Continuing medical education for pathologists: linking commitment to change statements and reasons for participation to practice change

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Continuing Medical Education for Pathologists: Linking Commitment to Change Statements and Reasons for Participation to Practice Change

by

Jean M. Taylor

A Dissertation Submitted to the University at Albany, State University of New York in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

School of Education Educational Theory and Practice Department

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Continuing Medical Education (CME) is a set of learning activities that engage physicians as life-long learners in a process of acquiring new knowledge and skills that will allow them to keep up-to-date with developments in their fields. Developing continuing education activities for physicians that will result in measurable improvement in the quality of patient care is the most important challenge facing educators of the health professions today.

My study examines the application of knowledge learned in Continuing Medical Education (CME) activities by pathologists to their daily practice and how their motivations for attending CME events relates to their intentions to integrate new knowledge and skills to their practice. The Participation Reasons Survey (PRS) and a Commitment to Change (CTC) form were used along with a questionnaire on demographics. Follow-up by e-mail questionnaires was used to engage the participants in a reflective process of examining their actual application of new knowledge or skills and how they see this linked to the particular CME activity.

This research found that the participating pathologists were most strongly motivated by factors described as “professional service”. This is consistent across both work environments and years in practice. The participants who did not offer any CTC statements were significantly more motivated by the “collegial learning and interaction” choices on the PRS than those who did share any CTC statement. Participants who agreed to be contacted for a follow-up questionnaire on practice
changes did not differ significantly in motivations for attendance from the other CTC participants.
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CHAPTER 1

Introduction

History and Evolution of Continuing Medical Education

Continuing Medical Education (CME) consists of educational activities which serve to maintain, develop, or increase the knowledge, skills and professional performance and relationships that a physician uses to provide services for patients, the public, or the profession. The content of CME is that body of knowledge and skills generally recognized and accepted by the profession as within the basic medical sciences, the discipline of clinical medicine, and the provision of health care to the public (Accreditation Council for Continuing Medical Education, 2007).

Continuing Professional Education (CPE) is also required for other health care professionals such as nurses, pharmacists, physician assistants and a wide variety of allied health care professions. CPE/CME is required both for continued certification by professional credentialing organizations and many states’ licensure regulations. Working professionals are personally responsible for accumulating the appropriate number of officially recognized contact hours of CPE/CME for their field each year. The CPE/CME offerings vary in format from face-to-face conferences and workshops at regional or national meetings, written or other materials mailed to participants or online programs. The Accreditation Council for Continuing Medical Education (ACCME) provides statistics for CPE/CME activities directed at physicians, but those activities also have a significant number of non-physician participants. They identified 113,003
CPE/CME activities either directly sponsored or jointly sponsored by their accreditation organization in 2007. Of these activities 49,686 (44%) were internet based, either live, “search and learn” or enduring materials activities (ACCME Annual Report 2007). The growth of CME providers in the US has been fueled in part by the estimated 2.4 billion dollars per year spent on CME activities (Fletcher, 2007). With this huge expenditure in time and money each year for CME, it is little wonder that the call for outcomes measures to validate the effectiveness of these activities has been made by many stakeholders. These stakeholders include the physician professional organizations who conduct CME, the accreditation organizations who over see the education of physicians both during and after medical school, the federal and state government agencies who oversee physician performance, such as state licensure agencies, health care insurers and the patients and communities who are served by these physicians.

The absence of convincing evidence that these professionals were maintaining minimum competency levels has led many legislatures and regulatory boards during the 1970s to stipulate continuing education as a requirement for re-licensure. The main arguments advanced for the requirements were that it would prevent obsolescence and that it would promote the acquisition of knowledge and the development of skills (Young & Willie, 1984, p. 113).

Developing continuing education activities for physicians, nurses, therapists, and other health care team members that will result in measurable improvement in the
quality of patient care is the most important challenge facing educators of the health professions today (Marinopoulos, et al. 2007).

The licensing boards, professional organizations, and indeed, the public are seeking proof that continuing education can change practice and improve care. Despite the broad range of CME aimed at educating practicing physicians, researchers have found that physicians commonly overuse, under use, and misuse therapeutic and diagnostic interventions. It has been suggested that CME may not be effective enough to significantly narrow the gap between what is done in clinical practice and what should be done based on current evidence. Understanding what CME tools and techniques are most effective in disseminating and retaining medical knowledge is critical to improving the effectiveness of CME and thus diminishing the gap between evidence and practice (Marinopoulos, et al 2007, p. v).

Thus the providers of CME are now being asked to comply with more stringent standards and required to accurately document how and where their activities are impacting patient care. Many professional organizations representing various physician groups have been instrumental in lobbying for CME reform. One of these organizations is the Council of Medical Specialty Societies (CMSS) which is made up of 32 groups representing the medical sup-specialties. In 2005 the CMSS emphasized the need to link CME to physician behavior change and patient outcomes as the most critical issue facing CME reformers.
Other important tasks involve the expansion and improvement of available needs assessment modalities, the development and updating of curricula, the official recognition of multiple modalities available for physician learning, the broadening of the CME research agenda, and the need to explore alternative ways of financing lifelong learning (McDonald, 2005, p.144).

The challenges facing CME providers are many; the current research connecting participation in CME with positive changes in patient care and community health outcomes is limited. Research done by Chambers et al. in 1976 focusing on dentists, directly explored the link between participation in CPE and post-CPE application. This study used direct observation of 15 participants before and after the learning event. Chambers found that although participants reported incorporation of new techniques into their practice, most had adapted the new techniques to such an extent that the anticipated improvement was diminished or eliminated. The work by Cividin and Ottoson (1997) demonstrated a link between the reasons identified by participants for attending CPE and subsequent application of learning. These researchers used a large population from a variety of health care professions including physicians. Their research was conducted by pre, post, and 2 month follow-up written survey responses using a 5 point Likert scale. The questionnaire was developed by Cividin and Ottoson from a review of the literature and question grounding. Items were not tested for reliability. Another study done in 2005 by Johnson used 16 physicians divided into two focus groups. Her goal was to “determine to what extent there is a shared
understanding among physicians as to the role that Continuing Medical Education (CME) and Continuing Professional Education (CPE) have and what affect it has on physicians practice” (Johnson, 2005, p. 936). At this time, these three studies are the only work done with health care practitioners attempting to link reasons for participation and change in practice.

Selection of Pathologists as Study Participants

Currently I have been unable to find any studies addressing the effectiveness of CME for pathologists. To date, there has been no published research that deals with the specialties of pathology or radiology, both of which have physicians who often act a “step removed” from the patient, as a consultant to the primary care clinician. The pathologist is the diagnostican for the patient. Practitioners of pathology and laboratory medicine have several unique features of their daily work environment that they share with few other medical specialists. These unique features include the pathologists’ lack of direct interaction with the patient, their use of microscopic examination of tissues to determine a diagnosis and their reliance on multiple tests most often performed by technologists in the laboratory who are not physicians. The clinician will design the treatment procedures based on the diagnosis rendered by the pathologist consultant. For the pathologist, giving the most exact, timely and cost effective diagnostic workup for each patient is the heart of their practice. The pathologist usually sees gross, surgical or fresh, frozen surgical specimens which are made into microscopic slides for examination. Often, the pathologist’s only contact with a patient is to
examine minute cellular samples from the patient under the microscope to render a diagnosis.

This working environment will create both challenges and opportunities that are unique for CME educators. The opportunities lie in the imaging capabilities of today’s laboratory. Digital images of every microscopic field examined in rendering a diagnosis can be stored and retrieved for teaching. The capability of real-time telemedicine microscopic examination of specimens allows pathologists across the globe to consult on challenging cases and learn from the experts in live CME events. This feature of the pathologists’ work, that they make their diagnosis from the testing results and a microscopic examination, allows CME presenters a unique opportunity to create case study activities that closely simulate the work environment. By using this case study format, are pathologists different in how they approach CME? Do they have heightened expectations of learning knowledge and skills that they could more easily apply to their own patients? Without research on this group to determine how they approach CME and how it can impact the care they render for their patients it is impossible to say. The focus of pathology CME presenters on adhering to a more realistic, simulation style of presentation may become a model for other medical specialties. What can be learned about the effects of CME on patient care from pathologists could offer insight into both the expectations of the physicians who attend and the process of connecting CME to health care improvements.
CME as a Learning Activity

The perception of CME/CPE as a valid educational experience has developed slowly over the past twenty years. Historically, CME activities for physicians have grown to include a variety of face-to-face conferences which relegated the actual educational activities to a marginal position in comparison to the social and entertainment activities (Manning & DeBakey, 2001).

Grotelueschen (1985, 1980) contends that professional continuing education is a specialized form of adult education and should be given a unique status reflected in its conceptualization, study and practice. He bases this premise on three areas: the nature of the participants (adults who attend educational events of any type), the characteristics of the reference population (all adults, both those who participate and those who do not), and, most important for this study, the educational beneficiaries (attendees, their families, co-workers and recipients of their skills and efforts enhanced by the educational event).

There is a strong predisposition among the providers of continuing professional education to regard as beneficiaries persons or groups once removed from the educational activity (for example, patients, clients, insurance companies and those concerned with the public health and welfare). It is sometimes argued that continuing professional education is successful only when benefits accrue to such secondary beneficiaries (Grotelueschen, 1985, p. 36).

The providers of CME have not availed themselves of many of the advances in educational theory or design that could be applied to their activities (Tian, et al.
CME had been a process of exposure to new knowledge and skills measuring most commonly, satisfaction, rather than application (Slotnick & Shershneva, 2002). Careful attention to course design and documentation of even knowledge acquisition were not primary concerns for many years. Many physicians, the public and educational providers began to question the benefits to participants from attending these events (Queeney & English, 1994). CME providers began to re-examine their policies and procedures for accrediting events (Davis, 2004). The focus of medical education at the graduate level had become “evidence-based” and these physicians were now demanding evidence of the value-added from participating in CME events (McWilliam, 2007).

The Kirkpatrick (2005, 2007) Four-Level Evaluation Model is one of the methods used to identify the desired goals and impact of a professional education program. This model is most often used in discussions of workplace learning but it translates well into CME/CPE situations. The four levels as identified by Kirkpatrick are:

- Level 1- Reaction. How do trainees react to the program, what is the measure of customer satisfaction?
- Level 2 – Learning. To what extent has learning occurred?
- Level 3- Behavior. To what extent has on-the-job behavior changed as a result of the program?
- Level 4 – Results. To what extent have results occurred because of training? (Kirkpatrick & Kirkpatrick, 2005, p. 5).
The “level 1 reaction” is routinely measured by the post CME/CPE evaluation forms. The “level 2 learning” is measured more frequently now with the inclusion of pre-tests and post-tests. In the most recent physician specialty board recertification requirements, physicians are now required to participate in a number of self-assessment activities as part of their CME requirement. The most common form of self-assessment activity now available are these pre-test/post-test components added onto didactic lectures and online courses. The “level 3 – behavior” for physician CME would be achieved when CME educators track the application of new information into the participant’s practice. These changes in practice have been tracked in a few research projects in the last decade reported in studies by Oxman, et al., (1995), Cividin & Ottoson (1997), Grol, (2002), Regnier, et al, 2005), Price, et al., (2005), McKenna, et al., (2008) and Shershneva, et al., (2008). The “level 4 – results would be a result of CME where the level 3 practice behavior change produces an improvement in patient health outcomes. In a recent article by Currier (2007) a fifth level was added to the Kirkpatrick model for physicians, adapted from Phillips, J. J. Return on Investment in Training and Performance Improvement (2003). This “level 5” represents the changes in population health outcomes. As the Kirkpatrick level increases, the challenges of linking the desired outcome to any one specific event also increase.

The delivery of CME activities has always been primarily in the hands of the professional organizations. Universities and Medical Schools have offered a small number of CME/CPE events in the past, more as a service to their alumni
and local supporters than in an endeavor to address a critical educational need (ACCME, 2007). With the increase in outside funding for CME/CPE, Medical Schools and Universities have increased their efforts to attract participants to their events as an added source of revenue.

The acceptance of life-long learning as a goal for all graduates has meshed with the realization that most professionals work in their field for 30+ years after graduating (Miller, 2005). The rapid increase in the knowledge base and the introduction of new technologies and therapeutics has made health care professionals acutely aware of the need to keep abreast in their field.

Continuous learning through continuing medical education is an important part of the life of every practicing physician. However, many organizations and investigators have questioned the present CME system’s effectiveness in the ever-changing contemporary healthcare environment. There is abundant evidence that the quality of patient care is variable, and that the safety of patients encountering the health care system is not uniformly optimal. One key to rectifying this lapse in consistency of quality care is restructuring and strengthening of the existing CME system. Today’s physician must stay current by learning smarter, not working harder.

Continuing to educate physicians beyond medical school and medical specialty training requires a coordinated lifelong learning process of timely effective CME, and measurable outcomes (ACCME & ACGME Report 2005, p.1).


**CME Outcomes**

Connecting the act of participating in CME/CPE events to improved patient outcomes has been a difficult challenge to meet as indicated by the meta-analyses done by Davis et al., (1999), Wakefield (2004) and Oxman et al. (1995). There can be numerous advantages to the participant at any CME event, such as networking and intellectual stimulation which come from attendance. But justifying the large expenditure of funds spent on CME requires a more accurate assessment plan focused on measurable outcomes. “The fact that most states lack a required credential specific to teaching adults, and given the current emphasis on accountability, continuous program improvement, and documented learner outcomes, the importance of training and professional development for adult basic education instructors is highlighted more clearly than ever” (Sabatini, et al. 2000 in Belzer, 2005, p. 33). The words of Sabatini are equally true for those involved in continuing professional education and none more so than that targeted at physicians.

Another issue raised by professional educators concerning the application of adult learning theories to CME/CPE was the lack of integration of these activities with professional experiences. Brennan (1996) stresses the lack of integration as a critical factor in the lack of identifiable outcomes tied directly to patient care for most CME/CPE activities. He states that integration involves the continuous flow of concepts, ideas, skills and learning outcomes between the graduate professional formal studies period, apprentice or internship phase and the CME/CPE learning during a person’s professional practice.
CPE has not been generally conceived as part of the fields of adult/continuing/community education, (ACE) especially by those in the professional associations or by some of the CPE providers. More recently the major initiatives regarding vocational education or vocational education and training (VET) have not significantly impacted on CPE provision or policy. CPE as a field of provision and practice has appeared to remain on the fringes of other types of education, particularly as they (ACE and VET) have become important foci for government policy (Brennan, 1996, p. 73).

