THE DEVELOPMENT OF SELF-EFFICACY AND SELF-ESTEEM IN PHARMACY STUDENTS BASED ON EXPERIENTIAL EDUCATION

A doctoral thesis presented

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Abstract

This doctoral thesis contributes to the literature on self-efficacy and self-esteem and the relationship to a student's school, age, gender, ethnicity, GPA, paid and introductory pharmacy practice experiences in a Doctor of Pharmacy (PharmD) program. Graduates with a high level of self-efficacy and self-esteem are more desirable as pharmacists upon graduation. A quantitative survey, which includes two standardized instruments, the Generalized Self-Efficacy Scale (GSE) and the Rosenberg Self-Esteem Scale (RSES), was administered to students at five schools of pharmacy in the northeast United States, resulting in a total of 399 responses. The findings confirm the significance of paid experiences and increased levels of a student's self-efficacy in a pharmacy setting. The other finding was related to ethnicity where the Asian/Pacific Islander students showed lower self-efficacy than other ethnic groups, which may be due to a cultural difference in displaying traits of high self-efficacy. Self-esteem also showed a positive finding for students with paid experiences and students who were older. There was an ethnicity finding where Asian/Pacific Islanders scored lower on the self-esteem scale, while the African-Americans scored higher than all the other groups. The results show that students improve their levels of self-efficacy and self-esteem through extended practical experiences. Schools should provide structured experiences of a sufficient length, beyond the present 300 hours, to prepare students for their transition into a professional role. Educators should be aware of the difference in Asian/Pacific Islander culture and encourage students to demonstrate their self-efficacy and self-esteem so other professionals can recognize them for their attributes.
Key words: quantitative study, self-efficacy, self-esteem, experiential learning and professionalization, paid experiences, introductory pharmacy practice experiences, pharmacy education
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## Table of Contents

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

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

Table of Contents ..................................................................................................................... 6

List of Tables ........................................................................................................................... 12

List of Figures .......................................................................................................................... 14

Chapter One: Introduction ....................................................................................................... 15

Purpose of the Study .................................................................................................................. 15

Problem of Practice .................................................................................................................. 15

Significance of the Problem of Practice .................................................................................... 16

Practical and Intellectual Goals ................................................................................................ 20

Research Questions .................................................................................................................. 21

Theoretical Framework ............................................................................................................. 22

  Founding fathers of education theory. ..................................................................................... 22

  Experiential learning theory .................................................................................................. 23

  Transformational theory ......................................................................................................... 25

  Reflection-in-action and reflection-on-action theory .............................................................. 26

  Occupations .......................................................................................................................... 26

  Professionalization ................................................................................................................ 27

  Self-efficacy ......................................................................................................................... 28
Chapter Two: Literature Review ........................................................................ 33
  Defining the Professions ............................................................................. 33
    From the apothecary to the pharmacist and physician – a short historical background. ..... 36
    Examining the pharmacy profession.......................................................... 40
  Professional Socialization .......................................................................... 46
  Experiential Education ............................................................................. 48
  Pharmacy Literature .................................................................................. 57
  Discussion .................................................................................................. 58
Chapter Three: Research Design ....................................................................... 60
  Review of Research Questions..................................................................... 60
  Self-Efficacy Hypotheses........................................................................... 62
  Self-Esteem Hypotheses............................................................................ 64
  Methodology ............................................................................................... 67
    Sample selection. ....................................................................................... 68
    Methods of data collection........................................................................ 69
    IRB process. ............................................................................................... 70
    Data analysis. ........................................................................................... 71
  Validity and Reliability ............................................................................... 71
  Limitations .................................................................................................. 72
Threats to Validity .......................................................................................................................... 73

Protection of Human Subjects ........................................................................................................ 74

Chapter Four: Report of Research Findings .................................................................................. 75

Review of Study's Research Questions and Methodology ......................................................... 75

Organization of Chapter .................................................................................................................. 76

Section 1. Descriptive Statistics of the Independent Variables .................................................... 76

Gender ........................................................................................................................................ 77

Year of birth (age) ......................................................................................................................... 78

Ethnicity ...................................................................................................................................... 80

Grade point average (GPA) ........................................................................................................... 81

Types of pharmacy experiences ................................................................................................... 82

Introductory pharmacy practice experiences (IPPE) .................................................................... 83

Paid experiences ............................................................................................................................ 84

Self-efficacy ................................................................................................................................. 86

Self-esteem ..................................................................................................................................... 87

Section 2. Statistical Testing of the Hypotheses ........................................................................... 87

Self-efficacy and experiential education hypotheses analysis ..................................................... 92

Hypothesis 1 ................................................................................................................................ 92

Hypothesis 2 ................................................................................................................................ 93

Self-efficacy and non-experiential independent variables hypotheses analysis ........................ 94

Hypothesis 3 ................................................................................................................................ 94
Hypothesis 4 ......................................................................................................................... 95
Hypothesis 5 ......................................................................................................................... 96
Hypothesis 6 ......................................................................................................................... 97
Hypothesis 7 ......................................................................................................................... 98
Self-esteem and experiential education hypotheses analysis ................................................. 99
Hypothesis 8 ......................................................................................................................... 99
Hypothesis 9 ......................................................................................................................... 100
Self-esteem and non-experiential independent variables hypotheses analysis ............... 101
Hypothesis 10 ....................................................................................................................... 102
Hypothesis 11 ....................................................................................................................... 102
Hypothesis 12 ....................................................................................................................... 103
Hypothesis 13 ....................................................................................................................... 104
Hypothesis 14 ....................................................................................................................... 105
Summary of Findings .......................................................................................................... 108
  Self-efficacy findings .......................................................................................................... 108
  Self-esteem findings .......................................................................................................... 108
Chapter 5: Discussion of Research Findings ....................................................................... 109
  Organization of Chapter .................................................................................................... 109
  Introduction ....................................................................................................................... 109
  Discussion of Findings ...................................................................................................... 111
  Self-efficacy ...................................................................................................................... 111
Paid experiences

Ethnicity

Remaining variables

Self-esteem

Paid experiences

School

Age

Ethnicity

Practitioner and Scholarly Significance

Strengths and Limitations

Strengths

Limitations

Further Research

Conclusion

References

Appendices

Appendix A: Questions in Self-Efficacy Scales

Appendix B: Pharmacy Self-efficacy and Self-esteem Study Questionnaire

Appendix C: Web Based Survey with the Unsigned Consent Form

Appendix D: IRB Approval for Paper Survey with Unsigned Consent Form
Appendix E: IRB Modification Approval for Web Survey with Unsigned Consent Form .... 157

Appendix F: Weighing the Data ........................................................................................................ 159

Appendix G: School 4 IRB Approval .............................................................................................. 160

Appendix H: Notification of IRB Action Renewal Approval.......................................................... 161
List of Tables

Table 1 Pharmacy Program by Gender .......................................................................................... 78
Table 2 Age in "25 and Under" and "Over 25 Years of Age" Categories and School ............... 79
Table 3 Frequency Distribution of Ethnicity .................................................................................. 81
Table 4 GPA Frequency in Categories .......................................................................................... 82
Table 5 IPPE Hours by School ...................................................................................................... 83
Table 6 Paid Experiences in Years by School .............................................................................. 85
Table 7 Self-efficacy Score Recoded into 5-point Groups ............................................................ 86
Table 8 Self-esteem Scores Recoded into 5-point Groups ............................................................ 87
Table 9 Summary of Across Group Hypotheses ......................................................................... 89
Table 10 Descriptive Statistics of Self-efficacy Recoded and Paid Experiences ....................... 93
Table 11 Descriptive Statistics for Self-efficacy Score Recoded and IPPE Hours .................... 94
Table 12 Descriptive Statistics for Self-efficacy Recoded and School ...................................... 95
Table 13 Descriptive Statistics for Self-efficacy Recoded and Gender ...................................... 96
Table 14 Descriptive Statistics for Self-efficacy Recoded and GPA .......................................... 97
Table 15 Descriptive Statistics for Self-efficacy Recoded and Age Groups ............................... 97
Table 16 Descriptive Statistics for Self-efficacy Score Recoded and Ethnicity ......................... 99
Table 17 Descriptive Statistics for Self-esteem Score Recoded and Paid Experiences ............ 100
Table 18 Descriptive Statistics for Self-esteem Score Recoded and IPPE Hours .................. 101
Table 19 Descriptive Statistics for Self-esteem Recoded and School ...................................... 102
Table 20 Descriptive Statistics for Self-esteem Recoded and Gender ...................................... 103
Table 21 Descriptive Statistics for Self-esteem Recoded and GPA .......................................... 104
Table 22  Descriptive Statistics for Self-esteem Recoded and Age Groups

Table 23  Descriptive Statistics for Self-esteem Recoded and Ethnicity

Table 24  Self-efficacy Summary

Table 25  Self-esteem Summary
List of Figures

Figure 1  Experiential Learning Cycle.................................................................................. 24
Chapter One: Introduction

Purpose of the Study

The purpose of the study was to examine the benefits of experiential education as a component of a Doctor of Pharmacy curriculum and to determine if self efficacy and self esteem are constructs which demonstrate a valid measurement of the contribution of experiential education to a student's learning.

Problem of Practice

The problem of practice is that some students are graduating pharmacy school without the proper balance of experience, skills and confidence to assume their role as a pharmacist. Experiential education is one method of learning self-efficacy and self-esteem. This study identifies the factors related to the development of self-efficacy and self-esteem by pharmacy students through practical experiences.

The social transformation that a student undergoes between their academic career and first entry into their professional life is arguably one of the most significant and difficult transitions that an individual must make. Although the student is forced to leave a world where a great deal of emphasis is placed on independence and responsibility, in reality, they do not receive their first dose of true accountability until they venture outside the comfort of the classroom. Pharmacy is an interesting case of a profession that has historically combined the models of classroom learning and apprenticeships, and serves as a strong example from which pertinent information regarding professional transformations can be observed.

Although pharmacy students receive extensive classroom instruction throughout the course of their academic careers, the lack of practical experience many of these students receive
leaves them unprepared to acclimate successfully in the workplace. Experiential education encourages students to be active, motivated and self-directed learners, which is essential to fulfill future practice roles. While lectures serve as an essential part of the degree curriculum, exposure to practical elements of the pharmacy field are just as important. "Without this exposure, pharmacy students are inadequately prepared to succeed in their role as a pharmacist practitioner" (Jungnickel, 2009, p. 81).

**Significance of the Problem of Practice**

Pharmacy education has evolved dramatically since the early 1900s, when the original training of a pharmacist occurred in the apprenticeship model. As the profession changed to meet societal needs, the educational requirements increased. The goal in the early 1900s was the same as today's; to educate a competent professional who can provide care, primarily focused on medications, to the public. The balance of didactic and experiential education is very significant in order to properly prepare the new pharmacist for practice.

The following information on the evolution of pharmacy education will provide the background to understand the problem. Prior to the mid 1800s, the apothecary provided both medical care and medicinals to patients and training was done primarily through apprenticeships. The apothecary's role was divided into two specialties: medical care, which became the role of the physician, and the druggist or apothecary, who prepared medications. The apprenticeship model was still the primary model of education, but specialty schools were emerging in the late 1800s to train both physicians and pharmacists. There were not any standards or educational requirements, and the training ranged from extensive formal requirements to ones with very weak requirements. Physicians, primarily those educated at formal universities, wanted to create
a standard curriculum and remove the substandard schools. The formalization of the medical school curriculum was done after a study by Abraham Flexner in 1910 and the resulting "Flexner Report (Cox, 2006; Flexner, 1910)."

This study motivated the pharmacy profession’s leaders to address the training and role of the pharmacist through the creation of a formal educational curriculum (R. A. Buerki, 1999). The leaders of the American Pharmaceutical Association who approached the Commonwealth Fund to study pharmacy education initiated the change. It resulted in the hiring of Wallace W. Charters, Dean of the University of Illinois School of Education. In 1927, working with many pharmacy groups, as well as looking at the University of Minnesota model, he came up with a report entitled “Basic Material for a Pharmaceutical Curriculum.” This report provided a standard four-year curriculum, as well as an independent evaluation of the pharmacy educational model by a respected evaluator (R. Buerki, 1999). For the time, the resulting curriculum met the goal of preparing a pharmacist to work with potent medicines. This study defined that “part of the pharmacist’s function is to deal with dangerous drugs and poisons, which requires much intelligence.” The American Pharmaceutical Association created the American Council on Pharmaceutical Education (ACPE) as a separate accrediting agency (R. A. Buerki, 1999; Worthen, 2009). This newly developed view of the pharmacy profession stressed the importance of classroom and laboratory educated pharmacists, but de-emphasized the role of apprenticeships or any type of practical, applied educational experiences.

In the 1960s, the pharmacy curriculum in the U.S. was increased from a four year to a five year baccalaureate program to address the changing advances in the field (Urdang, 1976). At the same time, the Doctor of Pharmacy degree, which is a clinically oriented degree, was
offered as either a post baccalaureate degree or in many West Coast schools, it was the only degree provided to students with a prior baccalaureate degree in a non-pharmacy area such as biology or chemistry. About half the schools of pharmacy offered the baccalaureate pharmacy degree and half offered the Doctor of Pharmacy as the only degree (Brodie, 1985). The result was the option of two separate degrees, a baccalaureate degree for people who wanted a business or distributive role, and a Doctor of Pharmacy degree for people who wanted more of a clinical role. In 1989, the American Association of Colleges of Pharmacy (AACP) decided that in order for the profession to be viable in the future, the baccalaureate degree should be eliminated and replaced with the Doctor of Pharmacy degree as the standard degree required to become a pharmacist. Their report concluded that "as the profession has articulated pharmaceutical care as the major contribution it has to offer to society, pharmaceutical education has developed the outcomes, competencies, content, and process of the educational curriculum that is required to prepare students to render pharmaceutical care at the entry level. Schools and colleges of pharmacy must examine their existing curriculums and restructure them to be consistent with this strategy" (AACP, 1989, p. 14). This became a requirement for all U.S. schools of pharmacy beginning with the entering class of 2000.

Pharmacy education has evolved with extremes on both ends; the apprenticeship model with 100% practical experience, to a program with didactic content but very little practical experience. The degree requirement has also changed. In the year 2000, all schools of pharmacy were required to offer only a Doctor of Pharmacy degree and discontinue the Bachelor of Pharmacy degree. This was implemented in order to elevate the profession through the degree, title and clinical emphasis.
The American Pharmaceutical Association, led by practicing pharmacists, was the initial force to create a structured curriculum along with the accrediting body, the American Council of Pharmaceutical Education (ACPE) (R. Buerki, 1999). At present, the academic educators are driving the education of pharmacists to the level of what they should be doing, rather than the practicing pharmacists, creating a gap between academic idealism and current practice (J. DiPiro, 2008).

Since the 1990s, educators realized the issue of too little practical training and have been addressing various methods of providing students more opportunities in the work setting through increased internships and other programs (Sorensen, 2005). In 2007, the American Council of Pharmacy Education (ACPE) addressed the experiential component because some students were graduating with inadequate experience, resulting in a less than optimally prepared pharmacist in regard to practical skills upon graduation.

The response by ACPE was to update Standard 14 in the accreditation standards. This standard specifies that a student needs 300 hours of early introductory pharmacy experiences (AACP, 2007; Jungnickel, et al., 2009). The number of hours is based on a percentage of the total curriculum and not on potential or desired outcomes. The experience a student receives during the 300 hours has to be structured, not necessarily supervised by a pharmacist, and there are projects that students complete to document the activities. The clinical experiences or advanced pharmacy practice experiences (APPEs) occur in the last year as an academic component with course credit and a grade, are unpaid and required in all pharmacy schools regardless of the early experiences (AACP, 2007).
The educational process ends with the goal of a baseline professional that is ready for their role as a newly graduated pharmacist. There are many inputs throughout a student's education and though the graduate is technically very well prepared, the question remains as to whether they are ready to perform in the role of a professional pharmacist upon graduation? With the didactic classroom work standardized across all schools of pharmacy, the experiential component is a variable that can affect a student's preparedness upon graduation. The difference that experiential education provides is best captured by the term "self-efficacy." This is defined as a measure of a person's beliefs in their capabilities to organize and execute the courses of action required to produce a given attainment (Bandura, 1997, p. 21). In addition to self-efficacy, self-esteem is a construct which is defined as a certain attitude and a perception of one’s self (Mruk, 2006). If a student’s self-efficacy and self-esteem are high, they will be able to perform at a very high level of competence and confidence.

Once a student enters an occupation, they have to adapt to the organizational environment and develop their occupational roles. Students with high self-efficacy tend to learn roles quickly and perform occupational roles innovatively, while low self-efficacy students tend to adopt traditional structured roles (Bandura, 1997, p. 447). The significant problem is whether self-efficacy and self-esteem are enhanced through the experiential process? If so, the development of high self-efficacy and self-esteem are challenges that pharmacy educators can directly address through changes in their curriculum.

**Practical and Intellectual Goals**

The practical goal of this study is to determine if adding additional experiential opportunities outside of the classroom has an impact on self-efficacy and self-esteem of students
in their P3 (third professional) year of an undergraduate curriculum. The intellectual goal is to
determine if the levels of self-efficacy and self-esteem gained through experiential opportunities,
beyond academic coursework, are substantially differentiated in students with a greater amount
of experience compared to those who have less experience outside of the classroom.
Additionally, I would like to encourage dialogue among pharmacy educators to utilize
experiential education in a more robust manner to enhance a student's self-efficacy and self-
esteeem if the hypotheses of my research prove to be correct.

**Research Questions**

Research question #1. Is there a relationship between the amount of experiential
education (paid pharmacy experiences and introductory pharmacy practice experiences - IPPEs)
and the level of a student's self-efficacy in a Doctor of Pharmacy program?

Research question #2. Is there an effect on self-efficacy by the independent variables
gender, year of birth, school, grade point average (GPA) and ethnicity?

Research question #3. Is there a relationship between the amount of experiential
education (paid pharmacy experiences and introductory pharmacy practice experiences - IPPEs)
and the level of a student's self-esteem in a Doctor of Pharmacy program?

Research question #4. Is there an effect on self-esteem by the independent variables
gender, year of birth, school, grade point average (GPA) and ethnicity?

The analysis is examining students prior to entering their last year of advanced pharmacy
practice experiences (APPEs).
**Theoretical Framework**

To better understand the topic, the theoretical framework used to address the research questions is based on student development, beginning at childhood and culminating with the attainment of an occupational status.

**Founding fathers of education theory.**

John Dewey studied child development and identified many factors that influence the learning of a child. Early Curriculum Theory by John Dewey (1916) examines how a child learns specifically through experience. He wrote "an ounce of experience is better than a ton of theory simply because it is only through experience does any theory have significance" (Dewey, 1916, p. 169). Dewey emphasized the significance of reflection as an important component of learning and described it as where the learner thinks about what they are doing and how it affects their actions. Dewey combined the action and reflection process with thinking, and identifies that learning is occurring when the student connects them and it becomes an ongoing process (1916). Dewey addressed the difference between a life experience and a learning experience by specifying that the learning experience must be educational. Dewey (1933) advocated learning that was active, student-centered, and involved shared inquiry. He defined experience as "the interaction of the external conditions of the environment with the internal state of the learner” (Dewey, 1938, p. 42). The concrete experiences require individuals to immerse themselves in the immediacy of the moment, relying on their intuitive and affective responses to the situation. Learning in the classroom is complemented by practical experience, where the teacher can assist the learner in interpreting an experience, and in choosing or creating subsequent experiences (Hall-Quest, 1998).
Kurt Lewin, another founding father of educational philosophy, developed the Field Theory around the interaction of the person and the environment. He also developed the basis of the learning cycle (Miettinen, 2000; Sansone, 2003). Lewin discussed adolescence as the process of moving from an individual child to become part of a larger group. This transition is important to a child's development as they experiment and learn from their experiences (Lewin, 1939). The third theorist who provided the base for the next theoretical category was Jean Piaget (1970) who suggested intelligence is largely a result of the interaction of the individual with the environment (Atkinson, Jr, & Murrell, 1988). Piaget believed that as a child grows, they are able to learn based on their age, maturity and ability to build upon prior experiences, known as social constructivism (Illeris, 2007). These theories provide the foundation for the understanding of the learning process, which leads into the next section, Experiential Learning Theory.

**Experiential learning theory.**

David Kolb developed the Experiential Learning Theory based on foundational work done by Dewey, Lewin and Piaget. Kolb (1984) defined three stages of learning: (1) acquisition, from birth to adolescence, where basic abilities and cognitive structures develop (2) specialization, from formal schooling through the early work and personal experiences of adulthood, where social, educational, and organizational socialization forces shape the development of a particular, specialized learning style and (3) integration in midcareer and later life, where non-dominant modes of learning are expressed in work and personal life (Kolb & Kolb, 2005).

The process and environment were the basis of Kolb's Experiential Learning Theory, which examines the psychological perspective and posits that learning is the major determinant
of human development. The way in which individuals learn shapes the course of their personal development (Kolb & Kolb, 2005).

Below is the Experiential Learning Model developed by David Kolb. The concrete-abstract continuum focuses on how learners gain knowledge from actively experiencing an event to thinking abstractly about the subject, where a reflective-active continuum explains how some learners prefer an observational role while others prefer an active role. Individuals move between the continuums and learn from various situations how to resolve problems and conflicts that occur in all learning situations (Atkinson, et al., 1988).

**Figure 1  Experiential Learning Cycle**

![Experiential Learning Cycle Diagram]

(Kolb, 1984)

To expand the theoretical framework further, I examined the learning style literature and discovered a variety of resources addressing the value of experience in the education process. Experiential learning is defined as “the process whereby knowledge is created through the transformation of experience and from the combination of grasping and transforming experience” (Kolb & Kolb, 2005). The Experiential Learning Model, which emphasizes additional reflection and a conceptualization of the experience, expands upon Dewey's original
work around concrete experiences. The primary difference is the increased amount of reflection, which occurs as reflective observation, and how it is then used to make decisions. Kolb moves from the experimental to actual experiences in his model. Increased reflective observation results in enhanced learning.

Dewey, Lewin and Piaget's theories focused on the developing student undergoing an experience for the first time. Kolb takes it to the next level by applying it to the older student who is moving into adulthood. As a person transitions from a child to young adult, they undergo a transformation where they begin to use prior experience as a basis to make decisions on present experiences. The next theory, Transformational Theory, addresses the next step in the learning process.

**Transformational theory.**

Jack Mezirow expanded upon the theoretical framework of the developmental theorists by examining the effect of experience on the older student as a young adult. Mezirow's Transformational Learning Theory examined the experiential process in older students, primarily in adults (mid 20s to 30s and older) who utilized critical reflection and experience to make judgments (Kitchenham, 2008). Mezirow believed that a student learner with a base of experiences, primarily from life lessons, will be able to experience a situation, reflect on the activity as it occurs, and is able to think of a response or solution in a more mature and thoughtful manner. The perceptions are changed and the student transforms through learning (J Mezirow, 1991). This theory relates to the framework since students in the Doctor of Pharmacy program are commonly in the 18 to 25 year old age range and do begin to learn as an
adults, especially towards the end of the program. Mezirow’s work is expanded by the work of Joseph Raelin and Donald Schön.

