the health professions. At the same time, collaborative care honors the diversity that is reflected in the

individual expertise each profession brings to care delivery.” (“Core competencies for interprofessional collaborative practice: Report of an expert panel,” 2011)

In 2010, working separately, but concurrently with the IPEC initiative noted above, the Academic Consortium for Complementary and Alternative Health Care (ACCAHC), representing the professions of chiropractic, acupuncture, naturopathy, and direct-entry midwifery, developed their own document on competencies for optimal practice in integrated environments. Following publication of the IPEC document, the ACCAHC Education Working Group undertook a line by line comparison of the two documents. The outcome of that exercise resulted in a recommendation to accept all four of the IPEC competencies, with the addition of two more: evidence-based health care and evidence-informed practice; and institutional health care culture and practice (“Competencies for optimal practice in integrated environments,” 2011). The rationale for the addition of the competency on evidence-based health care was to acknowledge the importance of evidence as a common language for collaboration and integration. The sixth competency on institutional health care culture and practice was suggested to address the needs of learners who are trained outside of conventional academic health centers and institutions (“Competencies for optimal practice in integrated environments,” 2011).

The move toward interprofessional collaboration in health care necessitates the move toward interprofessional education in health care institutions. True interprofessional collaboration and education should include all licensed disciplines and

accredited institutions. The challenges for interprofessional education are greatest across the domains of traditional and complementary medicine, as those institutions are almost always separate from each other. Institutions of complementary and alternative medicine, such as colleges of chiropractic, acupuncture and oriental medicine, or naturopathy, are almost exclusively small, tuition-dependent, non-profit institutions. By comparison, most conventional health institutions are situated in large, public, federally funded research universities containing academic health centers. These academic health centers provide a natural environment for interprofessional education among students in conventional health disciplines.

### **Implications for Academic Administrators**

In order to move toward interprofessional education for students in traditional and CAM disciplines, it is essential for administrators at traditional and CAM institutions to work together to create the structure for these learning opportunities. There is a clear parallel between the work that has been done with the CAM Practitioner Research Education Project (R25) and the work that remains to be done with interprofessional health care education. Administrators from both traditional and CAM institutions should look to the institutions that have successfully administered CAM Practitioner Research Education Projects (R25) for guidance on how to structure interprofessional education initiatives. Specifically, the CAM Practitioner Research Education Project (R25) partnerships that included colleges of chiropractic could provide valuable insight in creating relationships across philosophical divides. This research suggests that focused attention on personal relationships between boundary spanners, identification of faculty

champions, and administrative support will provide the greatest gains in creating successful collaborations.

The results of this research suggest that interpersonal relationships between boundary spanners is a key component to creating interinstitutional collaborations. Respondents from each of the three CAM Practitioner Research Education Project (R25) partnerships studied in this research identified the importance prior relationships in the formation of their partnership. Those same relationships, or other newly formed relationships resulting from the CAM Practitioner Research Education Project (R25) activities, should be explored for their potential in advancing the efforts of interprofessional education across traditional and CAM disciplines. Administrators must recognize the critical role that boundary spanners play in the cultivation of interinstitutional relationships and those individuals should be provided the necessary resources and support to fulfil their role. This is especially important for boundary spanner faculty members from CAM institutions where workload policies typically emphasize teaching activities over research and professional development.

Though this research did not identify between institution differences for the dependent variable related to perceptions of project success, individual item analysis did identify some areas of difference. Institution C, which deliberately chose early adopters for initial training emerged as having statistically significant differences between one or both of the other institutions on the items related to overall project awareness and involvement, organizational trust, and the combined variable on changes in teaching and

clinical care. One key participant from the CAM institution described the methodological approach in this way:

“Yes, we identified individuals who we thought would engage in the activity and who could influence other faculty. So, there are some individuals who tend to be trend setters or who other faculty kind of look up to, or follow. Those were identified first and brought in as early adopters to the process. By doing that—that's how we, I think, pretty much influenced the culture. The early adopters took this on, got excited about it and then all of those in between, who could go either way, just kind of leaned toward what the early adopters were doing. And so the laggards behind, or the resistant, were silenced, essentially.” (Interviewee C.8)

This suggests that focusing early attention on enthusiastic and willing faculty, who are highly regarded among their peers, might allow the other faculty time to identify with the project and, eventually, request participation. This approach seems to have been successful for Institution C, and according to one interviewee from a partner institution, the project is still gaining momentum though it is nearing the end of the grant cycle.