CME/CPE has only recently begun to embrace educational theory as a foundation for course development, design and delivery. CME/CPE providers have been around for decades, but until recently these providers were focused on bringing together lecturers and participants at events covering current topics and assuming learning, and transfer to practice would occur (Bennett, et al., 2000). More recently, CME/CPE providers have begun to utilize the skills and expertise of professional educators in course design. The competition for participants has increased with the advent of on-line offerings and professional CME for-profit providers (Carrière & Harvey, 2001).

In 2004 a CME Congress (Davis, 2004) was held by a group of sponsoring organizations, including the Society for Academic Continuing Medical Education, the Alliance for Continuing Medical Education and the Association for Hospital Medical Education along with interested co-sponsors. The focus of this CME Congress was the translation of research on CME into planning and evaluating
these educational events. Patient-directed health outcomes research has demonstrated that a clinical care gap exists between the high quality evidence-based results from clinical trials and the care commonly given to many patients in the US (Marinopoulos, et al., 2007). The Congress was called to study this “clinical care gap” and what steps can be taken to close the gap. The fields of study they examined as optimal for this task were CME, guideline implementation, health services research, continuing professional development and knowledge translation (Davis, 2004).

Despite the growing body of evidence about changing provider behavior and improving health outcomes and a recognition of their importance, few, if any, attempts have been made to bring scholars together on a global scale. Further, little work has been done to learn from each other, share unpublished findings, or create theoretical constructs to guide further research (Davis, 2004, p. S5).

This gathering of scholars and researchers, therefore, strove to develop plans to remedy this disconnect between research improvements and actual patient care by improving CME and other existing systems that were identified as avenues for physician learning.

Areas of critical skills have been identified by the Institute of Medicine (IMO), the Accreditation Council for Graduate Medical Education (ACGME), and the American Board of Medical Specialties (AMBS). These ‘competencies’ serve as the framework around which medical school curricula, residency programs, and continuing medical education

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(CME) can be built. Much discussion revolves around the reform of CME, and the organizations most involved have developed innovative plans and initiatives to ensure that CME is optimally positioned to support physicians in learning and change (Regnier, 2005, p.174).

This work in 2004 has not solved the problems for CME. In November 2007 The Josiah Macy Foundation sponsored another conference to address the complex issues concerning continuing education in the health care professions. The recommendations from this conference include, “New metrics are needed to assess the quality of CE. These metrics should be based on assessment of process improvement and enhanced patient outcomes” (Fletcher, 2007, p 5).

As the current state of research on physician learning and CME has indicated; some gaps in our understanding of how attending a CME event can impact patient care still exist. The studies of physician motivations to attend CME were done over 20 years ago and have not been duplicated since that time. Educators interested in CME could benefit from more clarification of how the individuals’ motivations may influence their willingness to plan incorporating new knowledge and techniques into the care they give their patients. Additionally, the work which has been done up to this point, attempting to link learning during CME to subsequent practice change, has produced only weak correlations. Current research on linking CME events to practice change has not attempted to differentiate participants by their motivations for attending and thus maybe missing an important factor which has a direct impact on transfer of learning to practice. Recognizing the unique work environment of pathologists, who have not
been studied up to this point, it might be informative for all CME organizers to learn what motivates pathologists to attend CME and how this relates to their planned and implemented practice change activities.

**Research Questions**

1. What are the reasons (motivations) most commonly cited by pathologists for their participation in CME Activities? Do these reasons vary in participants sorted by years in practice or work environment?

2. How do these reasons (motivations) cited for participation in CME correlate with a plan to make changes in a pathologist’s practice? Do those individuals who indicate practice change plans based on participation in the CME event differ in their motivations from those who do not indicate planned practice changes?

3. Over time, how do the participant’s attitudes towards these planned changes in practice and the CME event itself change?
CHAPTER 2

Literature Review

Motivation

Motivation in Adult Education

My study examines how pathologist’s motivations to attend a CME event can be linked to the individual’s willingness to plan and possibly execute practice change based on the learning event.

Although the basic science of motivation rests on a substantial foundation, studies of applications of these principles to continuing professional development are uncommon. To know exactly how to use these explanations, studies that use practice environments and continuing professional education programs as laboratories are needed…Studies are also needed that incorporate motivation as one of a series of variables affecting professional performance and patient care (Fox, & Miner, 1999, p.138).

As Cropley (1985) defined it, motivation for adult learners resides in identifying the hoped-for benefits adults expect to receive as a result of participation. Other authors define motivation as simply, “the student’s reasons for participation in the educational program” (Garst, & Ried, 1999, p. 300). This simple definition of motivation belies the critical importance motivational research has shown for this factor in student and program success. If CME providers are to measure success of events by the transfer of knowledge and skills to practice by participants, then not understanding what motivates participants to
attend leaves providers in the dark when transfer does not occur. Providers may view transfer of knowledge and skills to practice as a goal of the program but attendees may be focused on entirely different goals. Success for attendees may not equal success for providers unless both sides fully understand and share common goals of the CME event. Cropley (1985) goes on further to make an important distinction in types of motivation. He points out that motivation can be a transitory state of “readiness” where an individual is prepared to take on a new task or activity. This particular form of motivation is important for participants in continuing professional education, Cropley points out, since “the practitioners’ continued participation is dependent on the judgment that the learners make of the worthiness of a particular activity” (Cropley, 1985, p. 29).

The writing of Houle in the 1960’s formed the basis for the development of a body of research focused on adult’s motivations to learn. In Houle’s (1961) work, *The Inquiring Mind*, he opened the door to the concept that adults do not approach learning in the same way as children. Houle described three different categories of adult learners based upon their motivation to pursue continuing education. “Goal oriented people can describe clear-cut aims of what they want to achieve. Activity-oriented people participate in learning for reasons unrelated to the content of the event they are attending. Learning oriented people live education and the learning is more a constant than a continuing activity” (Houle, 1961, p. 66). Houle’s work with interviews of small groups is considered pivotal because he identified basic differences in what motivates adults versus what motivates children to learn. Houle went on to examine continuing education with
the publication of his book *Continuing Learning in the Professions* in 1980. He was an early supporter of self-directed learning for professionals.

The primary responsibility for learning should rest on the individual. It is the ideal of every profession, stated or implied in its code of ethics that each professional should feel a deep and continuing concern that his or her education be carried out at a high level throughout a lifetime of practice (Houle, 1980, p. 306). This raises the question of how these individuals identify their learning needs and how they seek out activities to satisfy these needs. These are the complex components of a motivation or drive towards continuing education (Houle, 1980). CME has embraced self-directed learning as a mantra of empowerment of learners. The complexity involved when an individual strives to accurately assess their learning needs is a challenging area of inquiry for CME researchers such as Parboosingh, (1998), Duffy & Holmboe, (2006), Davis, et al., (2006) and Holmboe, et al., (2006).

Research by Houle (1980), Knoles (2005) and others on adult learner motivations has identified broad categories of perceived benefits such as promotion at work, social desires to meet new people or a wish to explore new ideas. I feel that studies on motivation for adult learners need to be better refined since the category of adult learners encompasses everyone from those seeking to complete high school, through post-graduate studies. What motivates an adult professional in a CPE program may or may not differ from the motivations of adults in college or high school courses, for example.
Knowles (2005) first enumerated six principles of motivation for adult learners in his work during the 1970’s. Knoles (2005) developed the theory of andragogy to distinguish an integrated framework for adult learning from pedagogy which he describes as a theory of youth learning (p.58). Based on his theory of andragogy these six principles of motivation are:

1. Adult learners need to know why they need to learn something before learning it.
2. The self concept of adults is heavily dependent upon a move toward self-direction.
3. Prior experiences of the learner provide a rich resource for learning.
4. Adults typically become ready to learn when they experience a need to cope with a life situation or perform a task.
5. An adult’s orientation to learning is life-centered; education is a process of developing increased competency levels to achieve their full potential.
6. The motivation for adult learners is internal rather than external (Knowles, et al., 2005 p. 159).

The self-directedness of participation in a particular CME event is an illustration of these 6 principles of motivation as enumerated by Knowles. Knowles (2005) describes the adult learner, as having a clearer sense of purpose and ability to be more involved, including their ability to assess their competency development for themselves. In Knowles view, this adult learner favors application of learning and integrating the new skills over learning with a focus on modeling abilities and qualities. Knowles is in agreement with Maslow’s idea
of self actualization as the learner’s ultimate goal, but Knowles also sees goal formation as an active highly dynamic process internal for the learner but including input from his/her experience.

Motivation Research in CME

Part of self-directing a learning activity is self-assessment that can bring to light a problem or question. The participant needs to become aware of the “practice gap” or a particular need to be met that the program would provide if there is going to be openness to making a change in practice (Parboosingh, 1998). Not all attendees come to a particular event to fulfill this sort of learning need. Research by Harrison and Hogg (2003), Armstrong et al. (1996) and Goodyear-Smith et al. (2003) reports that frequently participants at CME events come away satisfied from an event where they were reassured that what they are doing in their practice is the best possible approach to a particular patient’s problem. A study by Harrison and Hogg (2003) interviewing general practitioners about attending a CME event showed that many came looking for reassurance that “what I am doing from day to day is OK” (p. 886). This research study is one of the few that looked at motivations or expectations of what prompted the attendees to come to the activity. They found three major themes that were identified by most participants; “information and update, reassurance about standard of practice and interaction with and new information from ‘the expert’” (p. 886). They also identified less commonly noted motives such as availability of the syllabus for later study, a break from practice and maintenance of accreditation. These reasons cited for participation are similar to those found by the researchers such
as Grotelueschen, et al. (1980) and Cervero (1981) using the Participation Reasons Scale (PRS) first developed by Grotelueschen and used to identify motivations of professionals for attending continuing education events. In Grotelueschen’s (1985) early work with the PRS, the cluster I “professional improvement and development” was rated as a strong motivator by groups he termed “professionals” including teachers, surgeons, management, supervisors and social workers” (Grotelueschen, 1985, p. 34). “It might be reasonable to suppose, however, that in those professions where career lines were made more predictable and stable, significant correlations with the ‘professional improvement and development’ cluster I and both age level and years in the profession would be found” (Grotelueschen, 1985, p. 34). This corresponds to Harrison and Hogg’s (2003) findings that physicians wish to keep current and seek reassurance that what they are giving their patients is considered the standard of care. Another study done by Garst and Ried (1999) examining motivations looked at non-traditional pharmacy students and pharmacist participants in a continuing education activity. These researchers, using the Education Participation Scale (EPS) found that these groups were most motivated by what the authors termed “Competency-related Curiosity” factors. The continuing education participants in Garst and Ried’s study rated “Compliance with External Influence” as the second most influential factor, closely followed by “Community Service”. Joyce and Cowman (2007) looked at nurses’ motivation to participate in “post-registration education” continued education for advanced degree beyond an entry level degree. Their nurse participants were most strongly motivated by a desire to
“obtain promotion to a higher position and to extend their clinical role”. These studies allow us to infer that the different professions differ in their motivations for participation in continuing education activities.

One study by Cividin and Ottoson (1997) which linked motivations for attending CME to subsequent practice change was located after an extensive literature search. This study followed multiple health care professionals including nurses, physicians, mental health counselors and rehabilitation specialists. Their data collection was through a series of three questionnaires, pre-event, immediately post-event and two months post-event. This research found that physicians showed two significant correlations between reasons for participation and application to practice. These two motivation descriptors were “a need to do my job differently” and “confirm that what you are doing is correct”. As the authors point out, these two motivators might, at first, appear contradictory. What is common for these two motivators, are indicators of actively seeking out an educational event that satisfies a “gap” that was identified by the participant; the focus was on self-directed, self-motivated learning for these physicians. Cividin and Ottoson reiterate the complexity of tracking practice change to any one learning event. “It was not anticipated at the beginning of this study that reasons for participation would tell the whole story of the complex, multidimensional process of application. It was anticipated that reasons for participation would at least provide the opening line for the application story” (p.53).

My study is directed at one particular sub-specialty physician group, pathologists. It is a unique feature of my study that I did not try to compare
motivations and subsequent application across different professions or even physician specialties. By restricting the variables of educational background, field of practice and work related responsibilities; this study can tie the motivations for attending CME to planned practice change with greater rigor.

Practice Change

Linking CME to Practice

Along with issues raised by professional educators concerning applying adult learning theories to professional education, integration of CME activities with professional experiences has also become a critical point for educators. Brennan (1996) stresses the lack of integration as a critical factor in the lack of identifiable outcomes tied directly to patient care for most CME activities. He states that integration involves the continuous flow of concepts, ideas, skills and learning outcomes between the graduate professional studies phase, the professional practice apprentice or internship phase and the CME learning during a person’s professional practice.

CPE has not been generally conceived as part of the fields of adult/continuing/community education, (ACE) especially by those in the professional associations or by some of the CPE providers. More recently the major initiatives regarding vocational education or vocational education and training (VET) have not significantly impacted on CPE provision or policy…. CPE as a field of provision and practice has appeared to remain on the fringes of other types of education, particularly
as they (ACE and VET) have become important foci for government policy (Brennan, 1996, p. 73).

The work of Slotnick and Shershneva (2002), Slotnick (1999) and Mann (2004) built upon the discussions of Grol (2002) as they begin to describe how theory can be used to improve physician’s professional education. Slotnick espouses a staged theory of physician learning. This theory describes a sequence of events where problems are identified, reflection and insight are applied to the problem and there is a resolution identified. I feel that the approach of basing learning interventions upon a firm base of theory and using theoretical scaffolding to develop educational activities is a critically necessary approach that needs to be consistently applied to develop quality CME programs. The fact that this approach is relatively new to the field of CME may be astonishing to educators in other disciplines; where theory drives the design of programs, forms the basis for evaluating program direction and rigor and allows for the introduction of new instructional ideas and concepts (Mann, 2004). CME can thus be appreciated as a relatively new area for academic educators, as it struggles with the early growing pains experienced by primary and secondary education in the first part of the twentieth century (Mazmanian, 2005).

