

**DEVELOPMENT PROFESSIONALISM MODEL OF
PHARMACISTS AND PHARMACY STUDENTS
IN THAILAND**

The background features a large, semi-transparent watermark of the Mahidol University logo. The logo is circular with a gold border containing Thai text. Inside the circle is a blue field with a gold emblem of a traditional Thai stupa (chedi) topped with a flame-like finial. The author's name is centered over this emblem.

CHANUTTHA PLOYLEARMSANG

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**Thesis
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PHARMACISTS AND PHARMACY STUDENTS
IN THAILAND**



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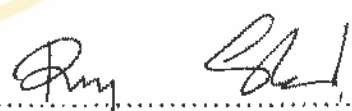
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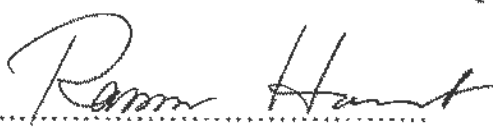

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Chanuttha Ploylearmsang

DEVELOPMENT PROFESSIONALISM MODEL OF PHARMACISTS AND PHARMACY STUDENTS IN THAILAND**CHANUTTHA PLOYLEARMSANG 4337546 PYPA/D****Ph.D. (PHARMACY ADMINISTRATION)****THESIS ADVISORS: PETCHARAT PONGCHAROENSUK, Ph.D. (Pharm. Admin.), THAVATCHAI VORAPONGSATHORN, Ph.D. (Research Design and Statistics), RUNGPETCH SAKULBUMRUNGSIL, Ph.D. (Pharm. Admin.).****ABSTRACT**

This cross-sectional, analytical research was carried out with three sample groups: 1,440 pharmacy students, 736 practicing pharmacists, and 50 role model pharmacists. Its objectives were to develop professionalism models of pharmacists and pharmacy students, to find factors affecting professionalism, and to find relationship pathways between factors in the model. This study was performed during 2002-2004 in three phases: theoretical model development, questionnaire development, and model testing. The professionalism model was developed and based on Tinto's social and academic integration, Schack and Hepler's professionalism, Kohlberg's moral reasoning and five related variables: grade point average, perception of public acceptance, professional satisfaction, social integration in workplace, and knowledge applicability. The content validity of the study instrument was examined by five specialists. Cronbach internal consistency reliabilities of study scales ranged between 0.67 and 0.88. Exploratory Factor Analysis and Confirmatory Factor Analysis were employed to examine the construct validity. Finally, the pathway relationships between model variables were determined by Structural Equation Modeling.

The results indicated 3 different models of professionalism (all pharmacy students' model, 4th and 5th year students' model, and pharmacists' model) each consisting of six components: using professional organizations as a major reference, belief in public service, belief in self-regulation, sense of calling, belief in autonomy, and belief in continuing competence that explained 47.5% of total variance. Four components of social and academic integration, which itself formed a component of the three professionalism models, were peer group interaction, faculty interaction, academic development, and faculty concern can explain 45.3% of total variance. Structural equation modeling analyses of the three professionalism models revealed a good model fit. The goodness-of-fit index (GFI) ranged from 0.97-0.99, the comparative fit index (CFI) ranged from 0.95-0.98, root mean square residual (RMR) was <0.05, root mean square error of approximation (RMSEA) was <0.05. The most powerful factor affecting pharmacy students' professionalism was social and academic integration ($\beta=0.71$). Social integration in the workplace was found to be the most influential factor affecting the 4th and 5th year students' and practicing pharmacists' professionalism ($\beta=0.94$ and $\beta=0.54$, respectively).

It is recommended that professionalism development should be continuously implemented throughout pharmacy school as well as in real-life practice environment by all parties concerned such as pharmacy organizations and pharmacy faculties.

**KEY WORDS: PROFESSIONALISM / MORAL REASONING / PHARMACIST/
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การพัฒนา รูปแบบจำลองความเป็นวิชาชีพของเภสัชกรและนักศึกษาเภสัชศาสตร์ประเทศไทย

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บทคัดย่อ

การศึกษาเชิงวิเคราะห์แบบภาคตัดขวางครั้งนี้ดำเนินการใน 3 กลุ่มตัวอย่างคือ นักศึกษาเภสัชศาสตร์ 1,440 คน เภสัชกร 736 คน และเภสัชกรผู้ประสบความสำเร็จในการประกอบวิชาชีพเภสัชกรรม 50 คน วัตถุประสงค์เพื่อพัฒนารูปแบบจำลองความเป็นวิชาชีพเภสัชกรรม หาปัจจัยที่ส่งผลต่อความเป็นวิชาชีพ และหาความสัมพันธ์เชิงเส้นทางระหว่างปัจจัยต่างๆ ดำเนินการวิจัยระหว่างปี พ.ศ. 2546-2547 ด้วย 3 ขั้นตอน คือ 1) สร้างและพัฒนารูปแบบจำลองเพื่อใช้เป็นกรอบแนวคิด 2) พัฒนาและทดสอบเครื่องมือเพื่อใช้ในการวิจัย และ 3) ทดสอบรูปแบบจำลองความเป็นวิชาชีพในกลุ่มตัวอย่าง รูปแบบจำลองความเป็นวิชาชีพพัฒนาจาก การบูรณาการ สังคมและองค์ความรู้ในมหาวิทยาลัยของ Tinto ทักษะคิดต่อความเป็นวิชาชีพของ Schack และ Hepler ความคิดเชิงศีลธรรมของ Kohlberg และตัวแปรสำคัญ 5 ตัวแปรคือ เกรดเฉลี่ย การรับรู้ถึงการยอมรับของสังคมต่อวิชาชีพ ความพึงพอใจในการประกอบวิชาชีพ การบูรณาการสังคมในสถานที่ทำงาน และการประยุกต์ใช้องค์ความรู้เพื่อปฏิบัติวิชาชีพ ความตรงเชิงเนื้อหาของเครื่องมือประเมินโดยผู้เชี่ยวชาญ 5 ท่าน ความเที่ยงตรงประเมินจากค่าสัมประสิทธิ์อัลฟาครอนบาค ซึ่งให้ค่าระหว่าง 0.67-0.88 ประเมินความตรงเชิงโครงสร้างโดยการวิเคราะห์องค์ประกอบ และศึกษาความสัมพันธ์เชิงเส้นทางระหว่างตัวแปรโดยเทคนิคการวิเคราะห์แบบ SEM

จากการศึกษาได้รูปแบบจำลองความเป็นวิชาชีพ 3 รูปแบบคือ รูปแบบจำลองสำหรับนักศึกษาเภสัชศาสตร์ทั้งหมด สำหรับนักศึกษาปี 4 และ ปี 5 ที่ผ่านการฝึกปฏิบัติงานจากแหล่งฝึก และสำหรับเภสัชกรผู้ปฏิบัติวิชาชีพ แต่ละรูปแบบจำลองประกอบด้วย 6 องค์ประกอบของทัศนคติความเป็นวิชาชีพคือ การใช้องค์กรวิชาชีพเป็นแหล่งอ้างอิงในการประกอบวิชาชีพ ความเชื่อต่อการให้บริการเพื่อสาธารณชน ความเชื่อต่อการควบคุมดูแลตนเอง ความยึดมั่นผูกพันต่อวิชาชีพ ความเชื่อต่ออำนาจในการปกครองตนเอง และความเชื่อต่อการพัฒนาศักยภาพอย่างต่อเนื่อง โดยทั้ง 6 องค์ประกอบสามารถอธิบายความเป็นวิชาชีพได้ร้อยละ 47.5 การบูรณาการสังคมและองค์ความรู้ ซึ่งปัจจัยหนึ่งในรูปแบบจำลองความเป็นวิชาชีพ ประกอบด้วย 4 องค์ประกอบคือ ปฏิสัมพันธ์ร่วมกับเพื่อน ความสัมพันธ์นอกชั้นเรียนกับคณาจารย์ การพัฒนาองค์ความรู้และแนวคิด และการรับรู้ถึงความใส่ใจของคณาจารย์ต่อนักศึกษา ซึ่งสามารถอธิบายการบูรณาการสังคมและองค์ความรู้ได้ร้อยละ 45.3 รูปแบบจำลองความเป็นวิชาชีพทั้ง 3 รูปแบบ ผ่านการทดสอบและให้ค่าสัมประสิทธิ์ในเกณฑ์มาตรฐาน โดยให้ค่า GFI ระหว่าง 0.97-0.99 ค่า CFI ระหว่าง 0.95-0.98 และค่า RMR และ RMSEA น้อยกว่า 0.05 ปัจจัยสำคัญที่มีอิทธิพลต่อทัศนคติความเป็นวิชาชีพของนักศึกษาเภสัชศาสตร์คือ การบูรณาการสังคมและองค์ความรู้ ($\beta=0.71$) และปัจจัยที่มีผลต่อทัศนคติต่อความเป็นวิชาชีพสำหรับนักศึกษาที่ผ่านการฝึกงานและเภสัชกรผู้ปฏิบัติงานคือ การบูรณาการสังคมในที่ทำงาน ($\beta=0.94$ และ 0.54 ตามลำดับ)

ความเป็นวิชาชีพเภสัชกรรมควรได้รับการพัฒนาและส่งเสริมอย่างต่อเนื่องตั้งแต่ในระดับมหาวิทยาลัย จนกระทั่งออกปฏิบัติวิชาชีพเภสัชกรรมในสังคม และสถานที่ปฏิบัติงาน โดยความร่วมมือจากทุกฝ่าย ทั้งองค์กรด้านการศึกษา องค์กรวิชาชีพ และสถานปฏิบัติงานวิชาชีพ

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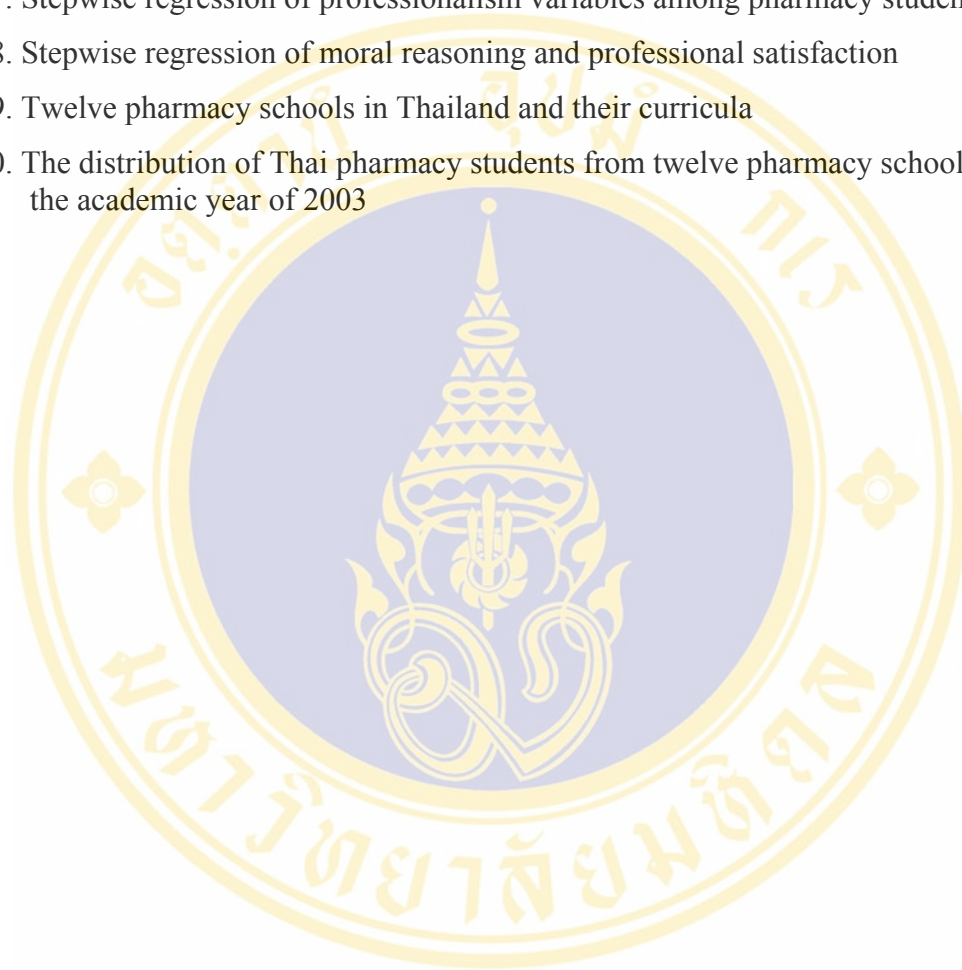
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CHAPTER 1

INTRODUCTION

Background and rationale

Changes in the pharmacy profession with advances in pharmaceuticals and technologies, more concerns in health financing, more customer involvement in health care service, and more improvements in drug therapy, have affected the pharmacy professional role and practice (1). The pharmacy practice has shift its focus from the product-oriented concept to the service-oriented concept and now to the patient-oriented concept.

Over the years, pharmacists' professional image has been viewed either as a business-oriented profession or a professional-oriented profession. Consumers do not quite understand the true roles of pharmacists in drug dispensing, counseling, and monitoring. The subject of patients' rights was highly discussed by the legislators and the government to protect the benefits of patients. More and more malpractices caused by pharmacists were reported (2). At the same time, the cost of health care has been skyrocketed at an accelerated rate and adverse drug reactions are one of major reasons for the high health care costs (3,4) . With all of these movements, pharmacists are now facing with more conflicts of interest and how to improve their roles in the eyes of the public. In order to survive for pharmacists in this new environment, Charles Hepler and Linda Strand (1) proposed the concept of pharmaceutical care to expand the pharmacists' roles on patient care with an emphasis on more clinical functions. They recommended pharmacists to prepare themselves for the responsibilities of pharmaceutical care so that they can serve their patients better. This led to a major change in pharmacy education and at the same time challenged the pharmacy educators to prepare future pharmacy graduates ready to apply the concept of pharmaceutical care. Profiles of prepared pharmacy graduates include high professionalism, more clinical responsibility, and good ethical manner. This is a well-suited characteristic of pharmacists who involve with decision-making for their patients.

To meet these changes, professionalism and ethic now have become two of the most important aspects of pharmacy education and practice. In pharmacy, professionalism, has been defined by different groups of people and associations. According to Chalmers (5), professionalism is displayed in the way pharmacists conduct themselves in professional situations. This definition implies a demeanor that is created through a combination of behaviors, including courtesy and politeness when dealing with patients, peers, and other health care professionals. Pharmacists should consistently display respect for others and maintain appropriate boundaries of privacy and discretion. Whether dealing with patients or interacting with others on a health care team, it is important to possess- and- display an empathic manner. By the year 2000, the American Pharmaceutical Association Academy of Students of Pharmacy and the American Association of Colleges of Pharmacy Council of Dean Task Force on professionalism defined professionalism as the active demonstration of the traits of a professional (6).

Ethic is a study of morality and there are many studies that showed a relationship between professionalism and ethics. In 1987, Balliet (7) stated that people who have high ethics were more likely to have high professionalism. Moral reasoning is an ethical decision making process by which the pharmacists choose among his or her moral values and the moral values serve as a standard of pharmacists' conduct. Based on Kohlberg's cognitive moral development (CMD), moral reasoning can be assessed by a recognition-based multiple choice test, the Defining Issues Test (DIT), that developed by Rest in 1979 (8).

The concept of moral reasoning was introduced into healthcare due to an increasing number of malpractice cases and unethical behaviors of health care providers. While society demanded for a higher standard of professional practice, health care providers were facing with the issue of moral dilemmas. In general, the public expected a high quality of medical health staff with high moral character. By 1970's, there was an assumption that moral reasoning positively affected the clinical performance of health care practitioners. Baldwin and Bunch (9) found that both professionalism and moral reasoning had an impact on medical practices. In pharmacy related studies, Latif et al. (10) studied the relationship between 114 community pharmacists' moral reasoning and components of clinical performance in

a large Southeastern metropolitan area. They found that moral reasoning accounted for only 10.1 percent of variance associated with self-reported clinical performance.

To predict professionalism and moral reasoning in pharmacy students and practitioners, the concept of social and academic integration in pharmacy school was found to be related. Social and academic integration is a crucial part of professional socialization. Socialization was defined in Dictionary of Behavioral Science (1973) as the process in and by which the individual learns the ways, ideas, beliefs, values, patterns and norms of his particular culture and adapts them as a part of his own personality (11). Because of its special form of socialization, Professional socialization of pharmacy was defined by Ruane (1978) as the changes that pharmacy student undergoes along the way to become a member of pharmacy profession (12). In 2003, Hammer et al. (13) also defined professional socialization of pharmacy as the transformation of individuals from pharmacy student to professionals who understand the values, attitudes, and behaviors of the profession deep in their souls. In the study of Hammer and her colleagues in 2003, they purposed professionalism as a product of the professional socialization process. It can be proposed that the development of professionalism must begin at the earliest stages of professional education.