“I think the main surprise -- because I've seen lots of EBM efforts across the country start with a flash and then fizzle. You know, the great surprise is related to the -- my perception of their success, which is it's still gaining momentum, and that's a pleasant surprise.” (Interviewee C.10)

Finally, the findings of this research suggest that administrative support, in terms of personnel and faculty development is an important factor in the success and sustainability of new initiatives. The enthusiasm that early adopter faculty bring to the table during the implementation of new endeavors can wear thin over time if additional expectations are simply added to already full teaching loads. Support, in the form of administrative assistance or work release can create space for faculty to more completely engage in the professional development and relationship building required for long-term sustainability of projects. This was summed up by a survey participant in this way:

“I have found the course and the travel demands to be challenging to complete with the other demands of my position. Although I value this EBCP knowledge and culture shift I have at times felt very stressed by my participation in this endeavor and I would have appreciated more support for those of us who have committed so much time and energy to this work.”

The path forward for interprofessional collaboration will require administrators and faculty from traditional and CAM institutions to expand beyond their current thinking to envision environments where students from traditional and CAM health care disciplines can learn alongside each other, for the benefit of the patients. This may take the form of integrating chiropractic, acupuncture, and naturopathic services into already existing academic health centers. Ultimately, this may lead to completely integrated learning environments where students from the licensed disciplines are enrolled in the same basic science courses together. This is already happening at the University of Southern Denmark in Odense and the University of Zurich in Switzerland where

chiropractic and medical students train together for three years before entering discipline specific clinical training programs ("The current status of the chiropractic profession: Report to the World Health Organization from the World Federation of Chiropractic," 2012).

The philosophical and cultural differences that exist between traditional medicine and CAM, combined with the competition for limited resources, has created an historically adversarial relationship between the health care educators and providers. The current health care environment, the demand by policy makers and patients for change, the success of initiatives such as the CAM Practitioner Research Education Projects (R25), and the willingness of an increasing number of educators and practitioners from both traditional medicine and CAM have created an environment ripe with opportunity for improved health care education and interprofessional collaboration. It is the perspective of this researcher that interpersonal, organizational, and interorganizational trust will play a critical role in the success of future health care collaborations and initiatives.

### **Limitations**

This study sought to understand the role of trust on the formation and perceived success of interorganizational collaborations. The specific collaborations used for this research included three partnership pairs involving small, private, non-profit CAM institutions that housed colleges of chiropractic and large, public institutions with intensive research activity. The limitations for generalizability of these findings relate to

the narrow focus on colleges of chiropractic, the small number of respondents, and the lack of specific validated trust instruments.

The choice to focus this research on partnerships that included colleges of chiropractic allowed for exploration of the historical tensions that exist between chiropractic and traditional medicine, but the narrow focus also impacts the generalizability of the results. Other CAM professions, such as acupuncture and oriental medicine, naturopathy, and direct-entry midwifery may not have experienced the same philosophical and cultural battles with traditional medicine as chiropractic. As such, it is difficult to speculate on how trust would impact the willingness of other CAM providers to participate in CAM Practitioner Research Education Project (R25) initiatives, or other collaborative efforts.

Another limitation of this study relates to the overall sample size. Though response rates by institution were acceptable, the total number of cases available for multiple regression was 90. Overall responses from faculty indicated perceptions of project success and self-reported behavior changes, though it is possible that those who felt the project was not successful or who did not engage in behavior change chose not to participate in the study.

Finally, the lack of a validated trust instrument is another limitation of this study. The evaluation of trust is very context specific and it was not possible to find one instrument for the design of this research. As a result, items from multiple trust instruments were modified and additional items were created to formulate the interview and survey instruments for this study.

### **Areas of Future Research**

Given the small scale of this research, one area for possible future study could be to replicate this study with the other six CAM Practitioner Research Education Project (R25) partnerships not included in this study. The other partnership pairings included institutions that were more philosophically aligned and it would be interesting to note whether trust had an impact on their success or failure. Additionally, this study could be replicated with other collaborative initiatives in health care, including those related to interprofessional education. Ideally, a validated trust instrument would be created that could be used across multiple studies, as none currently exists. In their review of the literature, McEvily and Tortoriello (2011) identified 171 studies on trust, using 129 different instruments. Of those 129 instruments, McEvily and Tortoriello (2011) found only five that they considered valid and reliable.

Another area for future research lies in exploring the impact of different approaches to faculty training on the success of curricular initiatives. As interprofessional education expands and faculty from research universities with very high research activity become more involved in training initiatives, it will be important to include them in future research. Though it was not the focus of this research, the three distinct designs of the CAM Practitioner Research Education Projects (R25) emerged as an interesting finding. Future study designs could specifically address the factors that influence faculty engagement and behavior change.