For educators involved in developing CME activities, the principal of continuity is critically important, since most events have a stated or implied goal of enabling the participants to incorporate the new knowledge and skills into their practice setting. In designing CME activities, educators and participants need to
be keenly aware of the audience’s current knowledge and how this relates to the topic of the CME activity (Marinopoulos, et al., 2007).

How Physicians Learn

Problem-solving has shown itself to be a complex process which involves multiple factors and cannot be simply taught in a linear fashion and result in application of learning in practice (Norman & Schmidt, 2000). Viewing patient care as a problem solving exercise is a way to begin to appreciate the complexity of the issue faced by physicians in their daily practice (Albanese 2000). This continues to be a frustrating issue in CME where day-long workshop activities and seminars are the norm for educational design. Participants indicate that learning goals were achieved and can identify the utility of the activity to their practice as reported on required event evaluation forms. Research on this issue has been done since the 1980’s by Young and Willie (1984) through this decade by Harrison and Hogg (2003) Goodyear-Smith et al. (2003), Davis et al. (2003) and Wakefield (2004). Does this learning carry over into their practice?

The ability to solve problems is tightly tied to one’s knowledge in that area; therefore, problem-solving ability varies markedly from case to case and from context to context. These findings have led to a new understanding and revised theories about promoting the learning of problem-solving; we now understand that learners require a wide variety and number of opportunities and exemplars in learning how to solve problems so that they have many different problem-solving approaches from which to draw (Mann, 2004 p. 4).
I feel that this idea can be seen to indicate that CME needs to be more closely tied to daily practice and extend over time rather than be an isolated event. CME which more actively allows the learners to personalize the knowledge and practice incorporating the ideas with opportunity for reflection and feedback would be CME that maybe more likely to alter practice.

Schön’s (1987) model of reflective practice is a widely quoted theory in continuing education literature. Schön’s theory developed from observations of practice across several professions. He described how professionals work and learn and frame and solve complex problems of practice. Schön identified a cycle of learning from experience, through practice to incorporation of new knowledge into behavior.

The non-routine situations of practice are at least partly indeterminate and must somehow be made coherent. Skillful practitioners learn to conduct frame experiments in which they impose a kind of coherence on messy situations and thereby discover consequences and implications of their chosen frames. From time to time, their efforts to give order to a situation provoke unexpected outcomes – ‘back talk’ that gives the situation a new meaning. They listen and reframe the problem. It is this ensemble of problem framing, on-the-spot experiment, detection of consequences and implications, balk talk and response to back talk that constitutes a reflective conversation with the materials of a situation – the design-like artistry of professional practice (Schön, D. 1987, p. 157-158).
Here we can identify the linking of ideas focused on the complexity of practice situations and the difficulty for the learner in constructing learning that can be applied to these situations which never identically mirror any artificially constructed learning environment. Theorists have grappled with the complex nature of practice based learning and the application of knowledge and skills to real world situations for all adult learners as seen in the research by Fox et al. (1989).

**Linking Learning to Practice Change**

Tracking the practice changes that may occur after participants return from a learning event has proven to be an extremely challenging topic to rigorously document (Wakefield, 2004). During the event, I suggest that it might be helpful if presenters support the visualization or anticipation of how new knowledge and skills could be incorporated into a physician’s current practice. The next step could include documenting these changes in the practice setting and finally how these changes affect patient care; levels 3 and 4 for the Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2005). This is a challenge CME providers have tackled in a variety of studies. One of the early approaches which has had some endurance due to its convenience, low cost and the quality of responses is the “Commitment To Change” (CTC) statement form from Purkis (1982). The idea of asking physician participants in Continuing Medical Education programs to make statements that would document how they anticipate applying new knowledge and skills when they return to their practices began with Purkis’ work. In 1982 Purkis published his study using what he termed “Commitment to Change
(CTC)” statements with data gathered during a pain management program attended by practitioners from a variety of disciplines. “During the second day of the program the participants were asked to complete a card with up to 3 items that they propose to change in their practice as a result of what they learned at the course” (Purkis, 1982, p. 62). After two months, the cards were mailed back to the participants with the simple question, “Have you been able to introduce these changes?” with check boxes for responses. Purkis had 39 physician participants in the course with 28 (72%) completing at least one CTC statement. After repeated reminders, these 28 participants all returned the follow up questionnaires, a 100% return rate. Purkis recognized that this instrument provides only indirect evidence of actual practice change, but that this is the most practical, cost effective and widely applicable technique available to document practice change for a majority the of medical disciplines. Purkis also recognized that there was a reflective activity involved in both completing the CTC statements and the follow-up questionnaire.

By attaching a reflective activity to the CME event educators might be able to increase the probability that new knowledge and skills are incorporated into the participant’s practice (Lowe et al. 2007) (Cervone 1989). The concept employed with this approach is to have the participants “envision their future behaviors” a simplified use of Bandura’s Social Theory of Learning (1977). “Bandura’s observational learning is characterized by the concept of self regulation. He contends that ‘persons can regulate their own behavior to some extent visualizing self-generated consequences’” (Bandura, 1976, p. 392 in Merriam, et al. 2007, p.
Using the CTC tool as a way to track the effect of CME participation on practice change and hopefully improving patient outcomes was not widely adopted until fairly recently. The work of: Mazmanian (1999), Dolcourt (2000), Lockyer, et al. (2001), Parochka and Paprockas (2001), Cole and Glass (2004), Wakefield (2004), and White et al. (2004) have brought this tool back into the forefront of research on CME effectiveness with the advent of increased demands for accountability from CME education providers.

CME Reform

Recently, the more innovative work in the field of continuing medical education has been on program design and assessment. The development of discrete standards for educational activities and assessment activities which go beyond the acquisition of knowledge to application of knowledge and improved patient care has been a new and exciting area of research within this field of education (Marinopoulos et al., 2007) (Fletcher, 2008). “Much discussion revolves around the reform of CME, and the organizations most involved have developed innovative plans and initiatives to ensure that CME is optimally positioned to support physicians in learning and change” (Regnier, et al 2005, p. 174). The push to show that identifiable outcomes can be linked to participation in CME has been spearheaded by several researchers, most notably, Davis, Fox and Mazmanian. In 1999 Davis had his co-authors wrote a meta-analysis reviewing the literature to identify studies which documented the effect of formal CME interventions on physician performance and health care outcomes. The
result of this review was surprising in the limited number of studies the authors could identify as suitable, only 14.

Nine generated positive change in professional practice, and 3 of 4 interventions altered health care outcomes in 1 or more measures. In 7 studies, sufficient data were available for effect sizes to be calculated, overall, no significant effect of these educational methods was detected…However, interactive and mixed educational sessions were associated with a significant effect on practice (Davis, D. et al., 1999, p.867).

The conclusion these authors draw is supportive of the notion that interactive, engaging events that allow participants to practice skills can produce a behavior change which impacts patient care, but purely didactic sessions are not as likely to create the same changes. Another component of the argument for engaging participants is the social atmosphere that is created by attendance at a conference where many colleagues and professional acquaintances gather. The networking, stimulation of new ideas and lively discussions build a community of learners which is difficult to achieve in the day-to-day workplace (Harrison & Hogg, 2003).

Attributing changes in practice to continuing education activities is questionable at best. Although continuing education may be a factor in improving performance, it is difficult, if not impossible, to separate the effects of continuing education participation from those of other factors that influence practice. Yet people will keep trying to establish causal
relationships, and indeed, some changes, such as improved knowledge can be measured (Queeney & English 1994, p. 40).

The goal for many educational activities throughout life is to transmit new knowledge and skills. This can be the end goal for many types of schooling and the possibility that the learners may actually apply the knowledge is not a primary concern of the educators. Designers of CME activities cannot be satisfied with simply transmitting knowledge and skills; the application for learning to practice is critical to the overriding purpose of CME.

In recent years, the value of traditional CME – which was delivered primarily as an extension of the didactic model, including lectures and reading (or listening) followed by testing – has been questioned. The debate has centered on whether traditional CME, which may enhance the knowledge base of professionals, relates to improved outcomes through changing physician practice behaviors (Kahn, et al., 2007, p. 1).

If CME does not have a direct measurable effect on practice, however, can mandatory participation still be justified? Voluntary participation for the personal benefits which do not have a direct impact on practice but may keep highly qualified practitioners active in the field are certainly of value to the community and the profession. It would be less likely that employers would finance CME which has only personal value. Could licensure agencies and recertification organizations require CME if there are no identifiable benefits for practice?
In an effort to identify specific practice change based on participation in CME, Wakefield (2004) used the “Commitment to Change, CTC” model originally described by Purkis (1982) in a study of practicing physicians.

In the first step (the CTC statement), the physicians are asked a question such as ‘As a result of this educational activity, do you plan to make any changes in your practice? If so, please describe the specific changes.’ Explicitly indicating an intention to change then becomes an important ingredient in the process of change. In the second step (the follow-up), participants are surveyed some weeks or months later and asked if the intended change was made and, not made, what prevented the change (Wakefield 2004, p.197).

According to Wakefield and other researchers, the CME program designers often focus on the satisfaction and knowledge acquisition but fail to do the long term follow-up to link participation in CME to practice change. My study is an attempt to bridge this gap, beginning with this sub-set of practitioners, pathologists. As described in the literature beginning with Purkis (1982) and though the work using CTC statements by Dolcourt (2000), Lockyer et al. (2001) and White et al. (2004) all these studies are limited by the self-reporting of participants and the results reported are thus somewhat subjective. However, all these researchers have indicted that CTC statements can often be very specific for traceable activities. Reports of follow-up by other than self reporting have been very rare in the literature. The work of Chambers et al. (1976) with dentists using
direct observation and the Better Prescribing Project by Herbert (2001) both showed that self reporting can over estimate practice changes.

Consistently, studies have shown that physicians who make a CTC are more likely to make practice changes than physicians who do not suggesting that a CTC may be a marker for an actual change in practice. Most studies have reported rates of ‘compliance’ with expressed CTC ranging from 47% to 87%. However, because these studies used only self-reporting to document outcomes, concern was expressed that the results were invalid because self-reported change may significantly overestimate actual performance (Wakefield 2004, p. 198).

I am concerned that the widespread application of this model (CTC) will reduce participant cooperation, as they tire of the questioning and follow-up surveys. I feel that these issues can be addressed by better informing both designers and participants of the importance of the sequence of steps and sharing results of the surveys with participants. By extending the activity over time and situating it within the work setting, the likelihood of initiating practice change may be enhanced as has been shown by the work of McKenna et al. (2008). McKenna reviewed four studies of the new Performance Improvement Continuing Medical Education (PI-CME) approach to CME. So few of these studies have been done and this approach is so new that there are no definitive results currently available. Medical specialty societies and examining boards are hopeful that this new more integrated approach which extends the learning over
A study by Cole and Glass (2004) may indicate the importance of reflective thinking in influencing practice change. In this study the follow-up activity where participants are contacted about the outcome for their CTC statements can be seen as a reflective event. They must think back on what was said, why and how this has worked out for them. When surveyed at a later date with more broad ranging questions using terms such as “ready to change” or “plan to do” the positive response rate increased to 32% (Cole & Glass 2004, p. 209). It was postulated that participants may have engaged in active reflection when viewing themselves as volunteers in a research study. I feel that if CME programs could create a more cooperative learning environment where participants feel connected with the development of new procedures to improve patient care, then educators could foster an atmosphere of reflective thinking. Reflective thinking has been shown to be integral to adult learning and incorporation of new information.

Several key concepts identified by Wakefield (2004) have direct application to the use of the CTC form in CME programs directed at pathology practitioners.

- Commitment to change can be used in many ways; stimulating reflection to promote change, planning educational programs, and evaluating impact.
- To be effective, the selection and use of an intervention strategy such as CTC must be guided by an understanding of the complexity of physician behavior change.
- The process used to solicit commitments to change can influence results.
• Although the commitment to change strategy may be ‘overused’ and decrease effectiveness, it may also encourage a way of reflecting and thinking about applying learning to practice (Wakefield, 2004, p. 203).

In a similar study of physicians by Lockyer et al. (2005) which examined outcomes through congruence of course objectives, the CTC statements were found to be more congruent with objectives than unmet-needs statements. Dolcourt and Zuckerman (2003) as noted in Lockyer et al. (2005) found that “evaluations based on instructional objectives although valuable, were incomplete because educational activities may stimulate many unanticipated learning outcomes. In this, they recognized that the learning of medical practitioners is intertwined with their ongoing practice and practice issues, making it likely that what physicians learn will be adapted towards the needs and contexts of practice” (Lockyer et al. 2005, p. 50). Russell (2004) describes a change in the format of follow-up questions used in an evaluation form for Urologic Nursing journal to include short answer open-ended questions with the standard Likert scale format. The short answer questions focused on how the participants critically examined their self-learning and how they applied this learning to their practice. Russell (2004) felt that the participants were thoughtful and insightful in their responses, going beyond what was required to complete the questionnaire. The work of Smith and Topping (2001) with nurses used a qualitative, case study approach to evaluate the positive results of an educational program. These researchers found that participants self-reported positive practice changes resulting from their CME activity and could identify specific incidents of these changes. This program
extended over a longer time than is usually seen (12.5 days over a 12 month period) and the researchers were involved as instructors of the program and in some situations were also the supervisors of the participants.

I feel that the ideal for all CME activities would be to have the participants involved at the level of “critical engagement” where the participant is actively envisioning themselves manipulating the new knowledge and skills and hopefully will begin to incorporate this new knowledge as their own as they manipulate the information at a level of “polysemic engagement” as described by Bangert-Drowns and Pyke (2002). The participants have a wealth of experience to share and their active involvement and willingness to subsume the knowledge into their personal learning sphere is critical for application of the new learning in their practices. From my perspective, the concept of educational engagement seems critical to CME, as program designers become more informed about education theory and design principals this should be a core goal for each participant. Currently, however, there has been no research published that attempts to examine physician engagement with CME learning.