Based on Tinto's model (14), student socialization was comprised of two main components, social integration and academic integration in the institutional environment. Peer group interaction and out-of-class interaction with faculty were used to measure social integration, while student's level of satisfaction with intellectual development and student's perception of faculty concern for student development were used to measure the academic integration. As related to pharmacy studies, Fjortoft and Lee (1994) applied Tinto's model to develop a professional commitment model. In their meaning, the professional commitment was one of the six components of professionalism. In this study, social and academic integration was used as independent variable to predict professional commitment. The results showed that students with a higher level of satisfaction with their academic development, faculty interaction, and peer group interaction indicated a higher level of professional commitment (15). By the year 2000, Lerkiatbundit (2000) reported that academic development which was one of factors in Tinto's model was the most significant predictor of professionalism (16).

Because professionalism is critical to the survival and enhancement of pharmacy professions and professionals, the model to identify the clear meaning of pharmacy professionalism in Thai pharmacy and its relationship with moral reasoning and social and academic integration during the professional study is needed. This model of Thai pharmacy professionalism can be applied not only in education field for management academic environment and professional socialization but also in practice settings and professional organizations for enhancing the future professionalism and maintaining professionalism among their members.

Research Objectives

General Objective

1. To develop professionalism models for pharmacists and pharmacy students in Thailand.
2. To find factors affecting professionalism.
3. To find the pathways relationships among related factors and professionalism.

Specific Objectives

1. To study the patterns of professionalism components among Thai pharmacy students, and pharmacists .
2. To evaluate impact of social and academic integration during pharmacy school on professionalism and moral reasoning.
3. To determine factors affecting professionalism and moral reasoning of pharmacists and pharmacy students in Thailand.
4. To determine the relationships of characteristics of Thai pharmacists and pharmacy students on professionalism and moral reasoning; and
5. To find pathways and relationships among factors affecting professionalism of pharmacists and pharmacy students in Thailand.

Research hypotheses

1. There were differences of professionalism and moral reasoning among Thai pharmacy students and pharmacists

2. Social and academic integration would have a positive impact on professionalism and moral reasoning.
3. Pharmacists and pharmacy students who have greater moral reasoning would have higher professionalism.
4. Pharmacists and pharmacy students with the different background characteristics would differ significantly in their professionalism and moral reasoning.
5. Pharmacists with direct approach to patient would have more professionalism and moral reasoning than pharmacist with indirect approach to patient.
6. Pharmacy students in different study years and different universities would differ significantly in professionalism and moral reasoning, more school year and direct approach to patient would have more professionalism and moral reasoning.
7. The factors during working such as social integration in workplace, knowledge applicability, and perception of public acceptance would have the positive effects on professionalism.

Definitions of terms

Professionalism is attitudinal professionalism. It is an attribute that pharmacy profession or a member of profession exhibits characteristics of profession.

Practicing pharmacists are Thai pharmacists who are working in seven settings including hospital pharmacy (public and private hospitals), community pharmacy, industrial pharmacy, pharmaceutical marketing, law enforcement, and education.

Professionalization is a professional socialization process that occurs both in pharmacy education and practice. It transforms pharmacy students into pharmacists who understand the values, attitudes, and behaviors of the pharmacy profession.

Social and academic integration is professional socialization process in pharmacy that occurs in pharmacy school. It comprised of two integrations, social integration refers to the satisfaction in peer group interactions and interactions with faculty and staff. Academic integration refers to academic development from the participation in extracurricular activities and perception of faculty concern.

Social integration in workplace is professional socialization process in pharmacy that occurs in workplace. For pharmacy students, it refers to the satisfaction in preceptor and client interactions and the satisfaction in professional development from

practice experiences during their clerkships. For pharmacists, it refers to the satisfaction in interactions with professional peers, other health professionals and clients and the satisfaction in professional learning from practice experiences.

Moral reasoning is an ethical decision making process by which the pharmacists choose among his or her moral values.

Professional satisfaction is the level of total satisfaction in pharmacy profession of pharmacists with the field they work and of pharmacy students with the field they are interested.

Scope of research

This study was designed to develop professionalism models among pharmacists and pharmacy students in Thailand. Scope of this research was all Thai pharmacy students in the academic year of 2003 and all Thai pharmacists who were still working as pharmacy profession in the year of 2002, from seven professional fields; community pharmacy, public and private hospital, pharmaceutical industry, pharmaceutical marketing, law enforcement, and pharmacy education.

Benefits

1. The professionalism model of pharmacists and pharmacy students in Thailand that is able to explain components of Thai pharmacy professionalism and factors influencing on professionalism.
2. The model and instrument can be applied for pharmacy education to assess professionalism as an important outcome of students and graduates. It can be used as an instrument to predict professionalism in student admission and recruitment processes and
3. The instrument can be used to assess student professionalism as a part of an evaluation system for curricula, teaching process and socialization process in pharmacy faculty.
4. For professional organizations, professionalism can be used as an instrument to assess members' professionalism in every fields.

5. The model and its variable can be used to set as the profession goal for enhancement and maintenance in their members' professionalism and professional satisfaction.



CHAPTER 2

LITERATURE REVIEW

In this chapter, a literature review of relevant concepts and research will be presented in five sections.

- I. Profession
- II. Professionalism
- III. Social and academic integration
- IV. Moral reasoning and moral development
- V. Relationships among factors in professionalism model

I. Profession

To understand origins and meaning of professionalism, it is necessary to understand the nature of profession, and to know characteristics of a profession. An extensive body of knowledge about professions exists in disciplines such as sociology and philosophy.

The Dictionary of the Social Sciences defines profession as occupations which demand a highly specialized knowledge and skill acquired at least in part by courses of more or less theoretical nature and not by practice alone, tested by some other authorized institution, and conveying to the persons who possess them considerable authority in relation to "clients" (17).

In social science viewpoint, there are many similarities of professional characteristics among sociologists but there is no universal agreement. Cogan (1953) notes that the word "profession" is used to indicate an occupation differentiated from other occupations, a formal vocational association, and a licensed vocation (18). In 1970, Mickey Smith had combined the views of a number of sociologists of the nature of the professions (19). Table 1 shows many sociologists and their views of nature of profession by defining professional characteristics.

Table 1: Sociologists' View of the Nature of Profession

	Professional Characteristic	Sociologists
1	Specialized knowledge of techniques	McGlothlin, Becker, Wilensky, Glennan, Gross, Barber
2	Self-imposed and enforced values and behavior	Slocum, Becker, Goode, Wilensky, Glennan, Barber
3	Altruism	McGlothlin, Becker, Wilensky, Glennan, Gross, Barber
4	Professional associations and identity	Slocum, McGlothlin, Goode, Glennan, Gross
5	Prestige	Becker, Goode, Glennan, Barber
6	Socially vital function	McGlothlin, Becker, Gross
7	Autonomy	Slocum, Becker, Goode
8	Specialized client relationship	Slocum, Becker, Gross
9	Intellectual base (including commitment to liberal arts, continuing education, and research)	Slocum, McGlothlin
10	Unique socialization of student members	Goode, Glennan
11	Legal recognition through licensure	Goode, Glennan
12	Complete equivalence of members	Goode, Glennan
13	Practicality	McGlothlin, Becker
14	Terminal occupation	Goode

Source: Smith, M.C. (1970).

In layman's viewpoint, or a folk concept, this view tends to be a subjective one and may be based on an incomplete knowledge of the characteristics of the occupation (20). Layman viewed profession as an honorific symbol in the society, it was an occupation requiring a high level of training and proficiency. They perceived that the professional can be trusted.

In professions' viewpoint, they viewed true profession seldom find it necessary specifically to analyze their own occupational characteristics in comparison with the ideal. They seek a recognition as a profession by defining the type of behavior that be judged as unprofessional. The recognition of professional status by other professionals with their unique body of knowledge monopoly to another was a important part of their professionalization process. They view the client relationships were the most subjective of their professional status.

It can be summarized that, in social science viewpoint and theories, the special characteristics (see Table 1) can distinguish occupation from profession.

Health care professional is viewed beyond the simple definition, they are expected to conform to the ethical standard of a profession, and show a concern for the welfare of society above personal interest (21). The community has an expectation that the professional can be trust. Health profession demands code of behavior requiring high commitment to expanding excellence in learning and knowledge and to their applications, it means wholehearted and genuine devotion to service.

Pharmacy was viewed as one of health professions. In the pharmacist's view, there was the widespread use of the term "professional" by practitioners of pharmacy, but pharmacists were asked whether they realized to be members of a true profession. Moreover, from those special characteristics proposed by several sociologists as mentioned above, pharmacy has faced the question whether pharmacy is a profession because it was not considered to have a duty to individual patients. It was doubt regarding pharmacy knowledge base, as pharmacy was dominated by physician because of his control of patient's drug treatment so pharmacy did not have full autonomy over the practice area. Moreover, society perceived pharmacists' work as being less prestigious than other groups such as physician (22). Pharmacy has needed to consider basis of professional status, to expand additional roles which can serve society and patient's drug therapy. The detailed characteristics and comments for pharmacy were summarized in Table 2.

By the year 2000, the American Pharmaceutical Association Academy of Students of Pharmacy and the American Association of Colleges of Pharmacy Council of Dean Task Force on professionalism tried to adapt the definition of profession from the reference cited and use that definition for pharmacy (6). They defined as an occupation whose members share 10 common characteristics that were 1) prolonged specialized training in a body of abstract knowledge, 2) a service orientation, 3) an ideology based on the original faith professed by members, 4) an ethic that is binding on the practitioners, 5) a body of knowledge unique to the members, 6) a set of skills that forms the technique of the profession, 7) a guild of those entitled to practice the profession, 8) authority granted by society in the form of licensure or certification, 9) a recognized setting where the profession is practiced and, 10) a theory of societal benefits derived from the ideology.

Table 2: Characteristics of Pharmacy as a profession

	Professional characteristic	Comment
1	Specialized knowledge of techniques	Pharmacy knowledge is still largely technical, even though the technique of compounding is in relative disuse.
2	Self-imposed and enforced values and behavior	Pharmacy has codes of conduct, but little enforcement to date.
3	Altruism	Performance fragmented may exist in prescription area while other goods are sold for profit motive alone.
4	Professional associations and identity	Pharmacy characterized by fragmented loyalties to various associations; lack of a single strong group limits ability to enforce ethics.
5	Prestige	Pharmacy ranks below other "professions" in most occupational prestige studies.
6	Socially vital function	Provision of drug therapy is socially vital function.
7	Autonomy	Relatively free of lay control but still tied strongly to physician; high percentage of employed members.
8	Specialized client relationship	Relationship exists, but primarily for pharmacy owners.
9	Intellectual base (including commitment to liberal arts, continuing education, and research)	Body of knowledge on drugs and their actions forms intellectual base.
10	Unique socialization of student members	This seems to occur less in the schools than in practice
11	Legal recognition through licensure	Pharmacists are licensed
12	Complete equivalence of members	Continued development of specialists may change this within the profession.
13	Practicality	Pharmacy certainly deals with practical matters.
14	Terminal occupation	Evidence exists that a substantial portion of present students plan other careers.

Source: Smith, M.C. (1970).

To answer the question whether pharmacy is a profession, pharmacy should learn more about their special characteristics and take an action to improve their roles and identity, especially the roles in the eyes of the public. The crucial core of health profession such as pharmacy for improvement the pharmacy roles is professionalism and morality. These two attributes were found to relate positively to

professional behaviors (13). Latif's study (2000) proposed that pharmacy students at higher levels of moral development may demonstrate an increased probability of adhering to their code of ethics and providing a high level of patient-focused care (23). Regarding to the importance of professionalism and moral development, understanding the meaning of professionalism and its components as well as moral development was very necessary for pharmacy profession.

II. Professionalism

Professionalism has been much attended and concerned by health professionals in the western countries (5-7, 9). The general definitions are defined by many groups of people. The Merriam-Webster's Dictionary (24) defines professionalism as a set of attitudes and behaviors believed to be appropriate to a particular occupation or the conduct, aims or qualities that characterize a profession or professional person. Professionalism has been studied more in the fields of sociology and education.

In 1966, Vollmer and Mills (25) defined the term, professionalization, as a process to develop professionalism and a dynamic process whereby many occupations can be observed to change certain crucial characteristics in the direction of a profession. Vollmer and Mills developed a professional model to explain the concept of professionalism. His model contained two aspects, structural and attitudinal. The structural side of the professional model referred to formal education and entrance requirements, while the attitudinal aspect included the sense of calling of the person to the field and the extent to which he or she used his or her colleagues as the major work reference. These two aspects, structural and attitudinal, of a professional model are important in distinguishing professions from other occupations. The details of each aspect are explained below.

1. Structural professionalism

In 1964, Harold Wilensky (26) initiated the structural aspect of the professional model. He noted that occupations have to go through a rather consistent sequence of stages on their way to becoming professions. In his model, there were four important components. They were: 1) creation of a full-time occupation; 2)

establishment of a training school; 3) formation of professional associations; and 4) formation of a code of ethics.

1. Creation of a full time occupation

This involves the performance of functions which may have been performed previously, as well as new functions, and can be viewed as a reaction to needs in the social structure.

2. The establishment of a training school

This reflects both the knowledge base of a profession and the efforts of early leaders to improve the status of the occupation. In the more established professions, the move is then followed by affiliation of the training school with established universities. In the newer professions, university affiliation is concurrent with the establishment of training schools.

3. Formation of professional associations

The formation of such associations often is accompanied by a change in the occupational title, attempts to define more clearly the exact nature of the professional tasks, and efforts to eliminate practitioners who are deemed incompetent by the emergent professionals. Local associations unite into national associations to strengthen their political power. As stronger associations are formed, attempts to secure licensing laws and protection from competing occupations become important functions.

4. Formation of a code of ethics

These ethical codes are concerned with both internal (colleague) and external (clients and public) relation. They are designed to be enforced by the professional associations themselves and, ideally, are given legal support. This component is important for professional practice and protecting clients from the unethical behaviors of professional.

Wilensky explained that occupations often pass through these four structural aspects during the process of professionalization. Pharmacy in Thailand also met four structural components. We have created our full-time occupation as pharmacist who involved into client's medication use since 1913 (27). The first formal training school which was the medicine formulating, Rajchapattayalai school

had been established since December 1913 (28). Regarding to the professional association, Thai pharmacy had the first formal pharmacy association called the Pharmaceutical Association of Siam since the fifth of March in the year of 1929 and renamed to be the Pharmaceutical Association of Thailand Under Royal Patronage (27). Pharmacy code of ethics was formed and mandated in 1985 by the Pharmaceutical Association of Thailand Under Royal Patronage, then Thai pharmacy was found to have four components of the structural professionalism.

Differences between the structural and attitudinal professionalism were explained were found. First, with the limitation of its application, the structural aspect can operate only on occupational level, whereas the attitudinal aspect can operate on individual level. Second, for classifying between profession and nonprofession, the attitudinal aspect that operates on the individual level is logically and empirically more valid than the structural aspect. Moreover, the structural aspect is indirectly subsumed under the efforts of professional associations, whereas the attitudinal aspects of professionalism reflect the manner in which the practitioners view their work under the assumption that there is some correspondence between attitude and behavior. Under those assumptions, the attitudinal aspect of professionalism became one of the interest concepts in sociological study.

2. Attitudinal professionalism

By 1968, an American Sociologist, Richard H. Hall (29), developed a scale to measure the attitudinal aspect of the professional model. His scale contained five attributes including 1) the use of the professional organization as a major reference, 2) a belief in service to the public, 3) a belief in the self-regulation, 4) a sense of calling to the field as referred to professional commitment, and 5) an autonomy.

1. Use of professional organization as a major referent

Formal and informal colleague associations within the professional organization represent the major source of ideas and judgements for the practitioner in his work. Such associations reinforce the values, beliefs, and identity of the profession and help the practitioner to develop as colleague consciousness. Once the practitioner

acquires this consciousness, he becomes more strongly influenced by the standards established by his professional organization.

2. Belief in public service

Belief in service to the public has traditionally been considered essential for recognition as a profession. The practitioner believes that his professional work is indispensable and beneficial to society, and that he should place the interests of his clients above his own interests.

3. Belief in self-regulation

Self-regulation involves belief in the practice of colleague control. It involves the belief that the performance of the professional should be judged only by a fellow professional. The relinquishment of such a belief would result in the professional's loss of control and authority over his work.

4. Sense of calling

A sense of calling reflects the dedication and personal commitment of the practitioner to his work. The professional shows much pride in his work and derives a great deal of personal satisfaction from the services he performs.

5. Belief in autonomy

The professional believes that he has a right to exercise judgement and to make decisions without external pressure from clients, from persons who are not members of his professions, from his employing organization, or from legal interference.

