A Prescription for Reframing Continuing Pharmacy Education in Massachusetts

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Abstract

Extensive research indicates that adults learn best when they are motivated, self-directed, and choose what and how they learn. This project focuses on continuing pharmacy education and seeks to answer the question: “How can pharmacists be motivated to participate in continuing pharmacy education programs because they want to, not because they have to?” The following questions form the basis for this research.

- To what extent do specific intrinsic and extrinsic motivators affect pharmacists’ perceptions for participation in self-directed learning activities?
- To what extent are specific obstacles keeping pharmacists from participating in self-directed learning activities?
- What characteristics are associated with pharmacists who have high intrinsic versus extrinsic motivation for self-directed learning?
- To what extent do pharmacists prefer to engage in these educational activities for self-directed learning?

This project used a descriptive research design (Fraenkel & Wallen, 2009) to survey pharmacists and draw conclusions on what would motivate them to participate in self-directed continuing pharmacy education, what obstacles to self-directed learning exist, and which activities pharmacists would be more likely to participate in if continuing pharmacy education credit was granted for their efforts.

Keywords: adult learning, self-directed learning, continuing professional development, continuing pharmacy education, reflective practice, pharmacy and accreditation.
Dedication

Dedicated with love and appreciation to my husband

Claude R. Young

For always caring and encouraging me

And for proudly watching over me as I earned this

Doctoral Degree
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It takes a village and sheer determination to complete a dissertation. It would have been impossible for me to complete this daunting task without the support and guidance from many people. First, I would like to thank my dissertation committee: Drs. McNabb, Szabla and Meldrum.

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The *Shehecheyanu* is the traditional Jewish blessing recited when giving thanks in commemoration of an occasion. This is one of those occasions.

“Blessed are You, L-rd our G-d, Ruler of the Universe,

who has granted us life, sustained us and enabled us to reach this occasion.”
# Table of Contents

Abstract ................................................................................................................................. 2

Dedication ............................................................................................................................ 3

Acknowledgements ............................................................................................................ 4

Table of Tables .................................................................................................................... 9

Table of Figures .................................................................................................................. 12

Introduction ........................................................................................................................ 13

  Statement of Problem and Significance ............................................................................ 13
  Research Questions ........................................................................................................... 16
  Organization of this Research Project ............................................................................... 17

Chapter 1: Theoretical Framework ..................................................................................... 19

  Adult Learning Theory ..................................................................................................... 19
  Socio-Constructivist Theory ............................................................................................. 24
  Planning Table Theory ..................................................................................................... 28

Chapter 2: Literature Review ............................................................................................... 33

  Continuing Professional Development .............................................................................. 33
  Reflective Practice ............................................................................................................ 39
  Program Accreditation and Licensing ............................................................................. 42

Chapter 3: Research Design ................................................................................................. 50
Chapter 4: Results ........................................................................................................ 65

Overview ..................................................................................................................... 65

Section 1: Demographic Data ..................................................................................... 66

Part 1: Summary of Demographic Data for Independent Variables.......................... 66

Part 2: Summary of Responses to Questions Regarding Continuing Education ........ 78

Section 2: Analysis of Findings from Research Questions ........................................ 83

Section 3: Summary .................................................................................................... 98

Chapter 5: Summary, Conclusions and Recommendations ...................................... 100

Discussion of Findings ............................................................................................... 102

Part 1: Demographic Data ......................................................................................... 102

Part 2: Continuing Education .................................................................................... 105

Part 3: Self-Directed Learning ................................................................................... 108

Strengths and Limitations .......................................................................................... 113

Implications for Future Research .............................................................................. 115

Summary and Conclusions ......................................................................................... 116
Appendix .................................................................................................................................133

Appendix A ................................................................................................................................133

Appendix B – Permission to use SDLRSNE .................................................................................. 143

Appendix C – Permission to use Pharmacy Survey ......................................................................... 145

Appendix D – Letter to colleagues for pilot and review .................................................................. 146

Appendix E – Letter to Pharmacists ............................................................................................ 148

Appendix F – Permission letter from Dean Reynolds ...................................................................... 149

Appendix G - Unsigned Consent Document for Web-based online surveys .................................... 150
Table of Tables

Table 1 CPE vs. CPD........................................................................................................................................... 36

Table 2 Gender................................................................................................................................................ 66

Table 3 Age.................................................................................................................................................. 67

Table 4 Gender and Age ............................................................................................................................ 68

Table 5 Years in Practice and the Relationship to Age .............................................................................. 69

Table 6 Age and Years in Practice.............................................................................................................. 69

Table 7 Degree......................................................................................................................................... 70

Table 8 Gender and Degree ....................................................................................................................... 71

Table 9 Practice Site .................................................................................................................................. 72

Table 10 Practice Site and Gender........................................................................................................... 74

Table 11 Employment................................................................................................................................. 75

Table 12 Employment and Gender........................................................................................................... 75

Table 13 Employment and Age .................................................................................................................. 76

Table 14 Married or Living with a Partner ................................................................................................. 76

Table 15 Children under 12 Living at Home............................................................................................ 77
Table of Figures

Figure 1 Research Design Schematic ................................................................. 101

Figure 2 The Continuing Professional Development Cycle ................................. 118
A Prescription for Reframing Continuing Pharmacy Education in Massachusetts

Introduction

Statement of Problem and Significance

Continuing education is intended to keep healthcare professionals current with advances in medication therapy and treatment options to enhance the outcome of patient care, reduce medical errors, ensure patient safety, and satisfy re-licensure requirements (Holman, 2009; 2010; Overstreet, 1998). For these reasons, it is important that pharmacists are motivated to be self-directed, lifelong learners. The Accreditation Council for Continuing Pharmacy Education defines continuing pharmacy education as a structured educational activity designed and intended to support the continuing development of pharmacists to maintain and enhance their competence. Continuing pharmacy education should promote problem-solving, critical thinking, and be applicable to the practice of pharmacy (2007). Is the current system of continuing pharmacy education meeting these defined goals? Two major reports indicate it may not be.


The specific flaws and problems identified were:

1. Excessive reliance on lecture format. The program measures hours of learning rather than improved knowledge, competence, and performance.
2. Too little attention given to helping individual clinicians to examine and improve their own practices.

3. Insufficient emphasis on individual learning to answer questions that arise during patient care.

4. Absence of promoting inter-professional collaboration and feedback from colleagues and patients, teamwork, or efforts to improve care systems – all recognized as key activities to improving performance by health professionals.

5. Inadequate use of Internet technology that can help clinicians examine their own practice patterns, provide medical information in real time, and assist in the use of newer treatment options (pp. 14-15).

In addition, the report identified a lack of high-quality scientific studies of continuing education (p. 15). A search of theses, dissertations, and articles on continuing pharmacy education confirmed this finding.

The Macy Foundation is the only national foundation solely dedicated to improving the education of health professionals. The foundation has three main goals: support projects that improve medical and health professional education, support projects that increase diversity in the healthcare professions, and promote educational strategies to increase care for underserved populations. Thirty-six leaders in medicine and nursing education attended the Foundation’s conference in 2007. Two limitations of the Foundation’s report on this congress are: 1) the faculty was not evaluated for their competence as educators of adult learners, and 2) there was no representation from the pharmacy community at the conference.
The Institute of Medicine (IOM) issued a more recent report, Redesigning Continuing Education in the Health Professions. This group concurs that the flaws identified by the Macy Foundation represent significant problems that must be addressed and states that continuing education currently delivered as didactic lectures may or may not be relevant to practice or to the target audience. In addition, IOM questions the appropriateness of commercial funding for continuing education programs because of the associated conflicts of interest that arise. Scientific literature on continuing education addressing how to support learning or how to assess learning effectiveness is scant. The regulations around accrediting continuing education programs vary widely within and between healthcare professions and among state regulating authorities (IOM, 2010, pp. 3-4). Most importantly, according to IOM, these flaws present a significant threat to the safety and wellbeing of patients and consumers who trust in the knowledge and skills of pharmacists and other healthcare professionals.

This project assesses the attitudes and opinions of pharmacists regarding their motivation toward self-directed, lifelong learning. Pharmacists, as healthcare professionals, are obligated to maintain and enhance their competence to stay current with the ever-changing advances in healthcare (Houle, 1980; 2008). Developing into self-directed, reflective practitioners is a key component in maintaining and enhancing competency and improving ones’ own practice.

Also, this project examines the present state of continuing pharmacy education and reviews alternative, non-traditional activities for continuing pharmacy education. Some alternative approaches to continuing education are innovative, effective, cost-effective, and appealing to pharmacists. These activities have the potential to enhance learning options for pharmacists and fulfill the legal requirements of regulatory and accrediting bodies, specifically.
Finally, this work will narrow the stated gap in the research literature identified by the Institute of Medicine and the Macy Foundation Conference on Continuing Education by providing scientific research into the advancement of continuing education for health professionals (2010; 2008).

Research Questions

After graduation from pharmacy school, pharmacists rely on continuing pharmacy education for their professional enrichment and development throughout their career. There are two regulatory bodies that develop standards and legislate the continuing pharmacy education requirements. The Accreditation Council for Pharmacy Education is the national accrediting organization for undergraduate and post-graduate programs in pharmacy education. It develops educational standards in an attempt to assure quality in education across schools of pharmacy and continuing education providers.

The second regulatory body is each individual state’s board of pharmacy. By statute, the Board of Registration in Pharmacy in Massachusetts is a consumer protection agency whose mission is to promote, preserve, and protect the public health, safety, and welfare by fostering the provision of quality pharmaceutical care to the citizens of Massachusetts through the regulation of the practice of pharmacy. The Board of Registration in Pharmacy is responsible for monitoring pharmacists to ensure they meet mandatory continuing education requirements (Board of Registration in Pharmacy). Boards of Registration in Pharmacy set regulations for continuing pharmacy education to satisfy re-licensure requirements. Since the main goal of continuing pharmacy education is maintaining and enhancing the competence of practitioners to improve their practice, this research will explore the following questions:

1. To what extent do specific intrinsic and extrinsic motivators affect pharmacists’
perceptions of self-directed learning activities?

2. To what extent are specific obstacles keeping pharmacists from participating in self-directed learning activities for continuing pharmacy education?

3. What characteristics are associated with pharmacists who have high intrinsic versus extrinsic motivation for self-directed learning?

4. To what extent do pharmacists prefer to engage in self-directed learning activities?

**Organization of this Research Project**

The upcoming chapters in this dissertation address these areas: theoretical framework, literature review, and research design. In the following section, the theoretical framework that informs this investigation is presented. This framework is comprised of the broad elements of adult learning theory and socio-constructivist theory. In the literature review, four areas of scholarship that broaden the scope of this research and place this project in context with other work are explored. The first is a review of the literature on continuing professional development. The second is a review of reflective practice. The third area of research is an investigation of practice-linked formats for continuing pharmacy education. The fourth section compares the available information on accrediting and licensing of healthcare continuing education activities for physicians, physician assistants, and pharmacists. Following the literature review is a description of the quantitative research conducted using a survey to study a sample of pharmacists. The survey documents pharmacists’ attitudes and opinions concerning motivation to participate in continuing pharmacy education. The responses are assessed for barriers or obstacles that hinder a more self-directed learning approach to continuing pharmacy education. Data collection and analysis procedures are outlined. The validity and credibility components are presented and the method by which ethical implications were evaluated is described. This
project includes a review of how each of the three sections - theoretical framework, literature review, and research design - informs one another.
Chapter 1: Theoretical Framework

The purpose of this research is to investigate the current state of continuing pharmacy education and to propose and model new approaches for effective continuing pharmacy education. The theoretical framework is comprised of two learning theories: the adult learning theory (Knowles, Holton, & Swanson, 2005) and the socio-constructivist theory (Vygotsky, 1978), both of which are applicable to continuing education, and a third approach called the Theory of Demonstrated Negotiations is a model developed to reveal the under-the-surface ethical and political issues associated with developing continuing education programs (Cervero & Wilson, 2006). The adult and socio-constructivist theories provide a way of identifying both the practices and the environment in which adults learn best. The Planning Table Theory broadens the scope of the investigation to include the non-educational aspects and concerns about planning and delivering continuing education activities.

Adult Learning Theory

Andragogy, or adult learning theory, is defined as the art and science of helping adults learn (Knowles et al., 2005, p. 61). According to Malcolm Knowles, considered by many to be the founder of these theories, adults learn from and build on prior knowledge and experience. As such, andragogy is based on six assumptions or principles:

1. Adults want to learn; they want to know what and why it is important to learn.
2. Adults are independent, self-directed, and responsible for their own decisions.
3. Adults have accumulated a great deal of prior knowledge and experience that is a rich resource for learning.
4. Adults are ready to learn; they value learning that integrates into and is relevant to everyday life and work experiences.

5. Adults are interested in immediate, problem-centered approaches rather than in subject-centered ones.

6. Adults are motivated by internal (intrinsic) drives such as job satisfaction, doing the right thing, and self-esteem, rather than by external (extrinsic) drives such as higher pay or promotions (Kaufman, 2003; Knowles et al., 2005; Merriam, 1993, 2001; 2008).

Adult learning theory is a critical component of this project because these basic assumptions are not currently taken into consideration when continuing pharmacy education programs are planned for practitioners. According to Knowles (2005), adults learn from and build on prior experience as well as their individual backgrounds. This is how adults form and expand their knowledge base throughout a lifetime of learning. Lifelong learners are those who seek out ways to learn, and continue to grow as professionals long after they graduate from formal schooling (Schon, 1983; Senge, 2006).

Motivation is an important factor in adult learning. “Meaning is at the core of motivation and learning for adults because it is where their ideas and emotions are joined to fulfill their personal, cultural, and spiritual commitments” (Wlodkowski, 2008, p. 110). Finding relevance to learning increases the motivation to learn more.

This project will illuminate factors that motivate pharmacists to participate in continuing education activities. Staying current with one’s work is a major motivator for adults to seek learning opportunities (1993), and many professions require it. Motivational factors can be
characterized two ways: intrinsic and extrinsic. Intrinsic motivating factors for pharmacists include the desire to help others as well as to maintain and enhance professional skills and knowledge. An extrinsic factor is the need to fulfill mandated regulatory continuing education requirements for continuing licensure as pharmacists.

Adult learners, depending on what motivates them at any given time, can fall into one or more of three modes of learning: goal oriented, activity oriented, or learning oriented (Houle, 1984; Tassone & Heck, 1997).

1. **Goal-oriented learners** identify a gap in their own knowledge or skill set and seeks to fill that gap. An example of a goal-oriented learner might be someone who goes back to school to earn a graduate degree or certification. For a pharmacist, this might mean earning a specialty certificate as a Board Certified Pharmacotherapy Specialist (BCPS) or becoming a Certified Diabetic Educator (CDE).

2. **Activity-oriented learners** look for social interaction such as membership in community action groups or professional service associations. They seek to learn in community and thrive on the collaborative learning and feedback that comes from such group opportunities.

3. **Learning-oriented learners** are curious and want to learn for the sake of learning. An example might be taking part in Toastmasters® to improve public speaking skills, learning to knit, or playing a musical instrument as a hobby. A pharmacist who continues to attend continuing education programs even after earning the mandatory minimum number of required credit necessary for re-licensure is an example of learning-oriented learner.
For adult learners to be successful, Wlodkowski proposes that four motivational conditions need to exist: inclusion, attitude, meaning, and competence (2003, 2008). To provide a sense of inclusion, it is important for adults to feel respected and connected to the educational process. To learn effectively, a positive attitude on the part of the instructor is important in engaging and involving the learner in the learning process. Attitude toward this engagement is linked to the relevance of the learning activity. If the material presented is irrelevant and meaningless, the learner will disengage and find the process useless. Learners rely on prior knowledge to bring meaning to their learning experiences. Adults look to make a connection and be able to relate new learning to past experiences. Lastly, competence enables adults to continue learning and applying that learning to their life experiences (Wlodkowski, 2008). Wlodkowski’s theories are applicable to continuing pharmacy education because maintaining professional competence is at the heart of continuing pharmacy education. Pharmacists should recognize the need to be self-directed and self-motivated to maintain their individual competency in the rapid changing scope of practice. Competence builds confidence. Once a skill is mastered it fosters a feeling of usefulness, which can encourage the learner to advance to the next level of expertise.

Adult learning theory supports the idea that adults need to control their own learning process to become self-directed, self-motivated learners. Self-directed learning is defined as an “approach to learning whereby the structure, planning, implementation, and evaluation of learning are initiated by the learner” (IOM, 2010, p. 42). Houle (1980) described this phenomenon as a “zest for learning.” He believes professionals want to learn and have an intrinsic drive or motivation to learn. Brookfield (1986) also reinforces the importance of developing into self-directed learners. He describes two kinds of self-directed learner: field dependent and field independent. Field-dependent learners rely on structure. Field-independent

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learners are more self-reliant. Both are self-directed learners, both share the important criteria of being critically reflective learners (1986).

By processes of maturation, adults have a stronger self-concept, and are more aware of their needs than younger learning adults, and want to be responsible for their own decisions (Knowles et al., 2005). A primary motivator for adults is the “desire to learn, change, or grow” (Tough, 1971). Wlodkowski posits that adult learners are motivated by their own volition (2008). There are clearly defined steps or phases in the adult learning process. These steps are: need, create, implement, evaluate (Knowles et al., 2005, p. 175). In the need phase, adults think about their individual learning needs as a way of uncovering the learning gaps they identify in their own skills and knowledge. This step may also be referred to as the reflection phase. Adults construct knowledge from their own experiences. Another assumption of adult learning theory is that adults have accumulated a great deal of prior knowledge and experience, which is a rich resource for learning. The adult learner uses these experiences as a resource for helping others learn (Caffarella & Barnett, 1994). The capability of learners to research and develop on their own as self-directed learners is critical to future collaborative work in groups and teams (Confessore, 1997). It is also of great importance in the shift from traditional continuing education formats to non-traditional formats such as continuing professional development.

Any proposed new model for continuing pharmacy education must consider the factors that predict the likelihood of participation in the learning activity. Self-motivation, extrinsic motivation, and education level are three such contributing factors (Livneh, 1988, 1999). The model must encourage and empower the learner to actively look beyond the basic learning experience to craft their own course by identifying their own needs or learning gaps. The model must promote learning rather than counting continuing education contact hours.
Adult learning theory provides a lens for examining more closely how continuing education programs should be planned for the adult learner. Overstreet (1998) reported that continuing pharmacy education providers rate themselves as having little knowledge of the theory and practice of adult education (p. iv). Effective continuing pharmacy education programs must be developed with adult learning theory as the focus for the instructional design of the program (IOM, 2010). To develop and deliver programs that enhance the competence of the pharmacy practitioner, both the accredited institutional providers of continuing education and individual faculty facilitators must have knowledge of adult learning theory. It is important to recognize that adults have their knowledge to share and learn from the experiences of others. Therefore, adult learning is more meaningful in a social context, which leads to a discussion of socio-constructivist theory.

**Socio-Constructivist Theory**

When we engage with our colleagues to solve problems that occur in practice settings, it opens our eyes to different solutions. Socio-constructivist theory proposes that when learners are provided with a condition that brings them together with colleagues or peers to reflect on their skills, knowledge, and practice, they will learn from one another (Slotnick & Shershneva, 2002). Socio-constructivism describes the importance of adults sharing their knowledge and experiences to enhance learning (Pereles, Lockyer, & Fidler, 2002). Brookfield suggests adults who teach and learn in one another’s company find themselves in a challenging activity that is both creative and passionate (1986, p. 1). Adults form their own conclusions by socially engaging with their colleagues and peers (Sthapornnanon, Sakulbumrungsil, Theeraroungchaisri, & Watcharadamrongkun, 2009). They transform themselves from individuals to colleagues to professionals as a community of learners. When continuing education programs challenge
learners to apply their knowledge with the help of colleagues, they benefit and build on individual practice experiences. Adult learning theory teaches us that learners do best when they can share their practical experiences and expertise with others. Learning, from and with each other, begins in childhood.

Russian psychologist Lev Vygotsky made an important contribution to the socio-constructivist theory by introducing what is known as the Zone of Proximal Development (ZPD) (Vygotsky, 1978). ZPD is defined as interaction with and help from more knowledgeable others to enhance learning capabilities and increase comprehension beyond that which could be learned alone. The zone of proximal development is the difference between what a learner can do without help and what he or she can do with help. Vygotsky believed that social networking with peers would enhance learning. He discovered in his work with children that interaction with adults and older children helped children learn and solve problems faster than if they worked on these same tasks individually. “Human learning presupposes a specific social nature and a process by which children grow into the intellectual life of those around them” (Vygotsky, 1978, p. 88). Socio-constructivist theory under girds the adult learning theory, which found that the educational process of older learners were also enhanced by social interaction.