## **Final Remarks**

The United States has the most expensive health care system in the world but ranks below Australia, Canada, Germany, the Netherlands, New Zealand, and the United Kingdom on the dimensions of quality, access, equity, efficiency, and healthy lives (K. Davis et al., 2010). Knettel (2011) argues that due to increasing budgetary constraints on health care delivery systems, the increasing aging population with complicated and chronic health problems, and the evidence to support the improved outcomes provided through team based care, that academic health centers “must make interprofessional collaborative practice a fundamental characteristic of how they organize and deliver care” (p.2). Regarding the negative impact that the lack of interprofessional collegiality has had on prior efforts toward interprofessional practice, Knettel (2011) states: "With reimbursement constraints and narrowing margins, health systems can no longer afford to absorb the adverse human resource costs of poor interprofessional collaboration and its consequences." (p. 2)

The costs associated with low back pain account for a large percentage of the nation’s total health care expenditures (Kosloff et al., 2013). Given the evidence to support the improved patient outcomes and cost effectiveness of chiropractic care in the treatment of musculoskeletal conditions, chiropractors should be considered essential members of interprofessional health care teams (Bishop et al., 2010; Kosloff et al., 2013; "United Kingdom back pain exercise and manipulation (UK BEAM) randomised trial: Cost effectiveness of physical treatments for back pain in primary care," 2004). The ability of providers from diverse disciplines to effectively interact with each other in

order to provide coordinated and quality patient care requires that they understand and trust each other. The growing evidence base for CAM disciplines can provide a common ground for providers to begin a dialogue.

Health care institutions can contribute to an integrated health care future by working across disciplinary divides to form opportunities for interprofessional relationships. Cultivation of interpersonal relationships is critical and boundary spanners from CAM and traditional medical institutions should be supported and provided opportunities to explore future possibilities. An understanding of the important role of faculty as champions of new endeavors is critical and they should be provided meaningful support for their participation. Though it is not yet clear how the future of health care education or the delivery of health care will look, it is certain that the road ahead is one traveled by interdisciplinary teams whose success will hinge on trust.

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## Appendix A

**INFORMED CONSENT FORM FOR INTERVIEW**

The role of trust in creating sustainable change through interinstitutional collaboration

You are invited to be in a research study of the role of trust in interinstitutional collaboration as it relates to the R25 CAM Practitioner Research Education Project Grants. You were selected as a possible participant because you have been identified as a key participant in an R25 grant. I ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by: Renée M. DeVries, DC, PhD candidate  
Organizational Leadership, Policy, and Development  
College of Education and Human Development  
University of Minnesota, Minneapolis, MN  
[zierd012@umn.edu](mailto:zierd012@umn.edu)

**Background Information**

The purpose of this study is to explore the role of interpersonal, organizational, and interorganizational trust on the success of collaborative initiatives between CAM and high research activity institutions.

**Procedures:**

The approximate time for the interview is 30 minutes. I will be recording the discussion and transcribing your responses. You may decline to answer any of the questions and can choose to end the interview at any time.

**Risks and Benefits of being in the Study**

The study holds no risk for the involved participants. Individual responses will be anonymous.

There are no direct benefits to participation in this study. Your participation may offer insight into factors that contribute to improved collaboration between CAM institutions and institutions with high research activity.

**Compensation:**

You will receive no compensation for your participation.

**Confidentiality:**

The records of this study will be kept private. In the dissertation or any potential publications, I will not include any information that will make it possible to identify a subject. Research records will be stored securely and only I will have access to the records. Records will be destroyed upon completion of the study.

**Voluntary Nature of the Study:**

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

**Contacts and Questions:**

The researcher conducting this study is Renée M. DeVries, DC . You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at (952) 885-5411 or [zierd012@umn.edu](mailto:zierd012@umn.edu). You may also contact Darwin Hendel, PhD, the advisor for this student, at [hend001@umn.edu](mailto:hend001@umn.edu) or (612) 625-0129.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

**Statement of Consent:**

I have read the above information. I consent to participate in the study. I consent to audio recording of my voice.

---

Signature

Date

## Appendix B

## Interview Questions

As you know, we will be discussing the R25 collaboration today, especially how trust affected the success of the collaboration.

Tell me about your role in the R25 project. Were you involved from the start?

First I'd like to ask about your experience with the partner institution prior to the formation of the R25 project.

## PRIOR

Prior to the initiation of the R25 collaboration, did you or others at your have any professional connections with faculty and other staff at your partner institution? (y/n)

3. (IF yes) Please describe the professional connections at your partner institution, prior to the initiation of the R25 collaboration?
4. How do you think that prior connections between the institutions impacted the formation of this R25 collaboration?
5. When you think about a collaboration with another institution, what does it mean from your perspective for the institution to be trustworthy?
6. Tell me about your trust of your partner institution at the onset of the collaboration.

## DURING

Now let's talk about aspects of the project itself.

7. What was your perception of willingness of individuals to share knowledge across both institutions?
8. Tell me about your comfort in sharing knowledge about the project, or exposing areas of weakness, with colleagues at your partner institution.

9. How would you describe the willingness of the faculty at the CAM institution to support the efforts of the R25 project?
10. How would you characterize the willingness of your administrators on the CAM campus to support the efforts of the R25 project?