Pharmacy and professionalism

Professionalism is now one of the foci of interest in pharmacy education and practice. In pharmacy, professionalism has been defined by different groups of people and associations. According to Chalmers (5), professionalism is displayed in the way pharmacists conduct themselves in professional situations. This definition implies a demeanor that is created through a combination of behaviors, including courtesy and politeness when dealing with patients, peers, and other health care professionals. Pharmacists should consistently display respect for others and maintain appropriate boundaries of privacy and discretion. Whether dealing with patients or interacting with others on a health care team, it is important to possess-

and- display an empathic manner. Hammer et al. (13) addressed professionalism as the extent to which an occupation or a member of that occupation exhibits the characteristics of a profession. By the year 2000, the American Pharmaceutical Association Academy of Students of Pharmacy and the American Association of Colleges of Pharmacy Council of Dean Task Force on professionalism defined professionalism as the active demonstration of the traits of a professional (6). Those traits were 1) knowledge and skills of a profession, 2) commitment to self-improvement of skills and knowledge, 3) service orientation, 4) pride in the profession, 5) good relationship with the client, 6) creativity and innovation, 7) conscience and trustworthiness, 8) accountability of his/her work, 9) ethically sound decision making and, 10) leadership.

With the valid characteristic of attitudinal aspect of professionalism, therefore, further pharmacy research in this area is focused more on the attitudinal aspect of the model. Based on our literature review, so far there were two areas of pharmacy research on professionalism. The first area measured the attitudinal aspect of professionalism in pharmacists and pharmacy students. The second area explored the new aspect of professionalism concept, behavioral professionalism.

1. Attitudinal professionalism

In 1974, Choich and Hepler (31) were the first group of pharmacy researchers who applied Snizek's 25-item attitudinal professionalism scale (30) on hospital pharmacists. Their exploratory research was done with a random sample of 2,000 active American Society of Hospital Pharmacists (ASHP) members in October 1972. They found that only two attributes, belief in the professional autonomy and use of the professional organization as a major work referent were associated with collective bargaining preference, a dependent variable in their study, among supervisors and staff pharmacists but not pharmacy directors and assistant directors.

Measurement of attitudinal professionalism

The original Hall scale had a total of 50 items, 10 items for each of these five attributes. In Hall's study, he used his 5-interval Likert scale with 328 subjects representing 11 different occupational groups. 11 groups included physicians, nurses, accountants, teachers, social workers, stockbrokers, lawyers, librarians, engineers, personnel managers, and advertising executives. In his conclusion, the structural and attitudinal aspects did not necessarily vary together. The strength of the attitudinal attributes was based on socialization which had taken place both in the profession's training program and the work itself. In this study, he also found the difference between structural and attitudinal aspect of professional model. While the structural aspect of professionalism is the result of a group effort, the attitudinal aspect is the result of an individual effort. Therefore, measurement of the attitudinal aspect of professional model appears to produce more valid results compared to the structural aspect of the professional model.

Hall's 50-item scale was further reduced to 25 items by Snizek in 1972. In Snizek's study (30) with 566 engineers, physicists, and chemists subjects, he compared his data with Hall's. He showed that his 25-item scale had the content and reliability equivalent to Hall's 50 item scale. However, the 25-item was not widely used compared to the Hall's original 50-item scale.

The 50-item Hall's attitudinal professionalism scale was further modified by Hepler and Schack, in 1979 (32). The researcher and his colleagues aimed to revise the 5-factor Hall's scale to be 6-factor revised scale with two reasons which were to replace all other-referent items of Hall's scale with self-referent items and to add a sixth factor called belief in continuing competence in their revised scale. Each of these six attributes had six items. The samples were 416 pharmacists (88 percent of hospital pharmacist, 1 percent of community pharmacist, and 10 percent of educator and others). The findings showed that 36-item scale with total six subscales had a good reliability of 0.82 when comparing with the value of 0.79 of the five factor scale with 30-item. The 36-item scale consists of six attributes: 1) the use of professional organization as a major referent, 2) belief in public service, 3) belief in self-regulation, 4) sense of calling, 5) belief in autonomy, and 6) belief in continuing competence.

For belief in continuing competence, it means the professional believes that, in order to maintain an adequate level of competence and remain abreast of new concepts, he must accept a personal commitment to continuing extend his professional knowledge. He must read current literature and attend formal continuing education programs in order to provide competent service to his client.

The 36-item Hepler and Schack's attitudinal professionalism scale with six attributes was later used to compare pharmacy student externs' and their preceptors' beliefs about professionalism by Pamela Robers in 1989 (33). In Rober's study, she found that there were significant differences in the professionalism scores between the extern group and the preceptor group. The extern group scored significantly higher than their preceptors on the public service and continuing competency attributes. On the other hand, the preceptors scored significantly higher than the extern group on the self-regulation attribute. This study concluded that educational experiences under the direct supervision of the faculty have had more impact on the students' professionalism.

In 1987, Segal et al. (34) used Hepler's and Schack's scale to measure three groups of 617 Ohio pharmacists' professional attitudes. The subjects were hospital, independent, and chain pharmacists. This study measured both the practical and attitudinal professional attributes. Overall, there was no significant differences in their practical beliefs about professional attributes among these three groups. However, significant differences were found in five out of six attitudinal attributes. Only the belief in public service attribute that there was no significant difference in among the three groups. Chain pharmacists were found to have the same level of the use of the professional organization as a major referent and belief in continuing competence attributes as the independent pharmacists. However, the independent pharmacists had a higher level of sense of calling and belief in autonomy attributes than the chain pharmacists. Finally, hospital pharmacists had a higher level of belief in self-regulation than independent pharmacists.

The attitudinal professionalism scale was later adapted for pharmacy students in Thailand by Sanguan Lerkiatbundit in 1998 (35). This study aimed to develop the professionalism scale of Schack and Hepler to be a version for pharmacy students. He tested the scale with 191 fourth and fifth year pharmacy students at

Prince of Songkla University. The reliabilities of four from six attributes of professionalism in the test were less than 0.70. The researcher modified and retested with 508 pharmacy students (first to fifth years). The 42-item modified scale showed acceptable reliability (range 0.76 to 0.86). Construct validity was tested by using exploratory factor analysis. The findings indicated that belief in professional organization, belief in public service and sense of calling were high in the first year students, then decreased in the older years gradually, and surprisingly increased in the fifth year. For belief in self-regulation, the first year showed the lowest score. There were no differences in belief in autonomy and belief in continuing competence among five study years.

In the late 1980, there were widely used attitudinal professionalism as an outcome for evaluating the effect of professional socialization in pharmacy school. In 1978, Sharpe measured American pharmacists' professionalism using his own 17-item scale consisting of only three components, knowledge, calling, and vital (36). This scale was used to assess pharmacists' views toward certain professional aspects of his/her occupation. With the same purpose of assessment the attitudinal professionalism, then Sharpe's scale was different from the 36-item scale of Schack and Hepler only in the number of items and the name of components. In 1987, Hatoum and Smith (37) used Sharpe's scale to identify patterns of professional socialization for pharmacists during pharmacy schooling and after one year in practice. Among the four groups of subjects, the second year professional pharmacy students seemed to score higher than the other three groups on the professionalism subscales. This study proposed the factors influencing on pharmacy professional socialization were: 1) The length of socialization, 2) relatives who worked as pharmacists, 3) work experience, and 4) prior educational experience.

By 1991, Smith, Messer and Fincham (38) investigated the influences of socialization on pharmacy students' attitudes. The 17-item professionalism scale developed by Sharpe was used with 325 BS program students at the University of Mississippi. The findings showed significant decreases in professional identity among pharmacy student over time.

2. Behavioral professionalism

By the year 2000, Dana Purkerson Hammer (39) expanded the concept of professionalism to examine the behavioral component of professionalism. This idea came from Fishbein and Azjen's theory of reasoned action (40). Based on this theory, one's beliefs shape one's attitudes which in turn can predict one's behavior toward which the belief and attitude are directed. Therefore, the concept of professionalism in pharmacy has now included the As and Bs of professionalism. The A part refers to the attitudinal aspect while the B part refers to the behavioral aspect of professionalism. These two parts (A and B) also are corresponding to each other. In other words, certain type of attitudinal aspect will influence certain type of behavior. During the 2000 American Association of Colleges of Pharmacy (AACCP) Teachers' Seminar, participants were asked to identify the professional attitudes and their corresponding behaviors that were appropriate for pharmacy students as well as pharmacy faculty members (6). Table 3 shows the professional attitudes and their corresponding behaviors for pharmacy students.

Table 3: Examples of professional attitudes and corresponding behaviors for pharmacy students

Attitudes (A's of professionalism)	Behaviors (B's of professionalism)
Accountability	Take responsibility for actions
Caring	Volunteering Act of service
Desire for self-improvement	Continued learning Self-instruction
Diversity	Fair treatment of all people regardless of demographic characteristics
Honesty	Behaviors that demonstrate honesty and trustworthiness
Open-minded	Increased receptiveness to new ideas
Respect	Dresses appropriately, Punctual Maintains confidentiality
Responsibility to learn	Comes to class prepared Active participates in class activities, such as engages in discussion
Team player	Engages in constructive peer assessment Accepts and applies constructive critique
Values new experience	Desire to seek out and take on new challenges

Source: Hammer, D.P. (2000)

The first instrument to measure behavioral professionalism was developed by Hammer et al (41). In the study, the developed instrument was assessed for its reliability, content validity, and construct validity with 994 student/preceptor pairs from 17 pharmacy schools during Summer 1998. Content validity of the instrument was assessed by a group of 90 experiential program coordinators and preceptors from 49 pharmacy schools. Then, constructed validity was assessed using factor analysis and this yielded a 24-item instrument divided into four attributes. These four attributes were: 1) interpersonal/social skills, 2) responsibility, 3) communication skills, and 4) appearance. Finally, Cronbach's alpha coefficient was used to determine the internal consistency reliability of these four attributes and the results were 0.949, 0.948, 0.875, and 0.844 respectively.

In the same year, Hammer (41) proposed the importance of defining and describing the attitudinal and behavioral professionalism, these were to help academic programs to develop and measure As and Bs professionalism in pharmacy students, to open a stage to share ideas on how to foster and measure them, and describe barriers to professionalism development. She conclude that the development of attitudinal professionalism and demonstration of behavioral professionalism are key factors in the practice of pharmaceutical care and maintenance of pharmacy's status as a trusted and respected profession.

Medical professionalism

In medicine's perspective (42), the professionalism concept could be part of background of the practice. Physicians should operate under certain assumptions about appropriate behaviors, high educational standards, and self-scrutiny that define emergency medicine as a profession. Medical professionalism is based on society and the individual patient's trust, it is a manifestation of values, attitudes, and behaviors that result in serving the patient and society's interest before the physician's own. The researchers suggested the methods for promoting professionalism that were the professionalism should be discussed formally in school and during training and it should be evaluated while student's training, professionalism should be discussed at meetings of professional organizations and societies. They summarized that medicine can never succeed as a transaction, it can

only succeed as a partnership, a trusting exchange with patients, which is the hallmark of professionalism.

For the US medicine (43), the efforts to strengthen individual professionalism, to promote professional values in physicians were urged and supported by the Association of American Medical Colleges. The focuses on undergraduate medical education, the inherent moral value, and enhancement of the links between clinical professionalism and service to society that affected the public trust were the crucial core of professionalism development. With the requirement of the Accreditation Council for Graduate Medical Education for documentation of education and professionalism evaluation in 2007, teaching professionalism during residency has been needed. The components of professionalism (honesty/integrity, Reliability/responsibility, respect for others, compassion/empathy, self-improvement, self-awareness/knowledge of limits, communication/collaboration, and altruism/advocacy) that have been proposed by the American Academy of Pediatrics were taught and measured in pediatric residents. The curriculum for introducing the principles of professionalism was described and used to be a model for other programs.

In the year of 2002, Robin and colleague's study (44) was proposed to examine the feasibility of using the American Board of Internal Medicine's (ABIM's) elements of professionalism (altruism, accountability, excellence, duty, honor and integrity, and respect for the others) for categorizing ethical issues (professional and unprofessional behaviors) of medical students. 120 second-year medical students at the university of Washington School of Medicine were asked to respond a set of questions about professional standards of conduct. It was concluded that the ABIM's taxonomy was useful for examining undergraduate medical students' perception of the ethical issues.

III. Social and academic integration

Social and academic integration concept was initiated in the fields of education and social psychology. This idea began during the 1970's, when many educators attempted to explain why students made their decisions to dropout from college. At that time, college characteristics and student dropout were the topics of

research interest. In 1961, Durkheim’s theory of suicide was applied to a model of dropout that sought to explain dropout from institutions of higher education. Durkheim (45) proposed that a suicidal decision came from the insufficiency of moral value integration and insufficiency of collective affiliation. These two insufficiencies made a person had a poor interaction with other members in the society and finally made a decision to commit suicide.

In 1970, William Spady (46) applied Durkheim’s theory of suicide to college dropout. In his study, Spady viewed the college as a social system and treated the college dropout as a suicidal decision (see Figure 1). He presumed that lack of integration into the social system of the college increased the chance of dropping out from college. In his theory, he proposed that there were two subsystems within the college system, social and academic systems. By the year 1970, three sociologists, Donald Rock, John Centra, and Robert Linn (47) studied the relationships between college characteristics and student achievement. They found that students’ characteristics at the college entrance but not the college characteristics themselves were the better predictors of the students’ academic achievement.

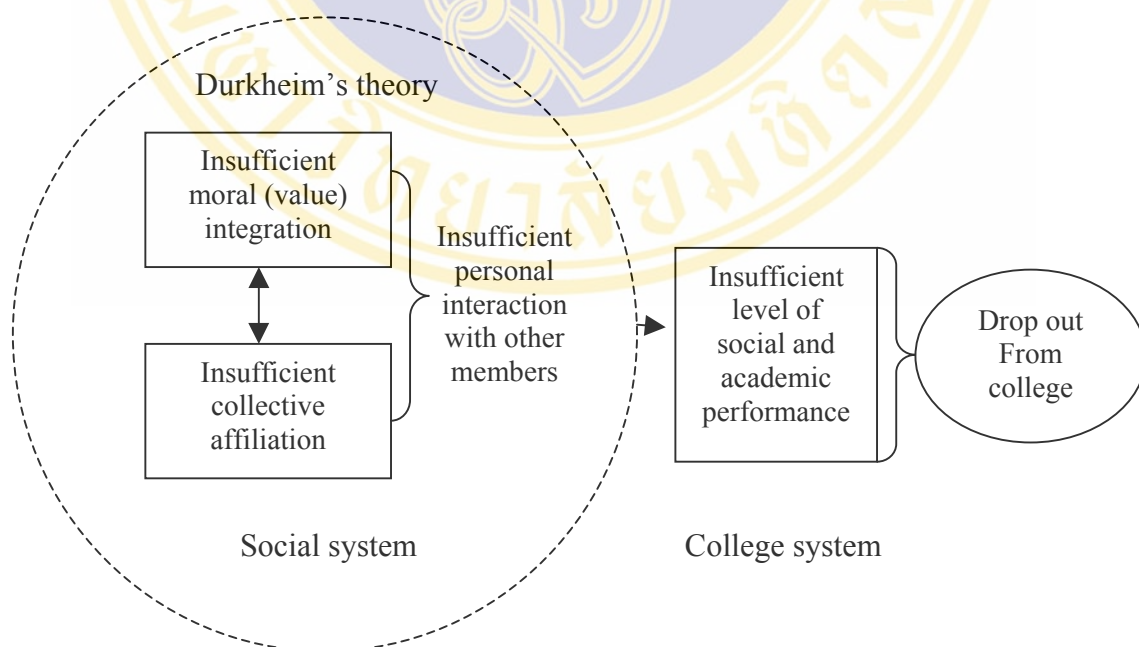


Figure 1. Durkheim’s theory of suicide as applied to dropout

In the late 1970, Vincent Tinto (14) developed a theory of student departure to explain the college students' retention and dropout. His theory was modified from Durkheim's and Spady's ideas. Based on this theory (see Figure 2), three factors, family background, individual attributes, and pre-college schooling were contributing factors to a student's goal commitment and institutional commitment. These two commitments were further influenced the student's academic system (grade performance and intellectual development) and social system (peer-group interactions and faculty interactions). According to Tinto, a student's goal commitment was defined as the degree to which he or she became integrated into the academic life of the institution, while a student's institutional commitment was defined as the degree to which he or she became integrated into the social life of the institution. A decision to dropout from college was explained by two factors, academic integration and social integration in which both of these factors affected the student's goal and institutional commitments before a dropout decision would be made. Between 1982 and 1987, Tinto (48) expanded his early work to integrate the student integration theory to explain the process that motivated an individual to leave college and/or university before graduation. These two types of integration had separate indicators; academic integration which stemmed from academic performance and interactions with faculty and staff while social integration could be valued by participation in and satisfaction with extracurricular activities and peer group interactions.