Study partners are an example of learning together. Chevruta (hevruta) is the traditional Jewish practice of learning with a study partner. This type of learning can be described as “think-pair-share” or as learning in a dyad. The next logical progression is to move from dyads to groups. A journal club is an example of a group learning activity. A journal club is a group of professionals who meet regularly to discuss and critique information presented in professional journals. Inter-professional collaboration is another example of group learning. The IOM report and the Macy Foundation report both suggest that inter-professional collaboration is an important
key to learning and expanding the scope of practice for healthcare professionals (2010; 2008).  
An example of an inter-professional learning group is a hospital Pharmacy and Therapeutics (P & T) committee. The P & T committee is usually a group of physicians, nurses, and pharmacists who meet regularly to serve as an advisory group on all medications and medication-related events occurring within a medical institution. Another example of a group or social learning experience is what is referred to as a Community of Practice. 

Communities of practice are “groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly” (Wenger, 2006, p. 1). Communities of practice share three characteristics: a domain of shared interest, a community for members to interact with and help each other, and a common or shared practice (Pereles et al., 2002). Communities of Practice or Professional Learning Communities (PLCs) are used in education to support innovative teaching strategies and environments (DuFour, Eaker, & DuFour, 2005). In healthcare, communities of practice in medicine are crucial to connecting learning with practice. Physicians learn by interacting with their colleagues (Parboosingh, 2002). An example for this type of learning is Schwartz Center Rounds (2012). It is a regularly scheduled opportunity for interdisciplinary caregivers to share issues around personal feelings that arise when taking care of patients. It allows these healthcare providers an opportunity to understand their patients and colleagues better by sharing their own responses to those feelings. 

An example of a Pharmacy Community of Practice (CoP) is the Transplant Pharmacy Community of Practice associated with the American Society of Transplantation (2010 - 2011). The goals of this CoP are to advance the importance of pharmacists to the transplant community and to provide educational opportunities for pharmacists who specialize in medications relevant to transplantation. This group is comprised of members from a diverse group of pharmacists
from all across the United States necessitating the need to meet electronically. Electronic Communities of Practice, or eCoPs, allow practitioners to meet using novel technology (Skype, email, video conferences) to actively share their knowledge and learn from others (Ho et al., 2010).

Larger and geographically diverse groups require some structure to optimize the value of participating. Palmer (1998) describes examples of communities of practice calling them “communities of truth,” or circular, interactive, and dynamic learning environments in which democratic rules for engagement are followed and passion is encouraged. An example is The American Society of Transplantation Communities of Practice which is self-regulating and governed by an Executive Committee elected by its members (2012).

Senge, as quoted by Confessore (1997), says that communities of practice are learning organizations “where people continually expand their capacity to create results they truly desire, where new and expansive matters of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together.”

Carl Rogers, the imminenent humanistic psychologist, wrote about the excited feelings he got when a group of learners is transformed into a community of learners (Rogers, 1967). Similarly, pharmacy faculty members have written on the importance of communities of practice to undergraduate curriculum and have suggested application to post-graduate pharmacy practice as well (Austin & Duncan-Hewitt, 2005; Poirer, Santanello, & Gupchup, 2007).

Socio-constructivism allows for adult learners to share their individual knowledge and experience to inspire others to help them learn. The process provides an active dissemination of knowledge among peers. Socio-constructivist theory informs this doctoral project by confirming
that learning should be a social experience for adults. However, further research is needed on the importance of peer influence on learning. Peer interaction in practice situations may be an essential missing piece of continuing professional development (Austin, 2005, Continuous professional development: A qualitative study of pharmacists' attitudes, behaviors, and preferences in Ontario, Canada, Austin, 2005 #1). Along these lines, Torr (2005) suggests the importance of introducing the concept of collaborative learning into the continuing professional development framework (2005). This information on collaborative learning is significant for planning programs for adult learners. It is also important when considering alternatives to formal continuing education. Socio-constructivism is an example of how problems of practice can be addressed in real-life situations by learning and working together.

In 1940, the renowned social scientist, Kurt Lewin famous for saying “there is nothing as practical as a good theory,” proposed the idea that problems of practice should be addressed in real-life situations (Herr & Anderson, 2005). As described in the next section, “Planning Table Theory,” people working together are responsible for planning improvements in industry and in educational activities that are relevant and applicable to real-life situations. This also applies to planning improvements in continuing pharmacy education.

**Planning Table Theory**

The theoretical framework for this project is based in part on the assumption that there are three domains to planning continuing education programs: academic, administrative, and regulatory. The Planning Table Theory explores these three domains in light of the program planner’s complex role. The Planning Table Theory was developed in 1998 by education researchers and professors Ronald M. Cervero and Arthur L. Wilson (Cervero & Wilson, 2006). Cervero also served as a reviewer for the Institute of Medicine Report on redesigning continuing
education in the healthcare professions. Cervero and Wilson’s theory, which is intended as a
guide for people who plan continuing education or workplace training programs for adults,
underscores the idea that these programs must be a social or community process. It has been
established that learners thrive as active community participants. There is also a community
involved in the creation of continuing education programs involving dynamic relationships,
conflicts of interest, and other forces that can dilute the quality and neutrality of adult education
offerings.

The Planning Table Theory focuses on the under-the-surface ethical and political issues that
must be managed when developing continuing education, thereby providing a non-traditional
look at this type of educational program planning. This theory attempts to make connections
between the technical, political, and ethical realities that program planners face, such as: Who
are the real stakeholders in continuing education? Who benefits from continuing education?
What are the financial interests of continuing education? Who has the power and influence when
planning or accrediting continuing education programs? What are the inside and outside political
relationships that must be negotiated for success (Cervero & Wilson, 2006)?

For more than 30 years, continuing education formats have been relatively unchanged.
Traditionally, theories on program planning in continuing education focus on the behavioral
steps in the systematic design of instruction. For example, the Dick and Carey model of
instructional design (Dick, Carey, & Carey, 2011) conducts a needs-assessment of the intended
target audience by identifying the target audience; writing measurable, behavioral learning
objectives; matching the learning assessment to the learning objectives; developing instructional
strategy; and planning the formative and summative evaluations of the activity. This domain
represents the academic component of continuing education planning. Cervero refers to it as the
technical aspect of continuing education program planning. Political power relationships and social contexts are primarily ignored. These represent the administrative and regulatory domains that must be understood and negotiated when planning continuing education programs.

There are four politically charged dynamics that operate at the tables where programs are planned, developed, and accredited:

1. Power relations, which enable and constrain people’s access to and capacity to act at the planning table;
2. Interests; people represent interests at the table;
3. Ethical commitments, which define who should be represented at the planning table;
4. Negotiation, the central practical action at the table (Cervero & Wilson, 2006, p. 85).

Program planning becomes a social interaction between individuals who may or may not have divergent issues. Often, social interactions can involve conflicts. “It is the business of an intelligent theory of education to ascertain the causes of conflicts that exist and then, instead of taking one side or the other, to indicate a plan of operations proceeding from the practices and ideas of contending parties” (1938, p. 5). Cervero and Wilson (2006) posit that actions at the planning table must be carried out in a democratic and ethical manner much like the concept of “communities of truth” posited by Parker Palmer.

Program planners must be able to focus on the best and most appropriate educational content for the target audience. Just as important, they also must be able to plan for and deal with all non-educational components of the program, such as political and ethical responsibilities. How is the program funded? Is there a corporate sponsor for the program, such
a pharmaceutical company? Does that company have a product that is related to the topic for discussion? Who will choose the speaker for the continuing pharmacy education program? Is the pharmaceutical company providing a speaker from the speaker’s bureau? Is the message going to be delivered with fair balance and free from commercial endorsement of one particular product? Will the pharmaceutical industry sponsor provide funding if the speaker is not from the speaker’s bureau? If not, how is the program funded? Is the potential speaker familiar with the accreditation process? Will they accept faculty guidance in instructional design? What are the national accreditation issues that must be adhered to? What are the requirements of local boards of registration in pharmacy? Usually these external forces must be dealt with while in the design phase of continuing education programming. However, external forces can shift between micro and macro views of planning (Warren, 2003). A micro view is what a planner would follow to develop a program based on instructional design. Cervero and Wilson would probably describe using the Planning Table Theory as taking a macro view of planning.

Another external factor to consider in program planning is the power. Power is determined by who has the authority to make decisions (Bush, 2003). There are six significant forms of power relevant to schools and colleges: 1) positional power (official positions: the dean, the accrediting body, boards of registration); 2) authority of expertise including subject matter experts and faculty; 3) personal power (charisma, personality); 4) control of rewards (promotions, references); 5) coercive power (the ability to constrain, block, or interfere); 6) control of resources (revenue and capital finance) (Bush, 2003). Providers of continuing pharmacy education must be able to act in two arenas: the educational arena and the political arena. Understanding how to work and plan continuing education programs that meet the
educational needs of the program participants while dealing with the constraints brought to the planning table by special interest groups is the challenge.

In summary, these three theories – the adult learning theory, the socio-constructivist theory and Planning Table Theory – can inspire the improvement of continuing education in healthcare. Continuing education providers must understand and apply the theories of adult learning and socio-constructivism to design the most effective learner-oriented programs. At the same time, they must be aware of Planning Table Theory to leverage the power relationships that seek to exert control. These theories illuminate not only what drives the attitudes and opinions of participants, but also which issues motivate pharmacists to participate in continuing education. Further, these theories inform the planning of traditional and non-traditional continuing education activities that meet the needs of the adult learner while brokering the best possible conditions for meeting the accreditation and regulatory requirements for continuing pharmacy education.
Chapter 2: Literature Review

The Macy Foundation and the Institute of Medicine identified the need for more scientific research into the continuing education of healthcare professionals. Existing literature available on continuing education and more specifically continuing pharmacy education was reviewed. As a result of examining the continuing professional development, reflective practice, non-traditional practice-linked formats for continuing education and of comparing accreditation and licensing requirements for physicians, physician assistants, and pharmacists, recommendations emerged for improving existing accredited continuing pharmacy education activities.

Continuing Professional Development

Currently, pharmacists rely upon traditional, structured formats for their continuing education (ACPE, 2007). For the most part, these formats are either didactic lectures at live symposia, daylong conferences, or home study modules. Continuing professional development is different. It is a non-traditional model for lifelong learning and professional enhancement. It places the educational responsibility squarely on the shoulders of each practitioner. In concert with the theory of how adults learn best, continuing professional development encourages pharmacists to be motivated, self-directed lifelong learners (Rouse, 2004).

The Institute of Medicine and the Macy Foundation reports strongly endorse the integration of continuing professional development into the redesign of continuing education in the health professions (IOM, 2010). It must be noted that continuing professional development is not meant to supplant continuing pharmacy education but to supplement it. Another important consideration is that pharmacists currently do not receive continuing education credits toward
meeting mandated re-licensure requirements by participating in professional development activities.

As a result of the IOM and Macy Foundation reports, many national and international professional service organizations in pharmacy support pharmacy practitioners incorporating the concept of continuing professional development into their continuing pharmacy education activities. Supporting organizations include: the American Pharmaceutical Association (APhA), the American Society of Health System Pharmacists (ASHP), the Council on Credentialing in Pharmacy, the World Health Organization (WHO), the American Association of Colleges of Pharmacy (AACP), and the Joint Commission of Pharmacy Practitioners, to name a few. The 2010 Continuing Pharmacy Education Resource developed by American Pharmaceutical Association strongly encourages continuing professional development be embraced by all pharmacy practitioners (Fjortoft, Lugo, & Rouse, 2010).

The Accreditation Council for Pharmacy Education defines Continuing Professional Development for pharmacy practitioners as “the lifelong process of active participation in learning activities that assists individuals in developing and maintaining continuing competence, enhancing their professional practice, and supporting achievement of their career goals.” Another definition adopted in 2006, suggested for continuing professional development is "a self-directed, ongoing, systematic, and outcomes-focused approach to learning and professional development" (Accreditation Council for Pharmacy Education, 2006).

A brief historical retrospective provides a comparison between the continuing professional development cycle and the continuous quality improvement cycle first introduced in 1948 by W.E. Deming. Continuous Quality Improvement (CQI) is a collaborative effort to
improve problems relating to industry. Continuing professional development recommended in the IOM and Macy Foundation reports can be seen as an iteration of the CQI process. There is a relationship between Knowles’ adult learning process and continuing professional development and their close resemblance to the Deming Cycle PDSA: Plan, Do, Study, Act (Deming, 1994). They resemble each other in theory, but not application. CQI is a social construct based on the collaboration of peers to solve problems. Continuing professional development is an individual practitioner’s personal plan for improving one’s own practice. Torr (2005) posits that individual competence is linked to professional, health system, and social standards. Practitioners gain competence by enhancing their skills and knowledge. As their expertise grows so does their confidence and professionalism (Torr, 2005).

The research literature confirms the strong relationship between adult learning theory and continuing professional development. The steps in the continuing professional development cycle – reflect, plan, act, evaluate, document – are grounded in the adult learning theory. This cycle closely resembles the steps in the adult learning planning process: need, create, implement, evaluate (Knowles et al., 2005). Continuing professional development encourages self-directed learning.

The differences between continuing pharmacy education and continuing professional development are indicated in Table 1.
Table 1 CPE vs. CPD

<table>
<thead>
<tr>
<th>Program Design Elements</th>
<th>Continuing Pharmacy Education</th>
<th>Continuing Professional Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational Needs</td>
<td>Pre-determined by someone else</td>
<td>Self-identified by the learner</td>
</tr>
<tr>
<td>Motivation</td>
<td>Extrinsic – re-licensure, increase in pay, required</td>
<td>Intrinsic – to expand the scope of practice, to help a patient</td>
</tr>
<tr>
<td>Relevance to practice</td>
<td>May be absent</td>
<td>High</td>
</tr>
<tr>
<td>Outcomes</td>
<td>May be absent – satisfy mandatory requirements</td>
<td>Increased competence, expanded practice, professionalism</td>
</tr>
<tr>
<td>Duration</td>
<td>Usually a single event</td>
<td>Ongoing, cyclical</td>
</tr>
<tr>
<td>Learning process</td>
<td>Passive learning</td>
<td>Active learning</td>
</tr>
<tr>
<td>Process</td>
<td>Other-directed</td>
<td>Self-directed</td>
</tr>
</tbody>
</table>

Adapted from Terry Schindel (Schindel), University of Alberta, Alberta, Canada

Continuing professional development is practiced in Ontario, Canada, the United Kingdom, Australia, New Zealand, and other countries throughout the world (Austin, Crouteau, Marini, & Vilato, 2003; Hao & Wuliji, 2006; Mottram, Rowe, & Gangani, 2002). A continuing professional development pilot program for practicing pharmacists in five states (Indiana, Iowa, North Carolina, Washington, and Wisconsin) in the United States was conducted with only limited success. Researchers used a prospective, randomized, observational case-control study method to evaluate the pilot. They concluded that training and support is needed for pharmacists to make the most of continuing professional development (Dopp, Moulton, Rouse, & Trewet, 2010). Conclusions from a poster presented at the 2010 American Association of Colleges of
Pharmacy meeting indicated that although pharmacists gained confidence and expertise with the continuing professional development process, more research was needed before CPD would be adopted in the United States (Trewet, Abel, Fjortoft, Ruddy, & Patterson, 2010). In a recent 10-month, non-blinded, randomized controlled study of licensed pharmacists employed at a health maintenance organization (HMO), participants reported their practice improved as a result of their participation in CPD activities compared with pharmacists who participated in traditional CPE activities (McConnell, Newlon, & Delate, 2010). These studies support the efficacy of continuing professional development in theory as an alternative to traditional CPD formats but not in practice.

The work of Kolb, Schön, Brookfield, and others is relevant because they provide insight into the importance of reflective practice in promoting self-directed lifelong learning.

Kolb’s four step experiential learning cycle is incorporated into the Continuing Professional Development Cycle (Kolb, 1984; Rouse, 2004). The steps include:

1. Have a new, concrete experience.
2. Reflect or think about the experience.
3. Draw conclusions from the experience.
4. Act differently as a result of the experience.

The Continuing Professional Development Cycle used in pharmacy is a five-step process that incorporates the adult learning process, the continuing quality improvement process, and the experiential learning cycle. The CPD cycle begins with individual practitioners and includes:
1. Reflecting on their practice to self-assess knowledge and skills or acting on an experience such as encountering a new medication or reacting to a question from a patient or other healthcare provider.

2. Identifying learning needs.

3. Developing a personal learning plan.

4. Implementing or acting on the plan.

5. Evaluating the effectiveness of the plan in relation to practice.

Documenting and recording each step in the cycle by the practitioner is an integral part of the continuing professional development cycle (Rouse, 2004).

There are barriers and limitations to the implementation of the CPD cycle. Like other good-intentioned endeavors that require commitment, dropout was one of the biggest problems with the five-state CPD pilot initiative.

Participants reported that time was a barrier to completing educational activities in the recent study by McConnell and colleagues (2010). This study found CPD was labor and time intensive. Pharmacists had little to no knowledge of the steps in the CPD cycle. In addition, implementation required thorough training and a commitment to change. There is no standardized feedback for the individual practitioner or assessment of learning. Finally, there is no extrinsic motivation garnered for embracing CPD, such as continuing education credits or job promotions or employee advancement. These are some of reasons pharmacists in the United States are not motivated and are reluctant to adopt CPD. Janke (2003) noted that staying focused on the goal of CPD is an important step forward in the continuing education of pharmacists.
Extrinsic motivating factors may be the key towards adoption of CPD cycle. Rather than trying to implement the entire CPD cycle, a step-wise approach might build the confidence of pharmacists to advance through the cycle. It may provide the meaning necessary to help adult learners better understand why implementation of the CPD cycle is important to their practice. Adult learning theory posits that adults want to learn, what they want to learn, and why it is important. Realizing the relevance of using the steps in the CPD cycle to self-assess professional development needs and goals could be a first stage in becoming a reflective practitioner. The next section will review the scholarship on what it means to be a reflective practitioner and the implications it could have on continuing pharmacy education activities.

**Reflective Practice**

Every time pharmacists read a package insert on a new medication before dispensing it they are assessing their need to know more. Informally, they have addressed a learning gap if one exits and looked to improve their knowledge. Pharmacists engage in this process continuously as they perform the day-to-day function of being a pharmacist.

Reflection is the first step in the continuing professional development cycle. Recognizing and validating the process of reflection or self-assessment is an important part of implementing the CPD cycle.

Reflective practice requires consideration of experiences when applying knowledge to practice. Dewey (1915, 1938), and later Schön (1987), realized that reflecting on one’s practice encourages practitioners to appreciate their professional knowledge. Dewey first defined the term *reflective thought* as “active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends” (2007). Synonyms for the word *reflective* are: thoughtful, philosophical, insightful, and
contemplative. Reflective thought leads to reflective practice. Reflective practice involves taking the time to thoughtfully assess needs and to recall accomplishments. Pharmacists regularly assess their needs, but not in a formal way. Introducing, formalizing, and encouraging reflective practice might move pharmacists to be more self-directed, self-motivated lifelong learners.

Unknowingly, the pharmacist who reads the package insert before dispensing a new medication is engaging in what is referred to as reflection-in-action. Looking back to the four steps in the experiential learning cycle described by Kolb, this learning moment was triggered by a new or concrete experience. Schön (1983) posits that the best learning experience for adults is in the “doing of activities” rather than in the application of principles and theories. Adults learn best when they learn from doing the everyday experiences of their profession. Schön (1983) refers to this as practicing the “art” of being a professional. Professionals might describe this behavior as intuitive. In his book *Blink* (2005), Malcolm Gladwell refers to intuitive decisions as similar thinking, just at a faster pace. Gladwell and Schön agree that professionals can fall into the practice of over-thinking or over-learning. Gladwell gives an example of emergency room physicians who are instructed to gather less information on their patients before treatment is started. They were told to gather only the most important and pertinent information and then have confidence in their own experiences to make decisions. Schön (1983) would describe this scenario as reflecting or knowing-in-action defined as the process “where we may reflect in the midst of action without interrupting it. Our thinking serves to reshape what we are doing while we are doing it” (p. 26). This scenario also provides an example of how adults learn best – by using the great deal of accumulated prior knowledge, which proves to be a rich source of learning. Experience is often thought of as the main ingredient in learning.
Reflection has been described in two ways: reflection-in-action or reflection-in-practice and reflection-on-action or reflection-on-practice (Rouse, 2004; Schon, 1983). Reflection-in-action occurs as an immediate reaction to a situation. It is the ability to rely on current and past experiences to solve problems as they are happening in our day-to-day work experiences.