**Reflection-in-action and reflection-on-action theory.**

Joseph Raelin further examines the reflection process. Learning is tied together through the reflection process or "reflection-in-action" which attempts to discover how one contributed to an unexpected or expected outcome, taking into account the interplay between theory and practice (Raelin, 1997). The Reflection-on-Action is retrospective learning based on one's experience. Donald Schön addressed learning outcomes by explaining that some students don’t realize what they learned until they enter a new context and can apply what they have learned (Schön, 1987). The educational process, from experimental to experiential to transformational experiences, leads to the creation of a professional.

Beyond the learning that occurs in a structured developmental process, the occupations, and especially the professions, have their own process of educating the entering learners. The next section reviews the professional socialization processes, which complement the learning that has occurred throughout the student's education.

**Occupations.**

Stephen Billet examined the occupational outcomes of education and how experiential education fits into the preparation to enter a specific occupation. Each occupation requires particular kinds of concepts, propositions, norms and procedures, sets of values and organizing ideas that constitute its canonical knowledge, which are shaped by situational factors (Billett, 2009, p. 46). Billet concluded that some of the key strengths of learning through workplace
experiences were: access to authentic work activities, observation and listening (cues and clues), access to more experienced co-workers (direct guidance) and practice opportunities to refine and hone skills. Some limitations include learning bad habits, dangerous or inappropriate shortcuts, a lack of opportunity to practice, lack of guidance, undertaking tasks and not understanding why or what, lack of support, and experiences that were personally or professionally confronting, which inhibited the development of a positive occupational identity (Billett, 2009, p. 49). This fits into the framework by documenting the completion of the educational process and how a student learns from their academic and out-of-classroom experiences to become a well prepared professional upon graduation.

**Professionalization.**

While the educational theory is linked to the transformational learning theory, the context that professional education is trying to achieve is a result of an evolution of the professions. The sociology literature has defined the professions and the educational process as the gateway to enter a profession. The process of professionalization, where students learn and adopt the values, attitudes, and practice behaviors of a profession, can be taught or at least influenced by a variety of factors (Hammer, 2006). Students undergo a "process" of socialization from their intellectual and practical experiences (Goldstein, 1984). It is understood that formal curricula, including experiential learning, help to socialize students, hopefully in a positive direction. "Hidden curricula" (i.e., attitudes and behaviors that are not formally taught) and experiences outside of a formal curriculum also help to socialize students in positive or negative directions (Hammer, 2006, p. 3).
Self-efficacy.

A key advantage of experiential education is the development of person’s self-efficacy. This term is used to define a person's self-confidence and ability to perform their role in a proficient and appropriate manner. Perceived self-efficacy is based on judgments of personal capability (Bandura, 1997, p. 11). General Self-Efficacy (GSE) is defined as an individual’s belief in their ability to perform well in a variety of situations (Scherbaum, Cohen-Charash, & Kern, 2006). People differ both in the areas in which they cultivate their efficacy and in the levels to which they develop it even within their chosen pursuits (Bandura, 1997, p. 36).

Perceived self-efficacy is based on what a person believes they can do with the knowledge and skills they have in a variety of situations. There are several types of influence which enhance self-efficacy and improve performance: actual modeling, symbolic modeling, videotaped self-modeling or cognitive self-modeling. The higher the perceived self-efficacy that a person achieves, the greater their performance accomplishments will be (Bandura, 1997, p. 95).

Attribution theory of motivation utilizes a reflective review of one's performance and its motivational effects. The person's effort is directly related to their success (Weiner, 1985). The attribution theory utilizes past experience, current situations and a person's ability to positively perform in their role as an important component of self-efficacy.

Schools are the primary setting to develop and validate cognitive capabilities. Children receive knowledge and problem solving skills essential to participate effectively in society. The fundamental goal of education is to equip students with self-regulatory capabilities which enable them to become lifelong learners (Bandura, 1997, p. 174). Schools also can form a student's self-efficacy by having high expectations and standards of achievement. Much learning occurs
outside of the classroom and students with a high cognitive and motivation level tend to be successful. A student who pursues a career through higher education has a structured pathway including counseling, advanced academic preparation, social and professional networks, and financial support to complete their training. Students who enter higher education are those with higher levels of self-efficacy as compared to those who complete high school and enter the workforce or even drop out from high school.

In the health field, illness is diagnosed based on symptoms and previous experiences, interventions are made based on likely outcomes, and medications are prescribed based on the knowledge and experience of the prescriber. In many instances, positive outcomes are correlated to the efficacy beliefs of the health care workers and the patients. Self-efficacy in the training of a health care worker is crucial to the success of their treatments and outcomes.

Reviewing self-efficacy and occupational roles, there is a correlation of a person's level of self-efficacy and the type of occupations that they enter. People with low self-efficacy have a difficult time making a decision and end up in a position by default rather than through planning. There is also a gender influence on self-efficacy where men may consider themselves able to perform in a variety of occupations while women may avoid occupations traditionally dominated by men (Bandura, 1996). As the demographics change and more women and minorities enter higher education, the traditionally white male occupations are becoming more integrated by gender and ethnicity.

Self-efficacy can be taught at the primary school level by teaching children that they can do higher level work and succeed in the college setting. Students become motivated to explore
careers beyond their initial thoughts. Developing self-efficacy is a societal challenge in the primary school level (Bandura, 1997).

People develop mastery of their competencies. Observational learning is where the student learns the skills, appropriate courses of action, and the utilization of skills in the practice setting. There are two types of skills: fixed and generative. The fixed skills are optimum ways of performing an activity with no allowance for deviation (such as driving a car) and the generative skills are evolving and flexible to meet the needs of the current situation. Through mastery modeling, students learn the basic rules and strategies, receive guided practice, and they apply the skills in practice under guidance in ways that will bring them success (Bandura, 1997, p. 440).

People with a high level of self-efficacy approach difficult tasks as a challenge to be mastered rather than a threat to be avoided (Bandura, 1989b). As people utilize self-efficacy in their occupational role, they can take advantage of business opportunities, manage constraints, cope with challenges, make decisions and respond to innovations. Managerial leadership is enhanced through a high level of self-efficacy in motivating people, creating productivity, enhancing teamwork and creating a "collective efficacy." This is defined as "a group's shared belief in its conjoined capabilities to organize and execute the courses of action required to produce given levels of attainments" (Bandura, 1997, p. 477).

The self-efficacy reviewed and categorized by Albert Bandura does support the framework of this problem by identifying a common theory which influences the success of a student in the preparation for their occupational role. The issue of whether students are provided self-efficacy skills in their primary school is outside the parameters of this study. Students who
have a certain level of self-efficacy and who applied were accepted into the pharmacy program and they are the ones that the study is addressing. Providing the optimum level of self-efficacy through modeling and application are the essence of this research.

The following chapter addresses how to measure self-efficacy. Self-efficacy scales should measure people's beliefs in their abilities to fulfill different levels of task demands within the psychological domain selected for study (Bandura, 1997, p. 44). There are several scales to measure self-efficacy and the most often utilized is the General Self-Efficacy (GSE) Scale which has been evaluated as a reliable and valid instrument (Scherbaum, et al., 2006). The GSE scale will be used to demonstrate outcomes based on experiential learning in the pharmacy program. Details of the scales are in the literature review.

**Self-esteem.**

Self-esteem is a social construct which is based on two psychological processes: evaluation and affection (Mruk, 2006, p. 10). The evaluation is defined as an attitude, both positive and negative. The affection is based on the person’s “ideal” self and actual self. If there is a wide discrepancy, then there will be a low self-esteem. If the perception and actual behavior are close, then there is high level of self-esteem.

The theoretical framework is longitudinal in the development of a child to one of a person in an occupation, and to the benefits of experiential education. As outcomes, self-efficacy and self-esteem are measurements which will demonstrate the impact of experiential education.
The definition of organization-based self-esteem is the degree to which an individual believes in their capability, significance and worthiness as an organizational member. This reflects the self-perceived value of the individual to his/her organization (Pierce, 2004).
Chapter Two: Literature Review

Prior to examining pharmacy education, a review of the sociological literature defining the professions and the educational process will be discussed.

Defining the Professions

Professions are defined as a form of social construction (Rossides, 1988). The term “profession” is based on a social division of labor, which constitutes the interlinked system of specialized activities in a society, representing diverse bodies of knowledge manifested through those activities. The professional is viewed as "an accomplished expert, a full-time specialist cultivating a particular kind of skill and activity" (Friedson, 1986).

Professional designations began during the medieval era with a division of labor. Emil Durkheim studied societal change where artisans and craftsmen formed guilds to organize labor into specialty groups. "A mutual need for specialized work is the primary force that holds modern society together", “(Ritzer & Walcsak, 1986, p. 18). Eliot Friedson (1970) defined a profession as:

an aggregate of people finding identity by sharing values and skills absorbed during a course of intensive training through which they all have passed. Another orientation sees the profession as a group of workers joined together on the most general level by virtue of sharing a particular position in society and by common participation in a given division of labor. (p. 81)

In addition to a particular skill set, a profession requires additional support in order to function. Political support of the profession is elaborated where a profession is “a product of a civilized society where a value is placed on the profession by the elite, and the professional position is
secured by political and economic influence of the elite” (Friedson, 1970). In addition to political support from the elite, a professional must provide a service. A professional has clients rather than customers. As a client, the person is unqualified to evaluate a professional’s work and therefore those dominating society feel that the public needs to be protected from unqualified workers and instituted licensing requirements upon completion of a formal education and training.

Talcott Parsons summarized the attributes of a professional in the following description: “The professional is someone who is supposed to be recruited and licensed on the basis of his technical competence rather than his ascribed social characteristics, to use generally accepted rather than particularistic scientific standards in his work, to restrict his work activity to areas in which he is technically competent, to avoid emotional involvement and to cultivate objectivity in his work, and to put his client’s interests before his own (Parsons, 1951).”

The support of the government is essential in the success of a profession. Pavalko described professions as having a monopoly over specialized knowledge supported through licensing standards. In addition to the restrictions of a license, many legislatures relied on professionals by seeking advice for decision-making purposes (Pavalko, 1972).

Professional activity plays a prominent role in life patterns, providing life goals, determining behavior and shaping personality. Professionalism requires an organized group, which is constantly interacting with society performing its social function through a network of formal and informal relationships. Professions possess: (1) systematic theory, (2) authority, (3) community sanction, (4) ethical codes, and (5) a culture (Pavalko, 1972).
Education has a very important role—it transmits the culture, promotes social solidarity, provides for personal development and selection by merit, and generates knowledge to update society (Starr, 1962). The social elite have their children often educated in private schools, then at elite colleges, where they meet other children of similar backgrounds, continuing the cycle each generation.

Power theorists view professions in terms of power, where they openly seek to exclude others, work politically to get the state to give them monopolies, and engage in incessant turf battles. Sociologists agree that in a modern capitalistic society, there is increased function specialization and growth by knowledge. The application and transmission of knowledge through professions and education yield a higher living standard and social adaptation. National organizations are an additional component of a profession that exist to ensure efficiency in the professions, economy and government (Friedson, 1986).

Professions have been in transition for many years. According to Friedson, the professions reached their “peak” in autonomy during the first half of the 20th century, followed by loss of control over their work and becoming mere “technical workers” in the organizational charts of management (Friedson, 1973).

There are many widely used definitions of a profession, which are summarized below:

1. Prolonged specialized training in a body of abstract knowledge unique to the members.
2. A set of skills that form the technique of the profession.
3. A service orientation to the community.
4. An ideology based on the original faith professed by its collective members.
5. An ethic that is binding on the practitioners. A professional must provide service to whoever needs it, while nonprofessionals can withhold it. Information shared between a professional and client is “confidential information” protected by law in the medical and legal fields.

6. A guild of those entitled to practice the profession seen in professional associations and organizations.

7. Authority granted by society in the form of accrediting schools and authority by the state through licensure.

8. Licensing and admission boards are manned by members of the profession.

9. The practitioner is relatively free of lay evaluation and control.

10. A recognized setting where the practitioners can do their work unsupervised.

11. A theory of societal benefits derived from the ideology.


**From the apothecary to the pharmacist and physician – a short historical background.**

The apprenticeship model in the professions was primarily used prior to the advent of formal education systems for training pharmacists and physicians in America during the 1800s and early 1900s. This was the first form of experience-based learning. The apprenticeship could last as long as seven years with the apprentice beginning as a child and completing the training by age 21. The apprenticeship program was primarily for men, who would then be granted the ability to work on their own (Giljie, 1986). Traditional universities existed in Europe for
medicine at the time, but due to the high cost and logistical concerns they were attended primarily by the elite. The Industrial Age began the decline of the guild and apprenticeship training models with the advent of large-scale manufacturing. Education evolved into the school based model to meet the needs of the population and avoid the indentured servitude and child labor issues of the apprenticeship model (Giljie, 1986).

During the early 1700s in America, the terminology used to describe the person who worked with medicine and provided care was that of the apothecary. The roles of the physician and apothecary (druggists) separated in the late 1700s where physicians treated illness and druggists prepared medications in an apothecary or pharmacy (Brownson, 1976).

Formalized schools evolved for the "trades" in the late 1800s, including medicine and pharmacy, but accessibility was extremely limited. Formal educational and licensing requirements did not exist for medical and pharmacy professions. The result was a wide variation in the quality and level of education that physicians and pharmacists received.

European university-trained physicians wanted to standardize medical education in the United States. They also wanted to close the poorly run “diploma mills” which had very low standards, and to remove the poorly prepared from the profession. The motivation was both in the public’s interest but also in their own, by limiting the amount of physicians they would increase their status and income. The American Medical Association (AMA), through the Carnegie Foundation, hired Abraham Flexner, a non-medical teacher, to review medical education in the United States and to develop minimal standards for medical schools. The Flexner Report of 1910 summarized the findings and proposed suggestions for changes in the way medical education was conducted (Cox, 2006). The standards set forth by Flexner became
the basis for the first “accreditation” of higher education. The Association of American Medical Colleges, the accrediting agency from the AMA, defines accreditation as “a voluntary, peer-review process designed to attest to the educational quality of new and established educational programs (LCME 2007).”

Members of the pharmacy profession, seeing itself as a peer of the medical profession, realized they had to do a similar evaluation of their educational process. The American Conference of Pharmaceutical Faculties approached the Carnegie Foundation to study pharmacy schools in the same manner that Flexner studied medical schools. The foundation refused because of ‘funding’ problems and the feeling that pharmacy was not a profession on its own, that it was simply an extension of the medical profession. The Conference realized that changes had to be made, and approached the Commonwealth Fund to study pharmacy education. In 1924, a feasibility study about the pharmacy profession was completed and it was determined that “pharmacy is a profession that has specialized training in order to safeguard the public in the preparation and dispensing of medicines.” Wallace W. Charters, Dean of the University of Illinois School of Education, was the lead investigator for the Commonwealth Fund. In 1927, working with many pharmacy groups, as well as looking at the model used at the University of Minnesota, his findings were presented in a report titled “Basic Material for a Pharmaceutical Curriculum.” This report provided a standard four-year curriculum, as well as an independent evaluation of the pharmacy educational model by a respected evaluator. The Pharmacy profession’s stature was elevated by this study, which defined that “part of the pharmacist’s function is to deal with dangerous drugs and poisons, which requires much intelligence.” The American Conference of Pharmaceutical Faculties, a part of the American Pharmaceutical
Association, set the standards for the schools of pharmacy. The organization set up an accrediting agency based on the findings, the American Council on Pharmaceutical Education (R. A. Buerki, 1999). This newly developed view of the pharmacy profession stressed the importance of formally educated pharmacists, but de-emphasized the role of apprenticeships or other experiences.

Formalized education provided a consistent and highly qualified graduate, but it also became an obstacle to people who could not get in to the schools. As the professions organized, they could control who gets accepted into a professional school, the training process, and the right of determining and evaluating the way the work is performed. The result was discriminatory practices to exclude women, minorities, and people of certain religions from the elite schools. In addition, the lower socioeconomic classes were not being served under the educational system and often left out. Part was due to the parents’ ability both financially and intellectually to encourage their child to attend college, and then their socioeconomic class determined what quality school a child attends and whether or not one attends a junior college or four year college. As stated by sociologists Bowles, Gintis, Bourdeieu and Parsserson: “Education in a capitalist society is a process of social reproduction” (Rossides, 1988). There is a relation between social class, values and orientation. The higher a person’s social class, the greater the likelihood that he will value self-direction for his children and himself. The lower a person’s social class, the greater the likelihood that he will value conformity to external authority and will believe in following the dictates of authority as the wisest or only course of action (Kohn, 1977). Access to higher education has improved for many people, but access is still an issue.
Examining the pharmacy profession.

Pharmacy is viewed as a marginalized profession, which means that it is not considered a true profession because of autonomy issues and work settings. This is an important distinction in understanding the context of pharmacy training and how the profession is evolving over time, especially over the past two decades.

Friedson examined the division of labor in medicine, where physicians are at the top of the hierarchy and all other medical professions are subordinate to the physician. The subordinate groups are considered “paraprofessionals” since they are in an occupation, such as nursing and pharmacy, and require orders from physicians to perform their work. They cannot give orders to physicians, resulting in a differentiation of power (Friedson, 1986).

Pharmacy as a profession has many of the professional characteristics discussed in the previous section, but has some characteristics that result in a marginalized profession. Below is a list of the characteristics of a profession and an explanation of the pharmacist’s training and activities:

- Prolonged training – the pharmacist has increased training, similar to physicians since the 1800s. Pharmacy education has moved from apprenticeship-only training to a certificate program, then to a bachelor’s degree, and presently requires a Doctor of Pharmacy degree. The Doctor of Pharmacy degree is either a six-year entry-level degree or a four-year degree in addition to a baccalaureate degree in a science. The training is prolonged and specialized.

- Specialized skills – pharmacy education provides extensive information on the use, manufacture and management of medication therapy. This is more than a physician,
nurse or other health care professional receives. The specialized education does provide unique skills for pharmacists, thus meeting these criteria.

- **Service orientation to the community** – as a visible member in community pharmacies throughout the country and world, pharmacists are easily accessible and provide many services to the community from prescription medication to assistance with non prescription medication and other health care needs. Pharmacists do provide extensive services to the community, often unpaid in terms of advice and counsel.

- **Ideology of its collective members** – similar to medicine, pharmacy has many subspecialties in various areas of practice, which is a result of expanded knowledge and practice settings. The commonality of pharmacists is that they all have the same license and ideology to serve the patient from the medication perspective. This is not unique to pharmacy, but a collective ideology of the members.

- **Ethics** – graduating pharmacists take an “Oath of the Pharmacist” which is similar to the Hippocratic Oath taken by medical students upon graduation. Ethics are taught in school to students, and pharmacists are monitored by the state licensing board. Both the intern and pharmacist fall under the board licensing power and are answerable to the board for actions affecting public safety, including ethical actions. In addition, patient information is confidential as defined by state and federal regulations.

- **Professional organizations** – pharmacy, like medicine, has many professional organizations on the state and national level, with specialties in many different practice areas, such as chain pharmacy, independent pharmacy, hospital pharmacy, health-system pharmacy, managed care, home infusion and consulting pharmacy as examples. When
federal legislation is being discussed, the national organizations have collaborated to provide a unified voice to the legislators for pharmacists in all the practice areas.

- **Authority granted by society in the form of school accreditation and licensure** – The American Council of Pharmaceutical Education is the national school of pharmacy accreditation body and each State Board of Registration licenses pharmacists in their respective state.

- **Licensing board and admission boards are manned by members of the profession** – The state licensing boards are comprised of a majority of members from the profession, with one or two members from outside the profession to provide a different viewpoint. The admission boards of educational institutions may have pharmacy school input, but often the admissions departments will use criteria from the pharmacy school and review applicants themselves. The pharmacy schools monitor the progression of students directly.

- **The practitioner is relatively free of lay evaluation and control** – this is an interesting criterion, because pharmacists work from prescriptions written by physicians. In essence, the pharmacists cannot provide a prescription medication to a patient without a physician’s order, yet the pharmacists control the drugs. There is a drug called “Plan B” where a pharmacist can evaluate a patient and prescribe the treatment for a specific prescription drug. There is a movement to create a third class of drugs in addition to prescription and non-prescription drugs where a pharmacist can dispense them with a medication review by a pharmacist.
The pharmacist is expected to perform their work without lay evaluation, but if an error occurs, the public and media scrutinize them, even though they may not have the knowledge to evaluate the problem. Based on the pure definition, the pharmacist is not in full control of the drug product because they can only dispense it from a physician’s order. There is a movement towards more autonomy with the third class of drugs, but it is very limited. This is conflicting with the criteria of complete autonomy, which creates a situation where the pharmacist has restricted control of his/her social object, the drugs.

- Authority - the setting where pharmacists work is commonly a community or hospital pharmacy, which is licensed by state regulatory authorities. They are working as the highest authority and are not supervised by non-pharmacy people. This meets the criteria of a profession.

- Societal benefits – since medication is such a powerful technology that has improved lives and extended life spans, there is a tremendous benefit to society. The medications are also very powerful and can cause harm if not used properly, so a pharmacist is very important in the process of reviewing the correctness of the prescription and making sure the patient knows how to use the medication correctly. As the profession becomes more involved in medication management, their contribution to society will be even greater.

- Pharmacists’ interaction with the public – in the community setting, there is a customer/patient relationship and this has been an area of contention because they are seen more as merchants than professionals in this setting. Physicians and lawyers have clients and charge for their service, and not for products, which is another difference between the professions. Pharmacists are working towards obtaining a provider status
with insurance companies and have been successful in many states, which is a new initiative for the pharmacy profession to get paid for service in addition to the medication.

Based on the previous definitions, pharmacy meets the criteria of being a profession in the traditional definition, with two exceptions; control of the social object (the drug) and the relationship with the person serviced as a patient or customer. In the sociological definition, the pharmacy profession can be viewed as a marginalized profession or one with an incomplete status because of the conflicting roles of a pharmacist. A dominant profession, such as physicians, views many of the pharmacist activities as occupational in nature. They include advertising, business practices, and a lack of altruism among all its members. Each profession has a social object. For medicine, it is disease and illness, while pharmacy has the “drugs” as its object. The problem with the drugs is the pharmacist does not have control over who prescribes them. The physician was the only one who could order a prescription drug. Recent changes have allowed nurse practitioners, physician assistants and clinical pharmacists to order drugs, but all have to be done in collaboration or under the supervision of a physician.

Looking at the knowledge aspect, the pharmacist is knowledgeable about the medications, but the physician is the expert on the use of the drugs specific to their practice area, so the knowledge isn’t unique to pharmacists. When patients receive their medications in the hospital, the nurse administers the drug. Upon discharge from the hospital, often a nurse explains to the patient how to use their medications. In a community pharmacy, a pharmacist is supposed to counsel patients on their prescriptions, but it doesn’t happen often enough to make this a consistent expectation for all patients. One fault is with the pharmacies themselves, due to
their large work volumes and short staffing, while the other is with the pharmacist not taking on this role as a primary responsibility. Since physicians prescribe medications and nurses can administer and educate patients on the use of medications, these tasks are not exclusive to the pharmacy profession.