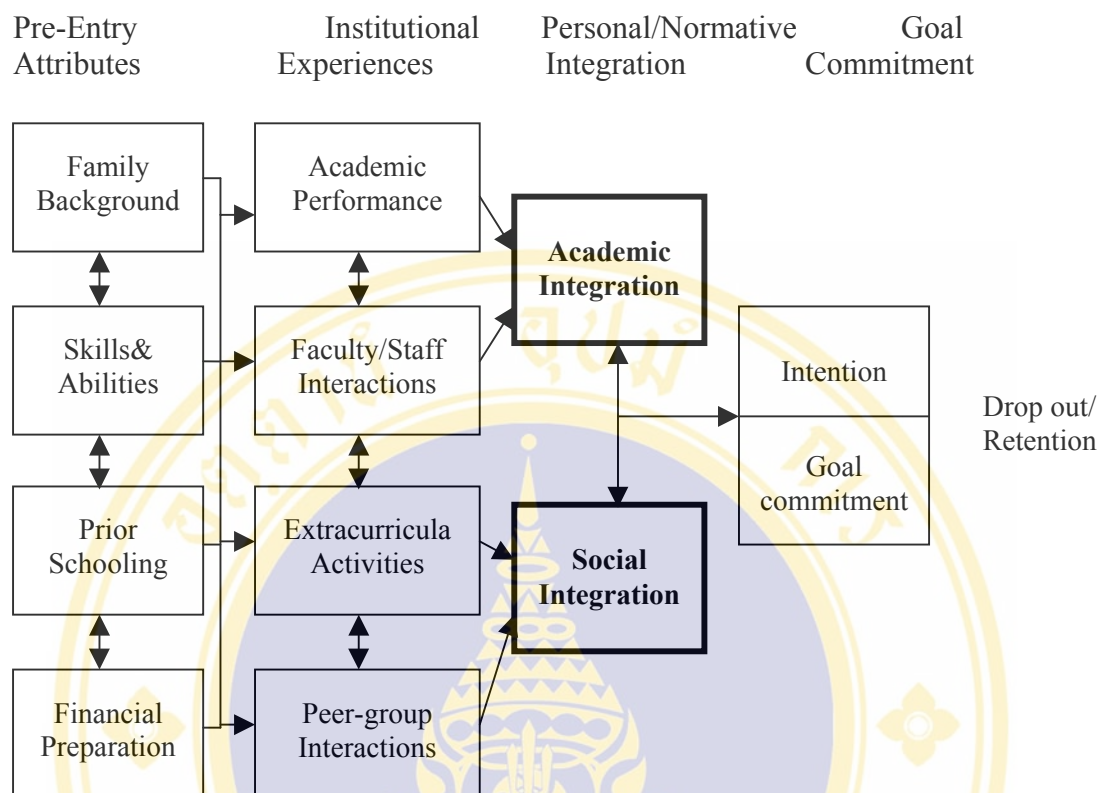


Figure 2. A model of student integration
Source: Tinto, V. (1975)

So far, Tinto's model was the best framework to determine the impacts of various factors on student retention and dropout. This model was further validated by Terenzini and Pascarella in 1977 (49). The validation confirmed Tinto's belief that student socialization was comprised of two main components, social integration and academic integration in the institutional environment. The social integration was explained by perception of nonacademic life, the number of extracurricular activities, and the number of times reported interacting with faculty members outside of class, whereas the academic integration was measured by perception of an academic program and student grade point average (GPA). Informal interaction with faculty member could not be separated between social and/or academic integration. In 1982, Terenzini et al. (50-51) continued his research and found that college experience such as contact with faculty positively affected students' personal development and growth, and professionalism was used as one aspect of a student's development.

In pharmacy area, social and academic integration in school life was viewed as a crucial part of professional socialization, then we have to know the definition and applications of this term.

Professional socialization

Sociologists and psychologists view socialization as the process by which a person acquires all the skills, knowledge, and disposition that enable him or her to play a more or less active role in society. Professional socialization is a specific form of socialization that deals with the changes an individual undergoes along the way to become a member of the profession. Merton (1957) defined professional socialization as the process by which people selectively acquire the values and attitudes, interest, skills and knowledge current in the profession (52). Professional socialization was proposed to occur in two settings, first was education or the formal training program (19), and second was workplace or the actual performance of the work of the profession.

The term, professional socialization, in pharmacy was defined by Ruane (1978) as the process of socialization of pharmacy students toward identification with their profession (12). The social and academic integration is only one part of professional socialization. In 1977, Manasse, Kabat, and Wertheimer (53) initiated to determine the effect of socialization of pharmacy students. Altogether, 614 subjects (346 pharmacy students, 100 pharmacist preceptors, and 43 college of pharmacy faculty) were assessed for their values. Values have been broadly defined as the collectivity of desired and terminal states of behavior were assessed into six basic classification in personality; the theoretical, economic, aesthetic, social, political and religious. It was found that the socialization process in pharmacy could not make a change of students' values when compared with preceptors' and faculties' values.

As related to pharmacy studies, Fjortoft and Lee (1994) applied Tinto's model to develop a professional commitment model (15). In this study, social and academic integrations were used as independent variables to predict professional commitment. Peer group interaction and out-of-class interaction with faculty were used to measure social integration, while student's level of satisfaction with intellectual development and student's perception of faculty concern for student

development were used to measure the academic integration. The results showed that students with a higher level of satisfaction with their academic development, faculty interaction, and peer group interaction indicated a higher level of professional commitment. In another study, Manasse, Stewart, and Hall (1975) explained that faculty members at the colleges of pharmacy and the preceptors under whom students complete their practical experience have been identified as the major forces of socialization for pharmacy students (54). This finding was similar to the 1982 Terenzini et al's study.

By the year 2000, Lerkiatbundit (2000) described and explained the change of professionalism as an outcome of socialization in Thai pharmacy students (55). His survey research was done at Faculty of Pharmaceutical Sciences of Prince of Songkla University. The samples were 446 all five study years pharmacy students who completed two surveys (first was done at the first two weeks of academic year, second was done at the last two weeks of academic year). Among four attributes of Tinto's model, Lerkiatbundit concluded academic development to be the most significant predictor of professionalism. Academic development was a significant predictor of five attributes of professionalism except belief in continuing competence. Faculty interaction was also a significant predictor of sense of calling, while peer group interaction was a significant predictor of the belief in public service and continuing competence. The researcher also suggested that Tinto's variables should be targeted for improving professionalism.

IV. Moral reasoning

Moral reasoning was defined as one's judgment when facing with moral dilemmas (57). In 1963, Lawrence Kohlberg (58) combined moral theory in psychology and cognitive development theory to develop Kohlberg's cognitive developmental stages of moral judgment. There were six stages grouping into three levels in Kohlberg's cognitive developmental stages of moral judgment. Each level had two stages. Level 1 (The preconventional level or the premoral level) contained stages 1 and 2, level 2 (The conventional level or the morality of convention) contained stages 3 and 4, and level 3 (The postconventional level or the morality of

individual principles) contained stages 5 and 6. Kohlberg's study was focused on moral development in children (details in next section).

Of the two theories used by Kohlberg, (1) moral theory in psychology and (2) cognitive development theory, the former was developed in the eighteenth century and was crucial to the psychology study. For the moral theory in psychology, Maze (59) was the first psychologist who formulated the moral development using an analysis of the concept of attitude to distinct the nature of moral judgment into two components: 1) moral beliefs and preferences and 2) moral assertions and factual assertions. Between 1973 and 1983, Maze continued his research in this area and eventually treated moral judgment as a cognitive achievement. On the other hand, the cognitive development theory was first originated by Sigmund Freud in 1920. During 1920 and 1940, Freud (60) continued his study in the area of child development psychology and developed Freud's psychoanalytic theory of child development. By 1950, Erik Erikson, an American psychologist, who had an interest in Freud's child development psychology, developed the theory of personality to explain the interaction between biological and social factors in personality development during childhood and adulthood (61). By 1955, Jean Piaget, a child psychologist, developed the cognitive development theory which was later used by Kohlberg (62). This theory explained children's thinking into developmental form involving several age periods ranging from preconceptual stage to sophisticate, operational stage of thinking characteristic of adolescents and adults. The most important piece of Piaget's work was a book on the moral judgment of the child published in 1932. This book described that children passed through three stages in the development of their reasoning as follows: (1) the intuitive; (2) the concrete operational; and (3) the formal operation. Between 1970s and 1980s, Kohlberg's cognitive moral development (CMD) was widely studied by many psychologists. Because moral reasoning based on cognitive moral development theory, to understand the details of Kohlberg's theory was necessary.

Cognitive Moral Development (CMD)

Lawrence Kohlberg's cognitive moral development Theory (CMD) is based on 40 years of quantitatively reproducible research. Kohlberg's theory is

grounded in Piaget's theories of how children develop both logical and moral reasoning skills. He provides a theory that explains the human decision-making process prior to behavior. Rather than being concerned with what is socially or morally right or wrong, moral reasoning is concerned with the processes individuals go through to arrive at decisions. It is a stage theory of moral development. Kohlberg, based on the extensive interviewing and observation of adolescents, derived a model that conceptualized ethical judgement based on a series of developmental stages. Cognitive moral development is cognitive in that it attempts to explain how a person thinks and their advancement along a stage sequence continuum of cognitive level.

Three levels of moral development begin with the term of pre-conventional morality then go along to the second term of conventional morality and sometimes up to the highest level called post-conventional morality. Each level has two developmental stage, and individuals progress upward in an invariant sequence. In other words, an individual progresses from stage to stage in a logical sequence. Theoretically, stages cannot be skipped. Rest, a psychologist, stated that one way for viewing the stages of cognitive moral development is to view them as six conceptions of how best to organize social cooperation in society (63). Table 4 shows conceptions of the six stages.

Table 4: Six stages viewd as conceptions of moral development.

	Conception
Level 1	Preconventional level
Stage 1	The morality of obedience: Do what you are told.
Stage 2	The morality of instrumental egoism and simple exchange: Let's make a deal.
Level 2	Conventional level
Stage 3	The morality of interpersonal concordance: Be considerate, nice and kind, and you'll make friends.
Stage 4	The morality of law and duty to the social order: Everyone in society is obligated to and protected by the law.
Level 3	Postconventional level
Stage 5	The morality of consensus-building procedures: You are obligated by the Arrangements that are agreed to by due process procedures.
Stage 6	The morality of nonarbitrary social cooperation: Morality is defined by how rational and impartial people would ideally organize cooperation.

Source: Latif, D.A. (2000)

The conception of all stages can be applied in pharmacy and also described as these. A pharmacist at the pre-conventional level of moral reasoning thought predominantly within the framework of what his/her best interest was, regardless of the behavioral effects on others. They focus was on himself/herself at this level. In the first level, the pre-conventional pharmacist might provide a very low level of patient focused care if the cost of doing so outweigh the benefits. The focus at the conventional level of moral reasoning is on relationships. Pharmacist's life required establishing relationships built on mutual trust. In this second level, conventional pharmacists would attempt to provide a level of patient focused care consistent with national laws. However, the conventional pharmacist would likely quit some care when faced with moderate situational pressures (e.g., increased workload). The post-conventional individual's resolution to social or moral dilemmas was guided by self-chosen or ethical principles. Laws are usually valid because they rest on principles. However, when laws violated them, the post-conventional person act in accordance with his own. The post-conventional pharmacists would probably provide a high level of patient focused care, despite being faced with moderate situational pressures. In the face of significant negative pressure to the provision of patient care, the post-conventional pharmacists would probably leave their work.

The two most commonly used instruments for assessment an individual's level of moral reasoning were: 1) the Moral Judgement Interview (MJI) and 2) the Defining Issues Test (DIT). The former developed by Kohlberg and his colleagues was a production-based semi-structured interview. The subjects were asked about several hypothetical moral dilemmas and their rationale for their particular actions. While, the latter developed by Rest in 1979 was a recognition-based multiple choice test. In the DIT, a subject was first presented with a hypothetical moral dilemma and then was asked to evaluate among 12 items (63).

Moral reasoning and health professionals

During 1980's, moral reasoning has been demonstrated to be of consequence to professional behaviors such as clinical decision-making in health professionals. This concept was introduced into healthcare due to an increasing number of malpractice cases and unethical behaviors of health care providers. While

society demanded for a higher standard of professional practice, health care providers were facing with the issue of moral dilemmas. In general, the public expected a high quality of medical health staff with high moral character. By 1973, there was an assumption that moral reasoning positively affected the clinical performance of health care practitioners (65).

Several studies were examined in the healthcare fields including medical, nursing, dental, physical therapy, orthopedics, and pharmacy. In 1980, Sheehan et al. measured moral reasoning of 244 pediatric residents to determine the relationship between these residents' clinical performance and their moral judgment (65). It was found that moral reasoning was a significant predictor of clinical performance and that high moral reasoning led to high clinical performance. Similar study was conducted with 39 family practice residents and yielded the same results. Meetz et al. (66) conducted a study in 1988 with dental students and found the same outcomes. On the other hand, several studies were done with nursing students. Shake Ketefian (67) found that there was a significant positive relationship between moral reasoning and moral behavior in 79 practicing nurse. Krichbaum et al. (68) reported that moral reasoning accounted for 34 percent of variance associated with nursing students' clinical performance in 1994. In 1995, Sisola (69) used moral reasoning to predict clinical performance of 58 physical therapy students. He reported in his dissertation that moral reasoning accounted for 19.4 percent of variance associated with their clinical performance. Another study was done with 53 practicing orthopedists in 1996. Baldwin et al. (70) found that orthopedists with fewer number of practice claims per year had a significantly higher level of moral reasoning than those with greater number of practice claims per year. Finally, Latif et al. (71) studied the relationship between 114 community pharmacists' moral reasoning and components of clinical performance in a large Southeastern metropolitan area. They found that moral reasoning accounted for only 10.1 percent of variance associated with self-reported clinical performance.

Moral reasoning and education

Based on those findings in various healthcare fields, both educators and health professional organizations attempted to incorporate the concepts of moral and ethical values in their students' health professional education. This led to several studies on the relationship between moral reasoning and education process. In 1979, Rest (72) reviewed 57 studies related to the impacts of educational interventions on moral reasoning. He found that peer discussion of moral dilemma helped students to have better moral judgment and that the period of discussion must be at least three and up to 12 weeks to be able to improve students' moral judgment. Felton and Parsons (73) determined the level of formal education on moral reasoning in 227 baccalaureate and 111 master's nursing students in 1987. It was found that master students had an overall index of moral reasoning higher than undergraduate students and therefore indicated that a formal education was a significant variable in the development of moral reasoning. In the field of medicine, Self et al. (74) studied the impacts of medical ethics case study discussion on 729 medical students' moral reasoning in 1989. He also compared the pre- and post-test moral reasoning of these medical students after a discussion of medical ethics among small group case study. The results showed that students who participated in 20 or more hours of the small group discussion had a significant increase in their moral reasoning. However, there was no significant increase in those who participated in the small group discussion less than 20 hours. In conclusion, he indicated that moral reasoning skills could be measured and taught to the students.

During the same year, Mustapha and Seybert (75) examined moral reasoning level of 266 freshmen throughout their senior years. There were three groups of subjects, two groups of liberal arts students and one group of nursing students. It was found that liberal arts students with the integrated curriculum and nursing students with the traditional curriculum had a significantly higher DITP (Defining Issues Test Principled) scores than liberal arts students with the traditional or distribution curriculum. Overall, the integrated curriculum affected the students' moral reasoning better than the traditional curriculum.

In 1993, Self (76) continued his research with his colleagues to examine different aspects of education on moral reasoning. First, he determined

whether or not different educational background affected moral reasoning of clinical ethicists including 26 philosophers and 24 theologians. Second, he examined the effect of educational background on orientations toward justice or care. Results showed that there was no significant difference in the moral reasoning and orientation toward justice or care between the philosophers and theologians. Third, he examined the influence of medical education on moral reasoning in 20 medical students. Unlike the previous study, this study used Kohlberg's Moral Judgment Interview (MJI) to measure the medical students' moral reasoning. He found that the mean scores on moral reasoning increased 18.5 points from the first year through the fourth year. However, this increase was not significantly different. Fourth, he used Rest's Defining Issues Test (DIT) to evaluate moral reasoning in 95 Texas A&M medical students at the beginning and the end of a registered first-semester medical ethics course and at the end of the students' fourth year. The results showed that an educational method such as a small group discussion of moral dilemmas appeared to be effective in enhancing medical students' moral reasoning skills. In the year 2000, Baldwin and Bunch (77) assessed moral reasoning skills of 80 orthopedic surgeons using Rest's Defining Issues Test (DIT). They found that the respondents had a mean score of 43.4 and this was considered a higher level of principled response. In another study, Patenaude, Niyonsenga, and Fafard (78) studied the changes in 92 medical students' moral development using the French version of Kohlberg's Moral Judgment Interview (MJI) in 2003. It was found that the stage of moral development did not change substantially over the three-year period with the mean of 3.46 in year one and 3.48 in year three.