#### “CONFLICT”

11. Tell me about times, if any, when misunderstandings between individuals at the partner institutions occurred during the R25 partnership?
12. How were misunderstandings resolved?

#### PROJECT CONCLUSION

Now let's discuss the overall success with your institution's R25 project.

13. What would you describe as the greatest success of your institution's R25 project?
14. What would you say have been the shortcomings of your institution's R25 project?
15. From your perspective, how did trust relate to the successes and shortcomings?

#### OUTCOMES

16. How has the culture regarding evidence-based, or evidence-informed, practice on your campus changed as a result of the R25 project?
17. In what ways has your organization demonstrated long term commitment to the R25 project? In what ways?
18. Please describe your level of trust with the individuals at your R25 partner institution as a result of your participation in this project.
19. Have any other collaborative efforts between your institution and your partner institution resulted from the R25 project?

20. Is there anything that I didn't ask about that you think would be helpful to me in understanding your project?

Thank you so much for participating in this discussion. Your insights are invaluable to me as I explore the impact of trust on partnerships.

## Appendix C

## Survey Instrument

**FACULTY PERSPECTIVES ON CAM PRACTITIONER RESEARCH EDUCATION PROJECT**

The following questions are related to your institution's CAM Practitioner Research Education Project Grant (R25). The overarching goal of these grants, funded by the National Center for Complementary and Alternative Medicine (NCCAM), is to increase the research literacy of CAM students, faculty, and clinicians. This data will be used to explore the factors that impact the success of these projects and your participation is appreciated. You were selected as a possible participant because you are a faculty member at an institution that has received funding through an R25 grant.

**Procedures:**

The survey should take about 10-15 minutes and holds no risks for participants. There are no direct benefits to participation in this study though your opinions may offer insight into factors that contribute to improved collaboration between CAM institutions and institutions with high research activity.

**Compensation:**

You will receive no compensation for your participation.

**Confidentiality:**

The records of this study will be kept private. The dissertation, or any other publication resulting from this research, will not include any information that will make it possible to identify a subject. Research records will be stored securely and only the researcher will have access to the records. Study data will be destroyed upon completion of the study.

**Voluntary Nature of the Study:**

Participation in this study is voluntary. If you decide to participate, you are free to not answer any question or withdraw at any time.

**Contacts and Questions:**



I have changed my clinical care as a result of my institution's R25 project.

I felt comfortable asking for help from someone at my institution, when needed, with the activities of my institution's R25 project.

My level of trust in my institution positively affected my willingness to accept the goals of the R25 project.

Our partner institution in the R25 collaboration is trustworthy.

My level of trust in our partner institution positively affected my willingness to accept the goals of the R25 project.

Your institutional champions are those people who led the efforts on your campus with regard to faculty development and curricular change. In many institutions, the project champion(s) is/are the principal investigator, faculty leaders, and administrators. Please consider those people when indicating your level of agreement with the following statements.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I have faith in my university's project champion(s) to look out for our faculty interests.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable sharing my areas of weakness related to the expectations of the R25 project with my institution's project champion(s).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I think carefully before telling my university's project champion(s) my opinions related to the R25 project.

If I had my way, I would not let our project champion(s) have any influence over issues related to my program.

A 2x5 grid of radio buttons. The top row contains five radio buttons, and the bottom row contains five radio buttons. A vertical orange line is positioned to the left of the grid, separating the text from the response options.

Rate your level of involvement with your institution's R25 project and its initiatives on your campus.

- No involvement
- Little involvement
- Some involvement
- High involvement
- Very high involvement

Initially, how would you characterize your willingness to participate in your institution's R25 project and its initiatives on your campus?

- Reluctant
- Somewhat reluctant
- Neutral
- Somewhat willing
- Willing

Currently, how would you characterize your willingness to participate in your institution's R25 project and its initiatives on your campus?

- Reluctant
- Somewhat reluctant
- Neutral
- Somewhat willing
- Willing

Please describe your involvement in your institution's R25 project.

Please describe any changes that you have implemented in your teaching, clinical care, or work related activities as a result of your participation in your institution's R25 project.

Please provide any examples of attitudinal or culture change that have resulted on your campus as a result of your institution's R25 project.

At which institution are you employed?

- National University of Health Sciences
- Palmer College of Chiropractic
- University of Western States

How long have you been a faculty member at your institution?

- less than 5 years
- more than 5 but less than 10 years
- more than 10 but less than 15 years
- more than 15 but less than 20 years
- more than 20 years

### What is your current academic rank or position?

- lecturer/instructor
- assistant professor
- associate professor
- professor
- Administrator

### What is your gender?

- Male
- Female
- Transgender
- prefer not to answer

Please add here any other comments regarding your institution's R25 project and its activities on your campus.