*Successful CME Outcome Measures*

When examining continuing professional education programs for pharmacists, Koda-Kimble and Batz (1994) discuss the research of Hale (1991) where attributes of successful programs are identified. Using participant feedback, these authors state that the most important feature of a successful CPE program was the inclusion of an experiential component.
Wakefield (2004) describes physicians who participated in longer CPE sessions lasting 1 to 2 days had reported a more than 70% commitment to change, whereas those who participated in structured journal reading or brief lectures reported less than 50% CTC. This would seem to indicate that it is the length of the contact with the learning community which can encourage the participant to develop the intention to carryover learning to practice.

The distinction between one-time sessions versus an ongoing community of practice sparks the question of what continuing professional education really is and what it has the potential to be. As it is often practiced, continuing education can be a misleading term. In its traditional form, it seldom includes real ongoing professional development beyond discreet educational sessions (Pittinsky 2005, p. 2).

In a meta-analysis of published research on continuing educational activities for multiple health care professions by Oxman, et al. (1995) the authors raise the question of presentation format as a critical factor which could impact the intended outcome of programs. This analysis focused on the levels of interaction between participants and faculty. Oxman and his coauthors found 102 trials done between 1970 and 1993 that met their criteria which met their criteria for measuring performance of health care professionals or health care outcomes. They documented no change in performance or health outcomes when using printed materials only. A finding such as this for printed material, could translate to those online programs which present a watch and read format (Oxman, et al. 1995). Pullen (2006) examined online courses for health care providers and found...
that of 42 programs examined, there was a statistically significant increase in knowledge, an improvement in self-reported practice behavior changes. Pullen also noted that those programs with a “clinical tool”, an experiential component that included some sort of role play or description of how to apply the new information demonstrated an even greater increase in self reported practice change.

Ottoson (1995) expressed a cautionary note about the results from research where participants identified a willingness to change at a CME event and then researchers attempted to track actual practice changes after the event. This research gives an indication of the difficulties with following through on planned change when a practitioner returns to their work environment after the CME event. “On end-of-workshop questionnaires…nearly all [participants] indicated they were likely or very likely to apply the model [which was taught]. In this study, a look beyond the workshop door after three months revealed relatively little application by most participants and no application by some” (Ottoson, 1995, p. 3). We cannot expect CME to turn incompetent professionals into stellar practitioners but we can hope to keep the competent practitioner competent. All professionals are faced with the rapid changes and technological developments of their profession, none more so than medicine.

No one can say with certainty that meaningful learning takes place in such (CPE) situations; it can or cannot, depending on such factors as the individual’s receptivity to it and the appropriateness of the educational activity to the individual’s needs. Whether mandated or
not, continuing education cannot automatically be assumed to address discrepancies between even a highly competent professional’s current state and his or her desired state. Specific interventions and follow-up evaluations would be required to justify such a claim (Queeney & English 1994, p. 37).

Several studies addressed the discrepancy between planned practice change and actual application. One study by Chambers, et al. (1976) utilized observation of the participants in their offices, while treating patients after the learning event. The dentists indicated that they had adopted the new techniques into their practice behaviors before observation. The observers noted that very few dentists actually did the entire procedure as taught. The changes in behaviors were adapted by each participant to their own particular techniques, often reducing or eliminating any of the positive effects of the newly taught procedures. This study supports the findings of Harrison and Hogg (1997) that showed family practice physicians believed they were learning something at lecture style CME events and that they were incorporating this knowledge into their practice. There was no observation or objective review in the Harrison and Hogg study to confirm this self reported application.

The literature on continuing professional education would seem to indicate that the critical issues for educators are:

- applying education theory and design principals to the CME programs
developing outcomes measures that can consistently and accurately determine the practice change benefits and improvements in patient care do actually result from participation in CME.

The development of CME has progressed over the past ten years due to the efforts of the professional organizations and with the prompting of government agencies (Marinopoulos et al., 2007). Now that these questions are being raised about the purpose of these activities, CME has reached the stage in its development where educational experts need to be more actively involved.

In order to raise the overall level of quality, continuing (professional) educators need to convert their reactions to mandatory continuing medical education as a validation of adult education principals into actions designed to integrate those same principals into the design, development, and delivery of activities that address the needs of the professionals they aspire to serve (Queeney & English 1994, p. 6). The standard procedure of pre-test, post-test is useful in tracking knowledge gained but is insufficient for predicting post-program application of new knowledge.

In most CPE [continuing professional education] evaluations, application equates with performance change…. Increasingly, CPE evaluations have demonstrated that continuing education may result in positive changes in behavior in some situations… Application is understood as a complex, multidimensional process that connects intent to ends, generates knowledge, concerns itself more with feasibility
than precision, and often involves adaptation of both concept and context (Cividin & Ottoson, 1997, p. 50).

The complexity of the process of behavior change for physicians was examined in a study by Armstrong, et al. (1996). The study used interview with general practitioners and questioned them concerning changes they felt they had made in prescribing over the last 6 months. These researchers identified three models of change: “an accumulation model, in which the volume and authority of evidence were important; a challenge model, in which behavior change followed a dramatic or conflicting event; and a continuity model, in which change took place against a background of willingness to change” (Armstrong, et al., 1996, p. 949).

Changing the prescribing of a particular medication for a general practitioner can be a much smaller, more incremental and exploratory attempt at change than most diagnostic decisions made by a pathologist. Thus we can see that the potential patient care implications for any one particular behavior change will weigh strongly on how the physician goes about implementing that change.

Why has (education) theory not provided us with more answers to date? There may be several contributing factors. First, it may be impossible to move directly from theoretical principles to practice. Theory cannot proscribe directly what to do; however, it can provide the tools to look for crucial variables that might be involved. It cannot provide ready-made instructional prescriptions; however, it offers a framework within which to conceptualize issues of learning and teaching. Second, theory has not consistently been systematically applied in our (continuing
medical education) work. In the presence of multiple models to guide interventions, theory has been applied eclectically and episodically, making it difficult to determine its true usefulness. Further, where theory has been used to guide research, when the research lacks rigorous design and implementation, we have been unable to draw conclusions about effectiveness of either the intervention or theoretical or conceptual framework involved. Consequently, evidence for the effectiveness of some educational interventions is lacking and the accurate assessment of theory is hindered. Third, there has not been consistent careful reflection on the ‘theories-in-use’ in educational practice and the conceptual and professional practice, many variables are at play. Fourth, and very importantly, theory has not provided us with more answers because the assumptions and theories that we, as educators, use tacitly are invisible to us and assumed to be self-evident because they are embedded in our beliefs and assumptions (Mann 2004, p. 6).

The literature shows that there is a need for physicians, physician educators and CME providers to plot a direction for the future of CME that is more targeted on measuring outcomes focused on translating new knowledge and skills into improvements in patient care. How to design and develop the educational programs that will achieve this outcome is still unclear. Techniques to actually track and measure the impact of CME on patient care and link educational interventions to subsequent practice change are still being examined. This is a new field of educational research and researchers are still discussing how adult
education theories can be used or should be used to give structure to the evolving research on CME. My research questions have been developed in light of these gaps in understanding.
CHAPTER 3
The Study

This study examines the application of knowledge learned in Continuing Medical Education (CME) activities by pathologists to their daily practice and how their motivations for attending CME events influences their intentions towards integration of new knowledge and skills to their practice. This is a mixed methods study, using a quantitative questionnaire and survey along with a qualitative data collection tool. Follow-up by e-mail questionnaires was used to engage the participants in a reflective process of examining their actual application of new knowledge or skills and how they see this linked to the particular CME activity.

Research Questions

1. What are the reasons (motivations) most commonly cited by pathologists for their participation in CME Activities? Do these reasons vary in participants sorted by years in practice or work environment?

2. How do these reasons (motivations) cited for participation in CME correlate with a plan to make changes in a pathologist’s practice? Do those individuals who indicate practice change plans based on participation in the CME event differ in their motivations from those who do not indicate planned practice changes?

3. Over time, how do the participant’s attitudes towards these planned changes in practice and the CME event itself change?
Methods

The Participants

At the ASCP Weekend of Pathology, held during February, 2008 in Las Vegas NV, there were 162 attendees, 35 responses were collected. One response was significantly incomplete and so this was removed from the study. The response rate was therefore 34/162 = 22%. The attendance and participation information is presented in Table 1.

The participants were all physicians that were board certified in the specialty of Pathology and Laboratory Medicine. One was a resident in the final years of pathology training.

Table 1

Attendance and participation information for the data collection event, the ASCP Weekend of Pathology

<table>
<thead>
<tr>
<th>Weekend of Pathology</th>
<th>N</th>
<th>% of portion</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference attendance</td>
<td>162</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>PRS &amp; Demographics</td>
<td>34</td>
<td>22%</td>
<td>22%</td>
</tr>
<tr>
<td>CTC statements</td>
<td>28</td>
<td>82%</td>
<td>17%</td>
</tr>
<tr>
<td>Agreed to Follow-up</td>
<td>13</td>
<td>48%</td>
<td>8%</td>
</tr>
<tr>
<td>Responded to follow-up</td>
<td>10</td>
<td>78%</td>
<td>6%</td>
</tr>
</tbody>
</table>
The Site

Data was collected at a specialty conference arranged by the American Society of Clinical Pathology (ASCP), “the Weekend of Pathology” event. The ASCP is a well recognized national professional organization that sponsors accredited Continuing Medical Education (CME) events for pathologists. The ASCP conference was 3 days long and was held at major hotel conference facility. Attendees must register in advance and pay tuition.

The ASCP, Weekend of Pathology does offer a choice of lectures for attendees, registering locks a participant into selecting one of two topics offered for each morning and afternoon lecture.

Data Collection Instruments

1. The Participation Reasons Scale (PRS) first developed and validated by Grotelueschen, et al. in 1979 was modified slightly for these participants. Six of the 34 statements had one or two words changed which did not change the meaning of the statement but made it more targeted at the work of pathologists. (Appendix A)

2. Commitment to Change (CTC) forms, first developed by Purkis (1982) was slightly modified and used. (Appendix B)

3. Basic demographic data was requested from each participant. (Appendix C)

4. Follow-up questionnaires were distributed through e-mail to participants who completed the CTC statement form and indicated contact information. (Appendix D)
Design and Procedures

The study at the ASCP Weekend of Pathology was conducted during the CME event. The participants voluntarily agreed to participate by completing the PRS and CTC forms. This project has prior IRB approval from the University at Albany Institutional Review Board. Participants were not required to provide the researcher with sensitive or personal information. The only direct contact by the researcher with individual participants was via e-mail through information willingly supplied by the participant for this purpose.

The flow of activities:

1. As attendees entered the room for the CME event, they were given a packet of materials including:

   A. a letter from the researcher explaining the purpose and design of the study (Appendix E)

   B. the PRS and demographics questionnaire,

   C. the CTC form.

2. The researcher briefly explained the project, reiterated that participation is completely voluntary and as anonymous as possible and asked if there any questions.

3. Participants were given a few minutes to read the letter and complete the PRS and demographics survey.

4. At any time during the event, participants could chose to complete a CTC form. One copy of the CTC form is retained by the participant, the other
remains attached to the PRS & demographics surveys so they are returned together.

5. A collection box was provided so participants could deposit their materials as they left the room during any of the 3 days.

Data

The data collected is both quantitative, from the PRS and demographics questionnaire and qualitative from the CTC forms and the follow-up questionnaires. A large percentage of individuals who chose to complete the PRS forms also completed the CTC forms. This fact made it more difficult to identify two separate groups of participants by their motivations and expectations concerning CME. The plan was to identify two groups from the PRS responses: a) those that completed the CTC and b) those that did not. The ideal control group would be to hear from the attendees who chose to not complete either instrument concerning their motivations and plans to apply CME learning to practice. This particular data point is, unfortunately, unavailable at this time. The follow-up activity referred to in research question 3 is purely qualitative, self-reported data. A large percentage of most pathologist diagnostic activities deal with patients who are not “in-patients” that is, admitted to a hospital. The majority of the specimens they review are from patients who are seen as part of out-patient services and sent from clinician offices. The study cannot use a “chart audit” approach and hope to catch this large portion of the pathologist’s daily work. Self reporting is the most practical approach for capturing the wide variety of specimen types the pathologist deals with in their average day.
There has not been a previous study reported in the literature that combined the use of the Participation Reasons Scale and the Commitment to Change statements. The literature indicates that the number of participants is usually quite small for studies that focus on the CTC activity. “There are limitations to published studies of CTC. Sample sizes of participating physicians are small – usually less than 100 and sometimes less than 20” (Wakefield, 2004, p. 203). Wakefield’s (2004) review of the published studies using CTC statements for physicians shows a wide range in the number of participants that supports this statement. In the meta-analysis by Wakefield (2004) we see that the studies that used a single CME event ranged in participants from 17 to 41 in Purkis (1982), Pereles et al. (1997) and Green et al. (2003). There were 3 studies using multiple events, from 20 (a study by White et al., 2004) to 79 (study by Parochka & Paprockas, 2001) CME activities were included and carried out over time at various sites. These studies contained more participants, as we would expect; two of the three studies with multiple sites over time and location contacted the physicians for follow up. The study by White et al. (2004) focused on the relationship of the CTC statement to the length of time in the program during which that topic was covered. The study by Parochka & Paprockas (2001), focused on the barriers to change faced by physicians. Within the literature for research on this topic, my study is well within standard for number of participants and size of the study.

Studies that used the PRS instrument only, tended to have larger numbers of participants, as we would expect for a quantitative study using a one time, one
instrument approach for research communication with participants. Cervero’s (1981) study of physicians using the PRS had 211 participants. Grotelueschen (1981) published work on the development and verification of the PRS. His survey was mailed to 242 physicians practicing at hospitals in the Chicago area without tying the survey to a specific educational activity, he did not supply the number of surveys returned. Work by Laszlo and Strettle (1996) with Nurse Midwives used the PRS instrument and from the 120 questionnaires mailed, there were 83 responses, a 69% response rate. The work done by Cividin and Ottoson (1997) which applied a questionnaire created by the authors for their study, used participants from 4 professions attending 29 separate events occurring during an 11 month study period. They had 41 responses from physicians to their initial survey and when contacted for follow-up, no physicians participated.