The second, reflection-on-action, happens later. This is the process of reviewing an action that happened previously. Was the situation handled correctly? Was the outcome appropriate? Could the action have been handled differently? When a medication error or any quality related event occurs pharmacists are required to reflect-on-action. Through the process of reflection, both in-action or on-action, it is possible to examine and discover learning opportunities for self-improvement or in the processes one works under.

Critical reflection emphasizes the importance self-awareness has on improving our practice. Brookfield (1998) describes critically reflective practice as a process used to understand what guides the decisions we make. As the scope of pharmacy practice evolves, solutions for some of the problems of practice may become more complicated. Cervero (1988) describes the importance of thinking about or reflecting on the choices and solutions practitioners might make to solve problems as the critical viewpoint. In this viewpoint, reflection-in-action or reflection-in-practice become a critical learning tool – one could call it “taking a thinking step.”

Another view of reflective practice expressed by Regehr and Mylopoulos (2008) who draw attention to the importance of learning by addressing the daily practice of solving problems as they arise. They call this the process of “learning about practice, in practice, through practice”. They suggest two areas to focus on for maintaining competence. One is recognizing that informal learning takes place during practice. The other is that informal learning can lead to
the need for a more formal and structured learning opportunity. Both informal and formal learning are necessary elements of continuing professional development.

Vella (2002) introduces the principle of “praxis” as number five of her 12 principles of learning. Praxis is a Greek word that means “action with reflection” (p. 14). Vella posits that praxis is something we use everyday as we perform in our daily lives, think about our actions, and then change how we do things. We learn by doing – by reflecting during an action and again after its completion.

In summary, several contemporary educational scholars agree that reflecting on action while simultaneously performing daily professional functions provides important opportunities for learning. This type of learning has the potential to lead to greater competence, expertise, confidence, and increased professionalism (Torr, 2005).

**Program Accreditation and Licensing**

This final section of this literature review compares the accreditation standards for medicine, physician assistants, and pharmacy. It also reviews licensing requirements of the Boards of Registration for physicians, physician assistants, and pharmacists in Massachusetts. As previously stated, there are three domains involved in planning continuing education programs: the academic, the administrative, and the regulatory. Accreditation standards and re-licensing rules are in the category of the regulatory domain.

The American Psychological Association defines accreditation as “both a status and a process. As a status, accreditation provides public notification that an institution or program meets standards of quality set forth by an accrediting agency. As a process, accreditation reflects the fact that in achieving recognition by the accrediting agency, the institution or program is committed to self-study and external review by one's peers in seeking, not only to meet
standards, but to continuously seek ways in which to enhance the quality of education and training provided” (2010). Accreditation is a quality assurance mechanism administered by providers of continuing pharmacy education.

There are three continuing medical education-accrediting bodies: the American Medical Association (AMA), the Accreditation Council for Continuing Medical Education (ACCME), and State Medical Societies (SMS) such as the Massachusetts Medical Society. The accrediting bodies for other healthcare disciplines such as physician assistants and pharmacy base accreditation standards on those of the Accreditation Council for Continuing Medical Education. The accrediting body for continuing pharmacy education is the Accreditation Council for Pharmacy Education (ACPE). The accrediting body for continuing medical education for physician assistants is the American Academy of Physician Assistants (AAPA). ACCME, ACPE, and AAPA each promulgate standards for continuing education within their respective disciplines. These accrediting bodies grant accreditation authorization to those organizations that meet or exceed these standards. These accrediting bodies are referred to as providers of continuing (medical or pharmacy) education. Providers can be universities or continuing medical education companies.

The standards for continuing education set by these accrediting bodies are similar in scope and definition. ACCME refers to the Essential Areas and Their Elements. Included in the elements are: a mission statement, a policy for handling commercial support for continuing medical education, educational planning, evaluation, and improvement. AAPA follows these same criteria. ACPE refers to the Standards for Continuing Pharmacy Education. Included in this standard is: mission and vision statement, a policy for handling commercial support for
continuing pharmacy education, educational planning, evaluation and improvement, faculty development, and learning assessment.

There are two distinct categories for continuing medical education:

- **AMA Physician Recognition Award (PRA) Category 1** are educational activities that include:
  - Live activities like symposium or medical conferences
  - Enduring materials like printed or audio or online activities
  - Peer-reviewed journal-based activities
  - Test item writing for national exams
  - Peer-reviewed articles or manuscript review
  - Performance improvement learning.

The following are examples some of the non-traditional, practice-linked formats that are applicable to continuing medical education credit and could be applicable to continuing pharmacy education:

- **AMA PRA Category 2** are credits that are self-directed by the physician. The practitioner must keep documentation of completion of these activities. The following is a list of approved activities:
  - Teaching residents, medical (pharmacy) students or other health professionals
  - Unstructured online searching and learning
  - Reading authoritative medical literature
  - Consultation with peers and medical experts
  - Group discussions
  - Self-assessment activities
• Medical writing
• Preceptorships
• Research
• Participating in live activities not designated for AMA PRA Category 1. The activity must meet the definition of CME as described by the AMA, is non-promotional for any given product, and is determined to be a legitimate learning experience by the practitioner

This list is by no means complete. In speaking with pharmacy colleagues from both hospital and community practice, all the above apply as well as the following:

• Drug information research
• Patient specific medication therapy management
• Poster presentations
• Participation in communities of practice
• Journal clubs
• Formulary management

The American Medical Association recognizes that not all learning is formal. Significant adult learning takes place outside of traditional, structured educational formats. Schön (1983; 1987) emphasizes the importance of resourceful approaches to learning rather than relying on the traditional, structured formats. Informal learning is self-directed and can include formats like: Internet searching, networking in communities of practice, and precepting students. The following are characteristics identified with informal learning (Marsick & Watkins, 2001):

• Integrated with day-to-day functions
• Triggered by an internal or external incident
• Not highly conscious – can be passive

• Haphazard and influenced by chance

• Involves reflection and action

• Is linked to the learning of others.

Marsick and Watkins suggest three conditions that enhance informal and unstructured learning: reflection that uncovers what the learner knows; identification of what new skills need to be learned; and the creativity to think outside of the formal structured learning environment (2001). Marsick and Watkins’ work unites adult learning theory and the socio-constructivist theory with reflective practice and continuing professional development. Creating these circumstances for learning that are similar for pharmacists would inspire them to becoming motivated, self-directed lifelong learners. An extrinsic motivating factor to encourage engagement in this behavior might be to allow pharmacists to document these activities and use them toward their mandated continuing education requirements.

In addition to accrediting bodies, there is individual state licensing boards. These licensing bodies are referred to as Boards of Registration for each healthcare discipline. The mission of the Boards of Registration in Medicine, Physician Assistants, and Pharmacy in Massachusetts is to assure the public that only qualified physicians, physician assistants, or pharmacists are licensed to practice in the Commonwealth.

The Boards of Registration in Medicine and Physician Assistants do not accredit continuing medical education programs. These two Boards of Registration rely on definitions of continuing medical education categories established by the American Medical Association for re-licensure requirements.
The Boards of Registration in Medicine requires that a licensee complete 100 hours of Continuing Medical Education within the immediately preceding two years (Board of Registration in Medicine). Physicians must complete at least 40 hours in the American Medical Association (AMA) Physician Recognition Award (PRA) Category 1. A physician may obtain credit for no more than 60 hours in AMA PRA Category 2.

The Board of Registration for Physician Assistants (2010) has similar requirements.

- **Category I CME:** Programs that are approved for Category I CME by the American Academy of Physician Assistants, by the American Osteopathic Association Council on Continuing Medical Education, by the American Academy of Family Physicians, or American Medical Association Category 1 CME credit for the Physician’s Recognition Award from organizations accredited by the Accreditation Council on Continuing Medical Education.
  - Category II (Elective) CME: AAPA does not grant Category II (Elective) approval for CME activities; therefore, a provider may not state that a program is eligible for AAPA Category II (Elective) credit. Category II activities are logged on an hour-per-hour basis. The practitioner must keep documentation of completion of these activities.

- **Examples of activities that may be logged as Category II include:**
  - Clinical self-learning activities
  - Medical postgraduate courses, excluding courses completed in an actual PA program.

The Board of Registration in Pharmacy is the only healthcare board in Massachusetts that accredits continuing education programs. The Board of Registration in Pharmacy sets its own
standards for continuing pharmacy education and does not rely on the accrediting body, the Accreditation Council on Continuing Pharmacy Education, to set those standards.

Pharmacists in Massachusetts must complete a total of 15 hours of continuing pharmacy education yearly, or 30 hours immediately prior to the two-year license renewal period. Five hours per year must be obtained through live symposia, conferences or webinars; and two hours per year must be in the area of pharmacy law. The remaining 10 hours may be either live or enduring material (Board of Registration in Pharmacy, 2010b). At this time there is no opportunity in Massachusetts for elective, self-directed continuing pharmacy education credit.

For a unique example of how CPD has already been successfully implemented within the United States, we should look at the state of North Carolina. Their board of registration in pharmacy allows licensees to implement CPD as an alternative to completion of a mandatory number of hours of continuing pharmacy education in order to meet the requirements for maintaining their pharmacist license. The board also maintains a web-based portfolio for licensees to document their continuing professional development activities online. By participation in this program and CPD activities, pharmacists are granted a “waiver” of the traditional method of counting continuing education hours (Tofade, Eckel, Foushee, & Cailoa, 2010).

Self-directed learning opportunities and alternative accreditation options are areas that require evaluation. This research seeks to uncover information that will lead to changes in the policies around continuing pharmacy education accreditation programs and changes in the way pharmacists view this education. This research will illuminate the extent of and the ways accrediting bodies might be affected by the feelings, attitudes, and opinions of pharmacists
towards participating as self-directed learners in non-traditional continuing pharmacy education activities.
Chapter 3: Research Design

Research Questions

The purpose of this study was to describe the: 1) motivation of pharmacists to participate in self-directed learning; 2) obstacles pharmacists identify to self-directed learning; and 3) activities pharmacists prefer in self-directed learning. A survey research approach (Fraenkel & Wallen, 2009) was used to gather descriptive data on the feelings, attitudes, and opinions of pharmacists toward what might motivate them to participate in self-directed continuing pharmacy education; what obstacles to self-directed learning they perceive; and the characteristics of these learners. The second thread explored activities for continuing pharmacy education in which pharmacists may already be participating. Using established survey research methods (Creswell, 2009; Fowler, 2009; Fraenkel & Wallen, 2009), pharmacists chose from a list of program activities to identify those they would prefer as non-traditional opportunities for continuing pharmacy education.

The research design for this project is based on the following research questions:

Research Question 1 - To what extent do specific intrinsic and extrinsic motivators affect pharmacists’ perceptions on participation in self-directed learning?

There is a paucity of literature available assessing pharmacists’ attitudes towards self-directed learning. A follow-up study by Hanson, Bruskiewitz and DeMuth in 2007 elaborated on what they found fifteen years previously (Hanson & DeMuth, 1991). The research reports identified factors that were facilitative of lifelong learning such as intellectual curiosity, the opportunity to network and meet colleagues, and recognition from the professional community.
The classic theories of adult learners show that intrinsic and extrinsic motivators affect the educational process (Knowles et al., 2005). Extrinsic motivators might include continuing pharmacy education credit, increased pay, and career advancement. When adult learners are encouraged to engage in their own learning process they grow as both self-directed and lifelong learners (Schon, 1983). Based on these viewpoints, a hypothesis emerged.

**Hypothesis 1:**

a. The most frequent intrinsic motivator reported by pharmacists for participating in self-directed learning will be a personal desire to learn.

b. The most frequent extrinsic motivator reported by pharmacists for participating in self-directed learning will be continuing pharmacy education credit.

c. Pharmacists with a high intrinsic motivation to learn will be more interested in self-directed learning activities.

**Research question 2 - To what extent are specific obstacles keeping pharmacists from participating in self-directed learning activities?**

Traditionally, pharmacists are not compensated or otherwise recognized for the time they engage in self-directed learning activities (Hanson, Bruskiewitz, & DeMuth, 2007; Hanson & DeMuth, 1991). Continuing pharmacy education credit is based solely on traditional formats for continuing education (Board of Registration in Pharmacy, 2010b). These formats include attendance at didactic lectures or completing enduring material modules. Other healthcare professionals, including physicians, physician assistants, and nurse practitioners, are compensated, recognized, and rewarded for the time spent on their self-directed learning efforts
Board of Registration in Medicine. National accreditation standards and individual mandated Board of Registration in Pharmacy regulations regarding continuing pharmacy education should consider modified in order to actively encourage pharmacists to invest time in being self-directed learners. These changes might affect pharmacists’ attitudes toward self-directed learning, which leads to another hypothesis.

Hypothesis 2:

The most frequently reported obstacle by pharmacists for not engaging in self-directed learning is that there are no continuing pharmacy education credits awarded for it.

Research question 3 - What are the characteristics associated with pharmacists who have high extrinsic and intrinsic motivation for self-directed learning?

It is equally important to identify the independent, background variables that have bearing on this study. These include: gender, age, marital status, practice site, degree, full-time or part-time employment status, and position. These demographic characteristics were identified from previous research on pharmacists’ behavior as lifelong learners (Hanson & DeMuth, 1992).

Finding a correlation between the demographic characteristics (independent variables) and the dependent variables will help identify the characteristics associated with high intrinsic or extrinsic motivation to be self-directed learners.
Hypothesis 3:

a. Those pharmacists who are married with children will have higher extrinsic motivation scores (want to keep up, get recognition) for self-directed learning than pharmacists who are not married.

b. Those pharmacists practicing in environments that support clinical practice will have higher scores for intrinsic motivation for self-directed learning than pharmacists who work in community practice.

Research question 4 - To what extent do pharmacists prefer to engage in these activities for self-directed learning?

Pharmacists do not currently receive continuing pharmacy education credit for self-directed learning in Massachusetts. If they were to receive credit, what activities, based on those awarded to other healthcare professionals, would pharmacists prefer to engage in? In Massachusetts, physicians and physician assistants are required by their respective Boards of Registration to participate in self-directed (non-traditional) continuing medical education activities to fulfill 60 percent of their re-licensure requirements (Board of Registration for Physician Assistants, 2010). These activities can include participation in journal clubs, precepting medical students, and participating in collaborative discussions. The Board of Registration in Pharmacy in Massachusetts does not allow for self-directed learning activities to fulfill re-licensure requirements (Board of Registration in Pharmacy, 2010a). With this in mind, a fourth hypothesis is offered.
Hypothesis 4:

Pharmacists with greater interest in working with colleagues will have greater intrinsic and extrinsic motivation to engage in self-directed learning than those with less interest in working with colleagues.

Methodology

This is a descriptive, cross-sectional study. Descriptive studies help identify characteristics used to create a picture describing what is happening in a particular population (Creswell, 2009; Fraenkel & Wallen, 2009; Light, Singer, & Willett, 1990). The results presented here will describe the attitudes of pharmacists toward self-directed learning by identifying the motivators, obstacles, characteristics, and activities that increase or decrease pharmacists’ participation in self-directed learning. A validated survey was administered to a convenience sample of 4,000 pharmacists in Massachusetts at one point in time between May 1 and June 1, 2011.

A validated, self-administered survey instrument forms the basis for the research. The survey (Appendix A) used for collecting the data was developed and adapted from published, validated surveys from both nursing (Fisher & King, 2010; Fisher, King, & Tague, 2001) and pharmacy (Hanson et al., 2007; Hanson & DeMuth, 1991, 1992). Additional questions were added to gather pharmacists’ opinions and attitudes on their willingness to participate in self-directed learning. Included in the survey were more additional questions asking about the number of annual continuing education credits that were desirable.

This project drew ideas from research entitled Self-Directed Learning Readiness Scale for
Nursing Education (SDLRSNE) that was developed to study attitudes and characteristics related to self-directed learning in nursing students. The nursing study was repeated in 2009 (Fisher & King, 2010). Permission to use the survey questions was obtained from Murray Fisher, the corresponding author of the SDLRSNE. The confirmation of permission to use the questions is documented in Appendix B.

This project also drew ideas from a pharmacy survey entitled Facilitators and Barriers to Pharmacists’ Participation in Lifelong Learning developed in 1991 to measure attitudes and characteristics of pharmacists toward lifelong learning. Lifelong learning may include professional activities as well as hobbies (Hanson et al., 2007). The original survey was tested on a random sample of licensed pharmacists in the United States. Items were evaluated individually in the original survey. No assessment of the reliability of a scale was reported. The survey was re-evaluated in 2007 on a sample of pharmacists in Wisconsin. The confirmation of permission granted to use the questions is documented in Appendix C.

Colleagues from Northeastern University School of Pharmacy piloted and reviewed the survey for content-related evidence of validity (sometimes known as face validity). Content-related validity examines the content of the survey for appropriateness, comprehensiveness, and how reasonably it addresses the variables (Fraenkel & Wallen, 2009). Pharmacy professors on staff at Northeastern University were asked to comment on how the questions were written, the clarity and consistency of wording, the Likert scale chosen, time it takes to complete the survey, and the format of the survey. Revisions and modifications were made as necessary. The letter to colleagues explaining the purpose of my research and asking for help in pre-testing the survey is included in Appendix D.

Statistical analysis of the data from the pilot was conducted using the Statistical Package
for Social Science Research 19 or more commonly referred to as SPSS 19. Internal consistency or reliability of the scale was analyzed by running a Cronbach alpha test (Creswell, 2009). Cronbach alpha (α) is a commonly used test to estimate the reliability of instruments like surveys and tests. Cronbach alpha scores are reported 0.0 – 1.0. An α score of 0.80 would indicate that the survey or test is 80% reliable.

In addition to an informal peer review, Floyd J. Fowler, Ph.D., senior research fellow at the Center for Survey Research, at the University of Massachusetts in Boston, and author or co-author of four books on survey methods reviewed the survey. Fowler’s expertise is in survey question design and methods that apply to studies of medical care issues. Fowler offered advice on how the survey could be revised or modified to address the research questions more clearly. Fowler explained the importance of asking the right questions in order to get valid answers from respondents. He suggested creative revisions to the Likert scales being used. All revisions and modifications suggested were included (Fowler, April 5, 2011).

Sampling for survey participants allows for generalizing from a representative sample to a population (Creswell, 2009; Light et al., 1990). This research design afforded the opportunity to generate numeric measures to quantify and report the results of the research. Ethical approval of this study was requested and received from the Institutional Review Board (IRB) of Northeastern University.

**Site and Participants**

Collection of data for this study was virtual. The online web-based survey system SurveyMonkey® has a feature that protects the confidentiality of survey participants. The 11,660 registered pharmacists in Massachusetts were the target population. The sample
population will be drawn from the database of registered pharmacists in Massachusetts who have voluntarily logged in and created an account on the continuing pharmacy education website at Northeastern University, School of Pharmacy, Office of Continuing Pharmacy Education website at http://www.rxce.neu.edu. The database houses the e-mail addresses of more than 4,000 Massachusetts registered pharmacists. These pharmacists make up the sample or subset of the population (Fowler, 2009; Salkind, 2010). A copy of the cover letter e-mail is provided in Appendix E (Fraenkel & Wallen, 2009). This database was used as the distribution channel for the survey. The Dean of the School of Pharmacy (John R. Reynolds) granted permission to use the database. The permission letter was submitted to IRB and a copy is marked Appendix F.

Participants were asked to complete the online survey that contained the following sections: intrinsic and extrinsic motivators, obstacles, and activities for self-directed learning. Another section was used to collect demographic information (e.g., age, gender, degree, years in practice, practice site, marital status and childcare responsibilities). The survey was cross-sectional, with the data collected at one point in time. This process allowed for generalization to the entire population of registered pharmacists mandated by statute to obtain continuing pharmacy education.

To motivate and incentivize participants to respond to the survey and to possibly increase the response rate, a raffle consisting of four $25.00 gift cards to Whole Foods was utilized (Fowler, 2009). Participants responded by e-mail with the word “raffle” in the subject line to be included in the raffle.

All guidelines required by the Institutional Review Board (IRB) at Northeastern University were followed. An “unsigned consent document for web-based online surveys”
provided by the IRB office was used and a copy of the document is provided in Appendix G.

Data Collection

Data collection involved an Internet survey administered online. This method was chosen because online surveys are not only easy to administer, but also are easy for participants to respond to, and are inexpensive (Creswell, 2009; Fowler, 2009; Fraenkel & Wallen, 2009). The survey instrument included close-ended, forced-choice questions. These types of questions can be used to measure knowledge, attitudes, and behaviors. Creswell (2009) recommends the utility of SurveyMonkey®, the previously mentioned commercially available survey tool that allows the user to create surveys using templates. The self-administered survey instrument was field-tested prior to administration. It consisted of approximately 35 questions with responses using Likert scales, multiple-choice answers, and yes or no responses. The survey took approximately 15 minutes to complete. Each survey question was evaluated individually and by groups of variables – intrinsic and extrinsic motivators, characteristics, and activities.