Pharmacists are viewed as the “social agency” through which the drug may be obtained rather than an individual who makes some service contribution. This is due to the financial practice and the public perception. Many pharmacists charge patients using a mark-up system, while a fee for service structure, similar to lawyers, physicians and accountants is considered more professional. The general public still views the pharmacist as dispensing a product, not providing a service. The profession is not seen for its role in checking the physician’s prescription to make sure that it is the right drug at the right dose for the right patient. Many pharmacists are employees working primarily in a community pharmacy or hospital pharmacy. The pharmacy profession is similar to other marginalized professions such as optometry, osteopathy, and chiropractic doctors (Pavalko, 1972).

Friedson states, “it is not the training or technical skills that determine professional differences, but a political and social process where power and persuasive rhetoric are of greater importance than the objective character of knowledge, training and work” (Friedson, 1986). For a long time, pharmacists functioned as a drug supply manager and did not get involved in the political arena. This changed drastically over the past two to three decades since the 1970s with the increase of chain pharmacies, managed care and consumer involvement. In order to be part of the legislative process, pharmacists are getting politically involved, realizing that this is the most effective method to accomplish change in the profession.
Professional Socialization

Professionalization is a process of resocialization designed to create the values and behaviors to reach the endpoint, being a member of a profession. Job socialization occurs through a person’s exposure to the people and work setting. The students acquire specific skills and knowledge, and learn about the professional culture and values. They learn about the norms and beliefs of the profession and they develop interpersonal skills. Students learn more abstract skills such as the ability to deal with ambiguity and uncertainty, being adaptable to challenges, decision-making, and self-esteem. The process of professional education includes the acquisition of knowledge and skills, as well as the conceptualization by students of themselves as professionals. The choice of a profession and the formal socialization in a professional school plays a great part in explaining the behavior of individuals in work settings (Friedson, 1973).

Once the student is accepted into a professional program, there are several theories related to the formation and existence of the professions, resulting in various viewpoints around the process and outcomes of what makes a profession. One set of theories categorized as the "predictable approach" views the student as a receiver of information where he or she is exposed to a workplace and learns by assimilation. The first one is identification theory, which focuses on the process as being predictable. The student is viewed as dependent with a strong emotional attachment to the model, and wants to be like the professional and to emulate appropriate behavior. The generalization theory hypothesizes that the socialization of attitudes, values, and ways of thinking is abstracted and generalized from the modes of successful adaptation to daily life pressures and situations (Bandura, 1971). Role theory focuses on the social behavior of
learning to play specific or multiple roles in society, including non-paid work (such as parenting) or a work-related role.

The contrast to the predictable approach is one of a dynamic process where the characteristics of the student influence the character of eventual outcomes (Merton, 1982). Ritzer described professional socialization as idealism vs. reality learned in school through various training programs such as internships, clinicals, dissertations, etc. He noted changes in commitment and identity. The end of the occupational socialization is the beginning of an occupational career (Ritzer & Walcsak, 1986). Merton describes socialization into the medical profession as a “process through which the medical student develops a professional self, with its characteristic values, attitudes, knowledge and skills, fusing these into a more or less consistent set of dispositions which govern behavior in a wide variety of professional situations (Merton, 1982). The socialization process is quite complex and ranges from acquiring specific skills and knowledge required for daily activity, to learning about professional cultures and how mechanisms work to protect the professional when a mistake is made (Bosk, 1979).

Granfield’s study on law students at Harvard Law School produced similar findings. Most students enter law school with a set of altruistic ideals that they can make a difference in society. As they move through the curriculum, their socialization experience clearly shows them the message that although community based service is very altruistic, the money and rewards are in corporate law. During the internships and post graduation job search, the law students tended to change their initial philosophy from public service to corporate law, where the financial rewards are higher (Granfield, 1992).
The growth process is not one giant leap, but rather small steps forward. Students learn in stages and the process of transitioning from a novice to a professional is a long and challenging one. The challenge is how to best deliver education and measure change over time (Brown, 1985).

The next section examines how the integration of experiential education is utilized to teach professional socialization. The definition of a professional and the process of becoming a professional is the foundation of experiential learning. The value provided by experiential education is the professional socialization of a student.

**Experiential Education**

Experiential education is defined as "a methodology in which educators engage learners in direct experience and targeted reflection in order to increase knowledge, and to develop skills, behaviors and values" (Jungnickel, et al., 2009, p. 8). The difference between work and experiential learning is that "experiential learning activities can support and enhance learning environments if we are to deploy them effectively. The learning process must be rigorously planned to incorporate multiple aspects of the learning cycle" which is based on the work of John Dewey and David Kolb (Eisenstein & Hutchinson, 2006). Dewey's writings on the process of human learning specified early on that experience in itself is not always educational (Dewey, 1933). He knew that an experience required some type of structure to show a student the value of what they have learned through a reflection process. Dewey created the term "concrete experience," which defined a hands-on approach to obtaining experience by a student in a setting related to their education. He complemented the experience with guided reflection on the connection between the experience and the learning. Kolb's Experiential Learning Theory
expanded upon Dewey's theory incorporating active participatory learning and Piaget's theory, which focused on the individual's interaction with their environment (Atkinson, et al., 1988). Kolb's theory incorporates the concrete experience, a reflective component, an abstract perspective of what a person thinks may happen, and an active component where they perform a task and experience the results. Kolb's learning model suggests people develop in four primary ways: affectively, perceptually, symbolically, and behaviorally (Atkinson, et al., 1988, p. 376).

Eisenstein and Hutchinson (2006) draw the conclusion that “contrary to popular wisdom, compared with traditional learning, experiential learning is likely to be a risky proposition because it can be either accurate and efficient or errorful and biased” (p. 244). To successfully learn from experiential activities, the learning process must be rigorously planned to incorporate multiple aspects of the learning cycle. Therefore, it is important to understand how experiential learning activities can support and enhance learning environments if we are to deploy them effectively. Scholarly evaluation is the key to developing a better understanding of the many intentional and inadvertent aspects of experiential activities that can positively or negatively affect the learning process (Eisenstein & Hutchinson, 2006, p. 244; M. R. Young, Caudill, & Murphy, 2008). Beard summarized the definition of experiential learning as the sense-making process of active engagement between the inner world of the person and the outer world of the environment (Beard & Wilson, 2006). Deming describes the learning cycle as one of continuous improvement where people plan, do, check and act (Beard & Wilson, 2006).

Experiential learning is a dynamic process where a student has more knowledge after an activity than before. Donald Schön's book, Reflection in Action, discusses the difference between reflection in-action and reflection on-action. His theory is that as a person experiences
events, they have enough knowledge and past experiences to make decisions as the event unfolds so they "think on their feet." Reflection on-action is retrospectively examining an experience resulting in new knowledge to be used in the future. Schön does focus on the reflection component as a necessary part of experiential learning which if missing, learning doesn't occur (Schön, 1987). Work-based learning is another term describing experiential education (Raelin, 1997). The student acquires theory along with practical skills during a practical experience, and alternately, a student can examine an experience through a theoretical lens to create meaning and understanding of what they learned. Rogers examined seven theoretical approaches on reflection and summarized the findings by describing a process of active engagement, learning through unique experiences, interpreting their understanding based on one's beliefs, and that new understanding is continually integrated into one's experience (Rogers, 2001). Experiential learning occurs when the learner experiences a new situation, often in the form of a challenge or problem. How they respond to the situation is based upon their previous experience, education and what they have learned from past situations. The ongoing process of reflection is an essential part of learning (Schön, 1987).

A student learning community is an extension of the experiential learning process where small-learning groups promote the emotional, moral and professional growth of the students. In medical education, the use of small groups in an experiential setting is a successful tool in the professionalization of the student. They created their professional identities. The combined experiential and reflective approaches adopted by these programs appear to have potentiated changes in professional values and attitudes (Hickcox, 2002). Students need to work with faculty to set achievable expectations in real world settings. Learning opportunities that facilitate
the development of students as collaborative problem-solvers as well as independent learners are needed in an experiential setting to be the "concrete experiences" that students need to experience and reflect upon (Hickcox, 2002, p. 128). Another dimension of student learning in addition to experiential education is how students need to critically evaluate information and develop a personal value system that enhances their maturity into adulthood (Higgins, 2009).

Through experiential education as well as the classroom, students undergo a transformation, which is the basis for the Transformational Learning Theory (Jack Mezirow & Marsick, 1978). The theory is defined as "a rational process of learning within awareness [which] is a meta-cognitive application of critical thinking that transforms an acquired frame of reference by assessing its epistemic assumptions.” The transformative learning process involves:

1. recognition that an alternative way of understanding may provide new insights into a problem;
2. context awareness of the sources, nature, and consequences of an established belief;
3. critical reflection of the established beliefs supporting epistemic assumptions;
4. validating a new belief by an empirical test of the truth of its claims, when feasible, or by a broad-based, continuing, discursive assessment of its justification to arrive at a tentative best judgment;
5. coping with anxiety over the consequences of taking action; and

Billet (2002) examined the quality and likely contributions of learning experiences. These practices comprise the reciprocal process of how workplaces afford participation and how individuals elect to engage with the work practice, termed co-participation. Billet commented
that workplace experiences are structured. He notes,

[They are] a product of the historical-cultural practices and situational factors that constitute the particular work practice, which in turn distributes opportunities for participation to individuals or cohorts of individuals. That is, they shape the conduct of work and learning through these practices. However, how individuals construe what is afforded by the workplace shapes how they elect to engage in that practice and learn (Billett, 2002, p. 457).

People who learn from repetition in the workplace are able to think about their progress and next steps of the tasks they need to complete. Individuals who experience new tasks are better able to deal with problems, which leads to the topic of self-efficacy.

Self-efficacy is a skill learned by doing, and a pharmacy student gains self-efficacy through practical experiences to reach the level of a new practitioner upon graduation. Bandura examined self-efficacy and how it affects a child’s social and learning abilities, defining their success in school academically and socially (Bandura, 1996). Further along in the education of a student, perceived self-efficacy can determine career paths. For example, if a student had a low self-efficacy in mathematics, he/she may avoid occupations that require quantitative skills. Students may make decisions on career paths based on potentially wrong perceptions, including gender stereotypes and required abilities. Once in a career path, self-efficacy can affect a person's performance. A person with a high self-efficacy in an occupational setting can problem-solve. People with low self-efficacy tend to have difficulty solving problems and may resort to dysfunctional methods of coping with stress (Bandura, 1997, p. 466).

Self-efficacy is a descriptor that can be used as a unit of measurement. There are three measures of generalized self-efficacy that are viewed as reliable psychometric tools that assess

Sherer's scale consists of 17 items which are described as a “general set of expectations that the individual carries into new situations (Scherbaum, et al., 2006, p. 1049).” Schwarzer and Jerusalem’s General Perceived Self-Efficacy Scale is a 10 item survey examining problem solving and critical thinking skills. Chen's scale consists of 8 items with a range of "strongly disagree to strongly agree." This scale is goal and task oriented which appeals to a wider audience (G. Chen, Gully, & Eden, 2001). Below is the list of the New General Self-Efficacy survey questions:

1. I will be able to achieve most of the goals that I have set for myself.
2. When facing difficult tasks, I am certain that I will accomplish them.
3. In general, I think that I can obtain outcomes that are important to me.
4. I believe I can succeed at most any endeavor to which I set my mind.
5. I will be able to successfully overcome many challenges.
6. I am confident that I can perform effectively on many different tasks.
7. Compared to other people, I can do most tasks very well.
8. Even when things are tough, I can perform quite well. (Chen et al., 2001, p. 79)

The three scales were tested for validity by Scherbaum et al, and all three were deemed valid, with Chen's identified as displaying the most desirable properties. The Generalized Self-efficacy Scale will be used in the methodology section (Bandura & Barbaranelli, 1996; G. Chen, et al., 2001; Scherbaum, et al., 2006). The Generalized Self-efficacy Scale is applicable to a wide variety of settings. Examining the pharmacy literature and the use of the GSE scale, the
researcher could not find any articles that utilized the scale in the psychological format of the authors. Self-efficacy is examined as the ability to meet a set of outcomes rather than a personal belief in one's ability. Self-efficacy is not directly assessed.

The second construct often examined with self-efficacy is self-esteem. While the general self-efficacy scale measures more of a motivational belief (or judgment) regarding task capabilities, self-esteem is more of an affective evaluation of (or feeling regarding) the self (G. Chen, Gully, & Eden, 2004, p. 376). Self-esteem is also defined as a sense of self worth or self acceptance (Faunce, 2003). Mruk identified four definitions of self-esteem. The first is a certain attitude. The second is the difference between what one wants to be and what one actually is, the ideal vs. actual self. The third is how a person feels about him or herself, and the last is that self-esteem is part of a person’s personality, described in the psychology literature a part of the self-system. This is concerned with motivation or self-regulation (Mruk, 2006, p. 10). In relation to self-efficacy, self-esteem can be viewed as a measure of competence. The interesting paradox discussed by Mruk is that self-esteem can be both a cause of behavior (independent variable) or it can be a dependent variable meaning that it is a result of a person’s background (2006, p. 36). Self-esteem examines global relations toward one's self, a sense of self worth (Classen, Velozo, & Mann, 2007; Lightsey, Burke, Ervin, Henderson, & Yee, 2006). Self-enhancement and self-improvement involves self-evaluation and self-investment. Self-esteem is a result of the reflective view that a person has with their surroundings. A person seeking to improve their self-esteem will seek experiences that enhance their self-esteem (Rosenberg, 1965).
Within the theory of self-esteem are the subsets of worthiness-based self-esteem and competence based self-esteem. The growth process of childhood through adolescence is the source of developing self-esteem, but the transition into adulthood is where the need to master new social relationships and acquire necessary competencies is essential for success in life. Self-esteem can be obtained from direct feedback or reflected appraisals. The direct feedback is in terms of evaluations and comments, while the reflection is based on what others do or say (Hewitt, 1998). Experiential education provides the opportunity where students receive formal appraisals as well as the informal feedback from co-workers, preceptors and other people they interact with in the course of their experiences. Ideally, as students progress through their academic and experiential opportunities, they enhance their self-esteem as they transition into adulthood. Higher self-esteem in adults resulted in high levels of happiness, energy, alertness, calmness and other positive traits. Low self-esteem leads to unhappiness, anger, feelings of threat and self-consciousness (Mruk, 2006, p. 172). Hewitt notes that self-esteem is “a result of educational accomplishments, not a substitute for real education” (Hewitt, 1998, p. 117). Self-esteem is a part of human behavior that is described as a source of success as well as a reason for people who are unsuccessful. Education and experience ideally will enhance self-esteem, but Hewitt discusses the medicalization of raising self-esteem through the use of antidepressants. This is an artificial way to increase self-esteem, but an interesting point in terms of the utilization of medication to treat personality issues, including depression and low self-esteem. The symptoms are addressed, but not the cause (1998). There is also a gender difference where males tend to have higher self-esteem than females, regardless of socioeconomic status (Rosenberg, 1965).
Rosenberg (1965, p. 225) discussed occupational orientation and self-esteem and he concluded that people with high self-esteem are open to taking a leadership role in the workplace, while people with low self-esteem reject the opportunity for a leadership position. The same result for competition in the workplace was true where the person with high self-esteem liked competition while those with low self-esteem avoided competition. Keshen (1996) discusses that a reasonable person keeps the concept of self-esteem in context with other people and their environment. Not everyone can be great at all things and a person must reflectively look at their strengths and how they enhance their self-esteem.

The literature supports the use of occupational experiences to enhance a person's self-esteem and self-efficacy. Lightsey's study on the relationship of self-efficacy and self-esteem demonstrated that there are differences in both constructs, but self-efficacy may play a role in the development of self-esteem. Both constructs can be utilized to examine the pharmacy student’s preparedness at the point of preparation in the curriculum. Self-esteem research has shown that modeling and increasing problem-solving skills enhance a person’s self-esteem, which fits into the experiential education theory where students learn these skills not in the classroom, but in the actual live setting (Mruk, 2006, pp. 101-102).

The psychometric tool, the Rosenberg Self-Esteem Scale (RSES), developed by Morris Rosenberg, is used as the standard instrument to measure self-esteem (Rosenberg, 1965, pp. 17-18). The scale consists of ten items addressing the "general feelings about yourself." The RSES has been used to assess self-esteem in a variety of populations and a variety of ages ranging from children to the elderly (Classen, et al., 2007; Dahlbeck & Lightsey, 2008; Demo, 1985; Roth,
Decker, Herzberg, & Brähler, 2008). The scale uses a four point Likert scale, and the sum of the ten questions provides a rating of self-esteem.

Though self-efficacy and self-esteem are closely related, the researcher will attempt to identify the components and treat the items separately.

**Pharmacy Literature**

While specific articles addressing student professionalism and development in the experiential components of pharmacy education are limited, there are a few key people writing on this topic. Dana P. Hammer has written the majority of articles about student professionalism with a specific focus on behaviors and skills. She has worked on developing survey instruments to measure professionalism in pharmacy students (Hammer, 2000). Marie Chisholm and co-authors expanded the instrument to elicit professionalism attributes (Chisholm, Cobb, Duke, McDuffie, & Kennedy, 2006), further refining the work of Hammer. The current research of both authors focuses on the practice of measuring student professionalism using survey instruments that are both reliable and valid.

A structured program has been shown to provide an improved experience as compared to an unstructured program. Sorenson studied students who were prepared for their experience prior to the actual experience, and he concluded that although pharmacy students are incorporated into a situated learning context during an internship, students who were prepared during an academic program learned more from the situated learning than those who did not. This implies the creation of a more appropriate situation for learning for future pharmacy students (Sorensen, 2005). Internships also provided a valuable learning experience when accompanied by good mentorship (J. T. DiPiro, 2008). Students learn better when they are
actively engaged in their learning (Karimi et al., 2010). The key factors of a successful experience include preparation, a teacher or mentor and some structure, which can be set by requiring certain outcomes or activities.

Problem based learning (PBL) has been applied to pharmacy classrooms. Novak discusses the use of PBL in pharmacy education and the outcomes that followed (Mort, Johnson, & Hedge, 2010; Novak, 2006). Though it was utilized in a case study format, the actual life experiences that students encounter in a practice setting are all problem based. Problem based learning is an additional method of developing self-efficacy and professionalism.

The collaboration of health care practitioners is increasing due to managed care and the need to increase efficiencies in the health care system. Liaw described an "apothecarial" relationship between the physician and pharmacist based on the common beginnings of the professions as an apothecary (Liaw & Peterson, 2009). As the health care system evolves, whether it is the United States market based system or a national health care system, collaboration begins at the student level and continues after graduation. Guided experiential learning under a knowledgeable faculty member or mentor is a valuable tool to teach students how to collaborate and not become adversarial. The experience increases each party's self-efficacy and they feel comfortable working together collaboratively.

**Discussion**

The educational process has been reviewed through the bodies of educational literature, leading to the transformation of a child into a young adult. At this stage, the process of identifying an occupational role begins, and the young adult embarks on their chosen path. Various factors influence the decision making process, both societal and personality, resulting in
many different paths. Once the decision to enter an occupation is made, the training process, whether vocational or higher education, begins. The professionalization process of pharmacy students is the focus of this study, which includes the classroom and experience based knowledge. How the educational structure affects a student's growth and transition into a professional role is the responsibility of the pharmacy education system, faculty and practitioners. Developing a high sense of self-efficacy and self-esteem in students greatly enhances their chances for success.

The literature review of the nature of professional education and how it has evolved provides the background to examine the effectiveness of current methodologies in pharmacy education. Education must be innovative and flexible, providing students with lifelong skills to adapt and initiate change for the benefit of the people they serve. Providing students with a high level of self-efficacy and self-esteem greatly enhances their academic and experiential success, as well as success throughout their career.
Chapter Three: Research Design

Review of Research Questions

The research study examines the effect of experiential education on a student's self-efficacy and self-esteem in a Doctor of Pharmacy program at the similar point in the curriculum; either in the fifth year of a six year program, the third professional year of a four year program or second year of a three year program. There are four research questions examined in this study.

1. Is there a relationship between the amount of experiential education and student's self-efficacy?

2. Is self-efficacy influenced by gender, year of birth, school, grade point average (GPA) and ethnicity?

3. Is there a relationship between the amount of experiential education and student's self-esteem in a Doctor of Pharmacy program?

4. Is self-esteem influenced by gender, year of birth, school, grade point average (GPA) and ethnicity?

Based on the course sequencing, just prior to their advanced pharmacy practice experiences, the students should be at the same level academically at the time of the survey. The research questions examine the current educational process. The contribution that experiential education provides to the overall education of a student is the focus of this research. Students obtain experiences from various types of opportunities, ranging from their own job to school provided experiences. Based on the school they attend, every student completed a unique introductory pharmacy practice experience to meet the accreditation requirement, which differentiates the students. The range of experiential education was from approximately 150
hours to over 2,000 hours. In addition to school provided experiences, some students work in a pharmacy-related position during their summers off from school and during the school year. The program that provides the highest number of hours is the cooperative education program at School 3. This program utilizes three four-month full-time experiences where students work in a pharmacy setting, accumulating up to 2,000 hours. The school identifier will determine what type of experiences a student obtains and there will be questions asking about experiences outside of the school programs.

In researching the value of experiential education, terms such as "learning the ropes" and "getting a head start on other students" fall under the definition of self-efficacy, where a person's confidence and problem solving abilities based on experience provides them with a skill set which is superior to students who do not have a similar experiential background. The pharmacy literature mentions self-efficacy but does not examine it in a thoughtful and thorough manner using standardized psychometric assessment tools, such as the Generalized Self-Efficacy (GSE) questionnaire. Self-esteem is the measurement of the view of one's self, which was measured using the Rosenberg Self-Esteem Scale. The use of General Self-Efficacy and Self-Esteem are similar yet different metrics to measure a student's perceptions of one's self.

Fraenkel (2006) explains that a hypothesis is a prediction of the possible outcomes of a study. This study examines the effect of experiential education, both paid and unpaid, on self-efficacy and self-esteem. To differentiate the students, they were grouped by the school they attend. Within the school group, demographic information was gathered to examine gender, age, ethnicity and grade point average. The following hypotheses guided the research study:
Self-Efficacy Hypotheses

H1: The self-efficacy of a student with paid work experience equal to or greater than one year is higher than the self-efficacy of a student with less than a year experience.

H2: The self-efficacy of a student with increased introductory pharmacy practice of more than 50 hours will be greater than students less than 50 hours of experience.

Judge (2007) performed a meta-analysis which examined self-efficacy in a different frame. Self-efficacy is examined in relation to a task or job performance. Judge examined individual differences and found that self-efficacy was not highly correlated with job performance. However, there was a correlation between self-efficacy and task performance. Chen et al. (2001) argued that their focus was on whether “self-efficacy can explain the cognitive ability–performance and conscientiousness–performance relations” (p. 225), whereas the focus of the meta-analysis was on the relative contributions of self-efficacy and distal variables in predicting performance (Judge, et al., 2007, p. 117). Additional literature support included "repeated activity, in this case interview skills, enhances a candidate's self-efficacy" (Moynihan, Roehling, LePine, & Boswell, 2003), "increased teaching experience enhances self-efficacy" (Klassen & Chiu, 2010) and "increased pharmacy experience provides increased self-efficacy" (Walker, Tucker Jones, & Mason, 2010).

H3: Self-efficacy of a student is affected by the school he/she attends.

H4: The self-efficacy score of a male student will be higher than the self-efficacy score of a female student.