Data Analysis

The Demographic Information

The participants completed a demographic information sheet, Appendix C. The data gathered on work environments and years in practice was used to sort the participants when analyzing their responses to the PRS and the CTC statements. Work environments were: academic medical center, community hospital, private practice and reference laboratory. Only 3 participants indicated they worked in a reference laboratory. These laboratories are more similar to private practice settings than to either community hospitals or academic medical centers in many respects. The reference laboratory participants were combined with the private practice pathologists for data analysis.
The years in practice information was also condensed to give two groups, 0 – 10 years and 10+ years for analysis. The original demographic information separated participants into 4 groups; 0-5 years in practice, 6-10, 11-15 and 15+. After review with four groups where the number of participants in each was extremely small, no significant difference was found in the results when the four groups were condensed into two for data analysis.

_The Participation Reasons Scale_

The Participation Reasons Scale (Appendix A) from Grotelueschen, et al. (1979) was validated by the authors and researchers during six years of work with professionals participating in continuing education events (Grotelueschen, Harnisch and Kenny, 1979; Grotelueschen, Kenny and Harnisch, 1980, Grotelueschen, Kenny, Harnisch, and Cervero, 1981). In the 1981 work, these authors developed comparative analyses of the professionals’ reasons for participation in continuing education activities.

The PRS has undergone both content and face validation. Content validation was an integral component of the development process. Item generation was based on analysis of the literature on participation and survey of representatives of selected professional groups. ….Recent findings across several professional groups tend to substantiate these early efforts to assure that the PRS is measuring what it intends to measure (Cervero, et al. 1985, p. 38).

Grotelueschen’s 1981 research focused on 5 professions, veterinarians, judges, physicians, business professionals and nurses. The original survey form
used a 7 point scale. For my study the scale was collapsed from 7 choices to 4 with “N/A” not applicable, added. This was done for two reasons. In the original form the Likert scale asks for responses on a range from “not important (1), through moderately important (2 – 6), to very important (7). The choices for moderately important offer a possibility of 4 selections, a wide variation in response without clearly defining for the participant what moderately “2” versus moderately “6” actually means. The results from Grotelueschen et al. (1981) indicate responses fall in the range of 4.04 to 5.32 (all moderately important) for one of the five statement groups. This affords an extremely small range to gauge the respondent’s true depth of motivation and compare responses within the group. By reducing the choices to 5 (1 = not important at all; 2= somewhat important; 3= very important; 4 = extremely important N/A= not applicable) each choice is better defined and differentiated for the participants. The choices now generate specified distinctions for this small study population, and are better defined in an attempt to bring out subtle differences for the data analysis. The second reason is that the original authors compressed the scale during analysis so responses of 2 vs. 3 for example, were not actually differentiated in the analysis. Additionally, the pathologists participating in my study were not a group with a great deal of time or interest in responding to 34 statements each with a range of 7 possible responses. Using the Likert scale of 7 would have increased the frustration level and perhaps decreased the already small N for responses, without adding rigor to the data collected. Additional changes made to the original instrument validated by Grotelueschen, et al. (1981) and slightly modified by one
of the authors Cervero (1981) to better address physicians’ needs, included slight
adjustments to wording in the statements to more directly address the work
environment of practicing pathologists. For example: PRS item 5 “improve
professional service to patients” was changed to read “improve professional
service to clinicians and patients” since pathologists offer diagnostic service
through the clinicians who send them patients’ specimens. Similar small
grammatical adjustments were made to 6 of the 34 PRS statements.
The work of Grotelueschen, et al. (1979, 1980 and 1981) sorted the PRS
statements into 5 basic “clusters” these are

- Cluster I professional improvement and development
- Cluster II professional commitment
- Cluster III personal benefit and job security
- Cluster IV professional service
- Cluster V collegial learning and interaction.

My study also used these same five factors in the data analysis. The idea of
sorting responses into cluster groupings is a well established procedure for
assuring the rigor and veracity of the theme behind the individual statements of
the PRS. As Grotelueschen (1985) observes, we recognize that continuing
professional education has both traditional and explicit purposes and less
traditional purposes that respond to the demands of the professional role in
modern society. Reasons included in the PRS instrument cluster into dimensions
that respond to both traditional and nontraditional purposes of continuing
professional education (Grotelueschen, 1985, p. 37).
A brief description of each of the clusters and an example of a PRS response of that item from the PRS form used in my study is given here.

- **Cluster I: Professional Improvement and Development** – “These items reflect a concern with maintaining and improving knowledge or skills to meet the demands of the work environment” (Grotelueschen, 1979, p. 34).
  
  - An example of a PRS statement from cluster I, “Keep abreast of new developments in my field.”

- **Cluster II: Professional Commitment** – “These items are focused on the physicians’ reflection on their interaction with their vision of the profession and how this impacts their self image” (Grotelueschen, 1985 p. 41).
  
  - An example of a PRS statement from cluster II, “Sharpen my perspective of my professional role.”

- **Cluster III: Personal Benefits and Job Security** – The items in this cluster reflect primarily an interest with increasing the likelihood of personal financial gain and benefits for family and friends and also maintaining the security of their present work position. This cluster also appeals to participants who are concerned with getting ahead in their professional field (Grotelueschen, 1979 p. 33).
  
  - An example of a PRS statement from cluster III: “Increase my prestige within this profession.”

- **Cluster IV: Professional Service** – For the pathologists in this study, “these items appeal to participants who are concerned with better serving both referring clinicians and patients” (Grotelueschen, 1979, p. 34).
An example of a PRS statement from cluster IV: “Increase my diagnostic skills on a particular topic.”

Cluster V: Collegial Learning and Interaction – “The items in this cluster identify a professional’s desire to interact with other professionals and to challenge his or her intellectual abilities” (Grotelueschen, 1979 p. 35).

An example of a PRS statement from cluster V: “A forum to exchange thoughts with medical colleagues.”

**The Commitment to Change statements**

In my study, the Commitment to Change statements were collected during the CME activity. Participants were asked to complete up to 3 statements (Appendix B). The statements were reviewed by the researcher and a second reviewer and given a grade based on the key coding items in that statement. In order to improve consistency between the two coders, the two coders have practiced with the pilot data, to coordinate their understanding of the coding scheme. Any differences in interpretation of the coding scheme were discussed at this stage, and the two coders negotiated changes as necessary to the coding scheme, so that it was consistently applied to first the pilot study (a duplicate study to this one done previously) data. This process continued iteratively until there is a high degree of agreement between the coders. At that point, they independently coded of all the responses from the final study data. Any differences in coding identified for specific responses after this process was completed, were reviewed and discussed to reach a consensus score.

- The “quality” categories used to grade a response statement:
o 0 = no response to the CTC form, but completing the PRS survey and demographics

o 1 = generic statements of improvement, these do not refer to a specific practice procedure but generalize to overall awareness, positive feelings and improved confidence or statements limited to meeting requirements for continued licensure, and other regulatory compliance

o 2 = more specific statements; those that relate to the knowledge gained either the sharing of knowledge with colleagues or personal learning where a specific topic is indicated and references are given to some item from the CME program

o 3 = targeted statements that give a specific practice change the participant intends to introduce to his/her practice, these will refer to diagnostic decision algorithms, procedures and other concrete behaviors, linked to topics covered in the CME event.

The coding categories created and the grades assigned to each are listed in Table 2.
Table 2

Coding categories and grades assigned for each of the Commitment to Change statements

<table>
<thead>
<tr>
<th>Category</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>refer to regulatory requirements</td>
<td>1</td>
</tr>
<tr>
<td>refer to personal knowledge acquisition</td>
<td>2</td>
</tr>
<tr>
<td>refer to knowledge transfer, sharing with colleagues</td>
<td>2</td>
</tr>
<tr>
<td>refer to diagnostic decision making</td>
<td>3</td>
</tr>
<tr>
<td>refer to specific behavior changes in practice setting</td>
<td>3</td>
</tr>
<tr>
<td>refer to generalized, positive comments focused on learning</td>
<td>1</td>
</tr>
<tr>
<td>negative comments with learning events in general</td>
<td>-1</td>
</tr>
</tbody>
</table>

These categories of coded statements were given a score ranging from -3 to +3. The negative scores were developed in anticipation of negative or critical remarks directed at the learning event; see Table 2 for these descriptors. There were no CTC statements which were given negative scores.

The score reflected the participant’s CTC statement’s direct relation to the application of the knowledge learned to their practice setting. For example, “Possibly alter immunohistochemical studies of sentinel lymph nodes (add more markers)” was given a grade of 3 since this identifies a specific activity the pathologist will do with a specific specimen type discussed during the course. A grade of 1 was given for “to fill requirements of state mandated CME requirements”. The act of attending would fulfill requirements, therefore the participant has no need to change any practice behaviors. Middle range scores (+2) were given to statements that related to sharing new knowledge and skills.
with colleagues; such as “Would share new useful critical information from the CME with my colleagues including clinical colleagues”. The focus of this research project was to tie the learning activities to practice changes that would hopefully improve patient outcomes, thus higher scores related to statements which directly include a specified practice behavior chance.

My study had a total of 74 CTC statements given by 28 of the 34 participants. The quality ratings were applied to each CTC statement. An individual participant was given a total of all the quality rating scores for all of their statements. These ratings allowed me to compare the CTC participating individuals to each other and to the participants who had no CTC response.

*The Follow-up e-mail questionnaires*

These questionnaires were sent at 3 months after the event. Participants who did not respond were sent an additional questionnaire after another month. Appendix E shows the follow-up questions. The pathologists who responded at the 3 month follow-up were a small group, just 10. These 10 follow-up questionnaires were returned from participants who had given a total of 29 CTC statements, 39% of the 74 total CTC statements collected. These responses were reviewed for the following factors:

1. Did the participants actually incorporate the intended changes?
   a. Statements that describe how a change statement from the CTC was carried out use terms such as “accomplished” “tried” “succeeded” “initiated”.
2. Any barriers to change identified
   a. Statements that discuss barriers to change include terms such as “failed to” “unsuccessfully” “prohibited from” “unable to” “not yet accomplished”.
3. Did the reflective activity of CTC and subsequent follow-up help the participant to better appreciate the value of CME to their daily practice?
CHAPTER 4

Results

Research Question 1: What are the reasons (motivations) most commonly cited by pathologists for their participation in CME Activities? Do these reasons vary in participants sorted by years in practice or work environment?

Participation Reasons Scale (PRS) - Responses from the 34 participants were organized by cluster and reviewed for the coefficient Alpha values (Analyse-it®, Analyse-it Software, Ltd.) for each cluster. These results indicate that the cluster responses were quite reliable and consistent. In cluster I there was only one item which caused the significant reduction in reliability. I chose to not remove this item since the total number of items for this cluster was already small, and the coefficient Alpha result at 0.71 was still significant although not as strong as the other clusters. Averaged responses to the PRS clusters for all participants, the work environment groups and the years in practice groups are combined for displayed in Figure 1.
Figure 1. PRS cluster responses all participants and sorted by years in practice and work environment.

Note. PRS = Participation Reasons Scale; All participants (N = 34); 0-10 years in practice (N = 9); 10+ years in practice (N = 25); Community hospital (N = 13); Private practice (N = 16); Academic medical center (N = 5) The Kruskal-Wallis test (Analyse-it®, Analyse-it Software, Ltd.) was used to examine the results of this study since it most applicable for small sample sizes with variable numbers of data points in groups.

The results for the three work environments are shown in Figure 2.
Figure 2. PRS cluster ratings sorted by work environment.

Note. PRS = Participation Reasons Scale; Comm Hosp = Community hospital (N = 13); Priv Pract = Private practice (N = 16); AcademMC = Academic medical center (N = 5) The Kruskal-Wallis test results for the work environment groupings showed no significant differences within any of the 5 clusters. The $p$ values all exceeded 0.05, ranging from $p = 0.99$ for cluster I, $p = 0.94$ for cluster II, $p = 0.86$ for cluster III and $p = 0.99$ for cluster V. Cluster IV, collegial learning and interaction, was the only one to show a difference that was slightly approaching significance ($H = 2.73, p = 0.26$), for this work environment grouping. In the responses for cluster IV, professional service, the pathologists from community hospitals and private practice felt more strongly positive about
the importance of cluster IV responses than the academic medical center pathologists.

Another item from the demographics that was correlated with the PRS responses was the number of years in practice. The results for years in practice cohorts are presented in Figure 3.

*Figure 3. PRS cluster ratings sorted by years in practice.*

PRS = Participation Reasons Scale; 0-10 yrs = 0 – 10 years in practice (N = 9); 10+ yrs = 10 + years in practice (N = 25) The data illustrated in Figure 3 is the average PRS response for each of the years in practice grouping for each of the 5 clusters. The years in practice data was compressed into two groups, 0 – 10 years (N = 9) and 10+ years (N = 25) to increase the number of participants in the groups for the Kruskal-Wallis test. Calculations done with the original four years
in practice groupings did not yield any significant difference in results for the Kruskal-Wallis test.

Overall trends indicate that there is agreement across years in practice groups showing that cluster IV, professional service, is the most important reason for attending CME for all the pathologists who responded. The Kruskal-Wallis test for cluster IV showed a significance difference in importance ratings for these two years in practice groups \((p = 0.012, H = 6.35)\). The Mean rank value calculated was 24.50 for 0 – 10 years and 14.98 for 10+ years, indicating a significant response difference between these two groups for cluster IV, professional service.

The responses for cluster I, professional improvement and development, were closing in on statistical significance between these two groups (0 – 10 years and 10+ years) \((p = 0.056, H = 3.66)\) a Mean rank of 22.89 for 0 – 10 years and 15.56 for 10+ years in practice. The results for the other three clusters were not significant, cluster II, professional commitment, \((p = 0.071, H = 3.25)\), cluster III, personal benefits and job security, \((p = 0.256, H = 1.29)\), and cluster V, collegial learning and interaction, \((p = 0.183, H = 1.77)\).

**Research Question 2**: How do these reasons (motivations) given for participation in CME on the Participation Reasons Scale (PRS) correlate with a plan to make changes in that pathologist’s practice? Do those individuals who indicate practice change plans based on participation in the CME event differ in their motivations from those who do not indicate planned practice changes?