Data Analysis

Survey data was downloaded directly from SurveyMonkey® to Microsoft Excel and transferred to SPSS 19. It provides everything needed for data analysis, data management, and graphics.

Descriptive statistics were used to describe the categorical data reported for demographic characteristics. Descriptive statistical analysis was used to report frequency or distribution: how many respondents per category answered the question or overall size of the data – N; the size of the individual category – n; and the percentage (%) of respondents in each category, including accounting for any missing data.
Seven hypotheses (relating to the corresponding research question) were proposed to try and predict the outcome of this research.

Descriptive statistics were used to organize and summarize the data collected and choices made by survey participants for the following hypotheses:

**Hypotheses 1a, 1b and 1c:**

a. The most frequent intrinsic motivator reported by pharmacists for participating in self-directed learning will be a personal desire to learn.

b. The most frequent extrinsic motivator reported by pharmacists for participating in self-directed learning will be continuing pharmacy education credit.

Another descriptive statistical technique, the Pearson Product-Moment Coefficient (Pearson r) was used to measure the significance of the relationship or association between responses to questions (Field, 2005; Fraenkel & Wallen, 2009; Gray & Kinnear, 2012; Morgan, Reichert, & Harrison, 2002).

Pearson r was used for the following hypothesis:

b. Pharmacists with a high intrinsic motivation to learn will be more interested in self-directed learning activities

**Hypothesis 2:**

Descriptive statistics (frequency and percentages) as previously described were used to summarize the data reported for the following hypothesis:
The most frequently reported obstacle by pharmacists for not engaging in self-directed learning is lack of continuing pharmacy education credit. Pharmacists will be more interested in self-directed learning if they receive continuing pharmacy education credit for their participation.

Inferential statistics were used to identify associations between the independent (e.g., gender, age, years in practice, degree, etc.) and dependent variables (e.g., intrinsic and extrinsic motivators, obstacles, characteristics and activities). Both parametric and non-parametric inferential statistical techniques were used. For normally distributed data (determined in the previous step – evaluating frequency distribution) applicable parametric tests were used to estimate or make an assumption from the sample population. Those tests included: “t” Test for Means to compare between groups the aggregate value of two normally distributed variables and the Analysis of Variance or ANOVA to test more than two groups. These tests help analyze the significance of results. A post hoc analysis or specifically the Tukey HSD (Honestly Significant Difference) and the Levene Test for Homogeneity of Variance were used to provide additional, supportive statistical reporting evidence (Field, 2005; Fraenkel & Wallen, 2009; Gray & Kinnear, 2012; Morgan et al., 2002). The non-parametric Kruskal-Wallis test is another type of analysis of variance statistical testing technique. These tests help generalize results to the population. Significance was tested for a p value less than or equal to 0.05.

Hypothesis 3a and 3b:

A “t” Test of Means was used to analyze the data for the following hypotheses:
a. Those pharmacists who are married with children will have greater extrinsic motivation scores (want to keep up, get recognition) for self-directed learning than pharmacists who are not married.

b. Those pharmacists with a clinical practice site will have higher scores for intrinsic motivation (enjoy learning, want to learn) for self-directed learning than pharmacists who work in a community pharmacy.

The inferential, parametric ANOVA or one-way analysis of variance was the statistical test chosen to analyze the results for the following hypothesis. The ANOVA was followed up by post hoc analysis using Levene’s Test for Homogeneity of Variances, the Tukey HSD test and the non-parametric Kruskal-Wallis test for analysis of variance.

Hypothesis 4:

The self-directed activities that involve working with colleagues will have higher scores that those that do not involve working with colleagues.

Validity and Credibility

Ensuring adequate validity and reliability of the instrument (survey) and protocols was part of the analytic plan. Possible threats to internal and external validity were identified. Efforts were made to reduce or minimize the affect these threats might have on the outcome of the study (Creswell, 2009).

Internal validity of the study was addressed in the following ways. The instrument (survey) were pre-tested and amended according to feedback received from reviewers and an objective expert in survey research. Obtaining expert judgment was used to check for content
validity. Survey distribution was limited to the pharmacists in the database at Northeastern University, School of Pharmacy, and Office of Continuing Pharmacy Education.

The survey was single stage – it was administered only once (Creswell, 2009). To address potential bias, there was no face-to-face contact with the subjects, all data was aggregated for analyses, and study-participant identity remained anonymous.

Threats to the external validity included the ability to generalize to the population from the chosen sample (Creswell, 2009; Light et al., 1990; Locke, Silverman, & Spirduso, 2010). To minimize this threat a wide range of pharmacists from different practice settings were included in this study. Limiting the survey responses to those who have access to computers might be see as a threat of exclusion to the external validity; however, all pharmacists taking part in the study registered or created an account on the Northeastern University School of Pharmacy Continuing Pharmacy Education web site using a computer. The sample size for the study was 4,000 registered pharmacists, making it reasonable to generalize to the entire population of pharmacists in Massachusetts (11,663). Paper versions of the surveys might have yielded better results, but online surveys are cost effective, easier to analyze and easier to implement. As a registered pharmacist in Massachusetts and the Director of Continuing Pharmacy Education at Northeastern University School of Pharmacy, the participants know this researcher.

Reliability refers to the consistency of the scores obtained. Fraenkel and Wallen (2009) identify two or three methods, test-retest and equivalent-forms method, both of which require two administrations of the survey. Since the approach used in this project was a single-stage study with the data collected at one point in time a Cronbach’s alpha test was used to analyze the data for internal consistency or reliability. Reliability coefficients range from 0.0 to 1.0, as
identified in Fraenkel and Wallen (2009), “a useful rule of thumb is that reliability should be at least 0.70 and preferably higher” (p. 157).

When an early version of the survey was administered to 12 faculty members in the Northeastern University School of Pharmacy for comment and review, the resulting Cronbach alpha score was 0.622. Questions were reworded and re-ordered. As previously mentioned, an expert on survey research (Floyd J. Fowler) also provided input that lead to changes in the survey and Likert scales used.

**Protection of Human Subjects**

This research was carried out in an ethical manner. Great care was taken to avoid any risks to participants in this research. All criteria of the Institutional Review Board (IRB) at Northeastern University were diligently followed. All material associated with this research underwent an IRB review. This included the survey instrument, invitation letter, permission letter to use the Northeastern University School of Pharmacy continuing pharmacy education database, and any other information as requested. Respondents were informed about the nature and purpose of the survey. An unsigned consent form for web-based online surveys was provided prior to participation in the survey. Participants also received a statement about confidentiality, risk to participants, and voluntary participation (ability to opt out of survey completion at any time). Data collected was safeguarded on a password-protected computer. This research presented no possible risks to participants (Fraenkel & Wallen, 2009).

**Conclusion**

Continuing education in the healthcare professions has come under fire. Two major institutes, the Institute of Medicine and the Macy Foundation, cite flaws in the current system,
including excessive reliance on lecture format; too little attention given to helping individual clinicians examine and improve their own practices; insufficient emphasis on individual learning to answer questions that arise during patient care; absence of promoting inter-professional collaboration and feedback from colleagues and patients, teamwork, or efforts to improve care systems; inadequate use of Internet technology; and a lack of high-quality scientific studies of continuing education (p. 15).

Changes should be made in the way continuing pharmacy education are developed and accredited. Existing literature clearly defines how adults learn best. Adults learn best when they can make their own choices. Today, state law mandates that pharmacists and other healthcare professionals stay up-to-date with the advances in their scope of practice. National accrediting bodies and professional associations in medicine, nursing, and pharmacy suggest continuing professional development as the answer to curing some of the ills in continuing education. I posit that the answer lies in motivating healthcare professionals to be self-directed learners. This project gathered data that helped answer the questions: what motivates, what are the obstacles, what are the activities that pharmacists prefer to engage in as self-directed learners. These questions were asked of pharmacy practitioners in Massachusetts. It is important to ask questions, pose solutions, and make changes democratically rather than authoritatively. It is important to make decisions data driven. Hopefully the data derived from this project will help formulate decisions that will encourage pharmacists to be self-directed learners and change laws that govern how pharmacists are recognized for their efforts.
Chapter 4: Results

Overview
Sir Winston Churchill once said, “However beautiful a strategy may be, it is important to look at the results.” This chapter reviews the results of this research project.

The purpose of this research was to identify factors that affect an individual’s intrinsic and extrinsic motivations to engage in self-directed learning activities associated with continuing pharmacy education. Chapter 4 presents the statistical analysis of the data and the results of the hypotheses tests. These results are based on a survey distributed electronically in May of 2011. Survey responses were collected by June 1, 2011. Results were downloaded from the SurveyMonkey® to SPSS PAW 19®. Chapter information is divided into three sections. Section 1, Demographic Data, summarizes demographic data and responses to questions regarding attitudes, perceptions and preferences towards continuing education. Section 2, Analysis of Findings from the Research Questions, provides the results of hypotheses tests that examined attitudes, opinions and preferences of respondents regarding motivation and obstacles to self-directed learning. Section 3, Summary of Findings, provides the outcomes of the hypotheses tests.

The survey was sent to 3,885 of 11,663 registered pharmacists in Massachusetts, 609 responded (16%). Of this, 574 completed the entire survey for a 94% completion rate, 19 opted out of the survey. Reminder emails were sent once a week for a period of one month to increase the response rate.
Section 1: Demographic Data

This section is divided into two parts. Part 1 is a summary of the demographic data for independent variables (e.g. gender, age, years in practice, degree, practice site, employment status, and marital status. Part 2 provides a summary of responses to questions regarding attitudes, perceptions and preferences towards continuing education. Descriptive statistics were used to report frequency and percentages for independent variables.

Part 1: Summary of Demographic Data for Independent Variables

Gender

Table 2 presents the summary data for gender.

Table 2 Gender

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>331</td>
<td>54</td>
</tr>
<tr>
<td>Male</td>
<td>259</td>
<td>43</td>
</tr>
<tr>
<td>Missing data</td>
<td>19</td>
<td>3</td>
</tr>
</tbody>
</table>

*Note. Missing data includes those who elected not to respond.

These percentages are comparable with national data from the American Association of Colleges of Pharmacy (Taylor, 2010).

Age

Shown in Table 3, pharmacists in the 26 – 35 year age range had the largest response rate at 26%.
Table 3 Age

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 25</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>26 – 35</td>
<td>159</td>
<td>26</td>
</tr>
<tr>
<td>36 – 45</td>
<td>124</td>
<td>20</td>
</tr>
<tr>
<td>46 – 55</td>
<td>145</td>
<td>24</td>
</tr>
<tr>
<td>&gt; 55</td>
<td>147</td>
<td>24</td>
</tr>
<tr>
<td>Missing data</td>
<td>21</td>
<td>3</td>
</tr>
</tbody>
</table>

*Note.* Missing data includes those who elected not to respond. Totals of percentages are not 100 because of rounding.

The data reveals an aging population of practicing pharmacists which is comparable to national data (Doucette, Gaither, Kreling, Mott, & Schommer, 2010).

**Gender and Age**

Table 4 presents data on gender and age. Female practitioners are younger than their male counterparts. The largest groups of male pharmacists are those over 55 years. See Table 4.
Table 4 Gender and Age

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Female (n)</th>
<th>Male (n)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 25</td>
<td>11</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>26 – 35</td>
<td>119</td>
<td>40</td>
<td>159</td>
</tr>
<tr>
<td>36 – 45</td>
<td>82</td>
<td>41</td>
<td>123</td>
</tr>
<tr>
<td>46 – 55</td>
<td>76</td>
<td>68</td>
<td>144</td>
</tr>
<tr>
<td>&gt; 55</td>
<td>40</td>
<td>105</td>
<td>147</td>
</tr>
<tr>
<td>Missing data</td>
<td></td>
<td></td>
<td>23</td>
</tr>
</tbody>
</table>

*Note.* Missing data includes those who elected not to respond. Totals of percentages are not 100 because of rounding.

Most pharmacists enter the workforce in their mid-twenties because of the post-baccalaureate study required by the Doctor of Pharmacy curriculum.

**Years in Practice and the Relationship to Age**

Most pharmacists responding to the survey (46%) say they have been in practice more than 20 years (Table 5).
Table 5 Years in Practice and the Relationship to Age

<table>
<thead>
<tr>
<th>Years in Practice (N = 609)</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 2 years</td>
<td>30</td>
<td>4</td>
</tr>
<tr>
<td>2 – 5 years</td>
<td>76</td>
<td>13</td>
</tr>
<tr>
<td>6 – 10 years</td>
<td>81</td>
<td>13</td>
</tr>
<tr>
<td>11 - 20 years</td>
<td>124</td>
<td>20</td>
</tr>
<tr>
<td>&gt; 20 years</td>
<td>279</td>
<td>46</td>
</tr>
<tr>
<td>Missing data</td>
<td>19</td>
<td>3</td>
</tr>
</tbody>
</table>

Note. Missing data includes those who elected not to respond. Totals of percentages are not 100 because of rounding.

Age and Years in Practice

Of the pharmacists who are in practice more than 20 years, 52% are over 55 years of age.

See Table 6.

Table 6 Age and Years in Practice

<table>
<thead>
<tr>
<th>Age and Years in Practice (N = 609)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristic</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>&lt; 25</td>
</tr>
<tr>
<td>26 -35</td>
</tr>
<tr>
<td>36 – 45</td>
</tr>
<tr>
<td>46 – 55</td>
</tr>
<tr>
<td>&gt; 55</td>
</tr>
<tr>
<td>Missing data</td>
</tr>
<tr>
<td>Totals</td>
</tr>
</tbody>
</table>

Note. Missing data includes those who elected not to respond.
The 26 – 35 years age category represents the more recent graduates or those with a Doctor of Pharmacy degree. The 36 – 46 years age category represents those with a 5-year Bachelor of Pharmacy degree or who have completed a post-baccalaureate Doctor of Pharmacy degree. The remaining respondents hold a 4 or 5 year Bachelor of Pharmacy degree.

**Degree**

The six-year Doctor of Pharmacy degree (PharmD) replaced the five-year Bachelor of Science degree program in 2001 as the entry-level degree for pharmacy practice. Table 7 displays responses breakdown by degree.

Table 7 Degree

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 year PharmD</td>
<td>195</td>
<td>33</td>
</tr>
<tr>
<td>5 year BS with post-baccalaureate PharmD</td>
<td>66</td>
<td>11</td>
</tr>
<tr>
<td>5 year BS in Pharmacy</td>
<td>249</td>
<td>42</td>
</tr>
<tr>
<td>4 year BS in Pharmacy</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>Masters degree or higher</td>
<td>60</td>
<td>10</td>
</tr>
<tr>
<td>Missing data</td>
<td>20</td>
<td>3</td>
</tr>
</tbody>
</table>

*Note. Missing data includes those who elected not to respond. Totals of percentages are not 100 because of rounding.*

The majority holds a Doctor of Pharmacy degree (44%) followed closely by practitioners (42%) with the 5-year Bachelor of Science in Pharmacy degree.
Gender and Degree

The Doctor of Pharmacy degree is held by 55% of female pharmacists practicing in Massachusetts. These data are representative of the trend towards more women than men are presently entering pharmacy (Doucette et al., 2010). Table 8 represents the highest degree earned by gender.

Table 8 Gender and Degree

<table>
<thead>
<tr>
<th>Gender and Degree (N = 609)</th>
<th>6 year PharmD</th>
<th>5 year with Post Baccalaureate PharmD</th>
<th>5 year BS</th>
<th>4 year BS</th>
<th>MS or higher</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>149</td>
<td>32</td>
<td>124</td>
<td>3</td>
<td>21</td>
<td>329</td>
</tr>
<tr>
<td>Male</td>
<td>46</td>
<td>34</td>
<td>123</td>
<td>16</td>
<td>38</td>
<td>257</td>
</tr>
<tr>
<td>Missing data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23</td>
</tr>
</tbody>
</table>

*Note. Missing data includes those who elected not to respond.*

Male pharmacy practitioners tend to be older and hold a five-year Bachelor of Science degree. The Doctor of Pharmacy degree is held by only 31% of male practitioners.

Practice Site

Pharmacists who practice within a hospital setting (38%) were the largest responding group with a total 222 responses (Table 9). Included were hospital in-patient dispensing, outpatient dispensing, and clinical and administrative practitioners. Community pharmacists practicing in large pharmacy chains (e.g. CVS or Walgreens), supermarket and independent practice settings made up 26% of the respondents for a total of 155.
Table 9 Practice Site

Practice Site (N = 609)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community – Independent</td>
<td>40</td>
<td>7</td>
</tr>
<tr>
<td>Community - Chain</td>
<td>87</td>
<td>15</td>
</tr>
<tr>
<td>Community – Supermarket</td>
<td>28</td>
<td>5</td>
</tr>
<tr>
<td>Hospital – in-patient dispensing</td>
<td>69</td>
<td>12</td>
</tr>
<tr>
<td>Hospital – out-patient dispensing</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Hospital – clinical</td>
<td>100</td>
<td>17</td>
</tr>
<tr>
<td>Hospital – administration</td>
<td>42</td>
<td>7</td>
</tr>
<tr>
<td>Ambulatory Care</td>
<td>29</td>
<td>5</td>
</tr>
<tr>
<td>Managed Care</td>
<td>33</td>
<td>6</td>
</tr>
<tr>
<td>Long Term Care</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Mail Order</td>
<td>2</td>
<td>0.3</td>
</tr>
<tr>
<td>Regulatory</td>
<td>5</td>
<td>0.8</td>
</tr>
<tr>
<td>Academia</td>
<td>32</td>
<td>5</td>
</tr>
<tr>
<td>Pharmaceutical Industry</td>
<td>28</td>
<td>5</td>
</tr>
<tr>
<td>Research</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>62</td>
<td>11</td>
</tr>
<tr>
<td>Missing data</td>
<td>20</td>
<td>3</td>
</tr>
</tbody>
</table>

*Note. Missing data includes those who elected not to respond. Totals of percentages are not 100 because of rounding.*

Pharmacists not working in the categories listed above provided examples of “other” careers included:

- Informatics pharmacist
• Home infusion pharmacist
• Medical writer
• Claims processing pharmacy consultant
• Hospital pharmacy residency program
• Drug information specialist
• Toxicologist

**Practice Site and Gender**

More males (27%) than females (25%) work in community practice pharmacy. More females (35%) than males (25%) work in hospital practice pharmacy. Table 10 indicates results for all practice sites and gender.
Table 10 Practice Site and Gender

<table>
<thead>
<tr>
<th>Practice Site and Gender (N = 609)</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community – independent</td>
<td>19</td>
<td>21</td>
</tr>
<tr>
<td>Community – chain</td>
<td>50</td>
<td>37</td>
</tr>
<tr>
<td>Community – supermarket</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>Hospital – in-patient</td>
<td>38</td>
<td>31</td>
</tr>
<tr>
<td>Hospital – out-patient</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Hospital – clinical</td>
<td>69</td>
<td>31</td>
</tr>
<tr>
<td>Hospital – administration</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>Ambulatory Care</td>
<td>21</td>
<td>8</td>
</tr>
<tr>
<td>Managed Care</td>
<td>22</td>
<td>11</td>
</tr>
<tr>
<td>Long Term Care</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Mail Order</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Regulatory Affairs</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Academia</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>Industry</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Research</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>33</td>
<td>29</td>
</tr>
<tr>
<td>Missing data</td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

*Note.* Missing data includes those who elected not to respond.

More male respondents (63%) than females (38%) hold hospital administrator positions.

The same ratio holds true for males in academia (63%) compared with female counterparts (38%).
Employment

Pharmacists were classified as working part-time if they were employed less than 35 hours per week. The results regarding full or part-time employment are depicted in Table 11.

Table 11 Employment

<table>
<thead>
<tr>
<th>Full-Time or Part-Time Employment (N = 609)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Response</strong></td>
<td><strong>n</strong></td>
<td><strong>%</strong></td>
</tr>
<tr>
<td>Full time (&gt; 35 hours per week)</td>
<td>463</td>
<td>76</td>
</tr>
<tr>
<td>Part time (&lt; 35 hours per week)</td>
<td>98</td>
<td>16</td>
</tr>
<tr>
<td>Not employed</td>
<td>28</td>
<td>5</td>
</tr>
<tr>
<td>Missing data</td>
<td>20</td>
<td>3</td>
</tr>
</tbody>
</table>

*Note.* Missing data includes those who elected not to respond.

The majority of pharmacists (76%) work full time.

Employment and Gender

Full-time employment is almost evenly divided between male (46%) and female (54%) pharmacists (Table 12).