Males and African-American/Black participants had higher learned resourcefulness scores than females and Caucasians (Goff, 2011). In a study of engineering students, there were
no differences on general self-efficacy based on gender. "The interaction by gender was due to differences between men’s and women’s coping self-efficacy scores. Women had significantly lower coping self-efficacy" (Concannon & Barrow, 2009, p. 168).

\[ H5: \text{The self-efficacy of a student with a GPA of equal to or greater than 3.4 is higher than the self-efficacy of a student with less than a 3.4 GPA.} \]

Students with an overall high level of their "self," which includes self-efficacy and academic self-concept, perform at a higher academic level (N. Choi, 2005). A study on students in a large urban commuter institution demonstrated the academic self-efficacy is a good predictor of academic success (Zajacova, Lynch, & Espenshade, 2005). Students who completed a cooperative education work experience in an engineering setting had a higher GPA based on a study completed at Mississippi State University (Blair, Millea, & Hammer, 2004). If students who work have higher self-efficacy, it could result in higher grades.

\[ H6: \text{The self-efficacy score of a student over 25 years of age will be higher than the self-efficacy score of a student less than 25 years of age.} \]

Age was a significant predictor of academic performance (Goff, 2011). There are many factors which affect self-efficacy as a person ages, and years alone is not a reliable indicator. Examining teachers, age was only one component, where workload stress and classroom stress were related to their self-efficacy (Klassen & Chiu, 2010).

\[ H7: \text{The self-efficacy of a student is affected by their ethnicity.} \]

A study (Jaret and Reitzes, 2009) on college students' identities, self-esteem and self-efficacy concluded that Blacks had higher self-esteem and self-efficacy than whites or Asians; whites had higher GPAs than blacks or Asians, while immigrant students had higher GPAs than
third-generation students. A conclusion is that Black students in college have a higher sense of self, thus higher levels of self-esteem and self-efficacy (Jaret & Reitzes, 2009). Concannon (2005) examined engineering students and found there were negligible differences in self-efficacy due to gender and ethnicity, but on the self-efficacy coping score, men scored higher than women. There was an ethnic component with self-efficacy, where blacks were identified as having lower aspirations due to lower perceived self-efficacy than whites, which is an area that had to be addressed by faculty.

**Self-Esteem Hypotheses**

**H8:** *The self-esteem of a student with paid work experience equal to or greater than one year is higher than the self-esteem of a student with less than a year experience.*

**H9:** *The self-esteem of a student with increased introductory pharmacy practice of more than 50 hours will be greater than students with less than 50 hours of experience.*

Students with work experience performed at a higher level in the midrange of the class rank, while students at the lowest and highest GPA had no significant change. Students who participate in a co-op program may do better in a course related to their work experience but not necessarily across the entire curriculum (Kramer, 2008). Marketing students who participate in a cooperative education program demonstrated that students enhance their maturity, communication skills and interpersonal skills (R. F. Young, Wright, & Stein, 2006). In essence, their self-esteem is enhanced through experience in the actual workplace. Ferris et al. postulated the following in regard to importance of job performance to self-esteem:

Workers who base their self-esteem on their performance in the workplace (i.e., high IPSE: *importance of performance to self-esteem*) show no positive relation between job
performance and self-esteem level, nor is their performance negatively impacted by Role Conflict, presumably due to the negative self-implications poor performance has for such individuals. Thus, self-esteem level has a main or moderating effect only for those with low IPSE. With respect to applicants with no work experience such as new school graduates), recruiters may wish to assess performance-contingent self-esteem in other domains such as academic competence (2010).

Another study examining student teachers demonstrated that self-esteem increased due to the practicums (Hascher, Cocard, & Moser, 2004). Experiential education provides students with performance-contingent self-esteem through real experiences. Katula (1999) discusses various types of experiential education programs including internships, study abroad, co-op programs and service learning, and how they vary widely. The benefits are understood but not quantified in a way that documents benefits. Most of the benefits are anecdotal and his essay, though supportive of this type of education, criticizes the lack of structure and integration into the classroom.

**H10:** The self-esteem of a student is affected by the school he/she attends.

**H11:** The self-esteem score of a male student will be higher than the self-esteem score of a female student.

Females with entrepreneurial skills have higher self-esteem than males (Wilson, Kickul, Marlino, Barbosa, & Griffiths, 2009). The girls’ self-esteem and assertiveness levels were found to be higher than the boys from the aspect of the gender variable (Karagozoglu, Kahve, Koc, & Adamisoglu, 2008). Depending on the type of self-esteem in a meta-analysis, men scored higher than women in self-satisfaction self-esteem, while women scored higher than men in moral-
ethical self-esteem (Gentile et al., 2009). A meta-analysis of self-esteem on teenagers showed that males demonstrated a slightly higher level of global self-esteem but the difference is small (Kling, Hyde, Showers, & Buswell, 1999). In a medical school setting, female students tend to be more stressed than male students. This could be due to females feeling they have to work harder, or that medical school has a gender specific strain. Performance based self-esteem in these students could be challenged due to the curriculum (Dahlin, Joneborg, & Runeson, 2007).

**H12:** The self-esteem of a student with a GPA of equal to or greater than 3.4 is higher than the self-esteem of a student with less than a 3.4 GPA.

Students with lower self-development have lower self-esteem (Mimura, Murrells, & Griffiths, 2009). Students who perform well academically and don't embrace learning from failure have lower self-esteem unless they have the willingness to use self-regulation to learn and improve themselves (Crocker, Brook, Niiya, & Villacorta, 2006). A study of college sophomores in the California system demonstrated that self-efficacy beliefs affect GPA and persistence rates of sophomore students (Vuong, Brown-Welty, & Tracz, 2010).

**H13:** The self-esteem score of a student over 25 years of age will be higher than the self-esteem score of a younger student.

An article by Dahle (2007) examines performance based self-esteem in medical students, who tend to be older and very highly motivated. What was concluded is that this population has a high risk for burnout due to low self-esteem issues. Orth et al. (2010) reported a longitudinal study examining people from 25 to 104 years of age, finding that self-esteem increases over time and peaks at about 60 years of age, showing a relationship between age and self-esteem. Age
was examined in the pharmacy student population to determine if there is a correlation to self-esteem.

**H14: The self-esteem of a student is related to their ethnicity.**

As discussed with H7 in regards to self-efficacy, Jaret and Rietze's (2009) study also found a link between a student’s self-esteem and their ethnicity.

The research questions examine variability within the schools and between the schools. The proposition investigated is the relationship between a student's experiences and the level of self-efficacy and self-esteem that a student attains. The literature review discusses the process of becoming a professional, the learning that occurs in the practice setting, and the reflective cycle that makes experiential learning such an integral part of the education of a student.

**Methodology**

A survey provides a quantitative description of a population by studying a sample of that population (Creswell, 2009). A survey was used as the data collection and as the methodological approach for this study. The survey was a self-administered questionnaire as a onetime anonymous survey. This approach ideally yields honest answers to the survey questions since the respondents know that they are anonymous. The survey was passed out in a class and collected at the same time. This is one method of achieving a high rate of return, as compared to an online method (Fowler, 2002). The cost was minimal in terms of labor since a faculty member of the school would distribute and collect the completed surveys, and then send them to the primary researcher for analysis. Time to complete the survey is a factor in the respondent's ability to answer the questions, so students should be given an adequate amount of time to complete the survey (Wentland & Smith, 1993). The time requirement was about 10 minutes to
complete the survey instrument. An online version was provided using the Survey Monkey platform for the two out-of-state schools (in reference to the researcher's location). The expectation was that the responses from an online survey most likely will be reduced, but it was the only option that the participating schools agreed to use.

**Sample selection.**

The purpose of this study is to determine the level of self-efficacy and self-esteem in doctor of pharmacy students at the similar point in their curriculum. Purposive sampling is the use of a researcher's judgment to select a sample which they believe will provide the data that is needed (Fraenkel & Wallen, 2006, p. 101). The targeted population was students in the fifth year of a six-year pharmacy program, third year (P3) of a four-year professional program or in the second year of a three-year accelerated program. This is the point in the curriculum where they have completed their introductory experiences and before they begin their advanced pharmacy practice experiences. Though there are over 120 schools of pharmacy in the United States, the schools the researcher is using are in the New England region. This was used as a sample of convenience, which resulted in a sample of students with similar demographics and with similar opportunities.

The researcher utilized a professional group, the New England Regional Deans and Experiential Education (NERDEE) consortium to access students from the institutions. Though there are newer schools in the region, only five schools had students matriculated at the point in the curriculum that the researcher targeted. The researcher also knows the deans of each school personally, which facilitated the approval and collection process.
Methods of data collection.

A survey, titled the *Pharmacy Self-efficacy and Self-esteem Study Questionnaire*, was presented to the Institutional Review Board at Northeastern University. Once approved, it was presented to the member schools for approval by their IRB. The sample time frame was the spring, April and May 2011, where all students were approximately at the same point in their coursework. The sample frame includes three characteristics; comprehensiveness, probability of selection and efficiency (Fowler, 2002). Comprehensiveness is based on a percentage of the population that is being selected and the risk of excluding participants. Since the study is of pharmacy students, physically going to their individual school would be the optimal method of capturing as large of a sample as possible. The probability of selection of an individual is another factor identified and the sample of pharmacy students in classes during the spring maximizes the probability of capturing as many as possible. The efficiency factor addresses the most effective process to capture the desired population without the ability to obtain 100% participation. Since the sample is within a school of pharmacy and not a general population, the process of going through a site faculty member/dean maximizes the efficiency factor.

Sample size is the next topic. The school class sizes range from 100 to 300 students, so the goal would ideally be as close to 100% as possible. The non-response rate could be a factor if the non-responders have a low level of self-efficacy or self-esteem and opt not to participate. People who are particularly interested in the research problem tend to be the most likely ones to respond (Fowler, 2002, p. 61). The survey was framed as not an analysis of a particular student, but of the educational model.
The survey was the vehicle for obtaining the desired information. Since each school had a designated faculty member/dean administering the survey or asking students to complete the electronic survey, the response rate was expected to be higher as compared to an outsider asking students to complete a survey.

In addition to the questions, gender, age and the school a student attends was collected, as well as the types and the amount of time of their out of school experiences. For types of experiences, the most common was community pharmacies and hospital pharmacies. There are some miscellaneous positions students may work in such as a pharmaceutical company, home infusion or long-term care pharmacy. The experiences were grouped into time frames of: < 1 year, one to two years, and > 2 years. School provided experiences were determined based on the curriculum plan offered at each school.

The Generalized-Self Efficacy scale contains eight questions and the Rosenberg Self-Esteem Scale contains ten questions. The scales include all of the original items and have not been altered. Participants were told that general self-efficacy relates to “one’s estimate of one’s overall ability to perform successfully in a wide variety of achievement situations, or to how confident one is that she or he can perform effectively across different tasks and situations,” and self-esteem relates to “the overall affective evaluation of one’s own worth, value, or importance, or to how one feels about oneself as a person” (G. Chen, et al., 2001). The responses for the questions in each scale are added to determine a rating of self-efficacy and self-esteem.

**IRB process.**

IRB approval was obtained from schools 3 and 4. Schools 1, 2 and 5 agreed to be a participatory site, which did not require IRB approval. The benefit to the participating schools is
to determine if the different models of delivering experiential education have a measurable impact on self-efficacy and self-esteem. The researcher worked with the dean, or a faculty member designated by the dean to identify a class where they can administer the survey to students. The survey took about 10 minutes to complete.

**Data analysis.**

The descriptive statistics include the means and standard deviations. The most common test to compare groups is a t-test, which examines differences between means. Crosstabs was performed for data exploration with Chi Square testing on categorical data to see if there are any relationships between variables. An analysis of variance (ANOVA) was also completed. ANOVA has 3 assumptions (Stevens, 1999),

1. The observations are normally distributed on the dependent variable in each group.
2. The population variances for the groups are equal.
3. The observations are independent.

Data management and analysis was completed using the SPSS PAWS 18 Statistical Software program.

**Validity and Reliability**

The researcher used the questions from the General Self-Efficacy (GSE) Scale and the Rosenberg Self Esteem Scale (RSES). Reliability is determined by using the Cronbach Alpha (α) measurement. The General Self-Efficacy Scale has a reliability factor where $\alpha = 0.76$-$0.89$ (G. Chen, et al., 2001). The Rosenberg Self-Esteem Scale has questions 1, 2, 4, 6, and 7 reverse coded, which was corrected for the analysis. The reliability factor of the Rosenberg Self-Esteem Scale is $\alpha = 0.80$, which is considered a reliable instrument (Classen, et al., 2007, p. 88). A
Cronbach alpha of less than 0.7 is considered a low value, so both factors are higher, thus demonstrating a high level of internal consistency (G. Chen, et al., 2001). These are the core questionnaires of the survey. Other questions are collecting demographic and work experience information. Based on the use of existing instruments as the primary data sources of the study, the validity and reliability have previously been substantiated.

**Limitations**

As a researcher examining the performance of students in a school of pharmacy, I have a personal bias to demonstrate that more experiential education results in a higher self-efficacy score. My role as the Senior Cooperative Education Coordinator of Pharmacy Education at Northeastern University is one where I believe that the experience students receive from several months of work experience is superior to other types of experience. The results were analyzed utilizing quantitative statistical methodology and the conclusions will either be in agreement or contradiction with my hypotheses. Another factor could be that the use of self-efficacy to measure differences between students was the wrong item to measure. Other methodologies to determine differences could have to be examined.

My colleagues, both faculty and professional staff at other schools of pharmacy, worked with me to distribute the survey. A potential bias is that their students who understand the study would want to demonstrate a high level of self-efficacy and self-esteem. Since the GSE survey and Rosenberg Self-esteem Scale have been demonstrated as being valid and reliable instruments, there should not be any change to the validity since I am using the exact survey questions with no manipulations. The only additional information I am seeking is gender, age, GPA and prior pharmacy experience. The demographic information is standard information.
obtained in many research protocols. The prior pharmacy experience may be an area with a potential issue since students may put information on the survey, which has to be interpreted and categorized by the researcher. Since this information is not affecting how a student responds to the GSE questions, this should not affect the validity of the instrument. Self reporting is subjective for all psychological testing and the phenomenon of “the social desirability effect” is one where respondents want to be seen as being successful and as a defensive response, they score higher than the actual level of where they should be reporting themselves at (Mruk, 2006).

**Threats to Validity**

Creswell (2009) discusses internal and external validity threats. My survey is a one-time event that precludes some of the internal validity threats such as history, maturation and regression. The selection of the students with certain characteristics is being accomplished through outreach to pharmacy school deans in the New England area. The students have a high probability of similar backgrounds since the schools draw students primarily from the northeast United States, with a mix of students from across the US and international students. One threat is that the schools in the study are a mix of private and public institutions. A socioeconomic analysis is not a component of the survey, which may potentially affect the results based on the type of student who attends private versus a public institution. My research examined experiential education and this should occur regardless of socioeconomic status. Some students may work more due to financial need, but that would presumably enhance their self-efficacy and self-esteem if the experiences occurred in a pharmacy setting. For external validity, the paper version yielded a higher response rate. Sites where the students completed an online version had reduced participation. The variability in early experiential education provided by each school of
pharmacy, which is revised every few years, results in a conclusion based on current delivery models. The ability to extrapolate the findings to a national population may not be valid due to potential regional biases.

**Protection of Human Subjects**

There is no personal, physical or emotional risk that a participant is taking to be part of this study. Students were asked to voluntarily take the survey by one of their faculty members. This may have placed students in a situation where they felt pressured to complete the survey since their faculty member was asking them. There is not any identifier other than gender, age, GPA and general experiences, so though the faculty member of a specific school might know students well enough to figure out who completed the survey, the surveys are sent to myself who would not have any method of identifying a student beyond what they wrote. This would provide anonymity to the students when the surveys are combined. The other potential issue is that students might feel that they are being tested and try to answer the way they think will present them in the best light, which would obviously skew the data. The person administering the survey asked the students to answer honestly and that stated that the information would be used in the aggregate to improve their educational experiences. An unsigned consent form was provided to students with the information about the study, contact person and IRB information.

The application was submitted and approved by the Northeastern University Institutional Research Board. There is no health information being collected, thus not requiring adherence to HIPAA laws. The surveys will remain in a locked office and be inaccessible to unauthorized people upon completion of the study.
Chapter Four: Report of Research Findings

Review of Study's Research Questions and Methodology

This research study examined the effect of experiential education on a student's self-esteem and self-efficacy. The data describes the results of survey responses from student participants (n = 399) from five schools of pharmacy that are in relatively close geographical proximity. The five schools were coded as follows:

- School 1 - A private college with a six-year PharmD program
- School 2 - A private three-year accelerated PharmD program
- School 3 - A private research university with a six-year PharmD program (with cooperative education)
- Schools 4 and 5 - Public research universities with a two-year pre-pharmacy program plus a four-year PharmD degree

Study surveys were distributed and administered during the Spring of 2011 in both paper and electronic formats. Survey responses were collected by June 3, 2011 from all five schools that agreed to participate in the research. The researcher received a total of 399 surveys from the five participating schools. The SPSS PASW 18 program was used to analyze the data based on the researcher's previous training, familiarity and availability of the program.

Paper surveys were used for the schools 1, 2 and 3, with a total of 353 respondents, and electronic surveys were used with schools 4 and 5, with a total of 46 respondents, per request of their respective deans. A series of descriptive summaries of the data provides an overview of the participants and responses. The independent variables, which proved to be significant and used to analyze self-esteem and self-efficacy, are school, gender, ethnicity, year of birth, grade point
average (GPA), paid experiences and introductory pharmacy practice experiences (IPPEs). The dependent variables used to measure self-esteem and self-efficacy are derived from the Generalized Self-Efficacy Scale and the Rosenberg Self-Esteem Scale. Both scales have been extensively used and reviewed in the literature as valid and reliable instruments to measure their targeted parameters. The researcher chose to use the scales in the original format to avoid any potential degradation of validity and reliability due to changing wording or answer scales. The dependent variables were chosen as a measure of a person’s image of one’s self, which the researcher determined in the literature review as potentially enhanced by increased experiences in the work setting.

**Organization of Chapter**

The chapter is organized into two sections: Section 1, descriptive statistics of the independent variables and Section 2, the statistical testing of the hypotheses.

**Section 1. Descriptive Statistics of the Independent Variables**

The response rates compared to the total class sizes at each school were approximately 66% for school 1, 50% for school 2, 50% for school 3, 17% for school 4, and 30% for school 5. The response rates were highest for schools 1, 2 and 3, and significantly less for schools 4 and 5. These response rates confirm the literature previously reviewed which emphasized that paper questionnaires tend to yield a better response rate than an electronic questionnaire, even though there is less work for the student and researcher using the electronic resource (Fowler, 2002). For schools 4 and 5, an initial email asking for cooperation in the study went from the dean's office of the respective school to the students in the targeted population. After one week and in response to a very low response rate, the researcher contacted the deans' offices and requested a
reminder email be sent to the non-responding students to try to increase the response rate. The request was prefaced that it would be a onetime reminder and the researcher would not ask again. The deans agreed to cooperate. The reminder was sent and the response rate did improve by about 10% from the first request, but was still low based on the total class size.

An analysis of the responses between the paper and electronic versions showed similar response patterns based on the questions regardless of the format. The number of responses from schools 4 and 5 to certain questions was too low for statistically significant testing (< 5 responses), but the overall percentage distribution across questions was similar among all of the schools. The paper survey compared to the electronic survey did not affect the response pattern.

**Gender.** Gender was examined to determine if there is a relationship with self-efficacy and self-esteem. The final numbers of respondents are displayed in Table 1.
Table 1  
*Pharmacy Program by Gender*

<table>
<thead>
<tr>
<th>School</th>
<th>Count</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>School 1</td>
<td></td>
<td>71</td>
<td>131</td>
<td>202</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>School</td>
<td>within</td>
<td>within</td>
<td>within</td>
<td></td>
</tr>
<tr>
<td>School 2</td>
<td></td>
<td>37</td>
<td>53</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>School</td>
<td>within</td>
<td>within</td>
<td>within</td>
<td></td>
</tr>
<tr>
<td>School 3</td>
<td></td>
<td>21</td>
<td>40</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>School</td>
<td>within</td>
<td>within</td>
<td>within</td>
<td></td>
</tr>
<tr>
<td>School 4</td>
<td></td>
<td>4</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>School</td>
<td>within</td>
<td>within</td>
<td>within</td>
<td></td>
</tr>
<tr>
<td>School 5</td>
<td></td>
<td>7</td>
<td>23</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>School</td>
<td>within</td>
<td>within</td>
<td>within</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>140</td>
<td>259</td>
<td>399</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>School</td>
<td>within</td>
<td>within</td>
<td>within</td>
<td></td>
</tr>
</tbody>
</table>

According to American Association of Colleges of Pharmacy (AACP) statistics, in 2010, 61% of pharmacy students were women. The sample distribution was 64.9% female, which is slightly higher than the national average (AACP, 2011). For further explanation of population data, see Appendix 1, where the survey data for the sample population was compared to the actual population.

**Year of birth (age).** The age of the student was examined to determine if there is a relationship with self-esteem and self-efficacy. To better highlight the differences among
schools, the Year of Birth was recoded into two groups; 25 and Under and Over 25 years of age.

The information is displayed in Table 2.

Table 2

<table>
<thead>
<tr>
<th>Age</th>
<th>School 1</th>
<th>School 2</th>
<th>School 3</th>
<th>School 4</th>
<th>School 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 25</td>
<td>35</td>
<td>60</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>104</td>
</tr>
<tr>
<td>% within YOB by 25</td>
<td>33.7%</td>
<td>57.7%</td>
<td>7.7%</td>
<td>1.0%</td>
<td>.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>25 and Under</td>
<td>161</td>
<td>22</td>
<td>53</td>
<td>15</td>
<td>30</td>
<td>281</td>
</tr>
<tr>
<td>% within YOB by 25</td>
<td>57.3%</td>
<td>7.8%</td>
<td>18.9%</td>
<td>5.3%</td>
<td>10.7%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>196</td>
<td>82</td>
<td>61</td>
<td>16</td>
<td>30</td>
<td>385</td>
</tr>
<tr>
<td>% within YOB by 25</td>
<td>50.9%</td>
<td>21.3%</td>
<td>15.8%</td>
<td>4.2%</td>
<td>7.8%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Students selected for study in Schools 1, 3, 4 and 5 are traditional college aged students who were admitted from high school directly into a professional pharmacy program requiring five years to reach the point in the curriculum which the researcher targeted. If a student graduated high school at 18 years of age and attended pharmacy school for five years, the students would be on average 23 years of age. Since this research occurred in 2011, the year of birth for students who matriculated through without any academic difficulties requiring an extra year, would be 1988. Only in school 2, the students tend to be older since a bachelor's degree was required to enter their accelerated program. They would have completed a prior degree in
four years, and at the time of the survey, they would be in their second year of a three year
accelerated program. This would be at a time point of six years post high school assuming they
went from high school to completing an undergraduate degree, then directly to pharmacy school.
The year of birth for this group would be 1987 on average assuming no delays in matriculation.
The students born prior to 1987 may have taken a path resulting in a time gap between their
undergraduate education and their pharmacy education. This may include working, traveling or
other activities that took time away from their academic career and may have an impact on self-
efficacy and self-esteem.