The Commitment to Change (CTC) responses from individuals given a total quality rating of 2 through 5 were grouped since there was only a very few
individuals in each of these categories; no one received a quality rating total of 1, a quality rating total of 2, 3 and 4 were given to one individual each and a total quality rating of 5 was given to the CTC responses from 3 individuals. Also these total ratings were relatively low in value and indicated CTC statements that were not directly related to changing behaviors in practice that would affect patient care. There were categories created with negative quality ratings, but no participants received a negative rating for their CTC statements. Table 3 shows the number of individuals who received each CTC quality rating score.

*Table 3: Number of participants given each total quality rating score value for their responses on the Commitment to Change (CTC) statement form.*

<table>
<thead>
<tr>
<th>Total quality rating CTC score</th>
<th>Number of individuals who received this score</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>2, 3, 4, 5</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td>6</td>
</tr>
</tbody>
</table>

The individual CTC statements quality ratings for the 74 CTC statements received were as follows: 4 statements were rated 1, 27 rated 2 and 43 rated 3, thus 58% of the statements received the highest rating and were directed at measurable practice change activities. Figure 4 shows the average PRS cluster response for participants separated by CTC total quality rating score and those who did not participate in CTC.
Figure 4. Comparing combined CTC rating groups for each PRS cluster.

Note. PRS = Participation Reasons Scale; NO CTC = those participants who did not complete any commitment to change statement (N = 6); 2-6 CTC = those participants who received a total quality rating score of 2 through 6 on their commitment to change statements (N = 12); 7+ CTC = those participants whose total quality rating score was 7 or greater for their commitment to change statements (N = 16)

The Kruskal-Wallis test was used to compare the different individuals grouped by their total CTC rating score and those who did not give any CTC statements with their responses to the PRS cluster statements. This test was carried out on groupings for CTC rating scores, no CTC, 2-5, 6, 7, 8 and 9, the
highest score by any individual for their total CTC response score. The Kruskal-Wallis test was also carried out after condensing some of the CTC score groups to give larger numbers of individuals in each group. The combined CTC score groups were: no CTC (N = 6), 2-6 CTC (N= 12), 7+ CTC score (N= 16). The results from this analysis showed that for only cluster V, colleague learning and interaction, differences between the 3 groups, no CTC, 2-6 CTC total quality rating score and 7+ CTC total quality rating score was significant, (p = 0.041, H = 9.97). The average values for each group’s PRS cluster responses are presented in Figure 4. Using the PRS response clusters to track motivations for attending, we can see that the participants with no CTC statements most closely match the responses for those participants whose CTC statement was rated highly for all the clusters except cluster V, collegial learning and interaction. The results for all the other clusters were not significant, but the cluster I, professional improvement and development, was approaching significance, (p = 0.086, H = 4.91). I broke these three groups down to do side by side comparisons to identify if there was a particular comparison that showed a significant difference for cluster I, professional improvement and development. When examining the 7+ CTC group against the 2-6 CTC quality rating group (p = 0.079, H=3.07) was not significant for the cluster I, professional improvement and development. Comparing the 2-6 CTC group to the no CTC group for cluster I, professional improvement and development, (p = 0.047, H = 3.94) which just reaches significance. When comparing the 7+ CTC group to the no CTC we can see how similar these two groups responses really were (p=0.551, H=0.36). The test results for the
remaining clusters were: cluster II, professional commitment, \((p = 0.457)\) cluster III, personal benefit and job security, \((p = 0.405)\) and cluster IV, professional service, \((p = 0.691)\). Throughout cluster I, II, III and IV, the responses for the 7+ CTC and the no CTC groups were very similar.

*Research Question 3*: Over time, how do the participant’s attitudes towards these planned changes in practice and the CME event itself change?

Not all respondents referred to individual CTC statements in their responses. The individual quality rating scores for the 10 participants who participated in the follow-up questionnaire are listed in Table 4.

*Table 4*: List of participants who replied to the follow-up survey the number of Commitment to Change (CTC) statements they gave and their total quality rating score

<table>
<thead>
<tr>
<th>Participant #</th>
<th>CTC rating total</th>
<th>Number of CTC statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>3</td>
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<td>27</td>
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<td>30</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>32</td>
<td>7</td>
<td>3</td>
</tr>
</tbody>
</table>

Figure 5 displays the average PRS cluster response for the participants separated by their CTC total quality rating score, those who did not participate in CTC and the participants who completed a follow-up questionnaire.
Figure 5. PRS average cluster responses sorted by CTC quality rating score and follow-up participation.

Note. PRS = Participation Reasons Scale; NO CTC = those participants who did not complete any commitment to change statement, (N = 6); CTC FU = those participants who completed the follow-up questionnaire about their commitment to change statements (N = 10); 2-6 CTC = those participants who received a total quality rating score of 2 through 6 on their commitment to change statements (N = 9) 7+ CTC = those participants whose total quality rating score was 7 or greater for their commitment to change statements (N = 9) The responses in general were short, sentences or fragments offered to the questions listed in Appendix E. The items for positive change included comments such as the following 3 comments to the survey question:
Which of the changes were successfully implemented?

(1) “I tried using the margins comment once, but stopped since we didn't have a problem with my old method of being more direct.”

(2) “Use of the term Unsatisfactory seems to have become more customary in the past few months. We didn't take any formal action on it in our pathologists meeting when I mentioned it.”

(3) “I didn't retain much of anything new at the conference, but I fulfilled my CME obligation. Mostly it was reinforcing/refreshing my memory of things I already knew.” One participant offered his/her personal insight on this particular CME event:

Sometimes I come back from a conference with one or two new ideas that sound good and I'd like to try. This conference, despite its length wasn't one of them - yet it was a useful conference to rekindle the embers of memories of things I don't normally think about. Many lectures often reconfirmed that I was making the correct diagnosis. Seeing things on the screen and having someone point to a feature is often helpful, since sometimes texts describe a feature, and even have a picture, but until someone puts their pointer on it and says that's the feature, you sometimes can't tell whether what you're looking at in the picture is what the author intended.

When queried about the experience of participating in the CTC process itself, those who responded, were not supportive of this tool. Here are the follow-up questionnaire items and sample responses:
2. How has this affected your individual practice? “Not much”

3. Has this had any effect on your group practice? “Not that I can tell”

4. How do you feel about the usefulness or applicability of the CTC process?
   “I'm doing this for research, but I'm not interested in having a nanny checking up on me after every conference I attend.”

6. Would you consider participating in the CTC process at another CME event?
   “Probably not.”

8. Has participating in this CTC process changed your attitudes towards CME participation or your reasons for participating in CME? “No”.

   The following excerpt from one of the two participants who had incorporated some changes is typical for the length and style for responses I received.

   “Have you had a chance to implement any of the changes you indicated on the “Commitment to Change” (CTC) form? YES
   IF YES:
   1. Which of the changes were successfully implemented? THE FIRST TWO – APPLIED WHAT I LEARNED TO MY WORK AND SHARED UPDATES WITH MY PEERS. 
   2. Were any not carried out? If so, what were the barriers to change? I DID NOT LOOK AT THE CD. TOO BUSY ONCE I GOT BACK.
   3. How has this affected your individual practice? FOR THE BETTER
   4. Has this had any effect on your group practice? FOR THE BETTER
   5. How do you feel about the usefulness or applicability of the CTC process? IT WAS VERY TRUE. I RARELY GO BACK TO THE SYLLABUS AFTER A CONFERENCE.
   6. Would you consider participating in the CTC process at another CME event? YES
   7. Has participating in this CTC process changed your attitudes towards CME participation or your reasons for participating in CME? NO”

   The final results from the 10 responses received included 2 who had
implemented some change, 8 who had not. There were a variety of different reasons given for not implementing changes planned in the CTC statements, including:

- “I did not come across any of the specimen types discussed so far”
- “My colleagues will review this material and consider implementing some changes in the future”.

The responses selected for reporting here are typical examples and are similar to all those received from the 10 participants.

Figure 5 shows the participants who responded to the follow-up questionnaires (CTC FU) compared to the other groupings, those with no CTC, those with CTC total quality rating of 2-6 and those with a 7+ quality rating for the total of their CTC responses. When using the Kruskal-Wallis test to check for significance, the results are consistent with those before separating out the 10 individuals who completed the follow-up questionnaire. Cluster V, colleague learning and interaction, was the only cluster from the responses to the PRS survey where there was a significant difference between these CTC groupings, \( p = 0.047, \ H = 7.95 \). The other cluster results did not show a significant difference between the participants. This result is the same as before the follow-up CTC participants were separated out, indicating that the follow-up CTC participants do not show any significant differences in their motivations for participation from those who did complete CTC statements but did not participate in follow-up.

Overall, in Figure 5 we can see a trend where the responses to the PRS from follow-up participants most closely match those from the 7+ CTC quality rating
group. Since 7 of the 10 follow-up CTC participants originally fell into the 7+
CTC quality rating group, as seen in Table 3, this is not surprising.
CHAPTER 5

Discussion

Research Question 1: What are the reasons (motivations) most commonly cited by pathologists for their participation in CME Activities? Do these reasons vary in participants sorted by years in practice (0 – 10 years, 10+ years) or work environment (community hospital, academic medical center or private practice)?

My study focused on pathologists and the only comparable groups in the literature on Participation Reasons Scale research focused on physicians, most commonly generalists or family practitioners. There are marked differences in the daily practice routine for pathologists when compared to these other physicians. A comparison of my study’s PRS results sorted by years in practice groupings and the work environment groupings is indicated by the literature. Grotelueschen (1985) states that “the PRS findings demonstrated that reasons for professionals’ participation in continuing professional education can differ significantly according to…the career stage of the profession [years in practice in this study] and the professional related characteristics [work environment in this study]” (p. 41). The PRS results for my study show that the most important statements as to why they participate in CME for all these pathologists studied are in cluster IV, professional service. This remained the most strongly rated area across all work environments and years in practice.

The results of the Kruskal-Willis test shows that there are no significant differences between these three work environments across all the 5 PRS clusters. Across 4 of the 5 PRS clusters, academic medical center pathologists are the least
positive about any reason for participating except for cluster II, professional commitment, where their average response was 0.09 points above that of the private practice pathologists and 0.11 points above that of the community hospital pathologists, as shown in Figure 2. It is an interesting phenomenon that since these academic pathologists, it could be assumed, by what is perhaps the common perception of what the nature of an academic work environment is, under less budgetary and or time constraints than those in private practice and community hospitals, where productivity may be more of an issue for the practice group and/or employer. I think that perhaps there are now more pressing budgetary constraints and increasing demands on the teaching/research facilities which could be creating a frustration and dissatisfaction with the pathologist’s profession which may be reflected in these pathologists’ lack of any strong motivation for attending CME. If we were to assume that academic pathologists felt that they received sufficient continuing medical education at their institution, then why would they attend? This would be an interesting topic for further study. How is the work environment of those pathologists who describe themselves as “academics” different from those of other pathologists and how does this influence their motivation towards participating in live CME? Do academics really have more time and/or opportunities to participate in a variety of CME events?

By examining Figure 1 it is apparent that the different work environment groupings and years in practice groupings give results for each PRS cluster that are very similar. Included in Figure 1 is the data for each PRS cluster from all the
participants. These results contrast with the findings of Gortelueschen (1980) in his initial study across multiple professions, where cluster I, professional improvement and development, was most important, followed by cluster IV, professional service, cluster V, collegial learning and interaction, cluster II, professional commitment, and finally cluster III, personal benefits and job security, with the weakest response ratings. The work of Cervero (1981) that focused exclusively on physicians showed similar results to Grotelueschen’s (1985) work. Although Cervero’s research used four clusters instead of the five from Grotelueschen, the most highly rated statement by Cervero’s participants, “keep abreast of new developments in the field” was part of the cluster I, professional improvement and development, statements of Grotelueschen.

When we look at the cluster III, personal benefits and job security, responses, the area of least importance to the participants in this study, the results correlate with the results for this cluster reported in the literature on physicians. In Grotelueschen’s (1985) research, nurses and business professionals rated the cluster III, personal benefits and job security, “higher than judges and physicians, but younger nurses and business professionals attributed a lower level to it than their older colleagues” (p. 41). The participants in my study rated the cluster II, professional commitment, and cluster III, personal benefit and job security, those clusters with the most personal focus, as the least important. This was a consistent result across work environments and years in practice. From my results, for this group studied, the experience of attending CME would seem to be more important to these pathologists as part of the larger vision of their involvement in their
profession rather than a means to fulfill a more personal goal. In two study reports by O’Connor (1979, 1982) focused on nurses, the primary reason sited were “to increase their professional knowledge and improve their ability to serve mankind” (O’Connor, 1982, p. 371). O’Connor used the Education Participation Scale (EPS) an instrument similar to the PRS but containing more clusters or factors that examine personal motivators for skilled, technical workers or those who are marginally considered professionals. This factor V “professional knowledge” in O’Connor’s research is comparable to the PRS cluster I, professional improvement and development. We can see this similarity in the PRS cluster I item “to ensure my future productivity in my current professional role” and the EPS item “to keep up-to-date professionally”. The EPS also included factors similar to the other cluster categories in the PRS; such as “professional knowledge” and “professional advancement”. It would appear, if we translate the EPS responses to the PRS representative clusters then cluster I, professional improvement and commitment was the second strongest motivator for O’Connor’s participants in this study of nurses. My study shows that, at least for these pathologists who participated at this particular CME event, the strongest motivators were the items that related to their professional service, rather than the personal acquisition of knowledge and skills. If this holds true for pathologists at other events or even for other groups of physicians then these results could indicate that there is an added a level of complexity that needs to be appreciated by CME professionals as they develop programs if the goal of the event is to have physicians adopt practice changes.
Examining the demographic information for the years in practice of the pathologists and sorting these “age” groups by their average PRS cluster responses has yielded some informative data. The major trends observed for the work environment groupings and the overall participant data is maintained here for the years in practice groupings as displayed in Figure 3. The strongest motivator continues to be cluster IV, professional service, followed by cluster I, professional improvement and development, cluster V, collegial learning and interaction, cluster II, professional commitment, and least motivational are the items for cluster III, personal benefit and job security. The Kruskal-Wallis test shows that the cluster IV, professional service, although rated as most important by both the 0-10 years in practice group and the 10+ years in practice group, did show a significant difference between these two groups. The 0-10 years in practice group rated this cluster IV, professional service, significantly more strongly than the 10+ years in practice group ($p = 0.012, H = 6.35$). This result agrees with the results reported in the literature. Grotelueschen (1985) noted that physicians showed a negative relationship between the number of years in practice and a service orientation to participation, indicated by cluster IV, professional service, in both studies. This would indicate that, although this was the strongest motivator for both years in practice groups, the younger pathologists were more focused on improving their abilities to better serve the needs of patients and clinicians.