Table 12 Employment and Gender

<table>
<thead>
<tr>
<th>Employment and Gender (N = 609)</th>
<th>Full-time (&gt; 35 hours per week)</th>
<th>Part time (&lt; 35 hours per week)</th>
<th>Not employed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>247</td>
<td>67</td>
<td>15</td>
<td>329</td>
</tr>
<tr>
<td>Male</td>
<td>214</td>
<td>31</td>
<td>13</td>
<td>258</td>
</tr>
<tr>
<td>Missing data</td>
<td></td>
<td></td>
<td></td>
<td>22</td>
</tr>
</tbody>
</table>

*Note.* Missing data includes those who elected not to respond.
National data indicates 57% for males and 43% for females as full-time workers

(Doucette et al., 2010).

**Employment and Age**

Table 13 Employment and Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Full-time (&gt; 35 hours/week)</th>
<th>Part-time (&lt; 35 hours/week)</th>
<th>Not Employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 25</td>
<td>12</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>26 – 35</td>
<td>141</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>36 – 45</td>
<td>98</td>
<td>24</td>
<td>2</td>
</tr>
<tr>
<td>46 – 55</td>
<td>114</td>
<td>24</td>
<td>6</td>
</tr>
<tr>
<td>&gt; 55</td>
<td>95</td>
<td>36</td>
<td>15</td>
</tr>
</tbody>
</table>

*Note. Missing data from those who elected not to respond = 23.*

Most pharmacists across all age categories indicated they work full-time.

**Marital Status**

The responses for those pharmacists who indicated (includes living with a partner) or not married are depicted in Table 14

Table 14 Married or Living with a Partner

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>469</td>
<td>77</td>
</tr>
<tr>
<td>No</td>
<td>119</td>
<td>20</td>
</tr>
<tr>
<td>Missing data</td>
<td>21</td>
<td>3</td>
</tr>
</tbody>
</table>

*Note. Missing data includes those who elected not to respond.*
Children under 12 Living at Home

Pharmacists were asked if they had children under 12 living at home to determine the effect childcare responsibilities might have on participation in self-directed learning or continuing pharmacy education (Table 15).

Table 15 Children under 12 Living at Home

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>169</td>
<td>28</td>
</tr>
<tr>
<td>No</td>
<td>418</td>
<td>69</td>
</tr>
<tr>
<td>Missing data</td>
<td>22</td>
<td>4</td>
</tr>
</tbody>
</table>

Note. Missing data includes those who elected not to respond. Totals of percentages are not 100 because of rounding.
**Part 2: Summary of Responses to Questions Regarding Continuing Education**

Pharmacists were asked about their format preference for traditional continuing education. The results are presented in Table 16.

Table 16 Responses to Survey Question #27

*Responses to the Survey question “What is your preferred format for continuing pharmacy education?” (N = 609)*

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home study from pharmacy journals</td>
<td>82</td>
<td>14</td>
</tr>
<tr>
<td>Live (face-to-face) Programs</td>
<td>388</td>
<td>66</td>
</tr>
<tr>
<td>Webinars</td>
<td>148</td>
<td>25</td>
</tr>
<tr>
<td>Online Home study</td>
<td>192</td>
<td>33</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Missing data</td>
<td>19</td>
<td></td>
</tr>
</tbody>
</table>

*Note. Missing data includes those who elected not to respond. Totals of percentages are not 100 because of rounding.*

Pharmacists prefer live seminars to mediated learning.

The opinions pharmacists had on self-directed learning as an alternative to traditional continuing education formats is shown in Table 17.
Table 17 Responses to Survey Question #36

Responses to the Survey Question “Do you think self-directed learning is a better way to learn than the traditional formats for continuing education?” (N = 609)

<table>
<thead>
<tr>
<th>Response</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely</td>
<td>59</td>
<td>10</td>
</tr>
<tr>
<td>Probably</td>
<td>320</td>
<td>53</td>
</tr>
<tr>
<td>Probably Not</td>
<td>192</td>
<td>32</td>
</tr>
<tr>
<td>Definitely Not</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Missing data</td>
<td>26</td>
<td>4</td>
</tr>
</tbody>
</table>

Note. Missing data includes those who elected not to respond. Totals of percentages are not 100 because of rounding.

Pharmacists (63%) considered self-directed learning a reasonable alternative for obtaining continuing education credit.

Table 18 summarizes responses for the percentage of self-directed learning that pharmacists identified would work for them.
Table 18 Responses to Survey Question #37

*Responses to the survey Question “If you could get credit for self-directed learning, what percentage would work for you?” (N=609)*

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>20% traditional CE formats/80% self-directed learning</td>
<td>69</td>
<td>11</td>
</tr>
<tr>
<td>50% traditional CE formats/50% self-directed learning</td>
<td>411</td>
<td>68</td>
</tr>
<tr>
<td>40% traditional CE formats/60% self-directed learning</td>
<td>43</td>
<td>7</td>
</tr>
<tr>
<td>25% traditional CE formats/75% self-directed learning</td>
<td>34</td>
<td>6</td>
</tr>
<tr>
<td>Missing data</td>
<td>52</td>
<td>9</td>
</tr>
</tbody>
</table>

*Note.* Missing data includes those who elected not to respond. Totals of percentages are not 100 because of rounding.

Pharmacists (68% or 411 respondents) were overwhelmingly in support of a 50/50 split in traditional formats to self-directed learning opportunities. Pharmacists were asked how they value continuing pharmacy education credits. The responses are indicated in Table 19.
Table 19 Responses to Survey Question #38

Responses to the Survey Question “How likely would you be to participate in self-directed learning activities if you received continuing pharmacy education credit for them?” (N = 609)

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very likely</td>
<td>347</td>
<td>57</td>
</tr>
<tr>
<td>Somewhat likely</td>
<td>216</td>
<td>36</td>
</tr>
<tr>
<td>Unlikely</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td>Missing data</td>
<td>20</td>
<td>3</td>
</tr>
</tbody>
</table>

Note. Missing data includes those who elected not to respond.

Pharmacists show a very positive attitude towards their likelihood of participating in self-directed learning. The majority (93%) agreed that they would be willing to participate in self-directed learning if they were to receive continuing education credit for their efforts.

Pharmacists were asked if they thought they currently engage in self-directed learning activities. Table 20 shows their responses.

Table 20 Responses to Survey Question #39

Responses to the Survey Question “Do you think you currently engage in self-directed learning?” (N = 609)

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>414</td>
<td>68</td>
</tr>
<tr>
<td>No</td>
<td>172</td>
<td>28</td>
</tr>
<tr>
<td>Missing data</td>
<td>23</td>
<td>4</td>
</tr>
</tbody>
</table>

Note. Missing data includes those who elected not to respond.
The majority of pharmacists believe they already engage in self-directed learning.

Pharmacists were asked about their attitudes towards participating in continuing pharmacy education and what they see as obstacles. The results are summarized in Table 21.

Table 21 Responses to Survey Question #24

*Responses to Survey Question, “How much do these things affect your participation in continuing pharmacy education?”*

<table>
<thead>
<tr>
<th>Response</th>
<th>A lot/Somewhat</th>
<th>A little/Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Convenience – travel distance to programs</td>
<td>489</td>
<td>83</td>
</tr>
<tr>
<td>Relevance to practice</td>
<td>481</td>
<td>81</td>
</tr>
<tr>
<td>Topic being discussed</td>
<td>467</td>
<td>80</td>
</tr>
<tr>
<td>Cost of the program</td>
<td>449</td>
<td>75</td>
</tr>
<tr>
<td>Information about available activities</td>
<td>426</td>
<td>72</td>
</tr>
<tr>
<td>Job constraints – lack of relief help</td>
<td>357</td>
<td>61</td>
</tr>
<tr>
<td>Other professional responsibilities</td>
<td>348</td>
<td>60</td>
</tr>
<tr>
<td>Family responsibilities</td>
<td>339</td>
<td>57</td>
</tr>
<tr>
<td>Lack of quality learning activities</td>
<td>292</td>
<td>50</td>
</tr>
<tr>
<td>Low personal priority</td>
<td>193</td>
<td>33</td>
</tr>
<tr>
<td>Degree of difficulty</td>
<td>141</td>
<td>24</td>
</tr>
<tr>
<td>Need to pass a test to receive credit</td>
<td>136</td>
<td>23</td>
</tr>
<tr>
<td>Not comfortable with technology (computer)</td>
<td>55</td>
<td>9</td>
</tr>
</tbody>
</table>

*Note. Other responses = 20; Missing data includes those who elected not to respond = 14 Total = 609*
Travel convenience to programs and relevance to practice were high on the list of importance to pharmacists participating. The use of computer technology was not seen as an obstacle or barrier to participating in continuing pharmacy education.

Pharmacists were asked if they were willing to support an increase in the amount of mandated continuing education required for re-licensure if they were to receive credit for self-directed learning activities.

Table 22 Responses to Survey Question #40

Responses to Survey Question “Would you be willing to support an increase in the amount of mandated CE required for re-licensure if you received credit for your self-directed learning activities?” (N = 609)

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>238</td>
<td>39</td>
</tr>
<tr>
<td>No</td>
<td>351</td>
<td>58</td>
</tr>
<tr>
<td>Missing data</td>
<td>20</td>
<td>3</td>
</tr>
</tbody>
</table>

Note. Missing data includes those who elected not to respond.

Respondents were not in favor in an increase in the amount of mandated continuing education credit required for re-licensure.

Section 2: Analysis of Findings from Research Questions

Survey questions were structured into groupings: intrinsic motivation (questions 1 - 12); extrinsic motivation (questions 13 – 23); obstacles to self-directed learning (question 25); activities that might lead to self-directed learning (question 26); continuing education (questions 27 and 36); demographic characteristics (questions 28 – 35) and self-directed learning (questions 37 – 40). Statistical tests used to analyze the data include: Descriptive analysis, Cronbach’s coefficient alpha, Pearson Product Moment Correlation, t-Tests, Analysis of Variance.
(ANOVA), Levene’s Test for Homogeneity, and Kruskal-Wallis analysis of variance.

The Cronbach’s coefficient alpha was used to report on the internal reliability or consistency of the survey items 1-23. Acknowledged descriptions of a Cronbach’s alpha of 0.9 - 0.8 is good and 0.8 - 0.7 as acceptable (Giliem & Giliem, 2003). The coefficient alpha for the twelve questions (1-12) related to intrinsic motivation was 0.8; the eleven questions (13-23) on extrinsic motivation had a coefficient alpha of 0.7. These results fall into the “acceptable” range for social science research (Bland & Altman, 1997). Piloting the survey before it was distributed tested external reliability of the survey.

The Pearson Product Moment Correlation was chosen to determine the degree to which a relationship exists between two or more variables. Correlation research serves two purposes: 1) to help explain human behavior and 2) to help predict outcomes. When data for both variables are expressed quantitatively, Pearson is an appropriate correlation to use for analyzing the results (Fraenkel & Wallen, 2009). Measurements of Pearson correlation are reported as “r". The correlation coefficient is measured in terms of “0” = no effect to an absolute value of “1” = perfect effect. Negative values imply a negative correlation between the two variables and positive values imply a positive correlation between the variables. In general, an absolute correlation coefficient between 0.10 and 0.30 indicates a small correlation between the two variables; 0.30 - 0.50 is a medium correlation; r > 0.50 indicates a strong correlation between two variables. Correlation coefficients determined from a random sample of information collected from a population can be used to draw inferences about an entire population (Field, 2005; Gray & Kinnear, 2012). Note as the sample size increases, the more significant lower Pearson Correlation Coefficients become indicating a correlation between two variables. For example, for N = 50, an r above 0.273 indicates a strong correlation between two variables (p <
0.001), while, if N = 200, an $r$ above 0.138 indicates a strong correlation between two variables ($p < 0.001$).

The $t$-Test for Means was used to see whether a difference between the means of two samples was significant (Field, 2005; Fraenkel & Wallen, 2009; Gray & Kinnear, 2012). If $p < 0.05$ the results are considered significant. The Analysis of Variance or ANOVA test was used to discover if significant differences exist between more than two groups. ANOVA is reported as $F$ value. The larger the $F$ value, the greater the likelihood that there is a significant difference between the groups (Field, 2005; Fraenkel & Wallen, 2009; Gray & Kinnear, 2012). Post hoc analysis was done using Levene’s Test for Homogeneity. Levene’s tests the hypothesis for equality in the groups tested. A significant result ($p < .05$) indicates the variances are different (not equal) thus the assumption of homogeneity of variance was violated (Fraenkel & Wallen, 2009; Gray & Kinnear, 2012). It is not unusual to do what is known as a “post hoc analysis” after running an analysis of variance and Levene’s test. They should be done when a significant result occurs within the ANOVA. Post-hoc tests show where and in what direction the interactions in an ANOVA occur. These tests are easily performed using SPSS software. Tukey HSD (Honestly Significant Difference) was the post hoc tests run following the results from the ANOVA and Levene’s test in this research. Post hoc analysis provides a broader picture to further compare the significance of results. A non-parametric analysis of variance (ANOVA) test, the Kruskal-Wallis Test, was used to further test for a difference between groups. Kruskal-Wallis tests the null hypothesis comparing the equality of medians.

Questions 1 – 23 were used to addressed the first two research questions:

*Research Question 1*

To what extent do specific intrinsic and extrinsic **motivators** affect pharmacists’
perceptions on participation in self-directed learning activities to receive continuing pharmacy education?

Responses were analyzed using descriptive statistics.

Hypothesis 1a

The most frequent intrinsic motivator reported by pharmacists for participating in self-directed learning will be a personal desire to learn.
Table 23 Intrinsic Motivators to Self-Directed Learning

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>Strongly Agree/Agree n</th>
<th>%</th>
<th>Disagree/Strongly Disagree n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>I want to learn new information</td>
<td>607</td>
<td>607</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I enjoy learning new information</td>
<td>608</td>
<td>608</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I like to gather the facts before I make decisions</td>
<td>604</td>
<td>604</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I learn from my mistakes</td>
<td>598</td>
<td>597</td>
<td>100</td>
<td>2</td>
<td>0.3</td>
</tr>
<tr>
<td>I am open to new ideas</td>
<td>601</td>
<td>597</td>
<td>99</td>
<td>4</td>
<td>0.7</td>
</tr>
<tr>
<td>I have a need to learn</td>
<td>600</td>
<td>591</td>
<td>99</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>I enjoy a challenge</td>
<td>602</td>
<td>593</td>
<td>99</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>I like to evaluate what I do</td>
<td>606</td>
<td>594</td>
<td>98</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>I am a person who needs to know why</td>
<td>604</td>
<td>587</td>
<td>97</td>
<td>17</td>
<td>3</td>
</tr>
<tr>
<td>I think about what I need to learn</td>
<td>605</td>
<td>586</td>
<td>97</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>I critically evaluate new ideas</td>
<td>601</td>
<td>573</td>
<td>95</td>
<td>28</td>
<td>5</td>
</tr>
<tr>
<td>I enjoy studying</td>
<td>600</td>
<td>433</td>
<td>72</td>
<td>167</td>
<td>28</td>
</tr>
</tbody>
</table>

Totals of percentages are not 100 because of rounding.
Hypothesis 1a states that pharmacists’ participation in self-directed learning will be motivated by a personal desire to learn. The most frequently chosen items were: “I want to learn new information” and “I enjoy learning new information”. These results support acceptance of hypothesis 1a that pharmacists do have a personal desire to learn. Thus the null hypothesis is rejected.

Hypothesis 1b

The most frequent extrinsic motivator reported by pharmacists for participating in self-directed learning will be continuing education credit to maintain licensure. Pharmacists will be more interested in self-directed learning if they receive continuing education credit for their participation.

Table 24 displays the extrinsic motivators for self-directed learning.
Table 24: Extrinsic Motivators to Self-Directed Learning

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>Strongly Agree/Agree</th>
<th>Disagree/Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like being able to help the patients I take care of.</td>
<td>600</td>
<td>597</td>
<td>3</td>
</tr>
<tr>
<td>I want to keep up with advances in pharmacy practice.</td>
<td>596</td>
<td>593</td>
<td>3</td>
</tr>
<tr>
<td>I like learning with other pharmacists.</td>
<td>597</td>
<td>555</td>
<td>42</td>
</tr>
<tr>
<td>I set goals for myself.</td>
<td>601</td>
<td>557</td>
<td>44</td>
</tr>
<tr>
<td>I like recognition for what I do.</td>
<td>597</td>
<td>546</td>
<td>51</td>
</tr>
<tr>
<td>I want to earn more money.</td>
<td>596</td>
<td>542</td>
<td>54</td>
</tr>
<tr>
<td>I participate in continuing pharmacy education because it is required to maintain my pharmacy license.</td>
<td>602</td>
<td>525</td>
<td>77</td>
</tr>
<tr>
<td>I am more likely to participate in a learning activity if it is free.</td>
<td>599</td>
<td>503</td>
<td>96</td>
</tr>
<tr>
<td>I want career advancement.</td>
<td>598</td>
<td>491</td>
<td>107</td>
</tr>
<tr>
<td>I am more apt to attend a program if I am reimbursed for the cost.</td>
<td>598</td>
<td>459</td>
<td>139</td>
</tr>
<tr>
<td>I am encouraged by my family to learn more.</td>
<td>599</td>
<td>431</td>
<td>168</td>
</tr>
</tbody>
</table>

Total of percentages is not 100 because of rounding.
Hypothesis 1b states that the most frequent extrinsic motivator reported by pharmacists for participating in self-directed learning will be continuing education credit to maintain licensure.

These results support acceptance of hypothesis 1b that continuing pharmacy education needed for re-licensure is an important extrinsic motivator. Thus the results support rejection of the null hypothesis that receiving continuing pharmacy education credit is not important.

*Hypothesis 1c*

Pharmacists with a high intrinsic motivation to learn will be more interested in self-directed learning activities.

The respondents indicated their preference for these activities using 3-point Likert-type scales ranging from 3 (Very interested); 2 (somewhat interested) to 1 (Not at all interested) (Morgan et al., 2002). The results are summarized in Table 25.

### Table 25 Activities for Self-Directed Learning

*Responses to Survey Question “How interested would you be with the following activities for self-directed learning?”*

<table>
<thead>
<tr>
<th>Response</th>
<th>Very or Somewhat Interested</th>
<th></th>
<th>Not Interested at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient specific medication therapy management</td>
<td>408</td>
<td>94</td>
<td>30</td>
</tr>
<tr>
<td>Reading clinical pharmacy journals</td>
<td>475</td>
<td>90</td>
<td>53</td>
</tr>
<tr>
<td>Job related but not pharmacy-specific opportunities</td>
<td>478</td>
<td>88</td>
<td>63</td>
</tr>
<tr>
<td>Unstructured online pharmacy-related learning</td>
<td>450</td>
<td>85</td>
<td>82</td>
</tr>
<tr>
<td>Drug information research</td>
<td>450</td>
<td>84</td>
<td>84</td>
</tr>
</tbody>
</table>
The correlation of intrinsic motivation with self-directed learning activities is depicted in Table 26.

Table 26 Self-Directed Learning Activities and Intrinsic Motivation

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Intrinsic Motivation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Activities</td>
<td>.119**</td>
<td></td>
</tr>
</tbody>
</table>

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

There was a low, positive and significant correlation between a personal desire to learn and self-directed learning activities. Findings demonstrate that pharmacists with a higher intrinsic motivation to learn also show greater interest in self-directed learning activities. These results support acceptance of hypothesis 3 and rejection of the null hypothesis.
Research Question 2

What are specific obstacles keeping pharmacists from participating in self-directed learning activities?

Hypothesis 2

The most frequently reported obstacle by pharmacists for not engaging in self-directed learning is that there are no continuing education credits awarded for it. Pharmacists will be more interested in self-directed learning activities if they receive continuing education credit for their participation.

Survey participants were asked to indicate their perceived obstacles to self-directed learning by checking their top 5 choices out of ten possibilities. Table 27 shows the frequencies of their choices for each item.

Table 27 Responses to Survey Question #25

Responses to Survey Question “If you were interested in self-directed learning, which of the following stands in your way?” (Please check your top 5 choices)

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>527</td>
<td>89</td>
</tr>
<tr>
<td>No CE credit</td>
<td>344</td>
<td>58</td>
</tr>
<tr>
<td>Other professional responsibilities</td>
<td>338</td>
<td>57</td>
</tr>
<tr>
<td>Family responsibilities</td>
<td>305</td>
<td>52</td>
</tr>
</tbody>
</table>
No perceived value by my employer 227 39
Access to peer-reviewed pharmacy journals/texts 183 31
Don’t know how to begin 142 42
Lack of peers to work with 139 24
Low personal priority 137 23
Lack of Internet access at work 83 14

Note. Other responses = 27; Missing data includes those who elected not to respond = 19; Total = 609

Time, continuing education credit, professional and family responsibilities ranked at the top of list as obstacles to self-directed learning.