Finally, ethics has become an important issue in the field of pharmacy since 1985. At the final general session of the 86th American Association of Colleges of Pharmacy (AACCP) annual meeting in San Francisco, Quinn (79) brought up the issue of ethical training for pharmacy students. On July 10, 1985, Quinn pinpointed that although pharmacists were ranked as the most trusted professional according to the Gallup's survey, however, the subject of pharmacy ethics were not addressed adequately in the pharmacy curriculum. He also suggested that there should be a development of a pharmacy ethics course in the pharmacy curriculum because ethics could affect the practice of pharmacy. For example, Brushwood (80) revealed two

pharmacists' malpractice cases related to the applicability of a legal doctrine known as strict liability and the scope of pharmacist's duty to warn patients concerning the risk involved with prescription drug therapy. These two cases raised a red flag on pharmacy ethical standards. At the same time, Hepler and Strand introduced the new paradigm, pharmaceutical care, into the practice of pharmacy. As the result, the practice of pharmacy has shifted its focus from a product oriented to a patient oriented concept. This new paradigm placed pharmacists in the position to make many ethical decisions for their patients. In order to graduate a pharmacist with a high ethical value, Buerki and Vottero (81) stated that pharmacy education needed to emphasize on ethics and professional prerogative and that internship preceptors also played a critical role in the professional development of the pharmacy students. They suggested that the profession should be focused on the moral and value-based standard of professional practice. Veatch (82) also supported the idea of ethics development in the pharmacy profession due to the facts that many problems arose because of no ethical standards in pharmacy practice.

So far, there are five pharmacy studies on moral reasoning in education. In 1986, Dolinsky and Gottlieb (83) studied moral dilemmas in pharmacy practice using Kohlberg's six stages of cognitive moral development. The fourth-year pharmacy students were asked to describe two moral dilemmas that they experienced in pharmacy practice in terms of their reasons and actions to resolve the dilemmas. It was found that a majority of the students (66.7%) were classified as stage three or below, 20 percent were in stage five or six (principled level), and the remaining were in stage four. Lindon and Draugalis (84) conducted a cross-sectional study in 1992 to assess moral development of 40 first-year and 31 fourth-year pharmacy students at one college of pharmacy. They used Rest's Defining Issues Test (DIT) to measure these students' moral reasoning and found no significant difference in the mean level of principled moral reasoning between the first- and fourth-year pharmacy students. In 1999, Latif and Berger (85) compared moral reasoning skills using the Rest's Defining Issues Test (DIT) between two groups of pharmacy students and pharmacy practitioners. Only the pharmacist group of 114 licensed community pharmacists was asked to respond to the Behavioral Pharmaceutical Care Scale (BPCS). The results showed that pharmacy practitioners with a high score on the BPCS had significantly

higher moral reasoning than 117 pharmacy students. Among the pharmacy practitioners, those with a high score of moral reasoning had significantly better clinical performance than those with a medium or low score of moral reasoning. Latif (57) continued his studies on moral reasoning in the year 2000. He attempted to explain the relationship between moral development and pharmacy education. Based on the results of his study, Latif suggested that an ethical dilemma discussion of moral reasoning throughout the pharmacy curriculum would lead pharmacy students to behave in a more professional manner when facing with the ethical dilemmas in the high pressure workplace. Further, Latif used Rest's Defining Issues Test (DIT) to determine the relationship between ethical dilemma discussion and moral development in 96 second-year pharmacy students. In the same study, he also examined the relationship between pharmacy students' moral development and their perceptions regarding the difficulty of resolving ethical problems commonly found in pharmacy practice. He found that students who had exposed to ethical dilemma discussion scored significantly higher on the post-test than the pre-test and those with a higher level of moral reasoning perceived that it was not difficult to solve common ethical dilemmas problems in pharmacy practice compared to their counterparts.

In Thailand, the importance of professionalism and ethics was proposed by the Prime Minister, Dr. Thaksin Chinawatra (86), he stated at the national academic conference in August 10th in the year of 2001 that the professional ethics is the vital character for qualifying a professional or a person who has professionalism. Professionalism and professional ethic were the crucial educational outcomes and needed to enhance and support by academia. Some evidences indicated that there were some problems of pharmacy professionalism in Thailand. First, a study of Sumlee Jaidee (1999) revealed that the ethical relationship between patients and pharmacists was in a declining stage, the pharmacy services focused on business oriented than profession oriented (87). They confronted with conflict of interests inducing ethical dilemmas. These effects negatively affected the professionalism among pharmacists. She also concluded that these problems reflected the quality and standard of pharmacy education in Thailand. Second, reports from the Pharmacy Council (88) showed more incidences of malpractices or unethical behaviors by pharmacists. A study of Lerkiatbundit in 1998 (89) revealed that the

levels of use of the professional organization as a major referent, belief in public service and professional commitment were high in the first year students, then gradually decreased in the successive years up to the fourth year. His study in 2000 also found that levels of professionalism at the beginning and the end of the pharmacy externship course remained unchanged. Those problems reflected the failure of professional socialization in pharmacy school as well as the teaching and pharmacy curricula. Moreover, the reality of the present day work environment often places pressure on pharmacists to behave in a manner that may conflict with the profession's code of ethics and professional behavior. Based on these evidences, professionalism and moral development should be more recognized as the important area of health professions training as well as pharmacy education.

Moral reasoning and affecting factors

From literature review, there are many factors affecting ethical decision-making or moral reasoning that can be categorized as, gender, age, socioeconomic status, intelligence, family and parental support, year of education, and work experiences.

Investigation results of Latif and Berger's study (1997) indicated significant gender difference in moral reasoning, female demonstrated significantly higher levels of moral reasoning in the community pharmacist sample (90). Their findings provided support for the contention that females perform as well or better than males on justice-based moral reasoning tests. A study of Trull (1990) investigated the relationship between change in moral reasoning and the freshman experience (91). His results indicated that after the freshman experience females experienced significant gains in moral reasoning, but males did not. In contrast to previous studies, Brownfield (1982) revealed his results that men in his population showed significantly higher moral reasoning than women on Kohlberg's hypothetical moral dilemmas (92). His suggestion of this result was the changing social ideals of masculinity and femininity in his culture. In Thailand, Nattawan (2000) studied with 285 students of Mahayomsuksa 4-6 and showed that there was little correlation between moral reasoning and sex of students (93).

Moral reasoning and age, Trull (1990) revealed his study results that the only significant effect of the characteristics of individuals who changed in moral reasoning was age (91). When age increased so did the likelihood of a significant increase in moral reasoning. The relationship of moral reasoning and socioeconomic status (SES), a study of O'Shaughnessy (1985) with 161 college students showed that both male and female respondents were influenced by two contextual features, the gender and socioeconomic status characteristics, male and low SES evoked less mature reasoning (94). A study to investigate the relationship between the moral reasoning and intelligence in 1981, Siefring's study revealed, even though there was no significant difference between male and female of 80 public junior high school students, but there was the statistical significant relationship between moral reasoning and level of intelligence. He concluded that intelligence was an important factor in the development of moral reasoning.

The relationship of moral reasoning and family and parental support, Sager (1998) examined the relationship between parental behaviors such as support, love withdrawal and adolescents internalized prosocial moral reasoning, he found that beyond gender of the adolescent which girls reported higher level of internalized prosocial moral reasoning than boys, parental supports, both fathers' and mothers' support was another important factor (96). Parental support was positively related to adolescent internalized prosocial moral reasoning. Moreover, fathers' love withdrawal was negatively related to adolescent internalized prosocial moral reasoning. In 1989, Silberman (97) investigated family influence in the development of moral reasoning, he found that parent level of moral reasoning have a linear relationship with the child's level of moral reasoning.

By the year of 1997, Naowarat Chalerm Sri (98) studied the effect of family background to the moral reasoning of 250 juvenile delinquents, she found that an inadequate family environment was significant factor affecting moral reasoning and behavior. Latif and Berger's study (85) about moral reasoning on 92 first year pharmacy students and 130 community practitioners in a large southeastern city. Their results showed that pharmacy students have scored significantly higher on the DIT than community practitioners. An explanation of Latif and Berger was the effect of the socialization of pharmacists to the community setting. As the previous

explanation of sociologists Denzin and Mettlin (1968) who explained and characterized community pharmacy practice as an incomplete or marginal profession because it contains elements which are both professional and nonprofessional (99). The ethical reality of most community pharmacies is guided by two specific and conflicting factors: professional responsibilities (e.g., adopting pharmaceutical care and adhering to the profession's code of ethics) and the economic needs of the organization (e.g., maximizing prescription volume for business, selling of unhealthy products such as tobacco).

The effects of work experience on moral reasoning were reviewed, a study of Latif in 2001, he explored the relationship between pharmacists' tenure in the community setting and their moral reasoning abilities. His study (100) with 45 independent and chain community pharmacists showed the results that community pharmacists with greater years of tenure in community practice scored significantly lower on moral than those pharmacists with fewer years of tenure. An important conclusion was a retrogression in moral reasoning skills as community pharmacists obtain tenure in the setting. Akanit Wangpetch's study (101) with 300 professional nurses in Siriraj Hospital in the year of 2000 found that duration of age and working experience had a significant positive association with moral behaviors. For organization climate, Sureerut Pornwatanakul (1999) found that a more warm organizational climate positively related to ethical behaviors (102). She suggested that organizational climate should be develop because it can help increase the quality of nursing practice. Moreover, the purpose of Jamison's dissertation (1981) was to examine the interaction between moral reasoning and peer pressure (103). He confirmed that peer pressure directly and positively affected stage 3 of moral reasoning. Adams's study (104) in 1987 explained the factors influencing the development of the 18-21 year old traditional college, the peer group is the most powerful. He examined the nature of peer influence on moral decision-making among undergraduate friendship groups.

Pharmacy professionalism, socialization and morality

With the consideration of profession definition and the attempt to measure professionalism, Roy Lewis and Angus Maude (105) proposed that a moral

code is the basis of professionalism, then the profession was redefined and added the criteria beyond the common criteria. These criteria were an accepted ethic beyond the private interest and a formal association fostering the ethical improvement of performance. The formation of a moral code and professionalism in pharmacy profession should take place through socialization with people who are significant for the individual such as faculty members, and fellow-students in the school (42).

In 1977, Robert A. Buerki (106) set up a study to investigate the level of professional aspiration and moral values of pharmacy students. The two questionnaire forms were developed and administered in April 1965 to all pharmacy students in the University of Wisconsin. The first form was “Pharmacist Smyth”, a better-than-average preceptor with high professional attitude as an ideal practice. The second form was “Druggist Smith”, an average preceptor with essential commercial attitude as a real pharmacy practice. The change of response on the two models among four year students was measured as the impact of socialization in pharmacy school and training. The study results revealed that the first year pharmacy students have not been socialized to the characteristics of the model. There was no change of response on those two models among the first year students. Older pharmacy students exhibited an increasing awareness of the difference between the ideal and real pharmacy practice. Pharmacy students were more likely to respond negatively toward a commercially-oriented druggist than to respond positively toward a professionally-oriented pharmacist. The researcher concluded that pharmacy students’ professional attitudes, moral value and aspirations can be affected by the classroom situation and continuing education activities later on in their careers.

V. Relationships among factors in professionalism model

For developing a theoretical model of the study, eleven relationships from nine study variables were reviewed for forming the basis of the model. Eleven relationships were; 1) the relationship between academic performance (Grade Point Average, GPA) and social and academic development, 2) the relationship between socioeconomic status (monthly income or allowance) and social and academic development, 3) the relationship between social and academic integration and social integration in workplace, 4) the relationship between social and academic integration

and professionalism, 5) the relationship between social integration in workplace and professionalism, 6) the relationship between knowledge applicability and social integration in workplace, 7) the relationship between moral reasoning and professionalism, 8) the relationship between perception of public acceptance and professionalism, 9) the relationship between professionalism and professional satisfaction, 10) the relationship between perception of public acceptance and professional satisfaction, and 11) the relationship between knowledge applicability and professional satisfaction.

First, the relationship between academic performance (Grade Point Average, GPA) and social and academic development, this relationship was originally determined by Vincent Tinto in 1975, an American educator in higher education. Tinto's study (14) revealed that the significant factor affecting to academic integration was students' grade performance and their intellectual development during the college years. His reviews also indicated that Grade Point Average (GPA) was the most visible form in the academic system and reflected the person's ability and achievement in relation to the educational system's values and objectives. He concluded that students with high grades were more likely to be high in measures of intellectual development which was a part of social and academic integration in an educational system.

An another research of Tinto (1997) also showed the relationship between students' GPA and their social and academic integration which later impacted to students' persistence (107). This research that was done among students at Seattle Central Community College proved that one of five significant predictors of social and academic integration and persistence was college grade point average.

In 1977, Patrick Terenzini and Ernest Pascarella (49) performed a study to assess the validity of Tinto's theory of students' integration in social and academic systems of an institution. The study was done with 500 freshmen who enrolled in the College of Arts and Sciences at Syracuse University. Their discriminant analyses supported Tinto and his two constructs and also reported the relationship of students' cumulative grade point average and academic integration.

A recent study of Alberta Gloria and Tamara Ho (2003) proposed the objective of examining the environmental, social and psychological factors on

students' academic persistence (108). With a total sample of 160 Asian American undergraduates, the researchers explained about the successful adaptation to college or the integration in social and academic experience was along with having a sense of psychological well-being and performing well in academic indicators such as school grade point average. Moreover, they proposed the academic self-concept such as academic ability, drive to achieve, and self-confidence in intellectual ability and achievement expectancies to be significant predictors of grade performance of students.

According to all studies above, it could be concluded that the academic ability or performance, particularly GPA, related to the social and academic integration in students' school life.

Second, the relationship between socioeconomic status (monthly income or allowance) and social and academic integration, this relationship was initiated by Vincent Tinto (14). His model explained that family background such as socioeconomic status was found to be inversely related to integration in educational system and affected students' decision of dropout from school. He revealed that children from lower status families exhibit lower score of social and academic integration in the institution and higher rates of dropout. A study of Fjortoft and Lee (1994) with the objectives of developing and testing model of professional commitment also found that among individual background characteristics of pharmacy students including gender, ethnicity, age, grade point average, family socioeconomic scale, and parents' occupation, the family socioeconomic scale (SES) was only background characteristic that found a significant negative relationship with institutional commitment (integration in the institution) (15).

Third, the relationship between social and academic integration and social integration in workplace, this relationship was found by a social psychologist, Richard Hall (1968), he suggested the importance of social integration or socialization in occupation and it had formed during the profession's training program in education system (29).

A study of Pamela Robers (1989) determined the effects of the externship experience (social integration in workplace) on academic development (one of four attributes of social and academic integration) as well as professionalism in 35 externs and 61 preceptor pharmacists (33). The results showed that during the externship the students integrated the ideas, developed their attitudes, and scored increasingly on sense of calling which was one attribute of professionalism. She also indicated that the integrated educational experiences from externship have had more impact on students' academic development and professionalism. Similar to Robers's idea, Lerkiatbundit (2000) performed a study to measure the externship outcome in 81 fourth year pharmacy students at Prince of Songkla University (109). He revealed that preceptor interaction or social integration during externship experience affected to students' academic development. He also suggested that pharmacy school should set up the externship that support and promote academic development and interaction with preceptors. From these reviewed studies, it can be concluded that the social and academic integration and social integration in workplace related and supported each other.

Fourth, the relationship between social and academic integration and professionalism, with the beginning study of Richard Hall in 1968, this relationship was revealed. Hall (29) suggested that socialization in the profession training program during school life had affected the professional attitudes. He also concluded that the strength of professionalism was based on socialization or social and academic integration which had taken place in education and the work itself. In 1967, Robert Buerki (106) attempted to consider profession definition and the attempt to measure professionalism. He set up a study to investigate the level of professional aspiration of all pharmacy students at the University of Wisconsin. His study concluded that pharmacy students' professionalism and aspirations can be affected by the classroom situation and continuing education activities later on in their careers.

With the same idea, Nancy Fjortoft and Mary Lee (1994) also set up a study (15) for predicting the development of professional commitment (sense of calling, an attribute of professionalism) in pharmacy students. The sample was a group of 408 first-year pharmacy students from three selected colleges of pharmacy. The results

showed that academic development was the most powerful predictor of professional commitment. The second was faculty interaction, whereas peer group interaction also indicated a positive and significant relationship to professional commitment. They concluded that social and academic integration was a strong predictor of professionalism. Lerkiatbundit's study (2000) with the objectives of describing and explaining the change of professionalism as an outcome of socialization in Thai pharmacy students, This survey research concluded that four attributes of social and academic integration were the significant predictors of professionalism (10% variance were explained), especially an attribute of sense of calling (24% variance were explained). The researcher suggested that Tinto's variables should be targeted for improving professionalism. These studies proved the relevant of the relationship between social and academic integration and professionalism (109).

Fifth, after finding the relationship between the integration during school life and professionalism, the integration in practice site or workplace was also found to be related to professionalism. In 1968, Hall's study concluded that socialization or social integration in workplace had affected workers' perception of professionalism. His study was performed with 542 American citizen representing 11 different occupations (physicians, nurses, accountants, teachers, lawyers, social workers, stock brokers, librarians, engineers, personnel managers, and advertising executives) from a wide selection of employing organizations. The results showed that the setting and work situation were the important factor that had impacted on self-regulation and autonomous of profession, two parts of professionalism, as well as the organizational climate and the conditions of employment were found to play the dominant role in the development of professionalism.

Moreover, in 1970 Epstein (110) studied in a group of 899 full-time professional social workers that represented a sampling of every third member of the New York City Chapter of the National Association of Social Workers (N.A.S.W.), and measured the professionalism and organization professionalization that reflected on the nature of the organizational environment in which professionals practice and their participation in the professional community. He concluded that the social

integration in professional organization had impacted on the professionalism of social workers.