The responses for cluster I, professional improvement and development, approached statistical significance for these years in practice groups ($p = 0.055, H$
= 3.66). Again the 0-10 years in practice cohort rated cluster I, professional improvement and development, as more important than did the 10+ years cohort, a finding that would seem consistent with a perceived need to develop expertise as younger professionals.

When looking at Figure 1 we can see that the 0-10 years in practice group reported feeling more positively motivated by each of the 5 PRS clusters than any other demographic grouping or the total of all participants. The 10+ years cohort, however, felt the least motivated by any of the 5 PRS clusters and in fact had consistently the lowest motivational level for each of the clusters for any demographic breakdown. The 10+ years group contained 25 participants and the 0 – 10 year group had the remaining 9 participants. Of the 9, 0-10 years in practice participants 3 did not participate in the CTC. Of the 25, 10+ years in practice participants, 3 did not choose to give any CTC statements. This seems to indicate that although the 10+ years in practice group were overall less motivated to participate in CME, they were not less motivated to participate in the CTC activity. This group was as interested in planning how they could incorporate new learning into their practice as were the “younger” pathologists. The small number of people in the 0-10 group, who participated in CTC (N = 6), precludes any deeper statistical comparisons. It is an interesting trend, however that the more years in the field did not hinder the participant’s openness to adapting new skills and techniques, even though they seemed to be more “jaded” to the overall experience of attending CME. This would be an interesting trend to follow in subsequent research. I feel that this maybe an opportunity for CME educators to
increase the interactions between participants and extend these interactions beyond the actual CME event. Studies by Oxman et al. (1995), Slotnick and Shershneva (2002), Grol (2002) and others have demonstrated that the likelihood of practice change increases when CME events incorporate multiple interactions over time and offer a connection with the daily working environment of the physician. The more experienced pathologist might need more information that is targeted at their particular interests to become more motivated with participating in the CME activities. These more experienced pathologists could be a group to approach concerning mentoring opportunities for the younger pathologists, perhaps working as a team of learners to support transition of the new learning into practice. The mentoring interaction with the younger pathologists may prove to be an additional motivation for some of the more experienced pathologists, I believe.

Grotelueschen’s (1985) research also reports that “the degree of importance attached to each reason cluster differs significantly for individual professions. For example, nurses and social workers rate the professional improvement and development [cluster I] and professional service [cluster IV] clusters significantly higher than physicians and business executives do” (p. 41). My study, of these pathologists, shows that this particular group of physicians now rate cluster IV, professional service, the most important followed by cluster I, professional improvement and development, which more closely matches Grotelueschen’s findings for non-physicians. Perhaps the 20+ year gap in time between these two studies has affected how physicians see themselves and their profession. Or
perhaps it is the mixed disciplines for Grotelueschen’s physicians that differ from my study focused on pathologists which affects the difference in findings. Current medical school curriculum focuses more on a “team approach” and evidence based medical care that is constantly being updated (McWilliam, 2007, Spivey, 2005, Djulbegovic, et al., 2009, and Buckley et al., 2009) The role of the physician as the “all-knowing sage” has shifted to the facilitator of care delivery through the advice and support of all the team members, including the patient. It would seem that these pathologists I studied have accepted the need to keep abreast of new developments through efforts at life long learning that include attending CME events.

2. Research Question 2: How do these reasons (motivations) given for participation in CME on the Participation Reasons Scale (PRS) correlate with a plan to make changes in that pathologist’s practice? Do those individuals who indicate practice change plans based on participation in the CME event differ in their motivations from those who do not indicate planned practice changes?

The literature search has not identified any research that attempts to link the PRS results and the CTC statements for any group of professionals. By allowing open ended statements which give the participants an opportunity to identify their individual outcomes, the CTC helps the participant to visualize desirable change. It has been proposed in the literature, that this visualization of future change can facilitate the actual change process. Dolcourt’s (2000) study of multiple health care professions found that “Those committing to change immediately following the lecture were more likely to change (47% vs. 7%, p =.0001)” p. 158).
Wakefield’s (2004) study using CTC statements supported the belief that “physicians who make a CTC statement are more likely to make practice changes than those who do not, suggesting that a CTC may be a marker for an actual change in practice” (p. 198). In my study, 58% of the CTC statements receive the highest quality rating, indicating that the pathologists who offered these statements were able to envision how new learning could be introduced to their patients.

The weakness of many studies using CTC, as well as my study, is the self reporting as a tracking mechanism to determine if changes had been implemented. Several studies have shown that self-reporting exaggerates the amount of actual change, such as the “Better Prescribing Project” reported by Herbert in 2004.

My study, while using a simple self-reporting CTC approach, strives to recognize the complexity of practice change and its dependence on many unmeasured variables such as the nature of the particular discipline or specialty under study, the particular group of patients served and the magnitude of the change in relation to the morbidity/mortality risk factors for any one patient. This approach is supported by the literature which examines behavior change by physicians (Slotnick & Shershneva, 2002, Goodyear-Smith et al., 2003, Chambers et al., 1978, Ceccato et al., 2007 and Regnier et al., 2005). All these authors struggle to understand and conceptualize the process of change and the multiple influences and complex interactions that are part of the process of change while at the same time attempting to track practice changes.
The strongest motivator for all CTC groups continues to be cluster IV, the professional service statements. The second most motivating cluster was cluster I, professional improvements and development. This duplicates the findings for the participants as a whole as displayed in Figure 1. A large disparity is noted in the results for the participants who did not give CTC statements as compared to those who did for cluster V, collegial learning and interaction. The Kruskal-Wallis test for cluster V, colleague learning and interaction, showed a significant difference between the no-CTC participants and those who had given CTC responses ($p = 0.017$). This cluster V was a very important motivator for these no CTC participants as seen in Figure 4. This might be interpreted to indicate that the individuals who attended the CME event and did not participate in the CTC portion and had strong motivations centered on their perceived responsibilities to colleagues and may not have seen the CME event as impacting their practice directly, so they did not visualize any changes they would be willing to make. It would appear that they are seeing themselves more as a representative for their colleagues at the CME event, a conduit for knowledge and information, but not relating attendance at the event to changes in their patient care activities. Distinguishing this sub group of attendees would be important for CME educators, as their goals for attending vary widely from other attendees and separating this group for targeted follow-up activities would be helpful in tracking the effects of CME on patient care.

Figure 4 illustrates that the PRS responses from those who did not complete a CTC statement more closely resemble those who scored the highest on the CTC
quality rating score than those who gave a CTC response rating 2-6. This trend holds true for all clusters except cluster V, collegial learning and interaction, which the no CTC group viewed as much more important than any grouping of the CTC participants. Over the 5 PRS clusters the 2-6 CTC total quality rating group identified each of the clusters of lower importance than the other two groups. Why would the responses of the participants who did not choose to share with the researcher plans for changes based on what they encountered in the CME event approach the importance ratings given by those whose 7+ quality rating indicates a very concrete and specific practice change plan? I would speculate that these two groups (no CTC and 7+ CTC) are similar in having clearly defined reasons for attending the CME event. By the significant positive response to cluster V, colleague learning and interaction, from the no CTC, these participants are focused most on bringing information back from the event. Planning and committing to changes in practice was not a personal goal for these participants at this time. The 7+ CTC group, who gave the targeted practice change plans in their CTC, could also be seeking a well articulated and specific benefit from attendance. I feel that this group came to learn a specific skill or gain knowledge that they felt they might be lacking and wished to consider incorporating into a previously contemplated practice change. Thus, this 7+ CTC group were further along on the “change continuum” than the other CTC participants. The 2-6 total quality rating CTC group lacked the goal orientation of these other groups, and so they were willing to contemplate making some change to practice eventually but had not clearly articulated what that change would be. I believe that this group is
at an earlier stage of the “change continuum” and although they are not adverse to envisioning change in a general way, they are not as open or receptive to making a commitment to behavior changes.

Research Question 3: Over time, how do the participant’s attitudes towards these planned changes in practice and the CME event itself change?

There seems to be a lack of “carry over” from the CME event to the world of practice that is disturbing. The participants who completed the CTC statements and responded to the questionnaire did not demonstrate a very enthusiastic attitude to incorporating the changes they had indicated. The reality of day to day pathology practice may have mitigated any thoughts of implementing the changes initially embraced during the CME event. There was an overwhelming negative response to the CTC tool from all those who responded. Perhaps if there were additional credit hours attached to participation in follow-up questionnaires or more information about the benefits of reflective activities on lifelong learning, the participants would have been more inclined to support the use of CTC to promote application of learning. My statistical analysis has showed that the participants who completed the follow-up did not differ significantly in their motivations for attending from any other group. Although this is a small number of participants, N=10, the Kruskal-Wallis test results for all clusters showed that the follow-up participants closely mirrored the other CTC participants in their mean ranking. The major difference was in cluster V, collegial learning and interaction, where all the CTC groups were similar in their mean rank and differed by over 10 points from that of the no-CTC group. It is this difference that allowed
this one PRS cluster to show a barely significant difference ($p = 0.047$). The follow-up CTC participants therefore, seem to not differ from those CTC participants who did not participate in the follow-up, or the individuals who chose to not complete CTC statements, as illustrated in Figure 5, except for cluster V, collegial learning and interaction. The significance of continuing to contact these attendees after the learning event needs to be re-examined in light of these findings. If the purpose of follow-up is to document practice change alone, then tracking of change or reporting could be requested and explained in more depth during the meeting so that participants are made aware of this goal. If the act of following up on CTC statements is itself part of a reflective activity that is designed to prompt an increased rate of change adoption, then this will need to be better incorporated into the learning event and course requirements to get better participation from more attendees. I feel that my study raises some concerns with follow-up as a tool for tracking change. Although this is a self reported change, which also has inherent difficulties, the low cost and short time required, make the CTC an attractive instrument for many CME providers. Perhaps pathologists are not as familiar with the CTC questionnaire process and so were less compliant than other physicians reported in the literature. Education of the CME audience as to the requirements placed on the providers and the necessity for the follow-up are critical to achieving better compliance. I feel that there are many aspects of the complexity of the change continuum and the “learning to doing” process which have yet to be adequately examined by educators.
The meta-analysis study from Wakefield (2004) examines the physician based studies using CTC statements and how it may effect behavior change. The results are inconclusive, some studies reporting slight improvements in practice change behaviors with the use of CTC statements, while others note little effect. Variables to be considered in these studies cited by Wakefield include the length of time between the learning activity and follow-up and the types follow-up tools used. The follow-up used for my study was the most common cited, 3 months and written contact with a reminder of the CTC statements supplied to the participants.

Physicians may decide not to change, and there are many potential reasons: the change itself may not be seen as important, preparing for the change is too difficult, or barriers to making the change are too great. Unfortunately, providing information about barriers as part of the CME activity does not increase the likelihood of subsequent practice change (Wakefield, 2004, p. 202).

The limited comments received from the 10 follow-up participants illustrate the difficulty in tracking learning and practice change in busy working professionals. CME events are one tool in the practice change development process, but it would be simplistic indeed to assume attendance at a single CME event could result in any swift, demonstrable change due to that experience alone. The work by Cividin and Ottoson (1997) was an attempt to explore the complexities of behavior change in physicians.
For the purposes of this study, application is defined as the process of putting learning from a continuing education program into practical contact in an intended, work-related context. Application is understood as a complex, multidimensional process that connects intent to ends, generates knowledge, concerns itself more with feasibility than precision, and often involves adaptation of both concept and context (Cividin & Ottoson, 1997, p. 48).

These authors give weight to multiple predisposing factors in the individual and the environment as well as the post event factors. They point out that the reasons for participation are part of the predisposing influences and have a potential to effect change but there are additional influences to be considered. The results of Cividin and Ottoson’s research with a group of health care professionals that included physicians but was not specifically directed at physicians, show that “programs that move participants away from diffuse general interest and extrinsic motivation and help them connect program content with practice concerns have a potential to influence post-CPE [Continuing Professional Education] application. CPE evaluation also needs to consider why participants attend” (Cividin & Ottoson, 1997, p. 54).

I feel that I need to examine the negative responses I received to the follow-up questionnaire for the CTC portion of this study. The only explanation I can find that would begin to cover how participants who are willing to discuss practice change and plan to make these changes during a learning event and then respond so negatively when questioned later would have to involve the change in
the environment. Remembering that these participants freely agreed to participate in the follow-up and gave the CTC statements to the researcher, it would seem that what was considered a “good idea” at the CME event became a less than acceptable idea when the participant returned to his/her work.

Lave and Wenger (1991), founders of the community of practice theoretical body of research, state that “leaning and a sense of identity are inseparable: they are aspects of the same phenomenon” (p.115).

The person has been … transformed into a practitioner, a newcomer becoming an old-timer, whose changing knowledge, skill and discourse are part of a developing identity – in short, a member of a community of practice. This idea of identity/membership is strongly tied to a concept of motivation. If the person is both a member of a community and agent of activity, the concept of the person closely links meaning and action in the world (Lave & Wenger, 1991, p 122).

By looking at CME activities from a community of practice perspective, I can begin to attempt to explain the learning process at this CME event, focused on the factors within the process which influence these pathologists to reject the planned practice changes they had formulated.

Community of Practice theory has emerged from the academic tradition of psychology. Not surprisingly, this tradition has focused on the role communities play in learning. Here, communities are central to explaining how learning happens through increasing participation and engagement. The object of study or unit of analysis is learning in practice. The
community is therefore defined in terms of the practice work it does. It is constituted through its practice and extended through development of this practice (Creese, 2005 p. 61).

Linking the community of practice idea with CME and other professional learning activities has been suggested by a few researchers on this topic. Sinnott (2005) discussed adult learning and the transformation of the self, the challenging aspects of constructing and maintaining this self and what motivates an individual to change. “When the dynamic interaction process involves the element of “connecting to others” (coupled with some other element), motivation comes from our desires to maintain and improve ties with people who are important to us” (p. 30). The community of practice’s importance to physician education and practice change is also discussed by Slotnick and Shershneva (2002).