Table 28 Activities and Obstacles to Self-directed Learning

Intercorrelations on Scores for interests in self-directed learning activities and obstacles to engaging in self-directed learning.

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Obstacles</td>
<td>___</td>
<td></td>
</tr>
<tr>
<td>2. Activities</td>
<td>.167**</td>
<td>___</td>
</tr>
</tbody>
</table>

Note. ** Correlation is significant at the $p < 0.01$ level (2-tailed).

There was a low, positive, but significant, correlation between interests in self-directed learning activities and obstacles to engaging in self-directed learning. This suggested that self-directed learning activities and obstacles to engaging in self-directed learning were related but not very strongly. Findings in Table 4.27 suggested that receiving continuing education credit was not as important as time based upon the frequency of items chosen by responders. These
results indicate pharmacists would be interested in self-directed learning if they had the time for it. Thus the null hypothesis is accepted.

**Research Question 3**

What characteristics are associated with pharmacists who have a high extrinsic motivation to learn?

**Hypothesis 3a**

Those pharmacists who are married with children will have greater extrinsic motivation scores for self-directed learning than pharmacists who are not married.

A “t” Test of Means was used to analyze the data. The results are depicted in Table 29.

Table 29 Effect of Marital Status on Extrinsic Motivation

<table>
<thead>
<tr>
<th>Extrinsic Motivation Differences between Pharmacists Married with Children and Those Not Married</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married with Children</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>149</td>
</tr>
</tbody>
</table>

Note. *p is significant at the .05 level (2-tailed). Effect size is .0127

The results indicate that the not married group scored higher on the extrinsic scale, therefore, hypothesis 3a is rejected and the null hypothesis is accepted. Those pharmacists who are married with children do not have greater extrinsic motivation scores for self-directed
learning than pharmacists who are not married. Being married and having children at home was not a significant predictor of extrinsic motivation towards self-directed learning.

_Hypothesis 3b_

Those pharmacists practicing in environments that support clinical practice (hospital practice settings) will have higher scores for intrinsic motivation for self-directed learning than pharmacists who work in community practice (independent, chain, supermarket).

Table 30 Intrinsic Motivation and Practice Setting

<table>
<thead>
<tr>
<th></th>
<th>Community</th>
<th>Hospital</th>
<th>df</th>
<th>t</th>
<th>p</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic Motivation Measure</td>
<td>144</td>
<td>144</td>
<td>201</td>
<td>41.13</td>
<td>3.72</td>
<td>343</td>
</tr>
</tbody>
</table>

Note. *p is significant at the .05 level (2-tailed). Effect size is -0.139.

Those pharmacists practicing in environments that support clinical practice (e.g., hospital practice settings) are significantly more likely to be intrinsically motivated towards self-directed learning activities than those pharmacists practicing in environments that do not support clinical practice (community pharmacy settings). These results support hypothesis 3b and reject support of the null hypothesis.

_Research Question 4_

To what extent do pharmacists prefer to engage in these activities for self-directed learning?
**Hypothesis 4**

Pharmacists with greater interest in working with colleagues will have greater intrinsic and extrinsic motivation to engage in self-directed learning than that of those who have less interest in working with colleagues.

A one-way analysis of variance (ANOVA) was conducted to compare the effect working with colleagues has on intrinsic and extrinsic motivation to engage in self-directed learning. The results of the ANOVA are presented in Table 31.

<table>
<thead>
<tr>
<th>Table 31 Working with Colleagues and Motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analysis of Variance Results for Working with Colleagues and Motivation</strong></td>
</tr>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>---------------------------------------------</td>
</tr>
<tr>
<td><strong>Extrinsic Motivators</strong></td>
</tr>
<tr>
<td>Between Groups</td>
</tr>
<tr>
<td>Within Groups</td>
</tr>
<tr>
<td><strong>Intrinsic Motivators</strong></td>
</tr>
<tr>
<td>Between Groups</td>
</tr>
<tr>
<td>Within Groups</td>
</tr>
</tbody>
</table>

Working with colleagues had a significant effect on intrinsic motivation at the $p<.05$ level for the three conditions [$F (3, 558) = 54.88, p = .000$]. There was also a significant effect on extrinsic motivation and working with colleagues at the $p<.05$ level for the three conditions [$F (3, 553) = 12.86, p = .000$].

A Levene's Test of Homogeneity of Variance results for extrinsic motivation were not significant ($p = .075$). However, the score for the Levene’s test for intrinsic motivation was
significant ($p = .004$). The result of the Levene’s showed a lack of homogeneity within of variance. This required further testing with a Kruskal-Wallis Test. Homogeneity of Variances is shown in Table 32.

**Table 32 Levene's Test for Homogeneity of Variances**

<table>
<thead>
<tr>
<th>Levene’s Test of Homogeneity of Variances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levene Statistic</td>
</tr>
<tr>
<td>Extrinsic Motivators</td>
</tr>
<tr>
<td>Intrinsic Motivators</td>
</tr>
</tbody>
</table>

*Note. $p < .05$ for intrinsic motivator scores.*

An Independent-Samples Kruskal-Wallis analysis of variance (ANOVA) test was performed. The results indicated a significant effect ($p < .05$) between intrinsic and extrinsic motivation and working with colleagues. Results are shown in Table 33.

**Table 33 Kruskal-Wallis Analysis of Variance**

<table>
<thead>
<tr>
<th>Kruskal-Wallis Analysis of Variance Results for Working with Colleagues and Motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Null Hypothesis</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>1. The distribution of extrinsic motivators is the same for all categories of working with colleagues</td>
</tr>
<tr>
<td>2. The distribution of intrinsic motivators is the same for all categories of working with colleagues</td>
</tr>
</tbody>
</table>

Post hoc comparisons using the Tukey HSD test indicated that the mean score for intrinsic motivation ($M=41.91$, $SD=3.64$) was significantly different from the mean score for extrinsic motivation ($M=36.32$, $SD=3.52$). However, taken together these results indicate that those pharmacists who prefer working with colleagues might also have greater motivation to
engage in self-directed learning activities. Specifically, the results suggest that pharmacists who work with colleagues might have slightly greater intrinsic motivation than extrinsic motivation to engage in self-directed learning activities. These results support acceptance of hypothesis 4 that pharmacists with greater interest in working with colleagues will have greater intrinsic and extrinsic motivation to engage in self-directed learning than that of those who have less interest in working with colleagues. The null hypothesis is rejected.

Section 3: Summary

This research identified factors that affect an individual’s intrinsic and extrinsic motivations to engage in self-directed learning activities associated with continuing pharmacy education. Seven hypotheses for motivation to participate in self-directed learning were tested. Key findings from hypothesis testing are:

- Pharmacists are intrinsically motivated to participate in self-directed learning. They report openness to learning and confidence in their ability to learn. Pharmacists want to learn new information, enjoy learning, and are decision makers about their learning.

- Pharmacists are extrinsically motivated to participate in self-directed learning. They want to feel gratification for their learning, be respected by their peers and receive monetary compensation for participating in learning activities.

- Participation in learning to receive mandatory continuing pharmacy education credits for re-licensure was important to them.
• The higher the intrinsic motivation to learn, the greater the interest in self-directed learning activities. Time, continuing education credit, professional, and family responsibilities ranked at the top of list of obstacles to self-directed learning.

• Being married and having children at home was not a significant predictor of extrinsic motivation to participate in self-directed learning.

• Those pharmacists practicing in environments that support clinical practice had a greater interest in self-directed learning activities than those pharmacists who do not practice in a clinical practice environment.

• Working with colleagues was significant to extrinsic and intrinsic motivation to learn.
Chapter 5: Summary, Conclusions and Recommendations

The objective of this chapter is to present a discussion of the results of this research. The research sought to answer four research questions: 1) To what extent do specific intrinsic and extrinsic motivators affect pharmacists’ perceptions on participation in self-directed learning activities? 2) To what extent are specific obstacles keeping pharmacists from participating in self-directed learning activities? 3) What characteristics are associated with pharmacists who have high intrinsic and extrinsic motivation for self-directed learning? and 4) To what extent do pharmacists prefer to engage in these activities for self-directed learning?

Seven hypotheses based on the four research questions were posed. Data was collected from a random sample of 3,885 pharmacists registered in Massachusetts. The total number of respondents was 609. Analysis of data using descriptive statistics and inferential statistics identified patterns in the sample and suggest areas for future research. Whenever possible, findings were compared with previous research studies with pharmacists (Hanson et al., 2007; Hanson & DeMuth, 1991); with nurses ((Fisher & King, 2010; Fisher et al., 2001) and with physicians (Hojat, Veloski, & Gonnella, 2009; Wetzel et al., 2010).

Previous research and the experience of this researcher as a Director of Continuing Pharmacy Education were used to help find meaning in the results. The questions that formed the foundation for this research explored the relationship of motivation to self-directed learning for pharmacists. Specifically, this research investigated the attitudes; perceptions and preferences pharmacists might have for self-directed learning and its possible impact on continuing pharmacy education. Ultimately, the question, “what would make pharmacists participate in continuing education because they want to rather than because they have to” is answered.
To provide procedural clarity (Rosenberg & Yates, 2007), a schematic representation of the research design for this study is pictured in figure 5.1.

Figure 1 Research Design Schematic

Research Design Schematic

* Continuing Pharmacy Education

This chapter is organized into four sections: (1) Discussion of Findings, (2) Strengths and Limitations, (3) Implications for Future Research, and (4) Conclusion.

Demographic characteristics provide a picture of the population being surveyed. In this study, Massachusetts registered pharmacists was the population being tested. Based on previous studies of pharmacists, it was determined that demographic information pertinent to the research was age, gender, highest degree earned, years in practice, practice site, employment (full-time or part-time) and marital status (Hanson et al., 2007; Hanson & DeMuth, 1991).

Next, it was important to learn what motivates these pharmacists. Are they intrinsically motivated to learn? Are they extrinsically motivated to learn? Are both intrinsic and extrinsic motivators suggestive of how pharmacists feel about themselves as learners? In what types of continuing education activities are pharmacists interested in participating? What do they know
about self-directed learning? What activities do pharmacists classify as self-directed learning? What are the perceived obstacles to engaging in self-directed learning as a way of fulfilling the mandated continuing education requirement? Most importantly, what would it take for pharmacists to participate in learning activities because they want to, not because they have to? Lastly, how can this behavior change be measured? Will it be in the better outcome of patient care in clinical and non-clinical practice settings? Will it be in how pharmacists perceive themselves? The following is a discussion of the survey findings from participating pharmacists.

**Discussion of Findings**

This section is organized into three parts: Part 1 - Demographic Data; Part 2 - Continuing Education; and Part 3 - Self-directed Learning.

**Part 1: Demographic Data**

Until the 1990s, pharmacy was a male-dominated profession. In fact, there were 10 women in this researcher’s graduating class from pharmacy school out of 100 graduates. In recent years there has been a steady increase in the number of females entering the profession of pharmacy. As of 2010, there were 22,194 males (39%) and 34,647 females (61%) enrolled in the Doctor of Pharmacy programs nationwide. In the 2009/2010 academic year (September 1, 2009 – August 31, 2010) there were 4,287 (37%) degrees conferred to males in the Doctor of Pharmacy program as a first professional degree program while 7,200 (63%) degrees were conferred to females (Taylor, 2010). A recent report of graduating pharmacy students from the American Association of Colleges of Pharmacy (2011) revealed that 63% were females and 37% male. Demographic information collected for this researcher’s study suggests a similar pattern of the total numbers shifting towards more women in the practice of pharmacy (54%) than males
(43%). This follows a trend regarding women in all areas of healthcare (Gardner & Stowe, 2006). Contemporary examples of women serving in healthcare leadership roles are Lucinda Maine, Ph.D., Executive Vice President and Chief Executive Officer of the American Association of Colleges of Pharmacy, Kathleen Sebelius, Secretary of Health and Human Services and Margaret Hamburg, MD, Commissioner of the Food and Drug Administration. Still, respondents to the survey indicated 10% more males hold hospital administrative positions than females. Amongst the top teaching hospitals in Boston, only one Director of Pharmacy is female. Findings from this researcher’s study show pharmacy leadership is an area that still needs to be cultivated.

Females who completed this survey were more likely to be younger (26 – 35) than the males who participated (males were more likely to be in the age category (> 55). This is representative of an aging population of male pharmacists practicing in Massachusetts (AACP, 2011). In this study, among the respondents, practicing in Massachusetts, the over age 55-category represent 24% of pharmacy practitioners. This finding corresponds with national data which report an aging population of pharmacists overall -- 37% were over age 55 in 2009 compared to 31% in 2004 (Doucette et al., 2010). Uncertain economic trends may be delaying retirement for many of these older pharmacists (Doucette et al., 2010; Farrell, 2011).

The change to a more clinically based practice for pharmacists necessitated a change in the educational requirements in 2000. This shift precipitated movement from a 5-year Bachelor of Science in Pharmacy to a 6-year Doctor of Pharmacy degree. Some pharmacists, with a Bachelor of Science in Pharmacy, chose to go back to school to obtain a non-traditional or post-baccalaureate Doctor of Pharmacy degree. Some pharmacists still practice under the Bachelor of
Science degree. National data shows that the proportion of licensed pharmacists practicing with a Doctor of Pharmacy as the highest degree at 22% (Doucette et al., 2010). The majority of pharmacists responding to this research (44%) hold a Doctor of Pharmacy degree. Research skills are an integral part of the Doctor of Pharmacy program. Courses in biostatistics and research design are part of the curriculum. Students are assigned and mentored through their own research projects. The greater response rate by those holding a Doctor of Pharmacy degree may, in fact, be due to the training received in Pharmacy School on the importance and significance of participation research studies such as this one. Another reason for the response rate might be that pharmacists, in general, are not usually asked for their opinions. This research provided an opportunity for those who responded to share their attitudes, perceptions and preferences regarding continuing education and self-directed learning.

A U. S. Bureau of Labor Statistics (BOLS, 2010-2011) report indicates that U. S. pharmacists held approximately 269,900 jobs in 2008. About 65 percent worked in retail (community pharmacy) settings. Most of these were salaried employees (e.g., chain, supermarket) but a small number were self-employed owners (independent community pharmacists). About 22 percent of pharmacists were employed in hospitals and a smaller number worked in mail order and Internet pharmacies, pharmaceutical wholesalers, offices of physicians, and the federal government. These statistics show that more pharmacists practice in the community or retail setting. Only 27% of respondents in this research study were community pharmacists. However, 38% of respondents were employed at hospitals (institutional practice setting). The assumption might be made that institutional or hospital-based pharmacists have a greater appreciation for research than community practice pharmacists and were more likely to respond to the survey.
Female pharmacists were more likely to practice in the institutional setting while more males practice in the community setting (Gardner & Stowe, 2006). A recent survey report from the American Association of Colleges of Pharmacy (2011) of graduating pharmacy students confirms that more students plan to work as community pharmacists rather than hospital or institutional practitioners; the ratio is 4 to 1.

Part 2: Continuing Education

A 2003 study from Britain reported that both the time required and a perceived lack of relevance of continuing pharmacy education activities as the main barriers to participation in programs. The lack of overall opportunities for continuing pharmacy education was also reported as a reason for low levels of participation (Wilson & Bagley, 1999; Wilson, Schlapp, & Davidson, 2003). Not surprisingly, a study of Australian pharmacists also identified time, accessibility and relevance of material as barriers to their participation in continuing pharmacy education (Marriott, Mc Namara, & Duncan, 2007). Another study based in the United States looking at facilitators and barriers to pharmacists’ participation in life-long learning found “job constraints” as the greatest barrier (Hanson & DeMuth, 1991). Ten years later a follow-up study was conducted. This time the research found job constraints, scheduling (location, distance, time) and family constraints (Hanson et al., 2007) as the top reasons for non-participation in the programs. This researcher’s data supports these earlier studies and indicates that travel distance, relevance to practice, and topics being discussed as the greatest potential obstacles to participating in continuing pharmacy education activities. Even though job constraints were high on the list, they were not considered a major obstacle.
The majority of pharmacists in this research study chose live (face-to-face) programs as their preferred format for continuing education. Respondents (58%) also favored online home study programs, as well as webinars as additional formats for continuing education. Findings from this research show that pharmacist feel comfortable with technology and are not concerned with the need to pass a post-test to receive credit for participation in these programs.

Fifty-three (53) individual state boards of registration in pharmacy (including the District of Columbia, Puerto Rico and Guam) require that pharmacists participate in continuing pharmacy education activities as a prerequisite for re-licensure. The National Association of Boards of Pharmacy Survey of Pharmacy Law (2009) outlines requirements regarding the types of programs that are recognized and the prescribed range of acceptable content. Most states, including Massachusetts, require pharmacists to have a minimum of 15 hours of continuing pharmacy education annually or 30 hours in a two-year renewal period. Massachusetts specifically mandates two hours of pharmacy law be included in the 15 annual hours required. Programs approved are either live seminars or symposiums; synchronous webinars where the target audience and speaker can interact in real time (e.g., chat room) and mediated programs (e.g., home study journal articles, online programs, asynchronous webinars). Most require a passing grade of at least 70% on a post-test learning assessment. State requirements for pharmacists do not include a requirement or mechanism for awarding continuing education credit for self-directed learning. In comparison, most state re-licensure requirements for physicians, physician assistants, and nurse practitioners are a minimum of 50 hours of continuing medical education (CME) annually or 100 hours in a license renewal period (2 years). Of those 50 hours, 40% (20 hours) are from traditional formats (e.g., live seminars, home-study journals, webinars, online home study programs) while 60% or 30 hours are from self-directed learning activities.
(e.g., acting as preceptors for students, independent research). Pharmacists in this survey were asked to comment on a percentage breakdown for the amount of traditional and self-directed learning that would work for them. Respondents were overwhelmingly in support of a 50/50 split of traditional and self-directed learning opportunities. Since the 40/60 split is currently working for the other healthcare providers for their CE requirement, perhaps a 50/50 distribution or a figure would work for pharmacists. The other professions have set the precedent. Since their respective boards continue to allow them to engage in self-directed continuing education, there must be something advantageous. There is no reason why the same should not be true for pharmacists.

The majority (68%) of pharmacists queried already believe they engage in self-directed learning. Participants were also asked if they considered self-directed learning a better way to learn than traditional formats. Again, the majority (63%) was in favor of self-directed learning as a reasonable alternative for obtaining continuing education credit. Most of the pharmacists (93%) agreed, they were more likely to engage in self-directed learning if they received continuing education credit for participation. These results show the willingness and interest on the part of pharmacists to participate in self-directed learning, maybe in part due to the fact that they feel they already are engaged in such activities and just are not currently getting credit for their work. Despite these seemingly positive responses, pharmacists still do not want to increase their workload. This is evident by the fact that they were not in favor of an increase in the mandated amount of continuing education required for re-licensure even if it included receiving credit for the self-directed learning.
## Table 34 Hypotheses Results

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a. The most frequent intrinsic motivator reported by pharmacists for participating in self-directed learning will be a person desire to learn.</td>
<td>Results supported acceptance of hypothesis 1a. Pharmacists have a personal desire to learn.</td>
</tr>
<tr>
<td>1b. The most frequent extrinsic motivator reported by pharmacists for participating in self-directed learning will be CE credit to maintain licensure.</td>
<td>Results supported acceptance of hypothesis 1b. Continuing pharmacy education needed for relicensure is an important extrinsic motivator.</td>
</tr>
<tr>
<td>1c. Pharmacists with a high intrinsic motivation to learn will be more interested in self-directed learning activities.</td>
<td>Results supported acceptance of hypothesis 1c. Pharmacists with a higher intrinsic motivation to learn show greater interest in self-directed learning activities.</td>
</tr>
<tr>
<td>2. The most frequently reported obstacle by pharmacists for not engaging in self-directed learning is that there are no continuing pharmacy education credits awarded for it.</td>
<td>Results supported rejection of hypothesis 2. The most frequently reported obstacle is the lack of time. Pharmacists would be interested in self-directed learning if they had the time for it.</td>
</tr>
<tr>
<td>3a. Those pharmacists who are married with children will have greater extrinsic motivation scores for self-directed learning than pharmacists who are not married.</td>
<td>Results supported rejection of hypothesis 3a. Those pharmacists who are unmarried with no children have greater extrinsic motivation scores for self-directed learning than pharmacists who are married.</td>
</tr>
<tr>
<td>3b. Those pharmacists practicing in environments that support clinical practice will have higher scores for intrinsic motivation for self-directed learning than pharmacists who work in community practice.</td>
<td>Results supported acceptance of hypothesis 3b. Pharmacists practicing in environments that support clinical practice (e.g., hospital practice settings) have a greater interest in self-directed learning activities than those pharmacists not practicing in environments that support clinical practice (community pharmacy settings).</td>
</tr>
<tr>
<td>4. Pharmacists with greater interest in working with colleagues will have greater intrinsic and extrinsic motivation to engage in self-directed learning that those with less interest in working with colleagues.</td>
<td>Results supported acceptance of hypothesis 4. Working with colleagues significantly affects a pharmacist’s motivation to engage in self-directed learning activities.</td>
</tr>
</tbody>
</table>
Results from this study show that pharmacists are intrinsically motivated to participate in self-directed learning by a personal desire to learn. Respondents indicated that they not only want to acquire new information but they enjoy learning, and consider themselves decision makers about their own education (Chapter 4, Table 4.22). The results further reveal the participants’ openness to learning and a confidence in their ability to learn. The research literature confirms that self-directed learners consider themselves responsible for finding or creating their own educational opportunities (Fisher et al., 2001; Wlodkowski, 2003, 2008). Since adult learners are self-directed learners they want to make their own decisions on what to learn and why (Knowles et al., 2005). Wlodkowski (2008) posits that adult learners are intrinsically motivated when what they learn is relevant and applicable. There needs to be a personal connection with the learning. When asked about choices for self-directed learning activities, pharmacists, in this research study, consistently chose those activities that were related to improving patient care. Previous studies evaluating pharmacists’ participation in lifelong learning show similar results (Hanson et al., 2007; Hanson & DeMuth, 1991).