**Ethnicity.** Ethnicity was examined to determine if there is a relationship with self-esteem
and self-efficacy. Table 3 displays the distribution of ethnicity for all students participating in
the sample. The largest ethnic groups in the sample were the White/Caucasian 237 (59%),
followed by the Asian/Pacific Islanders 118 (29.4%). The African-American/Black ethnic group
sample size was 16 (4%) and the Spanish, Hispanic and Latino ethnic group sample size was 9
(2.3%). The numbers of underrepresented minorities are 11.2% nationally (AACP, 2011). In
this sample, the percentage of African-American/Black and Spanish, Hispanic and Latino
students totaled 6.3%, which is less than the national average. There may be a cultural
relationship with self-efficacy and self-esteem, which will be further examined. Table 3 displays
the distribution of responses by ethnicity.
Table 3

Frequency Distribution of Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>African-American/Black</td>
<td>16</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Spanish, Hispanic &amp; Latino</td>
<td>9</td>
<td>2.2</td>
<td>2.3</td>
<td>6.3</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>118</td>
<td>29.4</td>
<td>29.6</td>
<td>35.8</td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>237</td>
<td>59.0</td>
<td>59.4</td>
<td>95.2</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
<td>3.0</td>
<td>3.0</td>
<td>98.2</td>
</tr>
<tr>
<td>Prefer not to state</td>
<td>7</td>
<td>1.7</td>
<td>1.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>399</td>
<td>99.3</td>
<td></td>
<td>100.0</td>
</tr>
<tr>
<td>Missing</td>
<td>3</td>
<td>.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>402</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Grade point average (GPA). The students’ GPA was examined to determine if there is a relationship with self-esteem and self-efficacy. Students who are admitted to pharmacy schools tend to be high achieving students due to the correlation of GPA and success in the program (Sasaki-Hill, Barnett, McDonald, & Knapp, 2008). Only half of the participating students (49.3%) responded to the GPA variable, as displayed in Table 4. Of those who responded to the GPA question, three-fourths (75.3%) of students had a 3.0 or higher GPA, while only one-fourth (24.7%) were less than 3.0. The low return rate was in spite of a verbal request to students to supply the information on the paper survey, which many students chose to ignore. This variable had the lowest response rate of all the variables possibly due to the
students' reluctance to reveal it. It may be that they feel this information is identifiable or they are embarrassed to reveal it, especially if it is low. In order to more easily display the information, the GPA was recoded into three meaningful groups to distinguish low, average and high achievement in the pharmacy program: Less than 3.0, 3.0 to 3.4 and 3.5 to 4.0. Table 4 displays the Valid Percent based on the total number of responses, excluding the 204 or 50.7% of the missing responses.

Table 4

<table>
<thead>
<tr>
<th>GPA Frequency in Categories</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid Less than 3.0</td>
<td>49</td>
<td>12.2</td>
<td>24.7</td>
<td>24.7</td>
</tr>
<tr>
<td>3.0 to 3.4</td>
<td>72</td>
<td>17.9</td>
<td>36.4</td>
<td>61.1</td>
</tr>
<tr>
<td>3.5 to 4.0</td>
<td>77</td>
<td>19.2</td>
<td>38.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>198</td>
<td>49.3</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Types of pharmacy experiences.

The Introductory Pharmacy Practice Experiences (IPPE) and the Paid Pharmacy Experiences are independent variables concerned with experiential education. The IPPE is a part of the curriculum and delivered through a course where a student spends structured time in various pharmacy and other related settings (such as community service) as an unpaid student receiving academic credit and a grade. Paid experience is a traditional work experience where a student is a paid employee in a pharmacy setting receiving a performance evaluation.
Introductory pharmacy practice experiences (IPPE).

Table 5 displays the amount of IPPE hours by school in 50-hour increments.

Table 5

<table>
<thead>
<tr>
<th>IPPE in 50 hr increments</th>
<th>School 1</th>
<th>School 2</th>
<th>School 4</th>
<th>School 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>14</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>% within School</td>
<td>7.7%</td>
<td>1.8%</td>
<td>.0%</td>
<td>.0%</td>
<td>5.4%</td>
</tr>
<tr>
<td>51 to 100 hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>9</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>% within School</td>
<td>4.9%</td>
<td>7.3%</td>
<td>.0%</td>
<td>7.4%</td>
<td>5.4%</td>
</tr>
<tr>
<td>101 to 150 hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>152</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>155</td>
</tr>
<tr>
<td>% within School</td>
<td>83.1%</td>
<td>5.5%</td>
<td>.0%</td>
<td>.0%</td>
<td>55.4%</td>
</tr>
<tr>
<td>151 to 200 hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>% within School</td>
<td>3.8%</td>
<td>3.6%</td>
<td>20.0%</td>
<td>3.7%</td>
<td>4.6%</td>
</tr>
<tr>
<td>201 to 250 hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>% within School</td>
<td>.5%</td>
<td>1.8%</td>
<td>6.7%</td>
<td>3.7%</td>
<td>1.4%</td>
</tr>
<tr>
<td>251 to 300 hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>0</td>
<td>3</td>
<td>11</td>
<td>20</td>
<td>34</td>
</tr>
<tr>
<td>% within School</td>
<td>.0%</td>
<td>5.5%</td>
<td>73.3%</td>
<td>74.1%</td>
<td>12.1%</td>
</tr>
<tr>
<td>300 to 350 hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>0</td>
<td>41</td>
<td>0</td>
<td>3</td>
<td>44</td>
</tr>
<tr>
<td>% within School</td>
<td>.0%</td>
<td>74.5%</td>
<td>.0%</td>
<td>11.1%</td>
<td>15.7%</td>
</tr>
<tr>
<td>Total</td>
<td>183</td>
<td>55</td>
<td>15</td>
<td>27</td>
<td>280</td>
</tr>
<tr>
<td>% within School</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

School 3, the school with the cooperative education model, has the hours reported as paid experiences and *does not* have specified IPPE hours. School 1 had the widest range of responses from 30 to 240 hours. Over four-fifths (83.1%) of the students accumulated between 101-150 hours of experience at the time of the survey. In School 2, the accelerated program, students in
the sample reported the largest percentage (41%) of experience in the 301 to 350 hours range. Schools 4 and 5 had similar ranges with three-fourths of the students reporting experience in the 250 to 300 hours range. The reason the hours are clustering for school 1 at 101-150 hours is that their IPPE curriculum was in the last year of a program that included a total of 140 hours. The students in School 3 accumulated a total of 320 hours as part of their IPPE requirement.

**Paid experiences.** Students were asked to provide the amount of paid experiences in units of years worked in a pharmacy once enrolled in the Doctor of Pharmacy program. They were provided four categories: No experience, Less than 1 year of experience, 1 to 2 years of experience, and more than 2 years of experience. Table 6 displays the amount of Paid Pharmacy Experiences.
Table 6
*Paid Experiences in Years by School*

<table>
<thead>
<tr>
<th>School</th>
<th>Count</th>
<th>None</th>
<th>&lt; 1 year</th>
<th>1-2 years</th>
<th>&gt; 2 years</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>School 1</td>
<td></td>
<td>7</td>
<td>14</td>
<td>33</td>
<td>136</td>
<td>190</td>
</tr>
<tr>
<td>% within School</td>
<td></td>
<td>3.7%</td>
<td>7.4%</td>
<td>17.4%</td>
<td>71.6%</td>
<td>100.0%</td>
</tr>
<tr>
<td>School 2</td>
<td></td>
<td>19</td>
<td>12</td>
<td>15</td>
<td>28</td>
<td>74</td>
</tr>
<tr>
<td>% within School</td>
<td></td>
<td>25.7%</td>
<td>16.2%</td>
<td>20.3%</td>
<td>37.8%</td>
<td>100.0%</td>
</tr>
<tr>
<td>School 3</td>
<td></td>
<td>1</td>
<td>5</td>
<td>8</td>
<td>37</td>
<td>51</td>
</tr>
<tr>
<td>% within School</td>
<td></td>
<td>2.0%</td>
<td>9.8%</td>
<td>15.7%</td>
<td>72.5%</td>
<td>100.0%</td>
</tr>
<tr>
<td>School 4</td>
<td></td>
<td>0</td>
<td>1</td>
<td>9</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>% within School</td>
<td></td>
<td>.0%</td>
<td>6.3%</td>
<td>56.3%</td>
<td>37.5%</td>
<td>100.0%</td>
</tr>
<tr>
<td>School 5</td>
<td></td>
<td>0</td>
<td>2</td>
<td>18</td>
<td>8</td>
<td>28</td>
</tr>
<tr>
<td>% within School</td>
<td></td>
<td>.0%</td>
<td>7.1%</td>
<td>64.3%</td>
<td>28.6%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>27</td>
<td>34</td>
<td>83</td>
<td>215</td>
<td>359</td>
</tr>
<tr>
<td>% within School</td>
<td></td>
<td>7.5%</td>
<td>9.5%</td>
<td>23.1%</td>
<td>59.9%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Schools 1 and 3 are similar models (0-6 year programs) located in an urban area with many opportunities to work outside of structured experiences. The survey question asked for a response in terms of "years" which did not differentiate between full or part-time hours. Over 87% of students from Schools 1 and 3 have been working for over a year with a majority of the time (over 71%) in the > 2 year time frame. School 2 is the accelerated program, with less opportunity in time to work, with an equal distribution over the four categories. Students in Schools 4 and 5 are located in rural areas with less opportunity to work during the school year and the students have an opportunity to work during the summers off from classes. Students in
Schools 4 and 5 reported the majority of hours (56 to 64%) in the 1-2 year category. The
students in Schools 1, 3, 4 and 5 report that over 95% have paid experiences, while students in
School 2 report that about 75% have paid experiences.

Self-efficacy.

Self-efficacy is defined as an individual's belief in their ability to perform well in a
variety of situations (Scherbaum, et al., 2006). The self-efficacy score was obtained from the
Generalized Self-efficacy Scale within the survey and the results are displayed in Table 7. The
data was categorized into six groups at intervals of five points each for the analysis.

Table 7
Self-efficacy Score Recoded into 5-point Groups

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 to 10 points</td>
<td>1</td>
<td>.2</td>
<td>.3</td>
</tr>
<tr>
<td>16 to 20 points</td>
<td>3</td>
<td>.7</td>
<td>.8</td>
</tr>
<tr>
<td>21 to 25 points</td>
<td>10</td>
<td>2.5</td>
<td>2.6</td>
</tr>
<tr>
<td>26 to 30 points</td>
<td>77</td>
<td>19.2</td>
<td>19.7</td>
</tr>
<tr>
<td>31 to 35 points</td>
<td>167</td>
<td>41.5</td>
<td>42.7</td>
</tr>
<tr>
<td>36 to 40 points</td>
<td>133</td>
<td>33.1</td>
<td>34.0</td>
</tr>
<tr>
<td>Total</td>
<td>391</td>
<td>97.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Missing</td>
<td>11</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>System Total</td>
<td>402</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
Self-esteem.

Self-esteem is defined as a global positive or negative self-assessment (Rosenberg, 1965). The self-esteem score was obtained from the Rosenberg Self-esteem Scale within the survey and categorized into eight groups at intervals of 5 points for the analysis. The descriptive statistics are in Table 8.

Table 8

*Self-esteem Scores Recoded into 5-point Groups*

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 to 15 points</td>
<td>1</td>
<td>.2</td>
<td>.3</td>
</tr>
<tr>
<td>16 to 20 points</td>
<td>4</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>21 to 25 points</td>
<td>4</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>26 to 30 points</td>
<td>21</td>
<td>5.2</td>
<td>5.4</td>
</tr>
<tr>
<td>31 to 35 points</td>
<td>32</td>
<td>8.0</td>
<td>8.3</td>
</tr>
<tr>
<td>36 to 40 points</td>
<td>65</td>
<td>16.2</td>
<td>16.8</td>
</tr>
<tr>
<td>41 to 45 points</td>
<td>118</td>
<td>29.4</td>
<td>30.5</td>
</tr>
<tr>
<td>46 to 50 points</td>
<td>142</td>
<td>35.3</td>
<td>36.7</td>
</tr>
<tr>
<td>Total</td>
<td>387</td>
<td>96.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Missing System</td>
<td>15</td>
<td>3.7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>402</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Section 2. Statistical Testing of the Hypotheses

The analysis of the Across Group Hypotheses compares self-efficacy and self-esteem with the independent variables school, gender, age, GPA, paid experiences, IPPEs and ethnicity.
To test the hypotheses, I used the analysis of variance (ANOVA), t-test and Chi-square testing methods. "The Chi square test of independence is used to examine the relationship between two discrete variables" (Tabachnick & Fidell, 2001, p. 55). The ANOVA tests the independent variables' ability to predict the dependent variable (Stevens, 2002). The assumptions for ANOVA, the multivariate statistic used to determine the effects of school, gender, age, GPA, paid experiences, IPPEs and ethnicity on the two dependent variables self-efficacy recoded and self-esteem recoded, are examined to determine if the test is appropriate. The researcher used the Kruskal-Wallis One Way Analysis of Variance, which is a non-parametric test used when the assumptions for ANOVA are not met (McDonald, 2009).

The results of the ANOVA and t-test which investigated each main effect on the individual dependent variables are presented. The results of each of the pairwise comparison of the Across Groups Hypotheses tests are presented.

The Across Group Hypotheses were tested to determine if there was a significant difference between self-efficacy and self-esteem based upon the independent variables: paid experience, IPPEs, school, gender, GPA, age and ethnicity. The Across Group Hypotheses are summarized in Table 9.
<table>
<thead>
<tr>
<th>Self-efficacy Hypotheses</th>
<th>Self-esteem Hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: The self-efficacy of a student with paid work experience is higher than the self-efficacy of a student with no paid experience.</td>
<td>H8: The self-esteem of a student with paid work experience is higher than the self-esteem of a student with no experience.</td>
</tr>
<tr>
<td>H2: The self-efficacy of a student with introductory pharmacy practice experiences (IPPEs) will be greater than students with no introductory pharmacy practice experience.</td>
<td>H9: The self-esteem of a student with increased introductory pharmacy practice experiences (IPPEs) will be greater than students no experience.</td>
</tr>
<tr>
<td>H3: The self-efficacy of a student is affected by the school they attend.</td>
<td>H10: The school a student attends has an effect on their self-esteem.</td>
</tr>
<tr>
<td>H4: The self-efficacy scores of a male student will be higher than the self-efficacy scores of a female student.</td>
<td>H11: The self-esteem score of a male student will be higher than the self-esteem score of a female student.</td>
</tr>
<tr>
<td>H5: The self-efficacy of a student with a GPA equal to or greater than 3.4 is higher than the self-efficacy of a student with less than a 3.4 GPA.</td>
<td>H12: The self-esteem of a student with a GPA of equal to or greater than 3.4 is higher than the self-esteem of a student with less than a 3.4 GPA.</td>
</tr>
<tr>
<td>H6: The self-efficacy score of a student over 25 years will be higher than the self-efficacy score of a student less than 25 years of age.</td>
<td>H13: The self-esteem score of a student over 25 years will be higher than the self-esteem score of a student less than 25 years of age.</td>
</tr>
</tbody>
</table>
ANOVA Assumptions with 2 dependent variables and 7 independent variables

The researcher examined the data to ensure that the three assumptions for ANOVA were met: (1) the observations are independent, (2) the observations are normally distributed on the dependent variable in each group (robust in respect to Type 1 error), (3) the population variances of the groups are equal which is the homogeneity of variance assumption (conditionally robust if the group sizes are equal or approximately equal – largest/smallest < 1.5) (Stevens, 2002).

Assumption 1: Observations are independent

The most important assumption for ANOVA is that observations are independent of one another. This means that subject scores on the dependent measures account for a single subject score without the influence of other subjects in the study (Stevens, 2002)

The participants of this study received a survey administered individually and participants who received a paper survey completed the survey at their desk in a classroom, and the ones who used the electronic survey completed the survey on their own computer. Participants were independent of each other. Assumption 1 was met for all of the hypotheses.

Assumption 2: Observations on dependent variables follow a normal distribution in each group.

If the assumption is violated, the skewness has only a slight effect on the level of significance of power. The effects of kurtosis on level of significance, although greater, also tends to be slight. The Central Limit Theorem states that the sum of the independent observations having any distribution whatsoever approaches a normal distribution as the number of observations increases. Bock (1975) notes the sums of 50 or more observations approximate normality. Because the sums of the independent observations approach normality rapidly, so do
the means, and the sampling distribution of \( F \) is based on the means. The sampling distribution of \( F \) is only slightly affected and the critical values when sampling normal and non-normal distributions will not differ by much (Stevens, 2002, pp. 261-262) The test of normality ran both the Kolmogorov-Smirnov and Shapiro-Wilk tests, but the researcher used the Shapiro-Wilk (\( S-W \)) test based on the power or detecting departures from normality (Stevens, 2002). The \( S-W \) statistic is extremely sensitive to both kurtosis and skewness. When the \( S-W \) equals 1, the data is normally distributed, and when the \( S-W \) statistic is significantly smaller than 1, the assumption of normality is breached. The results are presented at the hypothesis level if the assumption is not met.

*Assumption 3: The population variances for the groups are equal, often referred to as the homogeneity of variance assumption (conditionally robust-robust if groups sizes are equal or approximately equal - largest/smallest < 1.5).*

When the group sizes are equal, the \( F \) statistic is robust against heterogeneous variances. When the group sizes are sharply unequal and the population variances are different, then if the large sample variances are associated with the small group sizes, the \( F \) statistic is liberal - we risk falsely rejecting the hypothesis too often. When large variances are associated with the large groups sizes, then the \( F \) statistic is conservative and there is a decrease in power, where a \( \alpha < .05 \) level of significance and will adversely affect the studies. The researcher selected the Levene test based on its robustness against nonnormality (Stevens, 2002). Assumption 1 was met for all of the hypotheses. The results are presented at the hypothesis level if the assumption is not met.
Self-efficacy and experiential education hypotheses analysis.

It is important to remember that hypotheses 1 and 2 are based on research question #1, is there is a relationship between the amount of experiential education, both the IPPE and paid experiences, and the level of a student's self-efficacy (using the General Self-Efficacy Scale), in a Doctor of Pharmacy program (at a similar point in the curriculum)?

**Hypothesis 1.** H1 predicts that the self-efficacy of a student with paid work experience is higher than the self-efficacy of a student with no paid experience.

Paid experiences statistically predicted higher self-efficacy, $F = 3.11$, $df = 5/351$, $p = .009$, $\eta^2 = .043$ in pharmacy students. The researcher rejected the null hypothesis and supported the research hypothesis that students with paid experience have higher self-efficacy as compared to the students with no experience.

A descriptive data table for self-efficacy recoded and paid experiences is presented in Table 10 to display the distribution of mean levels of self-efficacy recoded by amount of paid experience as reported by the students.
Table 10

Descriptive Statistics of Self-efficacy Recoded and Paid Experiences

<table>
<thead>
<tr>
<th>Exp.</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>27</td>
<td>6.74</td>
<td>1.163</td>
<td>.224</td>
<td>6.28</td>
<td>7.20</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>&lt; 1 year</td>
<td>34</td>
<td>6.97</td>
<td>.758</td>
<td>.130</td>
<td>6.71</td>
<td>7.24</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>1-2 years</td>
<td>82</td>
<td>7.10</td>
<td>.840</td>
<td>.093</td>
<td>6.91</td>
<td>7.28</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>&gt; 2 years</td>
<td>209</td>
<td>7.11</td>
<td>.869</td>
<td>.060</td>
<td>7.00</td>
<td>7.23</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>352</td>
<td>7.07</td>
<td>.881</td>
<td>.047</td>
<td>6.98</td>
<td>7.16</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

**Hypothesis 2.** H2 predicts that the self-efficacy of a student with introductory pharmacy practice experiences (IPPEs) of more than 50 hours will be greater than students with less than 50 hours of introductory pharmacy practice experience.

Introductory pharmacy practice experiences did not show an effect on the Self-efficacy score of pharmacy students, \( F = 1.15, df = 5/271, p = .334, \eta^2 = .021 \). The researcher retained the null hypothesis, which shows no differences in self-efficacy based on the number of IPPE hours a student has completed. The hypothesis is rejected.

Table 11 displays the descriptive statistics for the IPPE hours and the self-efficacy scores.
Table 11
Descriptive Statistics for Self-efficacy Score Recoded and IPPE Hours

<table>
<thead>
<tr>
<th>Hours</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 50 hours</td>
<td>14</td>
<td>7.21</td>
<td>.802</td>
<td>.214</td>
<td>6.75 - 7.68</td>
</tr>
<tr>
<td>51 to 100 hours</td>
<td>15</td>
<td>7.07</td>
<td>.961</td>
<td>.248</td>
<td>6.53 - 7.60</td>
</tr>
<tr>
<td>101 to 150 hours</td>
<td>151</td>
<td>7.05</td>
<td>.855</td>
<td>.070</td>
<td>6.92 - 7.19</td>
</tr>
<tr>
<td>151 to 200 hours</td>
<td>13</td>
<td>6.92</td>
<td>1.256</td>
<td>.348</td>
<td>6.16 - 7.68</td>
</tr>
<tr>
<td>201 to 250 hours</td>
<td>3</td>
<td>8.00</td>
<td>.000</td>
<td>.000</td>
<td>8.00 - 8.00</td>
</tr>
<tr>
<td>251 to 300 hours</td>
<td>32</td>
<td>7.16</td>
<td>1.194</td>
<td>.211</td>
<td>6.73 - 7.59</td>
</tr>
<tr>
<td>301 to 350 hours</td>
<td>44</td>
<td>7.11</td>
<td>.754</td>
<td>.114</td>
<td>6.88 - 7.34</td>
</tr>
<tr>
<td>Total</td>
<td>272</td>
<td>7.09</td>
<td>.905</td>
<td>.055</td>
<td>6.98 - 7.20</td>
</tr>
</tbody>
</table>

Self-efficacy and non-experiential independent variables hypotheses analysis.

It is important to remember that hypotheses 3 through 7 are based on research question #2, does school, gender, grade point average (GPA), year of birth, and ethnicity have an effect on self-efficacy?

**Hypothesis 3.** H3 predicts that the self-efficacy of students is affected by the school they attend.
The school a student attends does not have an effect on his/her self-efficacy score, $F(4, 388) = .218, p = .928, \eta^2 = .002$. The null hypothesis is supported. The hypothesis as stated is rejected. Table 12 displays the descriptive data of general self-efficacy scores by school.

Table 12

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>School 1</td>
<td>197</td>
<td>7.05</td>
<td>.867</td>
<td>.062</td>
<td>6.91</td>
<td>7.17</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>School 2</td>
<td>89</td>
<td>7.09</td>
<td>.793</td>
<td>.084</td>
<td>6.92</td>
<td>7.26</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>School 3</td>
<td>61</td>
<td>6.98</td>
<td>.741</td>
<td>.095</td>
<td>6.79</td>
<td>7.17</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>School 4</td>
<td>14</td>
<td>7.00</td>
<td>1.109</td>
<td>.296</td>
<td>6.36</td>
<td>7.64</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>School 5</td>
<td>28</td>
<td>7.14</td>
<td>1.325</td>
<td>.250</td>
<td>6.63</td>
<td>7.66</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>389</td>
<td>7.05</td>
<td>.879</td>
<td>.045</td>
<td>6.97</td>
<td>7.14</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

Hypothesis 4. H4 predicted that the self-efficacy score of a male student will be higher than the self-efficacy score of a female student.