Engle's study in 1991 (111) about leadership and professionalism in pharmacy, he suggested that the integration in workplace or work environment was the crucial factor of professionalism. He also indicated that practitioner development in workplace was critical to the success of the profession, the practicing pharmacists should exercise their profession ideas, have a commitment to patient care rather than a routine dispensing of a product, and intent to improve their competence through continuing-education programs and other new practice options.

In the year of 2000, American Pharmaceutical Association Academy of Students of Pharmacy-American Association of Colleges of Pharmacy Council of Deans Task Force on Professionalism (6) had written white paper on pharmacy student professionalism, they explained that the professional socialization in both education and practice was the most important of the development of professionalism which was a core of the renewed pharmacist role, the responsibility of caring the patients and achieving optimal therapeutic outcomes.

Sixth, the relationship between knowledge applicability and social integration in workplace, this relationship was revealed by Yoder (1995). She (112) performed a study to investigate the career development relationships (CDR) among 390 Army staff nurses from seven clinic specialties. This study found that staff nurses perceived the coaching relationship to be most value. Good relationships with the head nurse and peers (social integration in workplace) among staff nurses were influenced by learning from practice, doing the challenge assigned tasks, and applying knowledge and those further influenced on satisfaction in career and profession. The concept of knowledge management proposed by Yogesh Malhotra (113) refers to the critical issues of organizational adaptation, survival and competence against discontinuous environmental change. Two main ideas of this concept are knowledge exchange and learning partnerships. Knowledge application in practice and exchange among organization's members are not useful for only organizational learning but also professional learning and partnerships among workers in the organization (social integration in workplace).

Seventh, the relationship between moral reasoning and professionalism, this relationship was explained by Paul Balliet (1987) who proposed the idea of professionalism and ethical decision and the relationship between them in optometry (7). He explained the characteristics of a health care professional, professional will conform to the ethical standards of a profession, and will show a concern for the welfare of society above personal interests. Professionalism was explained to involve a demanding code of behavior, morality was a basic of ethics, whereas ethics was one of numerous factors forming the foundation for professionalism. A moral code was finally viewed to be the basis of professionalism. Benor and His colleagues (1984) proposed the moral reasoning to be a criterion for admission to medical school (114). They explained that moral reasoning is a key concept in medical professionalism and is correlated with clinical performance.

In 1993, Mary Armstrong (115) proposed a study to describe the benefits of a sample course in accounting ethics and professionalism. The researcher concluded that ethics and professionalism were two important cores of curriculum and should be taught in students because of its benefit on predicting students' moral reasoning maturation. David Latif (2000) stated in his study of cognitive moral development and pharmacy education, that moral development and moral reasoning were important for pharmacy students because students at higher levels of moral reasoning may demonstrate an increased probability of adhering to their code of ethics and provide professional behavior or professionalism with a high level of patient-focused care.

Akanit Wangpetch (2001) studied a research about moral behavior of nurses under the act on nursing and midwifery profession B.E. 2528 (101). Moral behavior of 300 professional nurses for Siriraj Hospital in Thailand was obtained for data analysis. She found that professional commitment or professionalism had a significant positive relationship with moral behavior and decision. As well as, in 1999, a study of Sureerut Pornwatanakul (116) with the objectives of determining the professional nurses' ethical behavior and finding the relationship among the professional attitude, organizational climate and professional nurses' ethical behavior. With the samples 305 professional nurses form six hospital in Nonthaburi province, the results revealed that nurses' professionalism and warm organizational climate had a significant positive relationship with ethical behaviors in nursing practice.

Eighth, the relationship between perception of public acceptance and professionalism, based on his interest on students' aspiration and the socialization in work setting during clerkship, Buerki (1967) developed two different model preceptors (a high professional attitude preceptor and a commercial attitude preceptor) and asked the response from pharmacy students in the University of Wisconsin. He found that students can perceive social acceptance affecting their aspiration and professional attitudes (professionalism).

In 1976, with a study in students at University of Connecticut, McCook and Speranza's study (117) hypothesized that the positive perception of pharmacy's role in society was developed both in professional education and practical experience during the externship. From this perception, pharmacy students gain their status and their attitudinal professionalism. With the same concept, in 1980, Jerry Bennett and Robert Hunter (119) did a study to determine pharmacy students' perception of career status and professional behavior among 105 undergraduate students from the three professional year classes of the University of Cincinnati College of Pharmacy. The change of their perception of career status and its role in society affected their professional behavior and professionalism.

Ninth, the relationship between professionalism and professional satisfaction, this relationship was found by Choice and Hepler (1974). Their exploratory research (31) purposed to find the relationships between preference for collective bargaining and hospital pharmacists' job satisfaction and professionalism. Mail survey with a random sample of 2,000 active ASHP members was done in October 1972. The findings revealed that professional autonomy attribute of professionalism had the strong negative relations with job satisfaction.

In 1986, Smith, Stewart and Grussing (119) studied about factors influencing the rate of job turnover among hospital pharmacists. This research was studied in 529 pharmacists in acute-care hospitals in the Chicago area. The reasons that pharmacists revealed for leaving a job were working hours, professional challenge, job duties, and continuation of education. It can be concluded that the lack of professionalism had impacted on satisfaction and leaving a job.

With a study of measuring work expectations and organizational attachment of hospital pharmacists by Steward and Smith (1987), 529 pharmacists in 42 Chicago-area hospital were asked to respond to job and profession satisfaction and the degree to which the respondents' expectations of their work and profession had been met. The results (120) revealed that professional and organizational commitment were two of all factors affecting profession satisfaction. The researchers suggested that managers should encourage organizational commitment by providing promotion opportunities and leadership in the structure and facilitation of job duties.

The study of Yoder (1995) was also explained this relationship. This study was done to investigate the career development relationships (CDR) among 390 Army staff nurses from seven clinic specialties and to evaluate three outcomes of the relationship; professionalism, job satisfaction, and intent to stay. The researcher suggested (112) that professionalism should be viewed as an input of CDR model because it affected the level of job satisfaction. Staff nurses perceived the coaching relationship to be most value, especially the relationship between the staff and the head nurse through the teaching, assigning the challenge tasks, career counseling which provided good relationship and professionalism among them and also satisfaction in career and profession.

The effect of pharmacy commitment on development of job satisfaction and organizational commitment was performed by Sanguan Lerkiatbundit in the year of 2000. The samples were 94 fifth year pharmacy students at Prince of Songkla University, Thailand. He revealed that lower levels of career commitment associated with increased job stress, job dissatisfaction, and withdrawal from the profession and the employing organization. He also found that professionalism at graduation and job satisfaction were the strongest predictors of professionalism during practice.

The tenth pathway was the relationship between perception of public acceptance and professional satisfaction. This relationship was found by Ortiz and his colleagues in 1992. Their study (121) was conducted to determine job satisfaction of Australian community pharmacists. They found that the appreciation or the acceptance of others was one of the most frequently described as satisfying and one of the important job aspects that provided job satisfaction among community

pharmacists. This result summarized that the perception of social acceptance could indicate pharmacists' job satisfaction.

In 1996, Valerie Willett and Cary Cooper (122) performed a study with an attempt to identify stress of 200 community pharmacists in the north west of England in 1994 and its effect on job satisfaction. They found that a perceived low professional status in society when compared with allied professions was a main stressor for the pharmacists and affected on their job satisfaction. It could be concluded that the perception of social acceptance has influenced on job satisfaction among community pharmacists.

In 1998, Kawabata and colleagues (123) revealed the importance of clinical activities that increased the acceptance and expanded professional role to job satisfaction in 495 Japanese pharmacists. They concluded that the high involvement in clinical activities associated to the higher job satisfaction.

The final pathway was the relationship between knowledge applicability and professional satisfaction. In 1983, Pamela Robers (124) conducted a study to determine the factors affecting job satisfaction among U.S. pharmacists. Her subjects came from a wide variety of work settings. She found that five factors correlated with satisfaction, which were work setting, position, professional role, demographic factors, and other factors. The study conclusion revealed that professional role, especially the ability utilization related to job satisfaction among pharmacists. In the same year, Anal Purohit and Randall Lambert (125) identified the intrinsic and extrinsic job factors that were the most important to pharmacy students. Their finding revealed that five characteristics were found to be important to greater job satisfaction. These characteristics were pay or salary, sense of accomplishment, use of training, learning opportunities and relationship with their co-workers. They suggested that use of training from both education and practice should be promoted by pharmacy administrators.

Chris Kozma and colleagues (126) set up a study for measuring the effects of implementing a pharmacy services program on pharmacists' job satisfaction. They explained that a factor, participation in clinical services and use of skills and

knowledge in those services, had impacted on the levels of pharmacists' intrinsic job satisfaction.

With the same Kozma's concept, David Olson and Kenneth Lawson (127) did a study to find the relationship between hospital pharmacists' job satisfaction and involvement in clinical activities (128). They found that when pharmacists' role was expanded by applying knowledge through practice and spending more time in clinical activities, their job satisfaction increased. They also suggested that pharmacy managers should provide educational programs that develop their pharmacist' clinical skills and provide opportunities for staff pharmacists to participate in clinical pharmacy practices.

Ortiz, Walker, and Thomas (1992) proposed the relationship between job satisfaction and job characteristics, they found that good job characteristics related to professional satisfaction were the involvement a high level of skill and applicability knowledge to practice (128). As well as a study of Sanguan Lerkiatbundit (2000), he found that twelve predictors of job satisfaction in 1,396 registered pharmacists in six upper Midwest states of U.S. A main factor, skill utilization, was the most important factor affecting job satisfaction among pharmacists.

A recent study of Emily Cox and Valerie Fitzpatrick (130) in 1999 revealed the relationship between job satisfaction and perceived utilization of skills among pharmacists practicing in institutional and ambulatory care settings in Arizona. Their findings showed that pharmacists' perception of how they used their skills in practices was a strong predictor of job satisfaction. They concluded that one important factor contributing satisfaction among pharmacists was their ability to use the skills while on the job. It can be concluded that reviewed literatures proved the relationship between knowledge applicability and professional satisfaction.

CHAPTER 3

MODEL DEVELOPMENT

This chapter provides the development of the study models; professionalism model of pharmacy students and practicing pharmacists, as well as the relationships and components of professionalism model.

From the literature reviews, three main concepts; professionalism, social and academic integration, and moral reasoning were used as the core component of the model. The other six related factors; professional satisfaction, perception of public acceptance for pharmacy profession, social integration in workplace, knowledge applicability, grade point average (GPA), and monthly income or allowance also were added into the model. From three main factors and six related factors, eleven relationships among them were reviewed to form the study model for pharmacists, and nine relationships for pharmacy students (see Figure 3 and 4).

Begin with social and academic integration that was found to be a strong predictor of professionalism, the relationship between social and academic integration and professionalism was revealed in several researches. Social and academic integration, the crucial part of professionalization, was found to have a positive effect to professionalism. Then the first relationship was designed in professionalism model. Use social and academic integration as a point of view, strong initial determinants of social and academic integration were found, they were background characteristics such as academic performance, family socioeconomic status (SES), parents' education and occupation, study year, do part-time job.

Grade point average (GPA), a visible academic performance, and socioeconomic status (SES) assessed in terms of monthly income or allowance, were selected to be the initial factors in the model because they were standard indicators and showed the strongest relationships with social and academic integration. Moreover, GPA was also found to be a positive predictor of social and academic integration, then it was put in the professionalism model as a predictor of social and

academic integration, it later has the indirect effect to professionalism. With the concept of professional socialization that occurred in both education and workplace, then the relationship between social integration in workplace and social and academic integration in education was found. Social and academic integration was put in the model as a predictor of social integration in workplace.

Besides social and academic integration that was found to be a predictor of professionalism, social integration in workplace, perception of public acceptance, and moral reasoning were also found the positive relationships with professionalism. First, social integration in workplace, work is crucial part of professional development and perception of social status because it was a place that profession met clients, peers, staff and other health profession, and then it has a positive effect to professionalism. Second, perception of public acceptance, if pharmacist perceived his/her good status in the public's eye, with the identity, he may have a high commitment to profession. Then a positive relationship between professionalism and perception of public acceptance was revealed. Moreover, pharmacist or pharmacy student who perceived the more acceptance on their roles and status by society were more likely to have high professional satisfaction, then the another pathway from perception of public acceptance to professional satisfaction was found and added to the model. The final factor was moral reasoning. Moral code was found to be the basis of professionalism, moral reasoning as moral decision thinking process under the moral code was also found the association with professionalism. Then these three factors were put in the professionalism model.

Knowledge applicability was another factor that put in the model. Two pathways of knowledge applicability were the relationship with social integration in workplace and the relationship with professional satisfaction. The relationship between a high level of skill and applicability knowledge to the high professional commitment in workplace was explained. Moreover, it was found the significant relationship with professional satisfaction. Person who can utilize their knowledge in the practice well, he or she would be satisfied in profession. The final pathway, the relationship between professionalism and professional satisfaction, this relation explains the final outcome of being profession that may affect to the quality of practice and the status of being member in profession. Finally, eleven relationships

among nine factors in the model were linked and proposed to be the theoretical model of this study.

With the difference between pharmacist and pharmacy student, two models for each group were set up. While the model of pharmacists comprised of all nine described variables, the model of pharmacy students comprised of eight variables (except knowledge applicability, because students did not have opportunity to apply and make the decisions based on their knowledge in the actual work). The proposed models of pharmacists and pharmacy students were shown in Figure 3 and 4.

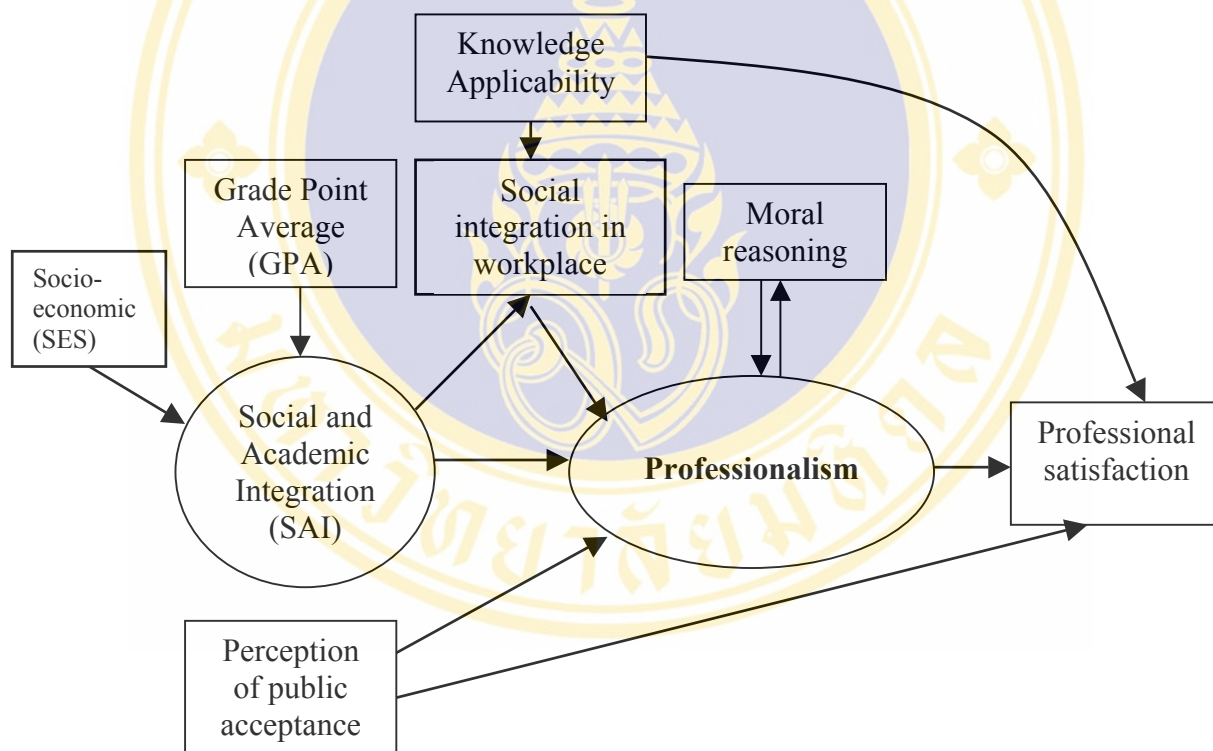


Figure 3. A proposed theoretical model for pharmacists.