It is common to measure extrinsic motivation in terms of recognition, such as promotions, increases in pay, bonuses, or awards. Findings from this study suggest that extrinsic motivation is important to pharmacists. They want to feel gratification for their learning, be respected by their peers and receive monetary compensation for participating in learning activities. Participation in learning activities to receive mandatory continuing pharmacy education credits for re-licensure is also important and was a significant finding in this research.

To be a lifelong learner, one must first be self-directed, confident and open to learning. When asked if they thought self-directed learning was a reasonable alternative for obtaining continuing pharmacy education credit, 63% of the pharmacists said it was (Chapter 4, Table
4.16). Not only does this show that pharmacists are willing to learn something new, but they are open to novel ideas that might change current practice. Furthermore, the self-directed learning activities presented to pharmacists as part of this research were modeled closely after those continuing education activities medical professionals currently receive credit for. Planning specific medication therapy management strategies and reading clinical pharmacy journals were the top two choices for self-directed activities-interested pharmacists. Both are relevant and applicable to their jobs. Both have the potential to improve practice and thereby improve patient care.

When pharmacists were probed about their preferred format for continuing education (Chapter 4, Table 4.15) respondents (66%) said they preferred live, face-to-face programs. These venues are often more costly, and require more time and effort on the part of the pharmacist to attend. These findings reveal an intrinsic motivation to learning on the part of these professionals. This trait will serve them well when participating in self-directed learning activities. It also shows a preference for learning in collaboration with colleagues.

According to the research literature, there has been little change in the perceptions of pharmacists regarding the obstacles to self-directed learning in the last decade (Hanson et al., 2007; Hanson & DeMuth, 1991). Not receiving continuing pharmacy education was reported as a significant obstacle in this study. However, time along with family and professional responsibilities were listed as greater obstacles. In fact, 57% (n=339) of respondents listed family responsibilities as “a lot” or “somewhat” of a constraint to participating in a continuing education program, while 60% (n=357) said they had other professional responsibilities that kept them from attending (Chapter 4, Table 4.20). Time, family and business commitments as obstacles to
learning have been cited in previous studies (Marriott et al., 2007). Further analysis of this sample might indicate that the lack of time is similarly due to family and professional responsibilities.

Surprisingly, those respondents who are married with children did not have any greater extrinsic motivation towards self-directed learning than pharmacists who are not married. What is most striking about these results is that fact that pharmacists' being married and having children was not a predictor of higher extrinsic motivation. The additional responsibility of being married and having children did not translate into increased extrinsic motivation to seek promotion or pay increases. The additional responsibility of family actually was seen as an obstacle to participating in self-directed learning. Perhaps this indicates that increased time constraints would be a detriment to any form of continuing education.

A noteworthy and interesting finding was that pharmacists practicing in environments that support clinical practice (hospital-based) had higher scores for intrinsic motivation for self-directed learning than pharmacists who work in community practice. Perhaps this is directly related to the differences in the practice environments The National Pharmacist Workforce Survey (Doucette et al., 2010) reported that of those pharmacists working in a community setting, 70% of their time was spent on dispensing functions and 10% on clinical practice issues leaving little time and opportunity for self-directed learning activities. On the other hand, hospital pharmacists devoted 43% of their time to dispensing functions and 27% of their time to clinical practice issues.

Since the respondents practicing in environments that support clinical practice had a greater interest in self-directed learning activities, may also be more likely to participate in
clinical research projects as part of their professional work. Receiving continuing education credit for their self-directed learning activities would appear to be a good fit for this group of pharmacists (n=222, 38%). The same might be said for pharmacists who are employed in ambulatory care, long-term care, the pharmaceutical industry or those working in research settings (n=29, 5%; n=12, 2%; n=28, 5%; n=9, 2%; respectively). This population represents 52% of survey respondents (Chapter 4, Table 4.9) a figure that corresponds with quite a large portion of practicing pharmacists nationwide.

Adult learners learn best when working together in communities of practice or actively learning with colleagues (Sthapornnanon et al., 2009). The results of this research study indicate pharmacists with a greater interest in working with colleagues also have greater intrinsic and extrinsic motivation to engage in self-directed learning that those with less interest in working with colleagues. Wlodkowski (2008) described a 1995 study by David Johnson and Roger Johnson that indicated that cooperative learning improves individual achievement and helps develop supportive relationships. A study from Belgium reported that pharmacists were motivated to participate in continuing education by social contact with colleagues (Driesen, Simoens, & Laekeman, 2008). As previously discussed, 52% of respondents to this survey are employed in settings in which pharmacists practice as part of a larger group. Whether they do rounds as part of a clinical team of healthcare professionals in a hospital, or work in a research setting, these pharmacists are more likely to engage in self-directed learning because they are already accustomed to working closely with colleagues.

The respondents’ attitudes, perceptions and preferences towards self-directed learning indicate that this is an area that should be pursued. Missing data on questions regarding self-
directed learning might indicate a potential lack of awareness about self-directed learning on the part of some pharmacists. Developing a program to educate pharmacists’ on the principles of self-directed learning is certainly an area to consider in the future. Pharmacists indicated a positive response (93%) regarding the opportunity of receiving continuing education credit for their participation in self-directed learning. Even more revealing, 96% of responders think they already engage in self-directed learning.

**Strengths and Limitations**

The interpretation of results of this research should take into consideration the limitations of the study designs. The survey was Internet based and distributed by email. Online surveys generally show a weaker response rate than telephone or face-to-face interview based surveys (Kaplowitz, Hadlock, & Levine, 2004). Online surveys are less expensive and have the potential to reach a wider audience. Non-response is a common occurrence and confounding factor in Internet-based surveys (Fowler, 2009) creating a non-response bias that is an important consideration. The overall effect non-responders had on the survey results is a question not easily answered. Responders may be more motivated to answer surveys for subject matters that interest them. In addition, the nature of self-report data can lead to providing more socially acceptable responses. The survey was only administered online which leaves out those pharmacists without computer access. Current contact information on newly graduated students (2010 and 2011) was difficult to obtain. The database used in this research may not have had the most up to date contact information and may have created bias in pharmacists’ age or years in practice. The geographic distribution of the survey was to pharmacists across Massachusetts. Analysis of response patterns by regions of Massachusetts was not performed. Finally survey questions may have been written to elicit more specific responses.
In spite of these limitations, this research supported previous studies in pharmacy, nursing and medicine. Hanson and Demuth, much cited study, entitled *Facilitators and Barriers to Pharmacists’ Participation in Lifelong Learning* reported “personal desire to learn” and “requirement for professional licensure” as top motivators for learning. Time constraints were reported as the most frequent obstacle to participation in self-directed learning. The study was replicated in 2003 with similar results (Hanson et al., 2007). Researchers in Belgium looked at the preferences that pharmacists might have for continuing education activities and how that might affect motivation to learn (Driesen et al., 2008). Colleagues from nursing, Fisher, King and Tague, did a study entitled the *Development of a Self-Directed Learning Readiness Scale for Nursing Education* (2001). Results showed nurses are both intrinsically and extrinsically motivated towards self-directed learning. The study was revisited in 2010. Results indicated a desire for self-regulation. Participants desired to take responsibility for their own actions and decisions in the learning process. The third study involving physicians entitled, “*Measurement and Correlates of Physicians’ Lifelong Learning*” (Hojat et al., 2009) defined lifelong learning using phrases like: self-initiated activities and information-seeking skills linked with motivation to learn and self-reflection. Career satisfaction was also examined. The findings showed a significant link to vocational fulfillment and a commitment to lifelong learning. Another notable finding was the correlation of learning motivation with professional accomplishments. The results of these studies support the validity of the survey used for this research and documents the importance self-directed learning among healthcare providers.

A majority of pharmacists’ surveyed (63%) are interested in pursuing non-traditional formats for self-directed learning. Even more impressive was the 93% response to the question on the likelihood of participation in self-directed learning if continuing pharmacy credit was
available. When asked if they thought they already engaged in self-directed learning, 68% of the pharmacists answered “yes”. Many pharmacists engage in hours of research and related Internet searches related to medication therapy. Some of these pharmacists do not recognize that they are already engaging in self-directed learning that is above and beyond the due diligence expected of them. This research attempts to change that paradigm by creating awareness and encouraging pharmacists who may not currently completely understand the concept of self-directed learning.

Implications for Future Research

The Josiah Macy, Jr. Foundation (2008) conference report, *Continuing Education in the Health Professions: Improving Healthcare Through Lifelong Learning* identified a lack of high-quality scientific studies on continuing education. A search of theses, dissertations, and articles on continuing pharmacy education confirmed this finding. This research begins to fill in that gap by researching continuing pharmacy education and by identifying areas for future research.

The addition of self-directed learning as a non-traditional format for continuing pharmacy education should be evaluated. At this time, pharmacists are not recognized for their own attempts at self-directed learning. Respondents were overwhelmingly in support of a 50/50 split of traditional and self-directed learning opportunities. Part of creating relevant learning experiences is creating a positive attitude towards learning (Wlodkowski, 2008). More attention must be given to helping pharmacists develop the skills and knowledge necessary to improve their own practices. One option for consideration might be a research study evaluating the behavior of pharmacy practitioners who are allowed to claim continuing pharmacy education credit for their participation in non-traditional formats (i.e., self-directed learning activities). The
assessment could be compared with pharmacists that are only participating in the traditional formats for continuing pharmacy education. Another option would be to measure how a change in behavior to more self-directed learning correlates with increased professional satisfaction. Development of a reporting mechanism is another area for future consideration. The National Association of Boards of Pharmacy and the Accreditation Council for Pharmacy Education recently instituted the Continuing Pharmacy Education Monitor system (CPE Monitor) to authenticate and store data for completed continuing pharmacy education units received by pharmacists from Accreditation Council for Pharmacy Education-accredited providers (ACPE, 2011). The National Association of Nurse Practitioners has a developed reporting portal that allows nurse practitioners to self-report their self-directed learning activities. Expanding the CPE Monitor system to accommodate pharmacists’ self-reporting self-directed learning activities may be a future option.

**Summary and Conclusions**

Adult learning theory postulates that adult learners prefer to be self-directed in their learning and that adults like to learn together (Knowles et al., 2005). Continuing professional development challenges pharmacists to be self-directed learners (Rouse, 2004), to assess their own learning gaps and to become reflective practitioners (Schon, 1983). Adult learners have family and professional responsibilities that make traditional learning opportunities a challenge. A non-traditional approach that encourages self-directed learning should be encouraged. This researcher recommends that the profession of pharmacy consider adopting the medical model for continuing pharmacy education by changing the acceptable format for continuing pharmacy education credit to a split between traditional and non-traditional learning experiences.
This conclusion is based in part on the assumption that there are three domains to planning continuing education programs: academic, administrative, and regulatory. Negotiation must begin with the regulatory Boards of Registration in Pharmacy and other pharmacy accrediting bodies. The time has come for continuing pharmacy education to keep pace with the changes in the profession. From this researcher’s experience, too much time is wasted sitting in mandatory continuing pharmacy education programs that are neither relevant nor applicable to individual practitioner needs or current practice. Webinars might fulfill mandatory continuing education requirements, but if they are not listened to they are a waste of valuable time.

The top four obstacles affecting participation in continuing pharmacy education programs selected by pharmacists were: convenience or travel distance to programs, relevance to practice, topics being discussed, and cost of the program. Self-directed learning can take place anytime, anywhere – at home or at the work place. Travel distance does not need to be an issue preventing participation. Relevance to practice and topics discussed is now based upon the pharmacist’s own learning needs. Self-directed learning allows professionals to engage in learning activities that are relevant and applicable to individual needs. They are self-chosen. Cost of most of the information available is free on the Internet or might be obtained through alumni access to University libraries at no cost. These are options that must be communicated and made available to pharmacists.

Continuing Professional Development (Rouse, 2004) has been presented, studied, piloted and revised. The research literature confirms the strong relationship between adult learning theory and continuing professional development. The steps in the continuing professional development cycle – reflect, plan, learn, evaluate, document – are grounded in the adult learning
theory. This cycle closely resembles the steps in the adult learning planning process: need, create, implement, evaluate (Knowles et al., 2005). Continuing professional development encourages self-directed learning. Figure 5.2 is the 2011 revision of Continuing Professional Development cycle.

Figure 2 The Continuing Professional Development Cycle

*The Continuing Professional Development Cycle*

The Continuing Professional Development cycle relies on learner’s intrinsic motivation to develop. This study has established that pharmacists are both intrinsically and extrinsically motivated to learn. This researcher recommends: 1) encouraging the use of the CPD cycle as a roadmap for self-directed learning; 2) allowing pharmacists to self-claim continuing pharmacy education credits for documented self-directed learning activities; and 3) increasing the amount of mandated continuing pharmacy education requirements from 15 hours to 30 hours per year with 50% of the hours coming from traditional continuing education formats and the remaining 50% from self-claiming non-traditional self-directed learning activities. In essence, this recommendation would create Category I and Category II continuing pharmacy education (CPE)
programs for pharmacists similar to the defined categories for continuing medical education for physicians.

The pharmacist’s role and scope of practice is evolving. Less time will be spent in the medication dispensing process and more time will be spent on patient-centered care or clinical practice issues. Undergraduate pharmacy education has changed to meet this paradigm shift. Physicians, nurses, pharmacists and other healthcare providers practice as team members to ensure safety and provide quality care for the patients they serve. Pharmacists as members of the healthcare team are involved in collaborative drug therapy and medication therapy management to improve patient outcomes and help manage the costs and financial burden associated with medication therapy. Traditional formats for continuing pharmacy education need to evolve to meet the needs of these practitioners and the patients they serve. Colleagues in medicine and nursing encourage self-directed learning by recognizing and awarding continuing education credit for the efforts practitioners take to enhance their skills and knowledge.

The results of the survey indicate pharmacists are both intrinsically and extrinsically motivated to be self-directed learners. Implications from this research can have far reaching affects locally, regionally and nationally for changing the traditional model for continuing pharmacy education. In 1975, the Accreditation Council for Pharmacy Education developed standards for the approval (now, accreditation) of providers of continuing pharmacy education (ACPE, 2009). Little has changed in the traditional formats (live and home study) for continuing pharmacy education since the development of the standards. It is time for a change.

This study is innovative in its approach to redesigning continuing pharmacy education. The recommendations suggested can change the model for continuing pharmacy education on a
national level. The change in the undergraduate education and scope of practice for pharmacists necessitates these changes to put pharmacists on par with their colleagues in medicine.

Four factors have been identified as facilitators for pharmacists to want to learn: activities that enhance skills and knowledge – that are relevant and applicable to practice, intrinsic motivation – a personal desire to learn, an environment supportive of learning and, extrinsic incentives – like continuing education credit - as recognition of learning. Recognizing the importance of these factors and how they affect self-directed learning, may further help pharmacy practitioners fulfill the mandated requirements for continuing pharmacy education while re-enforcing a commitment to lifelong learning as described in the Oath of the Pharmacist. “I will accept the lifelong obligation to improve my professional knowledge and competence” (Kelly & Sogol, 2011, p. 93).
References


http://www.theannals.com/cgi/content/abstract/44/10/1585 doi:DOI 10.1345/aph.1P161


Schindel, T. Traditional CE versus CPD University of Alberta. Alberta, Canada.


Anita Young's Survey

6. I critically evaluate new ideas.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree

7. I like to gather the facts before I make a decision.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree

8. I like to evaluate what I do.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree

9. I am open to new ideas.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree

10. I learn from my mistakes.
    - Strongly Agree
    - Agree
    - Disagree
    - Strongly Disagree
Anita Young's Survey

11. I am a person who needs to know why.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree

12. I think about what I need to learn.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree

2. What drives me to learn more?

How do the following statements describe you?

   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree

14. I participate in continuing pharmacy education because it is required to maintain my pharmacy license.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree
Anita Young's Survey

15. I want career advancement.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree

16. I like learning with other pharmacists.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree

17. I like being able to help the patients I take care of.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree

18. I am encouraged by my family to learn more.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree

19. I want to earn more money.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree
Anita Young's Survey

20. I want to keep up with advances in pharmacy practice.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree

21. I am more likely to participate if the learning activity is free.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree

22. I am more apt to attend a program when I am reimbursed for the cost.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree

23. I set goals for myself.
   - Strongly Agree
   - Agree
   - Disagree
   - Strongly Disagree

3. It isn't always easy.

How do you relate to the following as obstacles to your being a self-directed learner:
**Anita Young’s Survey**

24. How do you relate to the following as obstacles to your being a self-directed learner?

<table>
<thead>
<tr>
<th>Obstacle</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Job constraints - lack of relief help</td>
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<tr>
<td>b. Travel distance to programs</td>
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<td>c. Scheduling of group learning activities</td>
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<td>d. Family responsibilities</td>
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<td>e. Lack of relevance to my practice</td>
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<tr>
<td>f. Lack of information about available learning activities</td>
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<td>g. Cost of participating in the learning activity</td>
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<tr>
<td>h. Low personal priority</td>
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<tr>
<td>i. Other professional priorities</td>
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<tr>
<td>j. Lack of quality learning activities</td>
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<tr>
<td>k. Access to peer-reviewed pharmacy journals</td>
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<tr>
<td>l. No perceived value</td>
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<tr>
<td>Other (please specify)</td>
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</tbody>
</table>

4. Ways I like to learn

How do you relate to these activities?
### Anita Young’s Survey

25. Please describe to what extent you would prefer these activities for self-directed learning. Please answer all that apply to you.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Journal clubs</td>
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<tr>
<td>b. Precepting pharmacy students</td>
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<td>c. Reading clinical pharmacy journals</td>
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<tr>
<td>d. Drug information research</td>
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<tr>
<td>e. Patient specific medication therapy management</td>
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<tr>
<td>f. Poster presentations</td>
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<tr>
<td>g. Preparing continuing pharmacy education learning activities</td>
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<tr>
<td>h. Formulary management</td>
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<tr>
<td>i. Additional certifications e.g. BCPS, CDE</td>
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<tr>
<td>j. Unstructured online pharmacy related learning</td>
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<tr>
<td>Other (please specify)</td>
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</tbody>
</table>

### 5. What about you?

The next few questions ask about demographic characteristics. Remember these are anonymous.

26. What is your gender?

- [ ] Female
- [ ] Male

27. What is your marital status?

- [ ] Single
- [ ] Married
- [ ] Divorced
Anita Young’s Survey

28. What is your age?
   - < 25
   - 26 - 35
   - 36 - 45
   - 46 - 55
   - > 55

29. Do you work full time or part time?
   - Full time (> 35 hours per week)
   - Part time (< 35 hours per week)

30. Do you have child care responsibilities?
   - yes
   - no
31. What is your primary practice site? (choose one answer)

- Community - independent
- Community - chain
- Community - supermarket
- Hospital - in-patient dispensing
- Hospital - out-patient dispensing
- Hospital - clinical
- Hospital - administration
- Ambulatory Care
- Managed Care
- Long Term Care
- Mail Order
- Regulatory
- Academia
- Pharmaceutical industry
- Research
- Other (please specify)

32. What is your highest pharmacy degree?

- 6 year PharmD
- 5 year BS in Pharmacy with post-baccalaureate PharmD
- 5 year BS in Pharmacy
- 4 year BS in Pharmacy
- Masters Degree or Higher
33. How long have you been in practice?