The gender of a student did not have any effect on self-efficacy, $F(1, 389) = .388, p = .53, \eta^2 = .001$. The null hypothesis is retained and there is no difference between the genders on the self-efficacy scores. The hypothesis is rejected. Table 13 displays the self-efficacy scores by gender.
Table 13

Descriptive Statistics for Self-efficacy Recoded and Gender

<table>
<thead>
<tr>
<th>Self-efficacy recoded</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Std. Lower Bound</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Std. Upper Bound</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Max</td>
</tr>
<tr>
<td>Male</td>
<td>139</td>
<td>7.09</td>
<td>.788</td>
<td>.067</td>
<td>6.96</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.23</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Female</td>
<td>252</td>
<td>7.04</td>
<td>.925</td>
<td>.058</td>
<td>6.92</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>391</td>
<td>7.06</td>
<td>.878</td>
<td>.044</td>
<td>6.97</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
</tr>
</tbody>
</table>

Hypothesis 5. H5 predicted the self-efficacy of a student with a GPA equal to or greater than 3.4 is higher than the self-efficacy of a student with less than a 3.4 GPA.

A student's academic performance based on their GPA score did not show any effect on the self-efficacy scores, $F (2, 190) = .846, p = .431, \eta^2 = .009$. The null hypothesis is retained. There was no difference in the self-efficacy scores of a student based on their GPA range. The hypothesis is rejected. Table 14 displays the GPA and Self-efficacy descriptive statistics.
Table 14

Descriptive Statistics for Self-efficacy Recoded and GPA

<table>
<thead>
<tr>
<th>GPA</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 3.0</td>
<td>48</td>
<td>7.25</td>
<td>.700</td>
<td>.101</td>
<td>7.05</td>
<td>7.45</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>3.0 to 3.4</td>
<td>69</td>
<td>7.06</td>
<td>.802</td>
<td>.097</td>
<td>6.87</td>
<td>7.25</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>3.5 to 4.0</td>
<td>76</td>
<td>7.21</td>
<td>1.024</td>
<td>.117</td>
<td>6.98</td>
<td>7.44</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>193</td>
<td>7.17</td>
<td>.874</td>
<td>.063</td>
<td>7.04</td>
<td>7.29</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

Hypothesis 6. H6 predicted that a student over 25 years of age has higher self-efficacy than the students 25 years of age and under.

Age as a variable did not have any effect on the self-efficacy score of a student, $F(1, 376) = .112, p = .739, \eta^2 = .000$. Based on the results, the null hypothesis is retained. The hypothesis is rejected. Table 15 displays the descriptive data for the self-efficacy score and age groupings.

Table 15

Descriptive Statistics for Self-efficacy Recoded and Age Group

<table>
<thead>
<tr>
<th>Age</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 25</td>
<td>102</td>
<td>7.09</td>
<td>.857</td>
<td>.085</td>
<td>6.92</td>
<td>7.26</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Under 25</td>
<td>276</td>
<td>7.05</td>
<td>.883</td>
<td>.053</td>
<td>6.95</td>
<td>7.16</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>378</td>
<td>7.06</td>
<td>.875</td>
<td>.045</td>
<td>6.98</td>
<td>7.15</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>
**Hypothesis 7.** H7 predicted that the ethnicity of a student affects their self-efficacy.

The researcher sought to determine if there was a relationship between a student's ethnicity and their self-efficacy score.

The $S-W$ statistic was not significant for the African-American/Black students, $S-W(15) = .900, p = .097$ and the Spanish, Hispanic and Latino students, $S-W(7) = .890, p = .275$. There was a significant finding for the Asian/Pacific Islander students $S-W(114) = .957, p = .001$, and the White/Caucasian students $S-W(234) = .961, p < .001$. The test of normality was not met for the first two groups, but was for the last two groups. Since the sample size is > 50, observations approximate normality and this assumption is met. The Levene's Statistic $(5, 383) = 2.56, p = .027$. Since $p < .05$, the variables are significantly different. The sample does not meet the assumption of homogeneity.

Since the assumptions of ANOVA were not met, a nonparametric test, the independent samples Kruskal-Wallis test was run. The results showed that ethnicity did have an effect on the self-efficacy scores, $p < .001$.

The researcher examined the ethnicity variable relationship to self-efficacy based on the categorical data using Chi square testing. One particular group, the Asian/Pacific Islanders, showed a significant relationships to the self-efficacy variable, $\chi^2 (16, N = 113) = 51.77, p < .001$. The null hypothesis is rejected and the research hypothesis of differences in the self-efficacy score based on ethnicity was supported. Table 16 displays the self-efficacy scores based on the ethnicity reported by the students.
Table 16

Descriptive Statistics for Self-efficacy Score Recoded and Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>African-American/Black</td>
<td>15</td>
<td>7.20</td>
<td>.862</td>
<td>.223</td>
<td>6.72</td>
<td>7.68</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Spanish, Hispanic &amp; Latino</td>
<td>7</td>
<td>7.14</td>
<td>1.069</td>
<td>.404</td>
<td>6.15</td>
<td>8.13</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>114</td>
<td>6.72</td>
<td>.936</td>
<td>.088</td>
<td>6.55</td>
<td>6.89</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>234</td>
<td>7.24</td>
<td>.727</td>
<td>.048</td>
<td>7.15</td>
<td>7.34</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>other</td>
<td>12</td>
<td>6.92</td>
<td>.793</td>
<td>.229</td>
<td>6.41</td>
<td>7.42</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Prefer not to state</td>
<td>7</td>
<td>6.14</td>
<td>2.035</td>
<td>.769</td>
<td>4.26</td>
<td>8.03</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>389</td>
<td>7.06</td>
<td>.877</td>
<td>.044</td>
<td>6.97</td>
<td>7.14</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

**Self-esteem and experiential education hypotheses analysis.**

It is important to remember that hypotheses 8 and 9 are based on research question #3, is there is a relationship between the amount of experiential education (paid pharmacy experiences and introductory pharmacy practice experiences - IPPEs) and the level of a student's self-esteem in a Doctor of Pharmacy program?

**Hypothesis 8.** H8 predicted that the self-esteem of a student with paid work experience is higher than the self-esteem of a student with no experience.
Paid experiences showed an effect of a student's level of self-esteem, $F(1,342) = 4.971$, $p = .026$, $\eta^2 = .016$. The null hypothesis is rejected. The research hypothesis is supported. Table 17 displays the descriptive data for paid experiences and self-esteem.

Table 17

<table>
<thead>
<tr>
<th>Paid Exp</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>26</td>
<td>8.42</td>
<td>1.528</td>
<td>.300</td>
<td>7.81 - 9.04</td>
</tr>
<tr>
<td>&lt; 1 year</td>
<td>32</td>
<td>8.50</td>
<td>1.218</td>
<td>.215</td>
<td>8.06 - 8.94</td>
</tr>
<tr>
<td>1-2 years</td>
<td>80</td>
<td>8.71</td>
<td>1.203</td>
<td>.135</td>
<td>8.44 - 8.98</td>
</tr>
<tr>
<td>&gt; 2 years</td>
<td>211</td>
<td>8.89</td>
<td>1.365</td>
<td>.094</td>
<td>8.70 - 9.07</td>
</tr>
<tr>
<td>Total</td>
<td>349</td>
<td>8.78</td>
<td>1.333</td>
<td>.071</td>
<td>8.64 - 8.92</td>
</tr>
</tbody>
</table>

**Hypothesis 9.** H9 predicted that the self-esteem of a student with increased introductory pharmacy practice experiences (IPPEs) will be greater than students no experience.

The assumption of normality using the $S-W$ test showed significance for the IPPE hour categories of 51 to 350 hours, but not for the 1 to 50 hours. As discussed previously, the sampling distribution of $F$ is only slightly affected, and the critical values when sampling normal and non-normal distributions will not differ by much. The normality results are close to 1, meeting the normality assumption. The Levene's Statistic $(6, 264) = 3.45$ $p = .003$. Since $p < .05$, the two variables are significantly different. This does not meet the final assumption of homogeneity of data.
Since the ANOVA assumptions were not met, the Kruskal-Wallis test was used at a significance level of .05. The result was $p = .172$, retaining the null hypothesis that there is no difference in self-esteem based on the amount of IPPE hours. Table 18 displays the descriptive statistics.

Table 18

*Descriptive Statistics for Self-esteem Score Recoded and IPPE Hours*

<table>
<thead>
<tr>
<th>IPPE Hours Range</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>Lower 95% CI</th>
<th>Upper 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 50 hours</td>
<td>15</td>
<td>8.73</td>
<td>1.100</td>
<td>.284</td>
<td>8.12</td>
<td>9.34</td>
</tr>
<tr>
<td>51 to 100 hours</td>
<td>15</td>
<td>9.27</td>
<td>.884</td>
<td>.228</td>
<td>8.78</td>
<td>9.76</td>
</tr>
<tr>
<td>101 to 150 hours</td>
<td>151</td>
<td>8.97</td>
<td>1.233</td>
<td>.100</td>
<td>8.78</td>
<td>9.17</td>
</tr>
<tr>
<td>151 to 200 hours</td>
<td>13</td>
<td>8.23</td>
<td>1.964</td>
<td>.545</td>
<td>7.04</td>
<td>9.42</td>
</tr>
<tr>
<td>201 to 250 hours</td>
<td>3</td>
<td>10.00</td>
<td>.000</td>
<td>.000</td>
<td>10.00</td>
<td>10.00</td>
</tr>
<tr>
<td>251 to 300 hours</td>
<td>33</td>
<td>8.73</td>
<td>1.606</td>
<td>.280</td>
<td>8.16</td>
<td>9.30</td>
</tr>
<tr>
<td>301 to 350 hours</td>
<td>41</td>
<td>8.66</td>
<td>1.217</td>
<td>.190</td>
<td>8.27</td>
<td>9.04</td>
</tr>
<tr>
<td>Total</td>
<td>271</td>
<td>8.87</td>
<td>1.305</td>
<td>.079</td>
<td>8.72</td>
<td>9.03</td>
</tr>
</tbody>
</table>

**Self-esteem and non-experiential independent variables hypotheses analysis.**

It is important to remember that hypotheses 10 through 14 based on research question #4, do school, gender, grade point average (GPA), year of birth and ethnicity have an effect on self-esteem?
**Hypothesis 10.** H10 predicted that the school a student attends has an effect on their self-esteem.

The Levene's statistic \( (4, 380) = 3.067 \) \( p = .017 \) showing differences between the schools and the assumption of homogeneity of data is not met. The effect of school on self-esteem was analyzed using the Kruskal-Wallis test at a significance level of .05, resulting in \( p = .025 \), showing differences of self-esteem among the schools. The researcher rejected the null hypothesis. Table 19 displays the descriptive data of self-esteem scores recoded and schools.

### Table 19

*Descriptive Statistics for Self-esteem Recoded and School*

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>School 1</td>
<td>195</td>
<td>8.92</td>
<td>1.290</td>
<td>.092</td>
<td>8.74</td>
<td>9.10</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>School 2</td>
<td>87</td>
<td>8.75</td>
<td>1.143</td>
<td>.123</td>
<td>8.50</td>
<td>8.99</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>School 3</td>
<td>61</td>
<td>8.41</td>
<td>1.346</td>
<td>.172</td>
<td>8.07</td>
<td>8.75</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>School 4</td>
<td>15</td>
<td>8.33</td>
<td>1.915</td>
<td>.494</td>
<td>7.27</td>
<td>9.39</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>School 5</td>
<td>27</td>
<td>8.70</td>
<td>1.877</td>
<td>.361</td>
<td>7.96</td>
<td>9.45</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>385</td>
<td>8.76</td>
<td>1.352</td>
<td>.069</td>
<td>8.63</td>
<td>8.90</td>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>

**Hypothesis 11.** H11 predicted that the self-esteem score of a male student will be higher than the self-esteem score of a female student.

Gender was found not to effect the self-esteem of a student based on means testing:

\[ t(385) = 1.15, \ p = .251, \ F (1, 386) = 1.319, \ p = .251. \] A Chi square analysis showed a finding
that the female gender had an effect on self-esteem, $\chi^2(28, N = 250) = 57.98$, $p = .001$, but there was no effect based on the male gender. The means test supported retaining the null hypotheses of no differences of self-esteem scores by gender, but the Chi square test showed difference in the findings. Based on these results, the null hypothesis is rejected. Table 20 displays the descriptive statistics for the self-esteem recoded score and gender.

Table 20
Descriptive Statistics for Self-esteem Recoded and Gender

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Male</td>
<td>137</td>
<td>8.87</td>
<td>1.271</td>
<td>.109</td>
<td>8.65</td>
</tr>
<tr>
<td>Female</td>
<td>250</td>
<td>8.70</td>
<td>1.389</td>
<td>.088</td>
<td>8.53</td>
</tr>
<tr>
<td>Total</td>
<td>387</td>
<td>8.76</td>
<td>1.349</td>
<td>.069</td>
<td>8.63</td>
</tr>
</tbody>
</table>

**Hypothesis 12.** H12 predicted that the self-esteem of a student with a GPA of equal to or greater than 3.4 is higher than the self-esteem of a student with less than a 3.4 GPA.

Based on a student's GPA, $F(2, 191) = .470, p = .626$, there were no differences in self-esteem levels. The researcher retained the null hypothesis, which indicates no difference between the groups. Table 21 displays the descriptive statistics of Self-esteem recoded and GPA.
Table 21

**Descriptive Statistics for Self-esteem Recoded and GPA**

<table>
<thead>
<tr>
<th>GPA categories on a 4.0 scale</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 3.0</td>
<td>49</td>
<td>8.73</td>
<td>1.221</td>
<td>.174</td>
<td>8.38</td>
<td>9.09</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>3.0 to 3.4</td>
<td>68</td>
<td>8.54</td>
<td>1.460</td>
<td>.177</td>
<td>8.19</td>
<td>8.90</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>3.5 to 4.0</td>
<td>75</td>
<td>8.76</td>
<td>1.487</td>
<td>.172</td>
<td>8.42</td>
<td>9.10</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>192</td>
<td>8.68</td>
<td>1.410</td>
<td>.102</td>
<td>8.48</td>
<td>8.88</td>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>

_Hypothesis 13._ H13 predicted that the self-esteem score of a student over 25 years will be higher than the self-esteem score of a student less than 25 years of age.

The researcher used a Chi square test to examine the data and found that the age of the student, specifically the under 25 year old group, showed an effect on self-esteem, $\chi^2 (28, N = 270) = 51.29$, $p = .005$, whiles the means testing, $F (1,371) = .01$, $p = .919$, did not show any difference.

Based on these findings, there is an effect on the self-esteem level for the "25 and under" aged students, so the null hypothesis is rejected. Table 22 displays the descriptive statistics for self-esteem score recoded and age.
Table 22

Descriptive Statistics for Self-esteem Recoded and Age Groups

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 25</td>
<td>101</td>
<td>8.76</td>
<td>1.184</td>
<td>.118</td>
<td>8.53</td>
<td>9.00</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Under 25</td>
<td>272</td>
<td>8.75</td>
<td>1.416</td>
<td>.086</td>
<td>8.58</td>
<td>8.92</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>373</td>
<td>8.75</td>
<td>1.356</td>
<td>.070</td>
<td>8.61</td>
<td>8.89</td>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>

Hypothesis 14. H14 predicted that the ethnicity of a student affects their self-esteem. The researcher sought to determine if there was a relationship between a student's ethnicity and their self-esteem score. The test of normality was performed. For the African-American/Black students, $S-W (16) = .842, p = .011$. The Spanish, Hispanic, Latino students $S-W (8) = .859, p = .118$. The Asian/Pacific Islander student $S-W (115) = .933, p < .001$, and the White/Caucasian students $S-W (230) = .904, p < .001$. Three of the four groups met the test of normality. The Levene's statistic (5, 379) = 6.406, $p < .001$ showing differences in the homogeneity of the data.

The Kruskal-Wallis test was run at a significance level of .05, with a result $p = .001$, showing a difference in the ethnic categories. A Chi square test was run to determine additional information resulting in the finding of a significant effect on the African American/Black students, $\chi^2 (8, N = 16) = 23.11, p = .003$ and the Asian/Pacific Islander students, $\chi^2 (24, N = 115) = 83.66, p < .001$. The null hypothesis is rejected. There is a relationship between ethnicity,
specifically the African-Americans and Asian Pacific Islander students, and their self-esteem score.

A passage about ethnic differences between eastern and western cultures explains the differences in terms of self-esteem:

North Americans tend to make consistently positive evaluation of the self, irrespective of whether the test items are positively or negatively worded, Chinese tend to affirm positive attributes of the self without denying their negative qualities. We believe that East–West differences in the relative prevalence of the consistency motivation and the dialectical self may explain why Easterners have lower scores on self-report measures of self-esteem (Young-Hoon, Peng, & Chi-Yue, 2008, p. 114).

Table 23 displays the descriptive statistics for the ethnicity and self-esteem score recoded.
Table 23

*Descriptive Statistics for Self-esteem Recoded and Ethnicity*

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>African-American/Black</td>
<td>16</td>
<td>9.13</td>
<td>1.258</td>
<td>.315</td>
<td>8.45</td>
</tr>
<tr>
<td>Spanish, Hispanic &amp; Latino</td>
<td>8</td>
<td>9.00</td>
<td>1.414</td>
<td>.500</td>
<td>7.82</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>114</td>
<td>8.34</td>
<td>1.556</td>
<td>.146</td>
<td>8.05</td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>230</td>
<td>9.01</td>
<td>1.106</td>
<td>.073</td>
<td>8.87</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>8.10</td>
<td>2.079</td>
<td>.657</td>
<td>6.61</td>
</tr>
<tr>
<td>Prefer not to state</td>
<td>7</td>
<td>7.57</td>
<td>1.718</td>
<td>.649</td>
<td>5.98</td>
</tr>
<tr>
<td>Total</td>
<td>385</td>
<td>8.77</td>
<td>1.349</td>
<td>.069</td>
<td>8.63</td>
</tr>
</tbody>
</table>
Summary of Findings

Self-efficacy findings.

- Students with Paid Experiences had higher self-efficacy scores than those with no paid experience
- Self-efficacy was similar across all five schools.
- Asian/Pacific Islanders had lower self-efficacy scores than other ethnic groups.

Self-esteem findings.

- Students with Paid Experiences scored higher on self-esteem than students with no paid experiences
- Self-esteem scores did vary between schools.
- African-American/Black scored higher and Asian/Pacific Islander students scored lower on self-esteem than other ethnic groups.
Chapter 5: Discussion of Research Findings

Organization of Chapter

This chapter is divided into the following sections: (1) introduction; (2) discussion of findings; (3) the practitioner and scholarly significance of this research; (4) its strengths and limitations; (5) considerations for future research and; (6) the conclusion.

Introduction

The results of this study contribute to the limited body of research on Doctor of Pharmacy students' development of self-efficacy and self-esteem. This study investigated the variables of gender, ethnicity, GPA, age, the school a student attends, paid experiences and introductory pharmacy practice experiences (IPPEs) on a Doctor of Pharmacy student's self-efficacy and self-esteem. Standardized psychometric assessment tools, specifically, the Generalized Self-Efficacy (GSE) questionnaire and the Rosenberg Self-Esteem Scale, were administered to three hundred ninety-nine students in five pharmacy schools in the Northeast region of the United States. Data collected during this study was analyzed to determine which of the variables had an effect on a pharmacy student's self-efficacy and self-esteem.

By developing an understanding of pharmacy students' perception of their self-efficacy and self-esteem, school faculty and administrators can create optimal opportunities for students to achieve high levels of both in a pharmacy work setting. The findings will highlight the variables, which can be addressed through improved curricular design, and the benefit of expanding experiences obtained in a pharmacy setting. The goal of pharmacy education is to graduate a pharmacist with a high level of self-efficacy and self-esteem in anticipation for their role as a health care provider.
A self-administered survey was used to collect data from students located in five pharmacy schools in the northeast United States. Survey questions drew from the General Self-Efficacy Scale and the Rosenberg Self-Esteem Scale. These include questions about the students' pharmacy setting experience, encompassing both introductory pharmacy practice experiences (IPPE) and paid work experiences. The IPPE component is categorized by 50-hour increments and the paid experience component is grouped into four different time frames (no paid experiences at all, < 1 year, 1-2 years or > 2 years). The demographic data includes the students' gender, age, ethnicity, GPA and the institution they attend.

In addition to the descriptive statistics, the researcher used statistical testing, including ANOVA (analysis of variance), the Kruskal-Wallis one-way analysis of variance, and the Chi-square test of independence, to determine if there were statistically relevant differences in the responses.

There are four research questions in the study; the first two questions concern a student's level of self-efficacy, and the second two questions concern a student’s level of self-esteem.

The first research question asks if there is a relationship between the amount of experiential education (paid pharmacy experiences and introductory pharmacy practice experiences - IPPEs) and the level of a student's self-efficacy in a Doctor of Pharmacy program?

The second research question asks if there is an effect on self-efficacy by the independent variables gender, year of birth, school, grade point average (GPA) and ethnicity?

The third research asks if there is a relationship between the amount of experiential education (paid pharmacy experiences and introductory pharmacy practice experiences - IPPEs) and the level of a student's self-esteem in a Doctor of Pharmacy program?
The fourth research question asks if there is an effect on self-esteem by the independent variables gender, year of birth, school, grade point average (GPA) and ethnicity?

**Discussion of Findings**

This section is organized into two parts. Part 1 discusses the results of testing the hypotheses that investigated self-efficacy, based on the General Self Efficacy Scale, and Part 2 discusses the results of testing the hypotheses that investigated self-esteem, based on the Rosenberg Self-Esteem Scale.

**Self-efficacy.**

Self-efficacy is a construct which measures a person's ability to perform tasks, solve problems and attain goals (G. Chen, et al., 2001). Self-efficacy has been identified as a major goal of education, with the hope that students will be better prepared for the challenges of the workplace upon completion of their formal education (Bandura, 1997). A student's competency in their chosen discipline must reach a certain level in order for them to achieve success in their professional careers. As such, educators should strive for all students to achieve a maximum level of self-efficacy given the tools and opportunities provided by a formal education. This examined numerous variables to determine if they had an effect on the self-efficacy of pharmacy students. It was hoped that the results of the study could shed light on the factors that contribute to the increased self-efficacy of pharmacy students. The hypotheses that investigate self-efficacy are presented below in Table 17. For the reader’s convenience, the affirmed hypotheses are displayed in red font.
Table 24 Self-efficacy Summary

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The self-efficacy of a student with paid work experience is higher than the self-efficacy of a student with no paid experience.</td>
<td>There is a difference in self-efficacy in students with paid work experience&lt;br&gt;The research hypothesis was affirmed.</td>
</tr>
<tr>
<td>2. The self-efficacy of a student with introductory pharmacy practice experiences (IPPEs) will be greater than students with no introductory pharmacy practice experience.</td>
<td>There is no difference in self-efficacy based on the number of IPPE hours a student has completed.&lt;br&gt;The research hypothesis was rejected.</td>
</tr>
<tr>
<td>3. The self-efficacy of a student is affected by the school he/she attends.</td>
<td>There is no difference in self-efficacy scores among schools.&lt;br&gt;The research hypothesis was rejected.</td>
</tr>
<tr>
<td>4. The self-efficacy scores of a male student will be higher than the self-efficacy scores of a female student.</td>
<td>There is no difference in the self-efficacy scores between males and females.&lt;br&gt;The research hypothesis was rejected.</td>
</tr>
<tr>
<td>5. The self-efficacy of a student with a GPA equal to or greater than 3.4 is higher than the self-efficacy of a student with less than a 3.4 GPA.</td>
<td>There is no difference between self-efficacy scores of a student with a GPA equal to or greater than 3.4 than students with less than a 3.4 GPA.&lt;br&gt;The research hypothesis was rejected.</td>
</tr>
<tr>
<td>6. The self-efficacy score of a student over 25 years will be higher than the self-efficacy score of a student less than 25 years of age.</td>
<td>There is no difference in the self-efficacy score of a student over 25 years and a student less than 25 years of age.&lt;br&gt;The research hypothesis was rejected.</td>
</tr>
<tr>
<td>7. The ethnicity of a student affects his/her self-efficacy.</td>
<td>The ethnic group of Asian/Pacific Islanders showed a lower level of self-efficacy than the other groups.&lt;br&gt;The research hypothesis was affirmed.</td>
</tr>
</tbody>
</table>

The students were questioned to determine whether any or all of the following factors had an impact on their level of self-efficacy: paid work experience, introductory pharmacy practice experience (IPPE), school attended, gender, GPA, age, and ethnicity. The researcher made several hypotheses, based upon the literature and a wealth of personal experience, as a pharmacist for 34 years and a faculty member working in pharmacy experiential education for 20 years.
years, of how he believed these factors would influence the self-efficacy of pharmacy students. It was believed that all seven factors would have a direct correlation with students' level of self-efficacy in a pharmacy setting; however, once the data was collected and analyzed the findings painted a somewhat different picture.