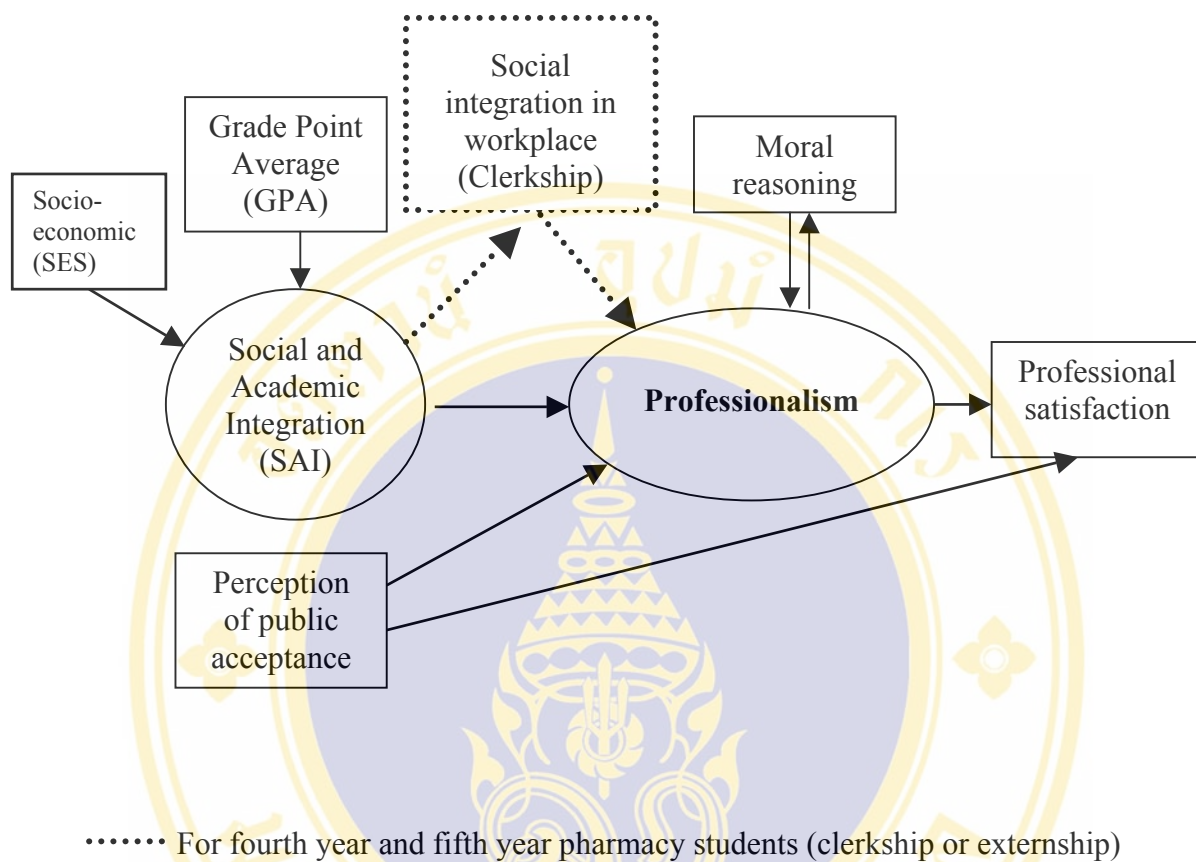


Figure 4. A proposed theoretical model for pharmacy students.

CHAPTER 4

METHODOLOGY

This chapter provides a description of research methodology including research design, three phases of procedure in the professionalism model development, population and sample, sample size determination, study instrument, study variables, and data analysis.

1. Research Design

A cross-sectional mail survey research was designed to develop the professionalism models for pharmacists and pharmacy students in Thailand.

2. Study procedure

This study was conducted and implemented through three major phases over a two-year period. These three phases were: 1) theoretical model development; 2) questionnaire development; and 3) model testing.

Phase 1. Theoretical model development

This phase was purposively to develop the theoretical model of this study, to find the relationships among main factors in the model based on literature reviews and relevant social science theories. The details of model development and relationships among factors were provided in chapter III.

The relationships among three domains of interest; professionalism, social and academic integration, and moral reasoning were developed to be the core of the professionalism model. Professionalism and moral reasoning were the main focuses or dependent variables, while social and academic integration was included in this study as the independent variable. The other six related factors; grade point average (GPA), socioeconomic status (SES), social integration in workplace, knowledge applicability, perception of public acceptance for pharmacy profession, and professional satisfaction also were added in the model.

Phase 2. Questionnaire development

The purposes of this phase were to develop the study instrument and assess the content validity and the reliability of this instrument. This phase was performed in three steps; 1) content validity assessment; step 2) review content by expert panel; and 3) assessment reliability.

Step 1. Content validity assessment

A literature review was conducted to find the meaning and components of professionalism and the one developed by Schack and Hepler was adopted. The Schack and Hepler model was modified from the original Hall's professionalism model. Tinto's model was used in the study for the social and academic integration. A questionnaire was developed containing the six aspects of professionalism and five aspects of social and academic integration. It was translated into Thai by a faculty school member. Content validity of the questionnaire was assessed by a group of five experts representing five different fields of pharmacy. These fields were pharmaceutical industry, pharmaceutical marketing community, hospital pharmacy, and law enforcement (see Appendix A). In Thailand, the law enforcement group refers to pharmacists who work at the Thai Food and Drug Administration (FDA) and the Provincial Health Office under the Ministry of Public Health. The experts were selected based on three criteria; 1) being a well-known person in the field; 2) being a good role model; and 3) actively involving in the pharmacy organizations. An in-depth interview was conducted with each individual expert for his or her comments. The experts were asked to consider the content validity of the Thai professionalism and the social and academic integration concepts and to provide feedbacks on the wording and clarity of the operational statements on the questionnaire. Inputs from these experts were used to modify the questionnaire to yield the first version of the study instrument.

This first version was further pre-tested by 100 practicing pharmacists. This questionnaire only contained questions pertaining to the professionalism concept but not the social and academic integration. This was done because the study intended to determine the content of professionalism from the perspective of the Thai pharmacists. These pharmacists were randomly selected from several databases representing different fields of pharmacy nationwide. The purpose of this step was to

assess the content validity of the study instrument from the perspectives of the practicing pharmacists. Each pharmacist was asked to read each item on the questionnaire and indicate his or her response on a three-point scale varying from agree (score=2) to undecided (score=1), and disagree (score=0). They were not asked to respond to the questionnaire for data collection purpose. Their inputs were used to develop the second version of the study instrument. Information obtained from these pharmacists was analyzed and all items were extracted, pooled, and regenerated to make sure that they represented the subscales of professionalism. The steps of the study instrument development were summarized and shown in Figure 5.

Step 2. Review content by expert panel

During this step, a meeting was held with all five experts together to perform a final review of the questionnaire. At the meeting, inputs received from the practicing pharmacists were presented to these experts for the final review. The experts were asked to consider the practicing pharmacists' comments and each item on the second version of the questionnaire was once again reviewed for content, grammatical correctness, organization, readability, and clarity. This step yielded the final version of the questionnaire.

Step 3. Assessment reliability

The final version of the questionnaire was pre-tested with a group of 52 pharmacists for reliability assessment. This questionnaire contained all three domains of interest including 32-item professionalism, 25-item social and academic integration, and one dilemma with 12-item moral reasoning. Therefore, the reliability assessments were performed for all of the three domains. Unlike the first group of pharmacists, these pharmacists were asked to answer the questionnaire rather than providing their comments on each item of the questionnaire. The subjects in this step were selected using the purposive sampling method from one of the 76 provinces in Thailand. Nakorn Ratchasima province was selected because it had the highest number of practicing pharmacists compared to other 74 provinces in Thailand (except Bangkok). The study did not use a sample of pharmacists nationwide due to budget constraint.

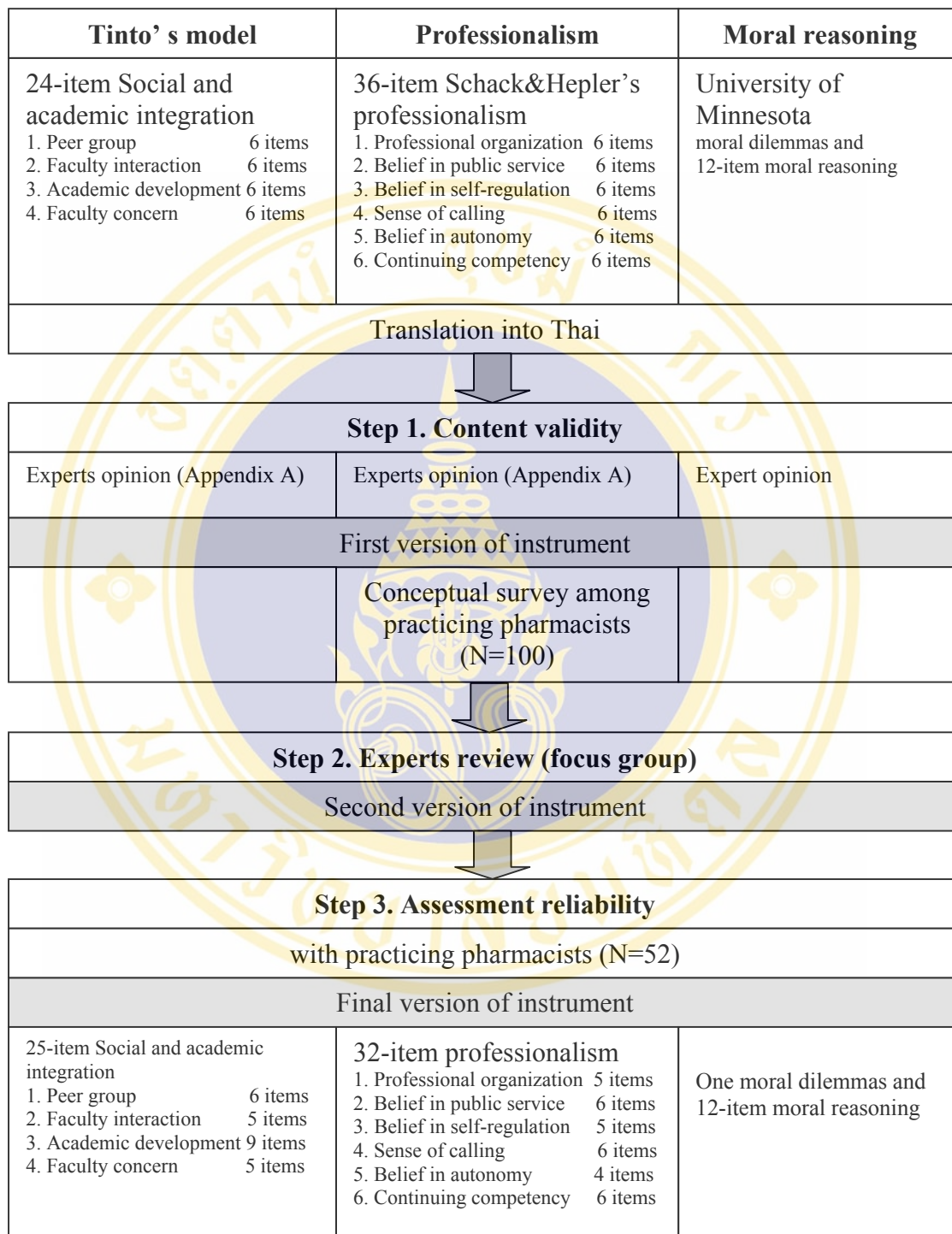


Figure 5. The steps of the study instrument development.

Study Instrument

The study instrument was a self-administered questionnaire. There were four sections in the questionnaire, demographics, questions related to professionalism, social and academic integration, and moral reasoning. The first section asked the respondents to indicate their gender, age, marital status, monthly income, work title, educational level, name of pharmacy school where graduated, year of graduation, pharmacy grade point average (GPA), field of pharmacy work, parents' educational levels and occupations while the respondents were in the pharmacy schools, the name of the person who influenced the respondents to choose the pharmacy program, respondents' satisfaction with the pharmacy profession, name of pharmacy organizations joined by the respondents, the level of pharmacy knowledge used to practice pharmacy, the perception of public acceptance for the pharmacy profession, the name of the agency that was responsible for the development of the pharmacy profession, and the respondents' opinions on which discipline should represent the pharmacy profession.

The second section of the questionnaire contained 32 operational statements representing the six aspects of professionalism. There were five statements each for the first (use of the professional organization as a major referent) and the third (belief in self-regulation) aspects, four statements for the fifth (belief in autonomy) aspect, and six statements each for the remaining aspects, the second (belief in public service), the fourth (sense of calling or professional commitment), and the sixth (belief in continuing competence). For each of the item, the respondents were asked to indicate their agreement using a five-point Likert scale ranging from strongly agree (5), agree (4), undecided (3), disagree (2), and strongly disagree (1). These operational statements were worded in the positive and negative manner to prevent the response set bias.

The third section of the questionnaire was comprised of 25 operational statements representing the four aspects of social and academic integration and 5 operational statements representing social integration in workplace. There were six statements for the first (peer group interaction) aspect, nine statements for the third (academic development) aspect, and five statements each for the second (out-of-class interactions with faculty), fourth (perception of faculty concern) aspects. The social

integration in workplace could be valued by participation in and satisfaction with professional activities and peer or customer interactions during working life in a workplace. The previous five-point scale was used in this section for the social and academic integration and the social integration in workplace.

Finally, the last section of the questionnaire asked the respondent to read a case scenario and then indicate their opinions on 12 operational statements using a five-point Likert scale ranging from the most important (5) to very important (4) to important (3) to less important (2) and not important (1). This was based on the Defining Issue Test (DIT) Manual published by the Center for the Study of Ethical Development, University of Minnesota.

Phase 3. Model testing

This phase was to test the proposed professionalism models in three groups of study samples. The final questionnaire with added 5-item of social integration in workplace was used in the samples. This phase was conducted through three steps during February 2003 and April 2004. These three steps were: 1) collecting data from Thai practicing pharmacists; 2) collecting data from Thai pharmacy students; and 3) collecting data from role model pharmacists. These steps were described below.

Step 1. Collecting data from Thai practicing pharmacists

During the first step, 1,250 practicing pharmacists representing seven different fields of pharmacy; public hospital, private hospital, pharmaceutical marketing, law enforcement, community pharmacy, and pharmaceutical industry, were randomly selected by proportion based on the distribution statistics of pharmacists nationwide. Based on the 2002 report of the Thai drug system committee, target population were 11,601 pharmacists in seven fields of pharmacy (see Table 4). The sample size of this group was determined by using the variance of professionalism score from the pretest. The names and addresses of Thai practicing pharmacist used in this study were obtained from the Thai Pharmacy Council and the other pharmacy professional associations. A questionnaire was mailed to the sample during December 2002 and April 2003. At the end of a questionnaire, a practicing pharmacist was asked to fill three names of role models based on their perception over the pharmacy professional life. One thousand two hundred eighty packets were distributed to

practicing pharmacists. Each packet contained of a four-section questionnaire, a cover letter describing the study researcher and the study objectives, and an address where the practicing pharmacist could send a responded questionnaire back to the researcher.

Sample size of public hospital pharmacists

$$n = \frac{NZ^2\sigma^2}{NE^2 + Z^2\sigma^2} \quad (\text{Wanichbuncha, 2003})$$

When, n = Number of sample

N = Population size (N = 4,459)

Z = The Z statistics at the confidence interval 95%, Z = 1.96

σ^2 = Variance of professionalism, estimated from the square of standard deviation (S^2) of the previous pilot study with 39 hospital pharmacists, $\sigma^2 = 24.60 \text{ score}^2$.

E = The accepted error of the population mean's score estimation, set by researcher, 0.5 score.

Computed n by;

$$n = \frac{4,459 \times 1.96^2 \times 24.60}{(4,459 \times 0.5^2) + (1.96^2 \times 24.60)}$$

$$n = 349 \text{ cases of hospital pharmacist}$$

$$n = 8\% \text{ of all hospital pharmacists}$$

The size of other six fields; private hospital, pharmaceutical marketing, law enforcement, community pharmacy, pharmaceutical industry, and pharmacy education, the researcher estimated their sizes with 8% of population of each field.

However, in order to save the loss samples in the data collection step, the researcher would collect additional sample of 25%. Therefore, the samples in this study were added as 10% of population. Sample sizes of seven pharmacy fields were shown in Table 5.

Table 5: Sample sizes of seven pharmacy fields

Pharmacy field	Population size ^a	Sample size ^b
1. Public hospital pharmacy	4,459	500
2. Private hospital pharmacy	948	120
3. Pharmaceutical marketing	1,800	150
4. Law enforcement	825	100
5. Community pharmacy	1,600	200
6. Pharmaceutical industry	1,169	100
7. Pharmacy education	800	80
Total	11,601	1,250

^a The distribution of pharmacist in Thailand, 2001 (143).

^b Sample size of each field \approx 10% of population.

Step 2: Collecting data from Thai pharmacy students

This phase was performed during the academic year of 2003. Four different pharmacy schools were selected from the list of all 12 pharmacy schools in Thailand (see Appendix G) by using a stratified sampling procedure. Three strata included a stratum of two government schools with a program of Bachelor of Science (B.Sc.), a stratum of a private school with the B.Sc. program, and a stratum of a government school with the Doctor of Pharmacy (Pharm.D.) program. The sample in this phase were 2,667 pharmacy students who were studying in the first year to the fifth year of the four selected schools during the academic year of 2003 (see Table 5).