- < 2 years
- 2 – 5 years
- 6 – 10 years
- 11 – 20 years
- > 20 years

6. Just a few more and your are finished.

Please respond to the following statements.

34. I would like to receive continuing pharmacy credit for my self-directed pharmacy related learning activities.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

35. What percentage of your continuing pharmacy education credits would you like to receive from self-directed learning activities (see question #33 for examples).

- 20% traditional CE formats/80% self-directed learning
- 50% traditional CE formats/50% self-directed learning
- 40% traditional CE formats/60% self-directed learning
- 25% traditional CE formats/75% self-directed learning

What is your suggestion?

36. How likely would you be to participate in self-directed learning activities if you received continuing pharmacy education credit for them?

- Very likely
- Somewhat likely
- Unlikely

Other (please specify)
Anita Young’s Survey

37. Would you be willing to support an increase in the amount of mandated CE required for re-licensure if you received credit for your self-directed learning activities?

○ yes
○ no

38. Are you aware of the specific differences in re-licensure requirements for physicians and pharmacists?

○ Yes
○ No

7. Raffle

If you would like to be put into the drawing for one of four $25.00 gift cards to Whole Foods, please send an e-mail to: young.ani@husky.neu.edu
put the word "raffle" into the subject line.
Appendix B – Permission to use SDLRSNE

From: Murray Fisher <murray.fisher@sydney.edu.au>

Date: March 24, 2011 6:31:45 PM EDT

To: "Young, Anita" <a.young@neu.edu>

Subject: RE: SDLRSNE

Dear Anita

I have attached the instrument for you use. Best wishes

Murray

Dr Murray Fisher | Director of Pre-registration Programs
Sydney Nursing School
THE UNIVERSITY OF SYDNEY
88 Mallett St (MO2) | The University of Sydney | NSW | 2006
T +61 2 9351 0587 | F +61 2 9351 0654
E murray.fisher@sydney.edu.au | W http://sydney.edu.au <http://sydney.edu.au>

-----Original Message-----

From: Young, Anita [mailto:a.young@neu.edu]

Sent: Thursday, 24 March 2011 11:33 PM

To: Murray Fisher

Cc: Young, Anita

Subject: RE: SDLRSNE
Dear Murray,

Thank you for the opportunity to share my research with you. Attached is the signed request for permission. I am planning on submitting the documentation to the Institutional Review Board as soon as I receive the permission from you.

Best regards,

Anita

-----Original Message-----

From: Murray Fisher [mailto:murray.fisher@sydney.edu.au]

Sent: Wednesday, March 23, 2011 8:10 PM

To: Young, Anita

Subject: RE: SDLRSNE

Dear Anita

I have attached the request for use form for you to complete. I would be happy to forward you the instrument once I have received this completed form.

Regards

Murray
From: Al Hanson <alhanson@pharmacy.wisc.edu>

Date: March 31, 2011 12:34:34 PM EDT

To: "Young, Anita" <a.young@neu.edu>

Subject: Re: Permission to use questions from the 1991 and 2007 LLL survey

Permission granted. Please provide me with a copy of the document illustrating their use

Al

Sent from my iPhone
Appendix D – Letter to colleagues for pilot and review

Dear Colleagues,

Can you give me your help in support of a project that is important to the profession and to me professionally? I would like you to review a survey I designed; it will take you less than 20 minutes and will have lasting impact.

Most of you know I am near completion of a Doctorate in Education. The purpose of my dissertation study is to describe the: (1) motivation of pharmacists to participate in self-directed learning; (2) obstacles pharmacists identify to self-directed learning; and (3) activities pharmacists prefer in self-directed learning. To capture this information, I plan to send a survey to registered pharmacists in Massachusetts. However, I need to conduct a feasibility and face validity pilot study. This is where I need your help.

Can you please complete the attached survey as: 1) a pharmacist completing the survey and 2) as a critical reviewer of the questions as your answer them. While your answer the questions, think about telling me if you understand what I am asking, does it sound redundant---please be honest, don’t hold back, let me know whatever pops into your head as your read and answer each question. Please comment on the question and the response choices.

Your suggestions will be incorporated into the final version that is sent to 4,000 pharmacists in Massachusetts. I estimate the survey should take you about 15-20 minutes. Your answers will be kept confidential.
Since SurveyMonkey® does not permit room for text feedback on individual questions, I am giving you a different format on which to comment. Ultimately, this will be administered on SurveyMonkey®. The pdf version is just for your information so that you can see what the participants will see.

As you know, completing this phase of a doctoral program is very intense and I would greatly appreciate your input so that I can make this the best possible survey. I am also eager to complete my doctoral requirements.

If you cannot help at this time, please let me know so I can ask someone else.

I appreciate your help.

Best regards,

Anita
Dear Fellow Pharmacist,

I am working on my dissertation project. I need your help with my research.

It is my goal to understand what motivates you to learn, what stands in your way and what activities you might engage in if you were to receive continuing pharmacy education credits.

This online survey is designed to capture your viewpoints. Your answers are very important to me. I know you are busy, the survey should take you less than 15 minutes. After you complete the survey, you will be asked if you want to participate in a “raffle”. Please follow the instructions at the end of the survey to be entered into a drawing for one of four $25.00 gift cards to Whole Foods. This is my way of saying thank you for your support and cooperation.

The Institutional Review Board at Northeastern University has approved this study.

Sincerely,
Appendix F – Permission letter from Dean Reynolds

March 8, 2011

This letter grants permission for Anita Young, a student in the Doctor of Education program at Northeastern University College of Professional Studies, and a member of the School of Pharmacy, to use the database in the school’s Office of Continuing Education for purposes of data collection relating to her dissertation project.

As part of her research, she will be recruiting pharmacists to participate in a one-time online survey. The purpose of this study is to describe the: (1) motivation of pharmacists to participate in self-directed learning; (2) obstacles pharmacists identify to self-directed learning; and (3) activities pharmacists prefer in self-directed learning.

All criteria expressed in the IRB process will be adhered to. If you need any further information, please let me know.

Sincerely,

[Signature]

JOHN R. REYNOLDS, PHARMD
DEAN AND PROFESSOR
Northeastern University School of Pharmacy
Room 206 Mugar Life Sciences
360 Huntington Avenue, Boston, MA 02115
617-373-5003/fax 617-373-7685
Appendix G - Unsigned Consent Document for Web-based online surveys

Northeastern University, Department of: College of Professional Studies

Name of Investigator(s): Joseph McNabb, PhD and Anita Young, MEd, RPh

Title of Project: Rethinking Continuing Pharmacy Education

Request to Participate in Research

We/I would like to invite you to participate in a web-based online survey. The survey is part of a research study whose purpose is to describe the: (1) motivation of pharmacists to participate in self-directed learning; (2) obstacles pharmacists identify to self-directed learning; and (3) activities pharmacists prefer in self-directed learning.

This survey should take about 15 minutes to complete.

We/I are asking you to participate in this study because you are a Massachusetts registered pharmacist. **You must be at least 18 years old to take this survey.**

The decision to participate in this research project is voluntary. You do not have to participate and you can refuse to answer any question. Even if you begin the web-based online survey, you can stop at any time.

There are no foreseeable risks or discomforts to you for taking part in this study.

As an incentive for completing the survey you will have the opportunity to enter a raffle for one of four $25.00 gift cards to Whole Foods.

Your part in this study is anonymous to the researcher(s). However, because of the nature of web-based surveys, it is possible that respondents could be identified by the IP address or other electronic record associated with the response. Neither the researcher nor anyone involved with this survey will be capturing those data. Any reports or publications based on this research will use only group data and will not identify you or any individual as being affiliated with this project.

If you have any questions regarding electronic privacy, please feel free to contact Mark Nardone, IT Security Analyst via phone at 617-373-7901, or via email at privacy@neu.edu.

If you have any questions about this study, please feel free to contact Anita Young (a.young@neu.edu) the person mainly responsible for the research. You can also contact Joseph McNabb, Ph.D. (j.mcnabb@neu.edu), the Principal Investigator.

If you have any questions regarding your rights as a research participant, please contact Nan C. Regina, Director, Human Subject Research Protection, 960 Renaissance Park, Northeastern University, Boston, MA 02115. Tel: 617.373.7570, Email: irb@neu.edu. You may call anonymously if you wish.

By clicking on the survey link below you are indicating that you consent to participate in this study. Please print out a copy of this consent form for your records.

http://_____________________________________________________

Thank you for your time.

Anita Young
APPLICATION FOR APPROVAL FOR USE OF HUMAN PARTICIPANTS IN RESEARCH

Before completing this application, please read the Application Instructions and Policies and Procedures for Human Research Protections to understand the responsibilities for which you are accountable as an investigator in conducting research with human participants. The document, Application Instructions, provides additional assistance in preparing this submission. Incomplete applications will be returned to the investigator. You may complete this application online and save it as a Word document.

If this research is related to a grant, contract proposal or dissertation, a copy of the full grant/contract proposal/dissertation must accompany this application.

Please carefully edit and proof read before submitting the application. Applications that are not filled out completely and/or have any missing or incorrect information will be returned to the Principal Investigator.

REQUIRED TRAINING FOR RESEARCH INVOLVING HUMAN SUBJECTS

Under the direction of the Office of the Vice Provost for Research, Northeastern University is now requiring completion of the NIH Office of Extramural Research training for all human subject research, regardless of whether or not investigators have received funding to support their project.

The online course titled "Protecting Human Research Participants" can be accessed at the following url: http://ohrp.nihtraining.com/users/login.php. This requirement will be effective as of November 15, 2008 for all new protocols.

Principal Investigators, student researchers and key personnel (participants who contribute substantively to the scientific development or execution of a project) must include a copy of their certificate of completion for this web-based tutorial with the protocol submission.

Certificate(s) Attached
Certificate(s) submitted previously – on file with the NU’s Office of Human Subject Research Protection

A. Investigator Information

Principal Investigator (PI cannot be a student) Joseph McNabb, PhD (advisor)
Investigator is: NU Faculty X NU Staff ___ Other ________________________
College of Professional Studies
Department - Doctor of Education Program
Address 42 Belvedere, Boston, MA 02115-5000
Telephone __________________ Email j.mcnabb@neu.edu
Is this student research? YES If yes, please provide the following information:
Student Name Anita Young, MEd, RPh Undergrad ____ MA/MS ____ EdD ____
Mailing Address: 157 River Street, Braintree, MA 02184
Anticipated graduation date: September 17, 2011
Telephone 617-373-5418 Primary Email a.young@neu.edu
Cell phone 781-771-8680 Secondary Email young.ani@husky.neu.edu

B. Protocol Information
Title: Rethinking Continuing Pharmacy Education
Projected # subjects 4000
Approx. begin date of project 04/01/2011  Approx. end date 08/27/2011

It is the policy of Northeastern University that no activity involving human subjects be undertaken until those activities have been reviewed and approved by the University's Institutional Review Board (IRB).

- Anticipated funding source for project (or none) none

Has/will this proposal be submitted through:
- NU's Office of Research Administration and Finance (RAF) ____
- Provost ____
- Corp & Foundations ____

C. Will Participants Be:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children (&lt;18)</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Northeastern University Students?</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Institutionalized persons?</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Prisoners?</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Cognitively Impaired Persons?</td>
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<td>x</td>
</tr>
<tr>
<td>Non or Limited English Speaking Persons?</td>
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<td>x</td>
</tr>
<tr>
<td>People Living outside the USA?</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Pregnant Women/Fetuses?</td>
<td></td>
<td>x</td>
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<tr>
<td>Other? (Please provide detail)</td>
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Does the Project Involve:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
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</thead>
<tbody>
<tr>
<td>Blood Removal?</td>
<td></td>
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<tr>
<td>Investigational drug/device?</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Audiotapes/ videotapes?</td>
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<td>x</td>
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</table>
D. What are the goals of this research? Please state your research question(s) and related hypotheses.

The research design for my project is based on the following research questions:

1. To what extent do specific intrinsic and extrinsic motivators affect pharmacists’ participation in self-directed learning activities to receive continuing pharmacy education?

2. To what extent are specific obstacles keeping pharmacists from participating in self-directed learning activities for continuing pharmacy education?

3. What are the characteristics that are associated with pharmacists who have high intrinsic and extrinsic motivation for self-directed learning?

4. To what extent do pharmacists prefer to engage in these activities for self-directed learning?

Hypothesis 1:

a. The most frequent intrinsic motivator reported by pharmacists for participating in self-directed learning will be a personal desire to learn.

b. The most frequent extrinsic motivator reported by pharmacists for participating in self-directed learning will be continuing pharmacy education credit.

c. Pharmacists with a personal desire to learn are more likely to participate in self-directed learning activities.

d. Pharmacists receiving continuing pharmacy education credit are more likely to be motivated to participate in self-directed learning activities.
Hypothesis 2:
   a. The most frequent reported obstacle by pharmacists for not engaging in self-directed
      learning is time.
   b. Pharmacists who report the lack of time are less likely to participate in self-directed
      learning activities for continuing pharmacy education credit.

Hypothesis 3:
   a. Those pharmacists who are married with children will have greater intrinsic
      motivation for self-directed learning.
   b. Those pharmacists with a clinical practice site will have a greater extrinsic
      motivation for self-directed learning.

Hypothesis 4: The most frequent activity that pharmacists would prefer to engage in
self-directed learning is working with colleagues.

E. Provide a brief summary of the purpose of the research in non-technical language.

The purpose of this research is to describe the: (1) motivation of pharmacists to participate in
self-directed learning; (2) obstacles pharmacists identify to self-directed learning and (3)
activities pharmacists prefer in self-directed learning.

F. Identify study personnel on this project. Include name, credentials, role, and
organization affiliation.

Advisor
Joseph W. McNabb, Ph.D.
Senior Fellow, School of Education
College of Professional Studies
Northeastern University

Student
Anita Young, MEd, RPh
Director of Professional Learning Programs
School of Pharmacy
Northeastern University
G. Identify other organizations or institutions that are involved. Attach current Institutional Review Board (IRB) approvals or letters of permission as necessary.

Attached is a letter from the Dean of the School of Pharmacy granting permission to use the continuing pharmacy education database for recruiting participants to this study.

H. Recruitment Procedures

<table>
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<tr>
<th>Description</th>
<th>Details</th>
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<tbody>
<tr>
<td>Describe the participants you intend to recruit. Provide all inclusion and exclusion criteria. Include age range, number of subjects, gender, ethnicity/race, socio-economic level, literacy level and health (as applicable) and reasons for exempting any groups. Describe how/when/by whom inclusion/exclusion criteria will be determined.</td>
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</table>

A convenience sample of all Massachusetts registered pharmacists who have voluntarily logged into the Northeastern University continuing pharmacy education website (http://www.rxce.neu.edu) to create an account for the purpose of participating in continuing pharmacy education activities will be recruited to participate in this research.

| Describe the procedures that you will use to recruit these participants. Be specific. How will potential subjects be identified? Who will ask for participation? If you intend to recruit using letters, posters, fliers, ads, website, email etc., copies must be included as attachments for stamped approval. Include scripts for intended telephone recruitment. |

An invitation to participate will be e-mailed to all Massachusetts registered pharmacists in the Northeastern University Continuing Pharmacy Education data base. The survey will be administered through SurveyMonkey.

What remuneration, if any, is offered?

To motivate and incentivize pharmacists to participate in the study and increase the survey response rate a lottery will be employed (Fowler, 2009).

I. Consent Process

<table>
<thead>
<tr>
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<tr>
<td>Describe the process of obtaining informed consent? Be specific. How will the project and the participants' role be presented to potential participants? By whom? When? Where? Having the participant read and sign a consent statement is done only after the researcher provides a detailed oral explanation and answers all questions. Please attach a copy of informed consent statements that you intend to use, if applicable.</td>
<td></td>
</tr>
</tbody>
</table>

If your study population includes non-English speaking people, translations of consent information are necessary. Describe how information will be translated and by whom. You may wait until the consent is approved in English before having it translated.

An unsigned consent document for web-based online surveys will be included at the beginning of the survey for participants to read and indicate their voluntary participation in this study.
The document will be generated from the template provided by the Northeastern University IRB website.

If your population includes children, prisoners, people with limited mental capacity, language barriers, problems with reading or understanding, or other issues that may make them vulnerable or limit their ability to understand and provide consent, describe special procedures that you will institute to obtain consent appropriately. If participants are potentially decisionally impaired, how will you determine competency?

Not applicable

*If incomplete disclosure during the initial consent process is essential to carrying out the proposed research, please provide a detailed description of the debriefing process. Be specific. When will full disclosure of the research goals be presented to subjects (e.g., immediately after the subject has completed the research task(s) or held off until the completion of the study’s data collection)? By whom? Please attach a copy of the written debriefing statement that will be given to subjects.

Not applicable

J. Study Procedures

Provide a detailed description of all activities the participant will be asked to do and what will be done to the participants. Include the location, number of sessions, time for each session, and total time period anticipated for each participant, including long term follow up.

Participants will be asked to read the unsigned consent document for web-based surveys and click on the link provided indicating consent to participate in the study.
Participants will be asked to complete an online survey.
The survey will take no more than 15 minutes to complete.
This survey will be administered on time.

Who will conduct the experimental procedures, questionnaires, etc? Where will this be done? Attach copies of all questionnaires, interview questions, tests, survey instruments, links to online surveys, etc.

The experimental procedures will be conducted by Anita Young via SurveyMonkey. The link is provided.

K. Risks

Identify possible risks to the participant as a result of the research. Consider possible
psychological harm, loss of confidentiality, financial, social, or legal damages as well as physical risks. What is the seriousness of these risks and what is the likelihood that they may occur?

There are no possible risks to participants. They will not be identified and there are no emotionally charged questions.

Describe in detail the safeguards that will be implemented to minimize risks. What follow-up procedures are in place if harm occurs? What special precautions will be instituted for vulnerable populations?

Participants will not be identified. There is no user identification link. The participants will be given a consent form to acknowledge their desire to participate in the study. All data will be stored on a password protected computer.

L. Confidentiality

Describe in detail the procedures that will be used to maintain anonymity or confidentiality during collection and entry of data. Who will have access to data? How will the data be used, now and in the future?

Access to the data will be the principal investigator (Joseph McNabb) and the student (Anita Young). Assistance from a bio-statistician who will only see de-identified data may be asked to help obtain good statistical information.

How and where will data be stored? When will data, including audiotapes and videotapes, be destroyed? If data is to be retained, explain why. Will identifiers or links to identification be destroyed? When? Signed consent documents must be retained for 3 years following the end of the study. Where and how will they be maintained?

All data will be stored on a password protected computer.

M. If your research is HIPAA-protected, please complete the following:

Individual Access to PHI

Describe the procedure that will be used for allowing individuals to access their PHI or, alternatively, advising them that they must wait until the end of the study to review their PHI.

Not applicable.
N. Benefits
What benefits can the participant reasonably expect from his/her involvement in the research? If none, state that. What are potential benefits to others?

The application and accompanying materials may be sent as email attachments or in hard copy. A signed Assurance of Principal Investigator Form may be sent via fax or in hard copy.

There are no benefits to the participants for their involvement in the research. Information obtained from the participants will be used to foster the improvement of continuing pharmacy education in Massachusetts.

O. Attachments

Identify attachments that have been included and those that are not applicable (n/a).

- Copy of flyers, ads, posters, emails, web pages, letters for recruitment *
- Scripts of intended telephone conversations *
- Copies of IRB approvals or letters of permission from other sites
- Informed Consent or Informed Consent and Health Information Use and Disclosure Authorization *
- Debriefing Statement *
- Copies of all instruments, surveys, focus group or interview questions, tests, etc.
- Signed Assurance of Principal Investigator Form (required)
- NIH Human Subject Training Certificate(s) (required if not already on file at HSRP)

*(Approved forms must be stamped by the IRB before use)

P. Health Care Provision During Study

Please check the applicable line:

- I have read the description of HIPAA “health care” within Section 3.0 of the Policies & Procedures for Human Research Protection. I am not a HIPAA-covered health care provider and no health care will be provided in connection with this study.

- I am a HIPAA-covered health care provider or I will provide health care in connection with this study as described in Section 3.0 of the Policies & Procedures for Human Research Protection. This health care is described above under “Study Procedures,” and the Informed Consent and Health Information Use and Disclosure Authorization form will be used with all prospective study participants.

If you have any questions about whether you are a HIPAA-covered health care provider, please contact Nan C. Regina, Director, Human Subject Research Protection at n.regina@neu.edu or (617) 373-4588.

Please return the completed application to:

Nan C. Regina, Director
Human Subject Research Protection
960 Renaissance Park
Northeastern University
Boston, MA 02115-5000
Tel: 617.373.7570; Fax: 617.373.4595

Appendix H – National Association of Boards of Pharmacy Survey of Pharmac...