The analysis of the data revealed that only two of the seven hypotheses were affirmed, while the other five were rejected as no significant primary effects of the independent variable were revealed. The first hypothesis, regarding the paid experience a student obtained, and the seventh hypothesis, regarding the ethnicity of the student, demonstrated a significant impact on the level of self-efficacy in a pharmacy setting of the student's that were surveyed. Hypothesis 1 and Hypothesis 7 will now be discussed in greater detail.

**Paid experiences.** Paid experiences had a significant effect on a student's development of self-efficacy in a pharmacy setting. Paid pharmacy experience is defined as experience in a pharmacy work place where students received financial compensation either as part of their school's structured program (i.e. students attending School 3 with the cooperative education program) or as experiences obtained outside of the school's and accreditation's requirements (i.e. students attending Schools 1, 2, 4 and 5). Students attending Schools 4 and 5 all reported they had received compensation for some of their pharmacy experiences. It is important to note that some of the students reported they had no paid pharmacy experience (7 students or 3.7% of the students attending School 1; 19 students or 25.7% of the students attending School 2; and one student or 2% attending school 3). School 3 required students to participate in their cooperative education component, therefore it is reasonable to assume that the single student who reported no work experience did so in error.
The amount of time a student worked can vary widely over the course of a year. For example, some students work only during their summer vacation as they are in classes during the winter, spring and fall. They have the opportunity to work approximately 500 hours over this 12-13 week period. Other students work part-time every week throughout the year and might work as few as 8-12 hours a week. The students in School 3, with the cooperative education program, work full-time for two to three 16-week semesters, accumulating 1,200 to 2,000 hours of work experience.

Students who accumulate extended experiences in a work based setting benefit through active learning and a shared inquiry (Dewey, 1933). During this experience, students model their behaviors to the pharmacists in the pharmacy setting, obtain and refine skills, and through ongoing reflection, they integrate their practical experiences with the theory (Bandura, 1997; Billett, 2009; Raelin, 1997). As students matriculate through the program, a transformation occurs where they move from a novice to an expert within their area of practice and are able to apply prior experiences to new situations (Owen & Stupans, 2009). The result is that students create meaning and develop an understanding of what they have learned (J Mezirow, 1991).

The conclusion of Hypothesis 1 is that an extended period of time in a work-based setting does enhance a student's self-efficacy. The implication of this finding is that students with more experience in a pharmacy setting demonstrate higher levels of self-efficacy as compared to those with less experience. The finding has significance because students in some pharmacy schools are obtaining a limited number of hours in pharmacy settings during their coursework, while the ones who supplement those hours with a paid job or who participate in a co-op program obtain extended experiences in a pharmacy setting, ultimately resulting in higher levels of self-efficacy.
The findings have shown that students whose only experience is through an IPPE program, based on a 300-hour model, do not obtain enough hours and experiences to achieve a satisfactory level of self-efficacy until they reach the 300-hour mark.

**Ethnicity.** The second variable with a significant effect on a student's level of self-efficacy is the ethnicity of the student, as affirmed by Hypothesis 7. Students who self-reported their ethnicity as Asian/Pacific Islander scored lower on overall level of self-efficacy in comparison to the other ethnic groups.

The lower level of self-efficacy in a pharmacy setting, as reported by the Asian/Pacific Islander students surveyed, raises an interesting question for the researcher. A review of the literature reveals that there is ample evidence to suggest that as an ethnic group, Asians exhibit a modesty bias in their public responses. This stems from a cultural tendency to be more moderate in their private beliefs, values and preferences than typical western students (I. Choi & Choi, 2002). The question now faced by the researcher is whether the responses from this population in fact indicate a low level of self-efficacy, or rather if their responses naturally understate their actual level of self-efficacy compared to the other ethnic groups? Choi’s (2002) paper suggests that responses by Asians should be taken as genuine and not adjusted for any perceived modesty bias. Although the findings may not necessarily highlight the need for Asian students to improve in regards to their level of self-efficacy as suggested by the data, the findings may indicate the need for Asian students to improve their outward presentation of their actual level of self-efficacy. The level of confidence and competency that a student portrays is not only essential to earn the respect and confidence of potential employers, but more importantly, it is imperative to convey competency when dealing with patients in a pharmacy setting (Bandura, 1997;
Freudenberg, Cameron, & Brimble, 2010). If a student, or even a licensed pharmacist, does not outwardly exhibit a certain level of competence when dealing with patients, the patient will likely have an adverse response to the interaction, regardless of the student or pharmacist's actual level of self-efficacy.

**Remaining variables.** Despite numerous references in the literature and decades of anecdotal evidence to the contrary, the other factors examined did not have a significant impact on a student's level of self-efficacy in a pharmacy setting. It was hypothesized that students who attend a particular institution, are male, are over the age of 25, or have a GPA greater than 3.40 (4.0 scale) would have a higher level of self-efficacy than their counterparts; however, these hypotheses were all rejected. The school hypothesis was based on the idea that students with more opportunities to work in paid positions would have higher self-efficacy scores. The variability was seen at the student level, not at the school level, resulting in no relation between the school and a student's self-efficacy.

It is very interesting to note that some of the literature related to studies and experiences from the not so recent past. Women were noted as having lower self-efficacy in studies completed in the late 1980s and 1990s, but the results of this research, occurring in 2011, demonstrated that these historical differences were not present (Bandura, 1989a; C.-C. Chen, Greene, & Crick, 1998; Wilson, et al., 2009). Age was identified as one component of self-efficacy, but not the only component (Klassen & Chiu, 2010). Age proved not to be a factor in this study sample. Academic performance was shown to increase in students who completed a cooperative education work experience, but there was no finding of a relationship between grades and self-efficacy in this study (Blair, et al., 2004).
It is possible that in just the last few years, the gap in the level of self-efficacy in a pharmacy setting amongst these aforementioned demographic groups has narrowed to the point where it is no longer statistically significant.

Self-esteem.

Self-esteem is a social construct based on two psychological processes—evaluation and affection (Mruk, 2006, p. 10). Evaluation is further defined as an attitude, both positive and negative. The affection is based on the person’s “ideal” self and actual self. If there is a wide discrepancy between the two, then there will be a low level of self-esteem. If the perception and actual behavior are closely related, then there is high level of self-esteem. A high level of self-esteem is a critical trait for students to exhibit in the workplace, as it directly correlates to their own perception of what they are able to accomplish given their current skill set (Crocker, et al., 2006). A high level of self-esteem provides students with the confidence they require to face new challenges and succeed in a dynamic environment. Conversely, a low level of self-esteem has prohibitive effects on students and prevents them from reaching their full potential in the workplace. The study investigated numerous independent variables to determine if they had an effect on the self-esteem of pharmacy students. It was speculated that the results of the study could provide insight on the factors that contribute to the increased self-esteem of pharmacy students. The hypotheses that explore self-esteem are presented below in Table 18. For the reader’s convenience, the affirmed hypotheses are displayed in red font.
**Table 25 Self-esteem Summary**

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. The self-esteem of a student with paid work experience is higher than</td>
<td>Paid experiences showed an effect of a student's level of self-esteem.</td>
</tr>
<tr>
<td>the self-esteem of a student with no experience.</td>
<td><strong>The research hypothesis is affirmed.</strong></td>
</tr>
<tr>
<td>9. The self-esteem of a student with increased introductory pharmacy</td>
<td>There is no difference in self-esteem based on the amount of IPPE hours.</td>
</tr>
<tr>
<td>practice experiences (IPPEs) will be greater than students with no</td>
<td><strong>The research hypothesis is rejected.</strong></td>
</tr>
<tr>
<td>experience.</td>
<td></td>
</tr>
<tr>
<td>10. The school a student attends has an effect on their self-esteem.</td>
<td>There was a finding of an effect by school</td>
</tr>
<tr>
<td></td>
<td><strong>The research hypothesis is affirmed.</strong></td>
</tr>
<tr>
<td>11. The self-esteem score of a male student will be higher than the self-</td>
<td>There were no differences by gender.</td>
</tr>
<tr>
<td>esteem score of a female student.</td>
<td><strong>The research hypothesis is rejected.</strong></td>
</tr>
<tr>
<td>12. The self-esteem of a student with a GPA of equal to or greater than</td>
<td>There was no difference by GPA level.</td>
</tr>
<tr>
<td>3.4 is higher than the self-esteem of a student with less than a 3.4 GPA.</td>
<td><strong>The research hypothesis was rejected.</strong></td>
</tr>
<tr>
<td>13. The self-esteem score of a student over 25 years will be higher than</td>
<td>There was an effect on the 25 and under group.</td>
</tr>
<tr>
<td>the self-esteem score of a student less than 25 years of age.</td>
<td><strong>The research hypothesis is affirmed.</strong></td>
</tr>
<tr>
<td>14. The ethnicity of a student affects their self-esteem.</td>
<td>The African American/Black and Asian/Pacific Islander students showed an effect on self-</td>
</tr>
<tr>
<td></td>
<td>esteem.</td>
</tr>
<tr>
<td></td>
<td><strong>The research hypothesis is affirmed.</strong></td>
</tr>
</tbody>
</table>

Upon completion of the data analysis, it emerged that four of the seven hypotheses regarding self-esteem were affirmed, while only three were rejected due to a lack of conclusive evidence of significant primary effects based on those three independent variables. Hypothesis 8, regarding a student's paid experience, hypothesis 10, regarding the particular school a student attended, hypothesis 13, regarding the age of the student, and hypothesis 14, regarding the ethnicity of the student demonstrated a significant impact on the level of self-esteem in a
pharmacy setting of the students that were surveyed. Hypotheses 8, 10, 13 and 14 will now be discussed in greater detail.

**Paid experiences.** The results based on the independent variable of paid pharmacy experience showed that increased paid work experience does result in a higher level of self-esteem. When students become acclimated into the workplace and successfully complete their assigned tasks, their individual self-esteem is enhanced (Pierce & Gardner, 2004). The analysis demonstrates a relationship between the amount of experience and a student's sense of "self" in terms of their personal perception in the pharmacy work setting. There was not a finding related to self-esteem when investigating the IPPE variable, which could have resulted from the limited number of hours obtained during those experiences as opposed to the significantly longer paid assignments. The results of Hypothesis 8, when combined with Hypothesis 1 concerning self-efficacy, provide further evidence that prolonged exposure to real-life work scenarios increases a student's self-esteem and self-efficacy and ultimately better prepares the student to enter the work force full-time upon completion of their formal education.

Examining three other variables, there were conclusive findings of differences in the self-esteem of students based upon the school a student attends, their age and their ethnicity, as investigated by Hypotheses 10, 13 and 14, respectively.

**School.** When further examining the variable of which school a student attended, there was a notable difference in the level of self-esteem based on the statistical analysis; however, the reason for the variability is not apparent at this time. The schools that showed students with the highest level of self-esteem were schools 1, 2 and 5, with a mean score ranging from 8.7 to 8.92, while the students in schools 3 and 4 were at 8.41 and 8.33, respectively. The researcher tried to
draw parallels between the three institutions that scored higher, or alternatively, the two that scored lower in this category, but no distinguishing factor stands out based on the above grouping. The researcher speculated that either the length of the program or whether the school was public or private would differentiate the institutions along the lines of level of self-esteem of their respective students; however, there does not appear to be any correlation along these criteria. Schools 1 and 2 are both private schools, but one is a six-year program and the other is a three-year program. School 5, which like Schools 1 and 2 also scored highly, is a four-year public program. The second, lower scoring group includes a six-year private school and a four-year public school. As is evident, no visible connection can be made between the three schools that scored highly or the two that scored lower. The researcher can postulate that the faculty of the higher scoring schools provides more feedback to students resulting in a higher level of self-esteem, or that "school spirit" at those institutions is more greatly emphasized; however, the factors that differentiate these schools based on the self-esteem of their pharmacy students cannot be identified by this study.

**Age.** A person's level of self-esteem as compared to their age is referenced throughout the literature. It is widely evidenced that as people age, their level of self-esteem increases, presumably with their amount of knowledge and life-experience (Orth, Trzesniewski, & Robins, 2010). The findings that affirmed Hypothesis 13 revealed that older students on average had a higher level of self-esteem than their younger peers. The data shows that the mean levels of self-esteem were almost identical between the Over 25 (8.76) and the Under 25 group (8.75), but the upper bound score for the Over 25 group was 9.00 as compared to 8.92 for the Under 25 group. A longitudinal study by Orth, et al. (2010) examining people from 25 to 104 years of age showed
that self-esteem increases over time and peaks at about 60 years of age, showing a strong relationship between age and self-esteem. The students who are older have more life experiences, are able to translate their prior experiences into new situations, and have a higher level of self-esteem as compared to a younger student. The pharmacy programs used in this study are comprised of students ranging from those just out of high school to those completing their pharmacy degree as a graduate program (ranging in age from 18 to 35 years). Students could feasibly be at a similar level intellectually, but their self-esteem is increased based on their chronological age and experience.

**Ethnicity.** The final variable that had a direct impact on a student's self-esteem is their ethnicity. The data showed a relationship between a student's level of self-esteem and their ethnicity for those students who identified themselves as either African-American or Asian/Pacific Islander. On an aggregate level, the African-American students scored the highest while the Asian/Pacific Islanders scored the lowest. The findings are consistent with the literature for both groups (Jaret & Reitzes, 2009). In a study of college students, African-American students reported the highest level of self-esteem compared with their peer groups, which can be partially attributed to their internalized self-images in the later stages of their educational careers (Elion, Wang, Slaney, & French, 2012). Students who identified themselves as Asian/Pacific Islanders, more specifically the Chinese, affirm positive attributes of the self without denying their negative qualities. The difference in the dialectical self may explain why the Asians have lower scores on self-report measures of self-esteem (Young-Hoon, et al., 2008). The level of self-esteem of students along ethnic lines becomes of increasing importance as the pharmacy workplace continues to evolve in terms of diversity and geographic distribution. It is
in the best interest of educators in the field of pharmacy to ensure that all students have a high level of self-esteem upon graduation, as supported by their proficiency in academics and pharmacy practice.

**Practitioner and Scholarly Significance**

The pharmacy profession has evolved from an apprenticeship-based training program to a formalized higher education program, with experiential learning as a key component of the curriculum, rather than an activity external to the academic program (R. A. Buerki, 1999). The evolution of the pharmacy profession, from a dispensing role to a clinical role in the management of medication therapy, has increased the educational requirements for pharmacists entering the work force. The addition of the Doctor of Pharmacy degree to the academic landscape in 2000 exemplifies the evolution of pharmacy education. Although the increased curricular content in recent years reflects the advances of medicine and corresponding medications, the amount of practical experience within the curriculum has been decreasing. Many programs have increased their level of classroom instruction at the expense of a student's amount of experiential education, as they struggle to find a balance of how to incorporate an increasing amount of content into their curricula without extending program lengths (J. DiPiro, 2008). The American Council of Pharmaceutical Education (ACPE) set a standard of 300 hours for IPPEs and approximately 1400 hours of advanced pharmacy practice rotations that students must complete prior to receiving their doctor of pharmacy degree (AACP, 2007).

In addition to the changes underway at schools of pharmacy throughout the country, many State Boards of Pharmacy have had to adapt to recent events. Several State Boards have suffered reduced budgets, decreased staffing and are seeing increasing numbers of students they...
are required to keep track of. One noteworthy example is that the state of Oregon is closing many state agencies, including the Board of Pharmacy, for 10 days during the current budget year to save money (Oregon.gov, 2012). Donna Horn, a past president of the National Association of Boards of Pharmacy confirmed that as a result of budget concerns, many State Boards of Pharmacy have deemed that the increased experiential education component within the Doctor of Pharmacy program is sufficient to prepare the students for licensure, and believe they can defer the documentation of practical hours to the individual schools rather than the governmental agency (D. Horn, personal communication, March 24, 2012). Additionally, Karen Ryle, president-elect of the National Association of Boards of Pharmacy for 2013, stated that the movement of boards of pharmacy transferring the traditional tracking requirements and costs associated with the practice to individual schools of pharmacy is becoming a national trend (K. Ryle, personal communication, March 24, 2012).

Some Boards of Pharmacy have gone as far as eliminating all reporting of hours, instead defaulting entirely to the school-provided experiential education components (Mass.gov, 2012). An example of states in the northeast region that don't require individual reporting of hours are New Hampshire, New Jersey, Massachusetts and New York (NABP, 2010a). Many State Boards of Pharmacy still require anywhere from 500 to 2,000 hours of documented experience outside of the classroom, which may include the Advanced Pharmacy Practice Experiences (APPEs) students obtain in the final year of their programs (NABP, 2010b). A concern of the researcher is that, by eliminating the state hours requirement, students who don't have to work or don't want to work, have no incentive to obtain experience outside of the school-provided assignments. The variation of hours that students in the sample acquired before their clinical
rotations ranged from less than 50 hours to over 2 years (with the potential of working up to 2,000 hours) of experience.

The somewhat limited amount of experiences provided by the schools and the changing State Board requirements for students are resulting in decreased opportunities for students to achieve practical experience prior to graduation. The decreased amount of experiential education with the current Doctor of Pharmacy degree is raising concern with the professional community about how well the students are prepared to enter practice upon graduation (J. DiPiro, 2008). Schools are now held responsible to develop experiential opportunities, providing enough experience to ensure a graduate can achieve a high level of self-efficacy and self-esteem upon entry into their professional role (Bandura, 1997; Locke, Frederick, Lee, & Bobko, 1984).

The findings from this study highlight several important factors in the education and corresponding success of pharmacy students. Many of the variables examined by this study cannot be changed through any actions on the part of the schools of pharmacy, including age, gender and ethnicity of the student. However, there are several variables that schools of pharmacy can directly influence, including a student's GPA and level of practical experience outside the classroom. Although GPA was not directly linked to self-efficacy or self-esteem in this study, a thorough understanding of academic concepts is imperative for success as a pharmacist. To maximize the number of students able to achieve academic success, admission to pharmacy programs should continue to be selective, allowing for only the strongest students possible to gain acceptance into a doctor of pharmacy program. The American Association of Colleges of Pharmacy has stated that it is essential to create a diverse ethnic and gender
composition of a class, resulting in graduate pharmacists who are culturally competent and representative of the communities and patients they serve (AACP, 2000).

Schools of Pharmacy should best adapt their practices to foster the development of students in both an academic and practical setting. In the academic setting, students can be encouraged to improve their task-based self-efficacy through problem-based learning. Simulation of common pharmacy tasks in the classroom allows students to hone their skills in a learning environment and gain more experience prior to entering the workplace. The simulation of tasks cannot replace the hands-on learning that occurs in the workplace, but it can dramatically shorten the learning curve and allow students to achieve competence in the workplace in reduced time.

The findings of this study have proven that students improve their levels of self-efficacy and self-esteem through extended practical experiences. Schools of Pharmacy can directly control the amount of experiential education that students are able to obtain during their schooling. It is a primary responsibility of these schools to provide the best education possible to their students in order prepare them for their professional role. Schools of Pharmacy should take steps to ensure that practice based experiences are of sufficient length and substance to prepare students for a successful transition from an academic setting to a professional one.

**Strengths and Limitations**

**Strengths.**

The key strength of this research study was the inclusion of five different Schools of Pharmacy, which utilize three different models of education. Pharmacy schools throughout the country utilize one of three models, each of which were represented by the sample used in this
study. The response rate was very good; the total sample size of 399 responses provided a robust sample for statistical analysis. It should be noted that the response rate of the schools that used paper surveys (Schools 1, 2 and 3) were significantly higher than the two that used electronic surveys (Schools 4 and 5). These results are consistent with Fowler's (2002) assertion that response rates tend to be higher with paper surveys compared to electronic surveys.

As discussed in Chapter 3, internal validity, as defined by Creswell (2009), is satisfied by the fact that this survey was administered as a one-time event for the students involved. Creswell asserts that several threats to internal validity, including history, maturation, and repetitive testing are inherently present in studies that collect data at multiple points in time from the same sample of respondents. This study only surveyed each student at one particular time, eliminating the threats posed from a multi-stage survey.

Another strong point of the study was the theoretical framework used to structure the study. The theoretical framework followed the progression of the student into a higher level of learning, where the value of experiential education and work are defined and valued. David Kolb's (1983) learning model incorporated the synchronous actions, which occur between the student and the workplace, and reflective learning was expanded upon by Jack Mezirow's transformational learning theory (1994) and the work of Joseph Raelin (1997) and Donald Schön (1987). These theories framed the study based on the accumulation of experience rather than an analysis of one component.

Limitations.

The study, however, is not without its limitations. One limitation lies in the response rate from two of the schools. The two schools that were surveyed electronically only returned a
response rate of 17% and 30%. The overall response rate for the other three schools was 50-66%, and the researcher expected the response rate for all participating schools to be at approximately that level.

The population of the sample was representative of the national trend in schools of pharmacy in terms of gender; however, the ethnic diversity was less than the national average and does not accurately represent the national demographics in pharmacy schools. In addition, all five of the schools used in the study are located in the northeast region of the United States, which has the potential to create a regional bias. Students are not necessarily from the area where they attend school, but it stands to reason that a higher percentage of students attend college in closer proximity to their hometown, especially in the case of the public state universities.

Another limitation of the study was that the information obtained through the survey was self reported by the students and not validated by another method, often referred to as triangulation. The students were assured of the confidentiality and anonymity of their responses and had no logical reason to falsify or embellish their responses; however, that risk is always prevalent in studies that rely on self-reported data. A faculty member at the school facilitated the procedure used to distribute the paper surveys to the students, but the researcher did not participate nor have any control of the distribution and collection process. Ideally, the researcher would have had full control over the administration of the data gathering process, but unfortunately logistical considerations did not allow for that to occur.