We see constructivism as most congruent with learning in medical practice because it claims that learning occurs as individuals reflect on their experiences both individually and with others to construct meaning in ways consistent with being members of a community of practice. In medical education, the community of practice and the learner’s role within the community change with time. Episodes of learning occur at any point on the continuum from medical school through practice and allow physician learners to construct meaning from what they do as members of the community and what they think as a result (Slotnick & Shershneva, 2002, p.198).
Educational events are often held as part of meetings for professional organizations. These types of activities could be seen as bonding for the community of practice, with its performance standards, behavioral expectations and body of beliefs. I see the focus of the CME event as the acquisition of new knowledge and skills so that the individual can maintain status within the group and feel assurance that he/she is current and competent in their professional activities. The community could be seen as upholding standards for the profession, maintaining high expectations for the individuals who are members and the professional community can be relied upon to validate educational achievement and therefore patient care benefits of continued membership (Wenger, 1998). In my personal experiences, physicians who are not members of any professional organization and are not attendees at some face-to-face CME events are often viewed as “outliers” of the profession and maybe even suspect in their abilities. These “reclusive practitioners” may be seen as shunning the participation in professional organizations which is seen to bestow some level of respect and recognition of competence from their fellow professionals.

I propose that in addition to the communities created by the work environment and professional associations, the individual pathologist becomes a member of a sub-set, temporary community of attendee pathologists when they participate in a CME event. The opportunity to network with like-minded professionals who share a common interest in the topics of the CME event and hear from thought leaders in the field creates a temporary community of like-minded practitioners (Gagliardi, et al., 2007). I see the attendees as having a
shared commitment to the learning event that is encouraged through social gatherings and joint meals designed to build professional relationships with other attendees. The “sheltering” atmosphere at these CME events may create an environment where participants are encouraged to question their current practice methods and explore new research on modifications in a safe setting. This is the “cocoon” of the temporary community of practice that is fostered by the CME event.

The idea of the construction of a temporary community of practice is supported by the work of Lave and Wenger (2003). We can view the learning at a CME event as the exchange of a “learning curriculum” which these authors see as:

a field of learning resources in everyday practice viewed from the perspective of learners. A teaching curriculum, by contrast, is constructed for the instruction of newcomers….A learning curriculum is essentially situated. It is not something that can be considered in isolation, manipulated in arbitrary didactic terms, or analyzed apart from the social relations that shape legitimate peripheral participation. (Lave & Wenger, 2003, p. 97).

The idea of creating a community of like-minded persons is supported by the work of Wenger (2006) where he points out that mutual engagement creates relationships between people. Sustained mutual engagement can create a “node of interpersonal relationships” (p. 76). The community of practice concept has no set time for duration or intensity of interaction. I believe that the CME event meets
the requirements under the description of a short duration community of practice as described by Lave, Wenger and others. The ability to participate in this community is one of the motivators that brings pathologists to this CME event, as I infer from their responses. Continuing medical education activities demonstrate the three dimensions of a community of practice as identified by Creese (2005), there is mutual engagement, joint enterprise and a shared repertoire. Recognizing the importance of the creation of this temporary community of practice at CME events could help organizers to support this process to facilitate learning and application.

In order to better address this shift from the learning event environment (I believe, a temporary community of practice) to the work environment (another community of practice), CME educators need to recognize and prepare for these shifting environmental influences. When considering the role of CME in practice change, the temporary community of practice that can be created by the learning event needs to be integrated into the other communities of practice where each attendee functions, such as the community of practice that is created by the pathologist’s work environment as well as the larger community of practice that includes all the pathologists who are active professionals. These communities work as external forces that can shape the decision process when a pathologist is deciding to make or not to make a change in his/her practice. The positive sounding, well intentioned CTC statements that were generated during the CME event may be a reflection of that transitory community of practice, the unique learning environment of attending the event. The follow-up contact after 3 months
was received in a very different setting and most of the responses are in sharp contrast to the positive attitude and good intentions outlined in the CTC statements. The arrival of the CTC follow-up questionnaires did not seem to be a welcome reminder of new knowledge and skills acquired and plans for improving patient care but as an interruption and an intrusion on their work day. These were participants who freely supplied their e-mail for this follow-up event. The results of my study would indicate that the most positive reflective experience for CME participants occurs during the learning event itself, when they are envisioning how to incorporate the new material into their practices.

Both the limited published literature and my study highlight the complexity of changing practice behaviors which needs to be recognized and addressed before actual changes can occur. The process is a stepwise adoption of new ideas, analysis of current practices, identification of possible shortcomings in current procedures and some method of controlled trial and evaluation before incorporating any new behaviors (Cividin & Ottoson, 1997, Ceccato, et al., 2007 and Van Harrison, 2004). These steps are impacted both positively and negatively by internal and external factors as has been identified in the literature (Bennett, et al., 2004, Van Harrison, 2004, Kane, 2007). It is simplistic of accreditation agencies such as ACCME to require each CME event to document a positive practice change outcome linked to that learning activity. This simplistic view of professional learning will create unattainable outcome standards for professional educators and frustration on the part of participants as they are more closely tracked and queried after each CME activity. This type of reaction can be seen in
the follow-up responses to my study. However, there is something happening over time with physicians who participate in CME. The attention to new advances and the drive to remain current will necessitate that these pathologist in this study continue to experience CME in a variety of venues and digest the new knowledge and skills. Then they could feel better prepared to select the items that apply to their patients and how best to safely introduce and monitor these new techniques. Incorporation of new learning does occur; what is the cumulative effect of all professional learning, both structured and unstructured, on this process is a complex and challenging area of education which is only now beginning to be explored.

*Limitations of the study*

There are several limitations to my study. The small number of participants, which decreased at each step, raises questions about the applicability of any results to a wider group of physicians or even other pathologists. The small “N” is in keeping with other research in this field and is reminiscent of other qualitative studies done on this topic using CTC statements. The fact that the data collected is from a continuing medical education event sponsored by a national professional organization, with a self-selecting sample of pathologists who happened to be attending this event, lends some randomness to the participant selection. However, the randomness of the selection cannot be verified with the information collected by my study. The studies in the literature which had larger numbers of participants used multiple CME events held at different times in different locations, thus increasing the “N” but adding other uncontrolled variables.
There is very little research done with pathologists reported in the literature. This limits the comparisons that can be drawn for this data. The unique work environment of pathologists may not compare well with that of other physicians who have daily face-to-face contact with patients and focus their efforts on treatment and follow-up rather than diagnosing.

Another factor to be considered as a limitation of my study is the level of expertise of the subjects themselves, who are all licensed, practicing professionals demonstrating a conscientious attention to patient care issues by their attendance at this event. When working with subjects who are already performing at a very high level of competence, to measure a positive change is challenging due to the limits of the effect size. The ceiling effect is also a mitigating factor since many of these professionals could be assumed to be currently working as well respected practitioners. To demand demonstrative change in practice behaviors from pathologist who are already practicing very successfully, would require a measure that is minutely attuned to slight behavior adjustments, unusual occurrences or the introduction of a totally new and overwhelmingly improved practice behavior to which these pathologists had no previous exposure.

The Commitment to Change instrument, although it has been around for 20+ years, has only recently begun to be used by researchers in an attempt to link practice change to attendance at Continuing Medical Education events. This research is in its infancy and the entire field of professional education lacks a strong body of quality research on which to build both theory and practical application methods. The CTC instrument may prove to be a valuable component
in the process of tracking practice change, but the complexity of this change process is only now beginning to be appreciated by educators in this area.
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Appendix A

Participation Reasons Scale

Please respond to each statement by DARKENING the number indicating that statement’s importance to you in making your decisions about attending this CME activity.

1 = not important at all; 2 = somewhat important; 3 = very important; 4 = extremely important N/A = not applicable

<table>
<thead>
<tr>
<th>Reason statement “I attend CME to…”</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>P 1. Be more competent in my current work</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 2. Maintain my current quality of professional service</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 3. Develop new proficiencies to improve my performance</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 4. Increase the likelihood that patients are better served</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 5. Improve my professional service to clinicians &amp; patients</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 6. Keep abreast of new developments in my field</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 7. Better accommodate the needs of patients &amp; clinicians</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 8. Better match my knowledge or skills with my work situations</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 9. Better meet the practice/group expectations of my performance</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 10. Increase my diagnostic skills on a particular topic</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 11. Make my work more satisfying</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 12. Maintain my current abilities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 13. Develop new professional knowledge and skills</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 14. Ensure my future productivity in my current professional role</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 15. Increase my work efficiency</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 16. Stimulate my own thinking</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 17. Increase my personal financial gain</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 18. Enhance the security of my current work position</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 19. Increase the benefits for my family</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 20. Obtain leadership capabilities in my profession</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 21. Advance in my present work position</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 22. Enhance my professional image</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 23. Increase my prestige within this profession</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 24. To better reflect on the value of my professional responsibility</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 25. Sharpen my perspective of my professional role</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 26. Consider the limitations of my professional role</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 27. Review my commitment to the profession</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 28. Change the emphasis of my present responsibilities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 29. Better assess the directions this profession is going</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 30. Relate my ideas to those of my peers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 31. Learn from the interaction with other pathologists</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 32. A forum to exchange thoughts with medical colleagues</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 33. Maintain my identity within my profession</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>P 34. Be challenged by the thinking of my colleagues</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Appendix B

Commitment to Change

Considering, what for you personally maybe the most important aspects from this lecture/workshop, please try to identify up to 3 things that you would like to do when you return to your practice as a result of this CME activity.

Please keep the (yellow) second copy for yourself, as a reminder. Keep the first sheet attached to the survey.

IF you agree to participate in the follow-up portion of this study, please supply a telephone number where you could be contacted in 4 to 6 weeks to discuss this learning activity.

1.________________________________________________________________________

________________________________________________________________________

2.________________________________________________________________________

________________________________________________________________________

3.________________________________________________________________________

________________________________________________________________________

I would like to participate in the second half of the study. Telephone #
_________________________________________ Best day/ time to call __________

I would prefer to be contacted via e-mail
____________________________________________________________

It is not necessary to include your name or location. All participation will be as anonymous as possible.

_____ I am interested in your research findings, please e-mail me a final summary report.
Appendix C

Demographic information

Gender:
Male _____    Female _____

Current position:
Pathologist ____   Resident ____   Year ____
Other (explain) ________________________________

Current work environment:
Academic medical center ____ number of pathologists ____
Community hospital _____  number of pathologists ______
Private Practice ____ number of pathologists ______
Other (please describe) _______________________________

Years at this position:
0-5 ____    6-10 _____    11-15 ____    16+ _____

Years in practice:
0-5 ____    6-10 _____    11-15 ____    16+ _____

Practice specialty or focus: (check all that apply, explain as necessary)
Mixed, clinical laboratory, anatomic surgical and cytopathology ______
Clinical laboratory only ___ (sub-specialty)
_____________________________
Anatomic, surgical and cytopathology ___________________________
Anatomic, clinical and surgical _______________________________
Autopsy service ____________________________
Other ________________________________

Your participation in Continuing Medical Education:

Average number of HOURS accumulated by attending conferences or meetings
per year _____________

Average number of HOURS from on-line events ___________ per year

Average number of HOURS from other types of CME (journal reading, in-house
subscription activities or grand rounds etc) _____________ per year
Appendix D

Follow-up Interview or E-mail questions

1. Have you had a chance to implement any of the changes you indicated on the “Commitment to Change” (CTC) form?

IF YES:

2. Which of the changes were successfully implemented?

3. Were any not carried out? If so, what were the barriers to change?

4. How has this affected your individual practice?

5. Has this had any effect on your group practice?

6. How do you feel about the usefulness or applicability of the CTC process?

7. Would you consider participating in the CTC process at another CME event?

8. Has participating in this CTC process changed your attitudes towards CME participation or your reasons for participating in CME?

9. Do you see the CTC process as a useful as an opportunity to reflect on your practice?

10. Does having a follow-up interaction, such as this questionnaire, increase your resolve to enact the changes you planned in the CTC statement?

IF NO:

2. What do you feel were the biggest barriers to implementing these changes?
3. Has participation in the CTC process had any benefits for your practice?

4. Do you see the CTC process as a useful opportunity to reflect on your current practice?

5. Would you consider participating in the CTC process at another CME event?

6. Has participating in this CTC process changed your attitudes towards CME participation or your reasons for participating in CME?
Appendix E:

Dear Dr.

I am a graduate student at the University of Albany, and I am working on my dissertation research focusing on CME educational activities. There has been a great deal of interest in designing CME programs that will have positive outcomes for a participant’s practice. Little research has been done to document the connection between participation in CME and subsequent changes in an individual’s practice. Even less research has been done with pathologists and their unique work environment.

By completing the following forms, you would be agreeing to participate in my research project. I have tried to design this process to be as anonymous as possible for each participant. The Institutional Research Review Board of the University at Albany has approved this project.

Included in this packet is:

1. A brief demographic survey
2. A survey of reasons for participation in Continuing Medical Education. This instrument has been used by various researchers for the last 30 years and has been slightly modified for the current project. Please use the Likert Scale to respond as indicated, from 1 least important to 5 most important.
   a. Please complete this before the lecture/workshop begins.
3. A Commitment To Change (CTC) form. This form asks participants to write down from one to three statements on how you anticipate incorporating ideas from the CME into your practice.
   a. Please complete this form as ideas occur to you during the lecture/workshop.
   b. Keep the back, yellow copy for yourself as a reminder of your CTC ideas.
4. A space on the CTC form where you can include a telephone number or e-mail address. This will allow me to contact you in 4-6 weeks and conduct a short (30 min. or less) interview about your survey, your CTC statements and how/if the CME activity has translated into practice changes.

If you do not wish to be contacted, but are willing to participate, please complete Parts 1 & 2, leaving 3 blank.

I will need as many participants as possible and all responses are completely confidential. No individual identifiers of any kind will be included in any reports by the researcher. If you participate in the research and would like to receive a final copy of the study, please indicate this on the CTC form and one will be e-mailed to you.

Please deposit all forms into the box provided as you exit the lecture/workshop during next few days.

Thank you in advance for your assistance.

Sincerely,