Lastly, the study did not examine the socioeconomic status of the respondents. With a mix of private and public schools, there may have been an effect on self-efficacy and self-esteem
based upon a student's socioeconomic status. Socio-economic status was the only commonly used major demographic characteristic not included in the study.

**Further Research**

This study provided a very strong initial investigation on the effect of practical experience on the self-efficacy and self-esteem of pharmacy students, yet there is ample opportunity for further studies to investigate the subject in more depth. The obvious next step in further exploring this issue is to expand the study to cover a larger sample size. A further study should include a nationwide sample comprised of a much larger number of students. That way, the results would no longer be susceptible to a regional bias and it would be easier to get a diverse respondent base representative of the current national enrollment figures of pharmacy schools.

Another area for further research deals with the final year of students' pharmacy education, where they take part in a 36-week rotational clinical program (APPE). It would be very interesting to survey students on their levels of self-efficacy and self-esteem after their clinical year, as it is reasonable to assume that a great deal of their personal and professional development occurs during this intensive year of practical experience. Extending this notion further, it would also be interesting to conduct a longitudinal study on the same students who participated in the original survey, several years after their graduation, to see if the levels of self-efficacy and self-esteem one had when still enrolled in college translates to the early part of their careers. Perhaps all differences based on demographics or amount of practical experience would have been erased by this point, as each pharmacist would have a significant amount of experience working full-time.
This study revealed that there was a difference in the levels of self-esteem from students at particular institutions, yet the factors that caused this phenomenon were not easily discernible. A further investigation into why students at particular institutions report a higher level of self-esteem compared to students at other universities could yield very important results. If key factors that contribute to higher levels of self-esteem in students can be determined based upon specific attributes of a school, all schools could seek to implement or enhance that particular aspect at their own institution. Some factors would obviously be more difficult to change than others, such as the reputation of the school or program; however, any determining factor would be able to point schools in the direction of where they could look to improve the self-esteem of their students.

A factor that was never fully distinguished in this study was whether the payment factor of a work experience played a role in either the self-efficacy or self-esteem of a student. It was determined that the amount of paid work experience a student received directly impacted their levels of self-efficacy and self-esteem, while the amount of time spent in an IPPE assignment did not have a significant impact. The caveat that the study did not address was whether payment was a factor. Paid experiences are of longer durations than IPPEs, which could implicate simply that the time spent in the workplace increases a student's self-efficacy and self-esteem, with payment (or lack thereof) not having a significant effect. It is possible that students regard a paid experience with a higher degree of importance than a similar unpaid experience, and that mindset could have an impact on the knowledge and skills a student gains from that experience, therefore potentially affecting their subsequent levels of self-efficacy and self-esteem.
The last area for potential future research, identified by this study, lies within the Asian/Pacific Islander demographic. This ethnic group reported lower levels of both self-esteem and self-efficacy than their peers of other ethnicities. It is not known if their levels of self-efficacy and self-esteem are less than their peers in actuality, or if their responses are subject to some form of a modesty bias. The self-reporting nature of this study allows for a modesty bias to play a major role in the students' responses. A subsequent study could focus more closely on Asian students and perhaps conduct one-on-one interviews with them to determine if such a bias exists, or if their levels of self-efficacy and self-esteem are actually below those of their peers. If no bias is revealed and their actual levels of self-efficacy and self-esteem are lower than their peers, the factors that contribute to that decrease should be further explored.

**Conclusion**

The study has found that self-efficacy and self-esteem are two valuable metrics which can be applied to pharmacy education and education in general. The value that experiential education adds to a student's overall education has been supported by the theories beginning with the 'concrete experiences' of Dewey to the use of 'reflective learning' by Kolb, Schön and Raelin. The professionalization theory defined the process as the students move from an entry-level position into a professional role, while the occupational theory explained how students learn during that transition from role modeling and experience. The constant thread throughout this study was the benefit of expanded experiential education as essential to the development of a student's self-efficacy and self-esteem in a pharmacy setting, which in turn will prepare them for success upon graduation.
There are two options for schools of pharmacy to consider. One is to expand the hours in an introductory pharmacy practice setting to 400 hours, exceeding the current 300 hours but keeping the additional hours manageable from a logistical standpoint. The second option is to add structure to other experiences that many students already participate in. The structure could be the implementation of learning goals during the experience and a reflective component at a specific time each year during their pharmacy education, which will allow for a learning opportunity for the student. The findings of the study clearly demonstrate the benefit of increased experiential education, which will benefit students during their academic career and for a career in pharmacy upon graduation.

The researcher began this project to explore the differences in student preparation based on experiential learning opportunities. Though most educators believe in the value of experiential education, there are limitations based on the academic calendar, increasing numbers of students, the limited number of available sites, and the need to have trained and willing mentors. Experiential education should not be viewed as an add-on to a student's education, but a valuable component of a student's education and professional development. Pharmacy-based self-esteem and self-efficacy are two outcomes that I have identified and supported through this research paper, which students must obtain through a well designed experiential education program in order to successfully transition into the workplace upon graduation.
References


NABP. (2010b). Standardization of definitions, requirements and registration of pharmacy interns (Resolution No, 106-2-10) Retrieved March 23, 2012, from


    &site=eds-live
    &site=ehost-live
Vuong, M., Brown-Welty, S., & Tracz, S. (2010). The Effects of Self-Efficacy on Academic
    Success of First-Generation College Sophomore Students. Journal of College Student
    Development, 51(1), 50-64.
    20-20.
    Psychological Review, 92(4), 548-573. doi: 10.1037/0033-295x.92.4.548
Wilson, F., Kickul, J., Marlino, D., Barbosa, S. D., & Griffiths, M. D. (2009). An analysis of the
    role of gender and self-efficacy in developing female entrepreneurial interest and


Appendices

Appendix A: Questions in Self-Efficacy Scales

Sherer's scale

1. When I make plans, I am certain I can make them work.
2. One of my problems is that I cannot get down to work when I should.
3. If I can’t do a job the first time I keep trying until I can.
4. When I set important goals for myself I rarely achieve them.
5. I give up on things before completing them.
6. I avoid facing difficulties
7. If something looks too complicated, I will not even bother to try it.
8. When I have something unpleasant to do, I stick to it until I finish it.
9. When I decide to do something new, I go right to work on it.
10. When trying to learn something new, I soon give up if I am not initially successful
11. When unexpected problems occur, I don’t handle them well.
12. I avoid trying to learn new things when they look too difficult for me.
13. Failure just makes me try harder
14. I feel insecure about my ability to do things.
15. I am a self-reliant person.
16. I give up easily.
17. I do not seem capable of dealing with most problems that come up in life.

The scale used was from "Agree strongly to Disagree strongly." (Scherbaum, et al., 2006, p.1049) (Imam, 2007)
Schwarzer and Jerusalem’s General Perceived Self-Efficacy Scale in a 10-item survey
1. I can always manage to solve difficult problems if I try hard enough.
2. If someone opposes me, I can find the means and ways to get what I want.
3. It is easy for me to stick to my aims and accomplish my goals.
4. I am confident that I could deal efficiently with unexpected events.
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.
6. I can solve most problems if I invest the necessary effort.
7. I can remain calm when facing difficulties because I can rely on my coping abilities.
8. When I am confronted with a problem, I can usually find several solutions.
9. If I am in trouble, I can usually think of a solution.
10. I can usually handle whatever comes my way.
1 = Not at all true  2 = Hardly true  3 = Moderately true  4 = Exactly true
(Schwarzer, 1993)

Chen's scale

1. I will be able to achieve most of the goals that I have set for myself.
2. When facing difficult tasks, I am certain that I will accomplish them.
3. In general, I think that I can obtain outcomes that are important to me.
4. I believe I can succeed at most any endeavor to which I set my mind.
5. I will be able to successfully overcome many challenges.
6. I am confident that I can perform effectively on many different tasks.
7. Compared to other people, I can do most tasks very well.
8. Even when things are tough, I can perform quite well.

Answers range from Strongly disagree to Strongly agree
Appendix B: Pharmacy Self-efficacy and Self-esteem Study Questionnaire

Gender: Male _____, Female _____, Year of birth ________, Overall GPA ______

Ethnicity: African/American/Black __, Spanish, Hispanic, Latino __, Asian/Pacific Islander __, White/Caucasian, __ other __, prefer not to state race __

Pharmacy School you attend: __________________________________________

Please circle the number based on the scale provided:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I will be able to achieve most of the goals that I have set for myself.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>2. When facing difficult tasks, I am certain that I will accomplish them.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>3. In general, I think that I can obtain outcomes that are important to me.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>4. I believe I can succeed at most any endeavor to which I set my mind.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>5. I will be able to successfully overcome many challenges.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>6. I am confident that I can perform effectively on many different tasks.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>7. Compared to other people, I can do most tasks very well.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>8. Even when things are tough, I can perform quite well.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>9. I feel that I am a person of worth, at least on an equal plane with others.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>10. I feel that I have a number of good qualities.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>11. All in all, I am inclined to feel that I am a failure</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>12. I am able to do things as well as most people.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>13. I feel that I do not have much to be proud of.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>14. I take a positive attitude toward myself.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>15. On the whole, I am satisfied with myself.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>16. I wish I could have more respect for myself.</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>17. I certainly feel useless at times.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>18. At times, I feel that I am no good at all.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

Please proceed to page 2
Pharmacy Experience(s)

**Introductory Pharmacy Practice Experiences (IPPE)**
Setting (community/hospital etc):                       Approximate hours:

---

**Paid work experiences**
Setting (community/hospital etc): None, < 1 year, 1-2 years, or > 2 years

---

**Other experiences**
Type (s):                                                Time

---

Page 2 end of survey
Appendix C: Web Based Survey with the Unsigned Consent Form

Self-efficacy and Self-esteem in pharmacy students

1. Web based consent form

Northeastern University, College of Professional Studies, School of Education
Name of Investigator(s): Joseph McNabb, Principal Investigator, Mark Yorra, EdD candidate
Title of Project: The development of self-efficacy and self-esteem in pharmacy students based on experiential 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 measure self-efficacy and self-esteem in 5th year (P3) pharmacy students. This survey should take about 10 minutes to complete.
We/I am asking you to participate in this study because you are a 5th year or P3 Pharmacy student. 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.

There are no direct benefits to you from participating in this study. However, your responses may help us learn more about self-efficacy and self-esteem as metrics to measure the impact of experiential education.

You will not be paid for your participation in this study.
Your part in this study is anonymous to the researcher(s). However, because of the nature of web based survey(s), 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 these 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 Narzone, 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 Mark Yorra, m.yorra@neu.edu or 617.373.3433, the person mainly responsible for the research. You can also contact Joseph McNabb, 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.

Thank you for your time.
Mark Yorra
Self-efficacy and Self-esteem in pharmacy students

1. Gender
   - Male
   - Female

2. Year of Birth
   

3. Overall GPA
   

4. Ethnicity
   - African/American - Black
   - Spanish, Hispanic, Latino
   - Asian/Pacific Islander
   - White/Caucasian
   - Other
   - Prefer not to state race

5. School you attend
Self-efficacy and Self-esteem in pharmacy students

3. Survey Questions

Please enter using the scale of 1 for Strongly Disagree to 5 for Strongly Agree

1. I will be able to achieve most of the goals that I have set for myself
   ○ 1  ○ 2  ○ 3  ○ 4  ○ 5

2. When facing difficult tasks, I am certain that I will accomplish them.
   ○ 1  ○ 2  ○ 3  ○ 4  ○ 5

3. In general, I think that I can obtain outcomes that are important to me.
   ○ 1  ○ 2  ○ 3  ○ 4  ○ 5

4. I believe I can succeed at most any endeavor to which I set my mind.
   ○ 1  ○ 2  ○ 3  ○ 4  ○ 5

5. I will be able to successfully overcome many challenges.
   ○ 1  ○ 2  ○ 3  ○ 4  ○ 5

6. I am confident that I can perform effectively on many different tasks.
   ○ 1  ○ 2  ○ 3  ○ 4  ○ 5

7. Compared to other people, I can do most tasks very well.
   ○ 1  ○ 2  ○ 3  ○ 4  ○ 5

8. Even when things are tough, I can perform quite well.
   ○ 1  ○ 2  ○ 3  ○ 4  ○ 5

9. I feel that I am a person of worth, at least on an equal plane with others.
   ○ 1  ○ 2  ○ 3  ○ 4  ○ 5

10. I feel that I have a number of good qualities.
    ○ 1  ○ 2  ○ 3  ○ 4  ○ 5

11. All in all, I am inclined to feel that I am a failure
    ○ 1  ○ 2  ○ 3  ○ 4  ○ 5
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Self-efficacy and Self-esteem in pharmacy students

4. Pharmacy experiences

Summarize pharmacy experiences outside of the classroom

1. For your unpaid IPPEs through your school, what setting did you work in and how many total hours approximately:

2. What type of paid work experiences do you obtain (community, hospital, LTC) and the time you worked there in terms of < 1yr, 1-2 years or >2 yrs

3. Other experiences and approximate time
Appendix D: IRB Approval for Paper Survey with Unsigned Consent Form

NOTIFICATION OF IRB ACTION
Date: April 5, 2011  IRB #: 11-03-28
Principal Investigator(s): Joseph W. McNabb
Mark L. Yorra
Department: Doctor of Education Program
College of Professional Studies
Address: 42 Belvidere
Northeastern University
Title of Project: The Development of Self-Efficacy and Self-Esteem in Pharmacy Students based on Experiential Education
Participating Sites: Permissions from additional recruitment sites will be forwarded on a rolling basis

DHHS Review Category: Expedited #7
Informed Consents: One (1) unsigned consent form

As per CFR 4548.111(2) Signed consent is being waived as the research presents no more than minimal risk
of harm to subjects and involves no procedures for which written consent is normally required.

Monitoring Interval: 12 months

APPROVAL EXPIRATION DATE: APRIL 4, 2012

Investigator’s Responsibilities:
1. The informed consent form bearing the IRB approval stamp must be used when
recruiting participants into the study.
2. The investigator must notify IRB immediately of unexpected adverse reactions, or new
information that may alter our perception of the benefit-risk ratio.
3. Study procedures and files are subject to audit any time.
4. Any modifications of the protocol or the informed consent as the study progresses must
be reviewed and approved by this committee prior to being instituted.
5. Continuing Review Approval for the proposal should be requested at least one month
prior to the expiration date above.
6. This approval applies to the protection of human subjects only. It does not apply to any
other university approvals that may be necessary.

C. Randall Colvin, Ph.D., Chair
Northeastern University Institutional Review Board

Nan C. Regina, Director
Human Subject Research Protection

Northeastern University FWA #4630
Northeastern University, College of Professional Studies, School of Education
Name of Investigator(s): Joseph McNabb, Principal Investigator, Mark Yorra, EdD candidate

Title of Project: The development of self-efficacy and self-esteem in pharmacy students based on experiential education

Request to Participate in Research
We would like to invite you to take part in a research project. The purpose of this research is to measure self-efficacy in 5th year (P3) pharmacy students.

You must be at least 18 years old to be in this research project. The study will take place at your school and will take about 10 minutes to complete. If you decide to take part in this study, we will ask you to fill out a survey about your demographic information, answer self-efficacy and self-esteem questions and provide some background of out-of-classroom pharmacy experiences.

There are no foreseeable risks or discomforts to you for taking part in this study. There are no direct benefits to you for participating in the study. However, your answers may help us to learn more about self-efficacy and self-esteem as metrics to measure the impact of experiential education.

Your part in this study will be handled in a confidential manner. That means no one, including the researcher, will know what your answers are. Any reports or publications based on this research will use only group data and will not identify you or any individual as being of this project.

The decision to participate in this research project is up to you. You do not have to participate and you can refuse to answer any question. Even if you begin the study, you may withdraw at any time.

You will not be paid for your participation in this study.

If you have any questions about this study, please feel free to contact Mark Yorra, m.yorra@neu.edu or 617-373-3433, the person mainly responsible for the research. You can also contact Joseph McNabb, j.mcnaabb@neu.edu, the Principal Investigator.

If you have any questions about your rights in this research, you may contact Nan C. Regina, Director, Human Subject Research Protection, 960 Renaissance Park, Northeastern University, Boston, MA 02116. Tel: 617.373.7570, Email: irb@neu.edu. You may call anonymously if you wish.

You may keep this form for yourself.

Thank you.
Mark Yorra

Approved
NU IRB
Valid
4/15/11
Through
4/14/12
Appendix E: IRB Modification Approval for Web Survey with Unsigned Consent Form

NOTIFICATION OF IRB ACTION
MODIFICATION APPROVAL

Date: April 15, 2011
IRB #: 11-03-28
Principal Investigator(s): Joseph W. McNabb
Mark L. Yorra
Department: Doctor of Education Program
College of Professional Studies
Address: 42 Belvidere, Northeastern University
Title of Project: The Development of Self-Efficacy and Self-Esteem in Pharmacy Students based on Experiential Education
MODIFICATION: Paper survey revised to add request for GPA. Addition of online version of same. For sites receiving electronic survey, researcher will obtain prior explicit permission from the site allowing faculty colleagues to distribute survey via email to their students.
Participating Sites:

Original Protocol Approved: April 5, 2011
DHIS Review Category: Expedited #7
Informed Consents: One (1) unsigned consent form as preface to paper or online survey
Monitoring Interval: 12 months
APPROVAL EXPIRATION DATE: APRIL 4, 2012

Investigator’s Responsibilities:
1. The informed consent form bearing the IRB approval stamp must be used when recruiting participants into the study.
2. The investigator must notify IRB immediately of unexpected adverse reactions, or new information that may alter our perception of the benefit-risk ratio.
3. Study procedures and files are subject to audit any time.
4. Any modifications of the protocol or the informed consent as the study progresses must be reviewed and approved by this committee prior to being instituted.
5. Continuing Review Approval for the proposal should be requested at least one month prior to the expiration date above.
6. This approval applies to the protection of human subjects only. It does not apply to any other university approvals that may be necessary.

C. Randall Colvin, Ph.D., Chair
Northeastern University Institutional Review Board

Nan C. Regina, Director
Human Subject Research Protection

Northeastern University FWA #4630
Self-efficacy and Self-esteem in pharmacy students Survey

Self-efficacy and Self-esteem in pharmacy students

1. Web based consent form

Northeastern University, College of Professional Studies, School of Education
Name of Investigator(s): Joseph McNabb, Principal Investigator, Mark Yorra, EdD candidate
Title of Project: The development of self-efficacy and self-esteem in pharmacy students based on experiential education

Request to Participate in Research
We'd like to invite you to participate in a web-based online survey. The survey is part of a research study whose purpose is to measure self-efficacy and self-esteem in 5th year (P3) pharmacy students. This survey should take about 10 minutes to complete.
We're asking you to participate in this study because you are a 5th year or P3 Pharmacy student. 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.

There are no direct benefits to you from participating in this study. However, your responses may help us learn more about self-efficacy and self-esteem as metrics to measure the impact of experiential education.

You will not be paid for your participation in this study.
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 Mark Yorra, m.yorra@neu.edu or 617-373-3433, the person mainly responsible for the research. You can also contact Joseph McNabb, 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.

Thank you for your time.
Mark Yorra

https://www.surveymonkey.com/s/pharmacyselfefficacyselfesteemstudy
4/14/2011
Appendix F: Weighing the Data

Based on the sample compared to the full class size by gender.

### School * Gender Crosstab by school

**Survey Response Count**

<table>
<thead>
<tr>
<th>School</th>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>School 1</td>
<td></td>
<td>71 (35%)</td>
<td>131 (65%)</td>
<td>202</td>
</tr>
<tr>
<td>School 2</td>
<td></td>
<td>37 (41%)</td>
<td>53 (59%)</td>
<td>90</td>
</tr>
<tr>
<td>School 3</td>
<td></td>
<td>21 (34%)</td>
<td>40 (66%)</td>
<td>61</td>
</tr>
<tr>
<td>School 4</td>
<td></td>
<td>4 (25%)</td>
<td>12 (75%)</td>
<td>16</td>
</tr>
<tr>
<td>School 5</td>
<td></td>
<td>7 (23%)</td>
<td>23 (67%)</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>140 (35%)</td>
<td>259 (65%)</td>
<td>399</td>
</tr>
</tbody>
</table>

**Total Population**

<table>
<thead>
<tr>
<th>School</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>School 1</td>
<td>107</td>
<td>196</td>
</tr>
<tr>
<td>School 2</td>
<td>75</td>
<td>125</td>
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<tr>
<td>School 3</td>
<td>42</td>
<td>73</td>
</tr>
<tr>
<td>School 4</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>School 5</td>
<td>42</td>
<td>58</td>
</tr>
</tbody>
</table>

**Total Weight = Pi/Ri**  
(Pi = total population PharmD Class of 2012, and Ri = responses)

Weighting was performed based on the total population in each school examined/responses.
Appendix G: School 4 IRB Approval

DATE: April 12, 2011

TO: Joseph W. McNabb
    Mark L. Yorra
    Northeastern University

FROM: Chair, Institutional Review Board
       FWA# 00007125

RE: Research Project Title: “The Development of Self-Efficacy and Self-Esteem in Pharmacy Students based on Experiential Education”

CC: Nan C. Regina, Director, Human Subject Research Protection

The Institutional Review Board (IRB) of the University reviewed the above referenced protocol and determined that it does not require an independent review by this IRB. The Northeastern University IRB has approved the study. Therefore, you may recruit participants on the campus and regional campuses (including the School of Law and School of Social Work). Please note that you should check with the administrative head of each campus to determine if their specific approval to recruit participants (i.e. post flyers, etc.) is required.

If you wish to recruit participants at the University, contact the IRB office.

Please indicate on your correspondence to potential participants from that this IRB has given permission for recruitment on this campus.

If you have any questions, please contact the Office of Research Compliance at...

Thank you for your inquiry.
Appendix H: Notification of IRB Action Renewal Approval

NOTIFICATION OF IRB ACTION RENEWAL APPROVAL

Date: March 2, 2012
Principal Investigator(s): Joseph W. McNabb
Mark L. Yorn
Department: Doctor of Education Program
College of Professional Studies
Address: 42 Bluejacket
Northeastern University
Title of Project: The Development of Self-Efficacy and Self-Esteem in Pharmacy Students based on Experiential Education
Approval Status: Closed to Enrollment – Ongoing Analysis Only
Participating Sites:

Original Protocol Approved: April 5, 2011
Most Recent Approval Date: April 15, 2011 - modification
NIHHS Review Category: Expedited #7
Informed Consent: N/A
Monitoring Interval: 12 months

APPROVAL EXPIRATION DATE: MARCH 1, 2013

Investigator's Responsibilities:
1. The informed consent form bearing the IRB approval stamp must be used when enrolling participants into the study.
2. The investigator must notify IRB immediately of unreported adverse reactions, or new information that may alter our perception of the benefit-risk ratio.
3. Study procedures and files are subject to audit any time.
4. Any modifications of the protocol or of the informed consent as the study progresses must be reviewed and approved by this committee prior to being instituted.
5. Continuing Review Approval for the proposal should be requested at least one month prior to the expiration date above.
6. This approval applies to the protection of human subjects only. It does not apply to any other university approvals that may be necessary.

C. Randall Colvin, Ph.D., Chair
Northeastern University Institutional Review Board

Nan C. Regina, Director
Human Subject Research Protection

Northeastern University TWA #4630