For saving the sample loss due to a low response of returned questionnaires and feasible managing of questionnaire distribution, the researcher decided to collect data from all students in four pharmacy schools of four universities; Chulalongkorn University, Chiang Mai University, Naresuan University, and Hauchiew Chalermprakiet University, as the representatives of all Thai pharmacy students. The pharmacy students could be clustered into three groups based on the difference in university type (government or private university) and education program (B.Sc. and Pharm.D. program). Sample sizes and percentages of three groups of pharmacy students were shown in Table 6.

Table 6: Number and percentage of three groups of pharmacy students

Program and University	Population size ^a		Sample size ^b	
	N	%	N	%
Bachelor of Science (B.Sc.)	5,981	89.5	2,224	83.4
1. Government university	4,671	69.9	1,524	57.1
2. Private university	1,310	19.6	700	26.2
Doctor of Pharmacy (Pharm.D.)				
3. Government university	702	10.5	443	16.6
Total	6,683	100.0	2,667	100.0

^a The distribution of pharmacy students in Thailand, Academic year of 2003. (Data from telephone surveys in October, 2003)

^b Sample size of each program and university was calculated from percentage of each population.

Step 3. Collecting data from role model pharmacists

The name list of Thai role model pharmacists was extracted and pooled from 736 returned questionnaires of the first phase. This group was used as a reference for model confirmation. The first 100 highest ranking score pharmacists of all 167 listed role models pharmacists were selected and mailed during November 2003 and March 2004.

3. Study variables

The study variables could be defined into two groups; dependent variables and independent variables (see Table 7).

Dependent Variable

1. Professionalism

The 32-item Professionalism scale with 5 interval Likert-rating scale represented six attributes of professionalism. Total score ranged between 32 and 160.

2. Moral reasoning

Moral reasoning instrument is a short-form DIT with one moral dilemma was used. A dilemma is followed by a series of 12 statements about the dilemma. Subjects were asked to select and rank order the issue in their opinion. The four highest ranked items were included in scoring the DIT. Those that represent principled thinking were included in a "P" score (defined as the relative importance a subject gives to principled considerations in making a decision about ethical dilemmas). Raw "P" scores can range from zero to 9. This score is then converted to

a P percent simply by dividing the raw score by 0.09. For example, a pharmacist got 8 scores of raw “P” that could be converted to 88.9 (8/0.09) of the P percent.

3. Professional satisfaction

Subjects were asked to rate their satisfaction of the pharmacy profession based on their own ideas. The range of the pharmacy professional satisfaction (the percentage of satisfaction) was zero (not satisfied) to 100 (completely satisfied).

Independent variables

1. Individual background characteristics

These characteristics comprised of gender, age, marital status, monthly income or monthly allowance, educational level, name of pharmacy school where graduated, year of graduation, pharmacy grade point average (GPA), parents' educational levels and occupations while the respondents were in the pharmacy schools, the name of the person who influenced the respondents to choose the pharmacy program, the perception level of public acceptance for the pharmacy profession, name of pharmacy organizations joined by the respondents, and the number of years after graduation.

2. Work experience

The group of work experience variables contained field of pharmacy work, work position, and the level of pharmacy knowledge used to practice pharmacy (knowledge applicability)

3. Social and academic integration

The 25-item social and academic integration scale with 5 interval Likert-rating scale categorized into four attributes. Total score ranged between 25 and 125.

4. Social integration in workplace

The 5-item social integration in workplace scale with 5 interval Likert-rating scale had total score ranging between 5 and 25.

Table 7: All thirty four variables in the study

Variable	Type of variable	Group of Variable
Independent Variables		
1. Gender	Category	Personal factor
2. Age	Continuous	
3. Pharmacy Grade Point Average (GPA)	Continuous	
4. Birthplace	Category	
5. Education; father	Category	
6. Education; mother	Category	
7. Occupation; father	Category	
8. Occupation; mother	Category	
9. Influential person for choosing pharmacy school	Category	
10. Member of professional organizations	Category	
11. Have a part-time job while studying in pharmacy school	Category	
12. University	Category	
13. Marital status (for pharmacist only)	Category	
14. Education level (for pharmacist only)	Category	
15. Years after graduation (for pharmacist only)	Continuous	
16. Current profession field or field interested	Category	
17. Monthly allowance (for pharmacy student)	Continuous	
18. Perception of public acceptance for pharmacy profession	Continuous	
19. Work position (for pharmacist only)	Category	Work experience factor
20. Monthly income (for pharmacist only)	Continuous	
21. Knowledge applicability	Continuous	
22. Social integration in workplace (for pharmacist and 4 th – 5 th year student)	Continuous	Social integration
23. Peer group interaction	Continuous	Social and academic integration
24. Faculty interaction	Continuous	
25. Academic development	Continuous	
26. Faculty concern	Continuous	
Dependent variables		
27. Use professional organization as a major referent	Continuous	Professionalism
28. Belief in public service	Continuous	
29. Belief in self-regulation	Continuous	
30. Sense of calling	Continuous	
31. Belief in autonomy	Continuous	
32. Belief in continuing competency	Continuous	
33. Moral reasoning	Continuous	
34. Professional satisfaction	Continuous	

4. Data Analysis

Several methods of data analyses were used to analyze the data of this study.

1. All three questionnaires for professionalism, social and academic integration, and moral reasoning were checked for their internal consistency reliability (Cronbach's coefficient alpha) and discrimination power. Discrimination power was used to assess the correction of classification attribute of the four scales. The good scale should be able to classify two groups between a group of the 20 percent highest score and a group of the 20 percent lowest score group with the significant difference of t-test.

2. To check for construct validity, factor analyses were used to explain and confirm the factors affecting professionalism and social and academic integration. Construct validity were assessed for two of the four study instruments, professionalism and social and academic integration. Construct validity (Cronbach & Meehl, 1995) refers to a theoretical relationship of a variable to other variables and factor analysis can be used to determine the construct validity of a study instrument in two ways. First, it is used to identify the number of factors or latent variables from a set of items. This procedure refers to Exploratory factor Analysis (EFA). Second, factor analysis is used to confirm whether or not the number of latent variables in our study correspond to the same number of latent variables in the adopted theory. This procedure is referred as Confirmatory Factor Analysis (CFA).

3. All variables were then divided into dependent variables and independent variables. Table 7 shows a list of all 34 variables in this study. Using this list, Pearson correlation coefficient and contingency coefficient were used to determine any existing relationships among several pairs of variables.

4. Once a relationship was identified for the continuous variables, t-test was used to determine whether or not there was a significant difference between the two groups such as male and female, direct approach and indirect approach to patient.

5. MANOVA (Multivariate Analysis of Variance) was used when there were more than three groups. This method was used to evaluate the mean differences among a set of continuous dependent variables when there were more than two groups of independent variables. MANOVA, considering the dependent variables in combination, has three advantages over ANOVA. First, MANOVA can be used to

measure several dependent variables at the same time, therefore, it increases the chance of discovering more significant results of different dependent variables and their interactions. Second, by using MANOVA, the type I error is less than ANOVA because only one test is performed for MANOVA while multiple tests must be performed for ANOVA. Finally, MANOVA can be used to detect any existing relationship between the two dependent variables, while ANOVA will not. Once a significant difference was identified by MANOVA, Scheffe post hoc comparison test was used to indicate where the significant difference lied between the two groups.

6. For those categorical variables, Chi-square was used to determine any significant differences among them.

7. LISREL program was performed for examining the relationship among important variables in the professionalism model of pharmacy students both the first order and the second one. The next step was to determine the cause and effect relationship between the dependents and independent variables, multivariate regression analysis was used. After classifying those continuous variables into latent and observed variables, Structural Equation Modeling (SEM) was used to develop the path analysis of professionalism, social and academic integration, moral reasoning, and some other related variables in the model. SEM under LISREL was employed to test the hypothesized model. SEM was selected because of its prominence in allowing the complexity of model and the more systematic or holistic view of model than other multivariate analyses.

All statistic techniques could be summarized and shown in Figure 6.

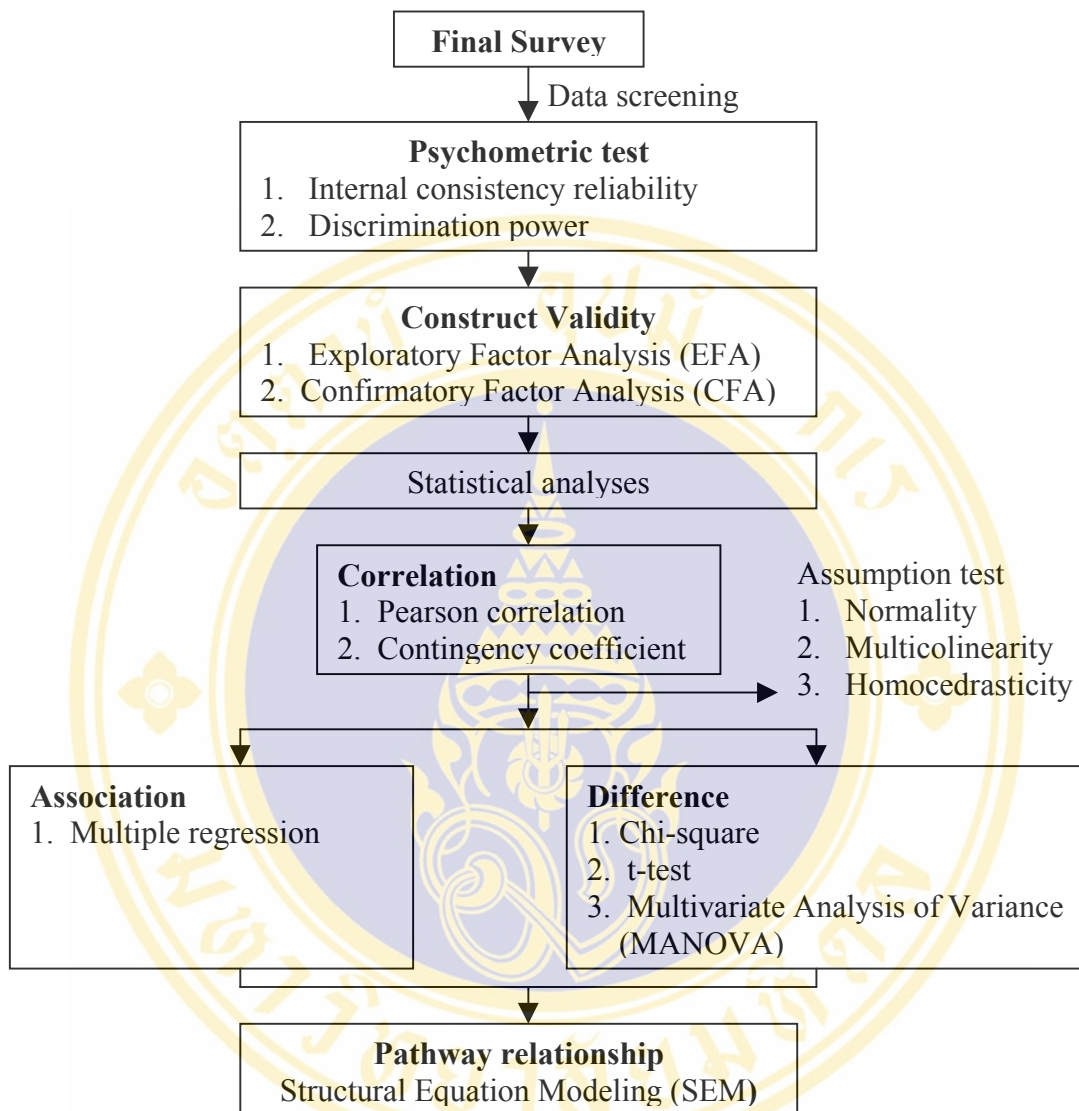


Figure 6. Steps of data analysis.

CHAPTER 5

RESULTS

The study results were presented in two parts as following.

Part 1. Questionnaire development

- 1.1 Content validity
- 1.2 Reliability and discrimination power

Part 2. Model testing

- 2.1 Construct validity
 - 1) Exploratory factor analysis
 - 2) Confirmatory factor analysis
- 2.2 Reliability
- 2.3 Statistical results of three groups of samples
 - 1) Characteristics
 - 2) Correlation
 - 3) Structural Equation Modeling

Part 1. Questionnaire development

This session presents the results from the phase of questionnaire development; content validity and reliability. In addition, the characteristics of the samples in this pretest phase were also be presented.

1.1 Content validity

For content validation, 100 pharmacists from a randomly selection were asked to respond to a survey to determine the content of professionalism concept. A response rate of 47.0 percent (N=47) was obtained from this pretest group. Of the 47 pharmacists, almost 60.0 of them (59.1%) were female, and 71.7% with a bachelor degree. The mean age was 44.45 ± 9.87 years while the mean number of years of work

experience was 19.23 ± 8.23 years. This group of sample represented five fields of pharmacy including community pharmacy (37.8%), law enforcement (28.9%), pharmaceutical industry (20.0%), public hospital pharmacy (8.9%), and pharmaceutical marketing (4.4%). Table 8 shows detailed characteristics of the sample.

The respondents were asked whether or not they agreed with each of operational statements related to the content of professionalism. The pharmacists identified four operational statements in which they disagreed. Four statements in which the pharmacists disagreed included: 1) the practice of pharmacy promoted by my professional organization is close to my personal ideal, 2) the only professional standards I will accept are those established by my pharmacy colleagues, 3) the opportunity to exercise professional judgement in my work should be determined by my employers and 4) I would depart from my employer's policies when I judge it professionally necessary. Based on this result, a panel of five experts was asked to review the four statements disagreed by the 47 pharmacists for professionalism. These experts agreed to drop these four statements out of the final questionnaire. The original 36 items of professionalism were reduced to be the 32-item scale.

In addition, they also were asked to consider the 24 statements related to social and academic integration. Based on their review, the panel suggested to add three statements and combined four of the statements into two statements. The added statements were: 1) my academic experiences in college have a positive influence on my intellectual growth and the new ideas, 2) while studying in college, I gained more social and academic learning gradually then I am more confident to do professional work, and 3) I understood the importance and learned more my study lessons. The final outcomes yield a total of 25 statements for social and academic integration.

Moreover, Five statements for social integration in workplace were included in the final version of study instrument. These five statements were: 1) since coming to the professional work, I have developed good interpersonal relationship with my peers, 2) I am satisfied my intellectual growth, interest in idea, and more experience since coming to work as pharmacy profession, 3) my professional work has had a positive influence on

my self-efficacy, attitudes, and values, 4) my interpersonal relationships with professional peers have had a positive influence on my professional goals and aspirations, and 5) my interpersonal relationships with clients in professional work have had a positive influence on my personal learning and my practices.

Table 8: Characteristics of respondents for content validation of professionalism (N=47).

Characteristics	Frequency (N=47)	Percentage
Age		
26 – 30 years	5	11.4
31 – 35 years	5	11.4
36 – 40 years	6	13.6
41 – 45 years	8	18.2
46 – 50 years	9	20.5
> 50 years	11	25.0
Mean \pm SD = 44.45 \pm 9.87 years, Range = 27 – 65 years		
Gender		
Male	18	40.9
Female	26	59.1
Professional field		
Public hospital pharmacy	4	8.9
Community pharmacy	17	37.8
Law enforcement	13	28.9
Pharmaceutical industry	9	20.0
Pharmaceutical marketing	2	4.4
Educational level		
Bachelor degree	33	71.7
Master degree	13	28.3
Duration of work		
\leq 5 Years	2	4.5
6 – 10 years	6	13.6
11 – 15 years	8	18.2
16 – 20 years	10	22.7
21 – 25 years	7	15.9
26 – 30 years	7	15.9
> 30 years	4	9.1
Mean \pm SD = 19.23 \pm 8.23 years, Range = 4 – 35 years		

1.2 Reliability and discrimination power

Fifty-six hospital pharmacists were purposively selected to assess the reliability and discrimination power of the three study instruments including professionalism, social and academic integration, and moral reasoning. A response rate of 69.6 percent (N=39) was obtained. A majority of the 39 hospital pharmacists in this second pretest group were female (69.2%), single (71.8%), and had a bachelor degree (87.2%). The mean age was 29.03 ± 6.19 years old while the mean number of graduation years was 6.13 ± 5.65 years. Table 9 shows detailed characteristics of this group of sample.

Table 10 shows the results of these reliability tests. In terms of internal consistency, social and academic integration ($\alpha=0.8863$) seemed to have the highest reliability in comparison to professionalism ($\alpha=0.7823$) and moral reasoning ($\alpha=0.7874$). Both professionalism and social and academic integration alpha values were in the acceptable range because the lowest acceptable value was 0.7. With regard to the discrimination power, all three instruments showed a good discrimination power with a significant level of $p < 0.001$ (see Table 10). Finally, 14 subjects from faculty of pharmacy at Mahidol University were asked to assess the test-retest reliability for moral reasoning. These results showed that four out of the 12 items had a low value. These four items were items number 2, 3, 6, and 7. Table 11 shows test-retest reliability of moral reasoning scale with average value for all items 0.6786. Based on all results of this part, the final version questionnaire showed its good characteristics of an acceptable instrument for the actual study.

Table 9: Characteristics of respondents for reliability testing of professionalism, social and academic integration, and moral reasoning (N=39).

Characteristics	Frequency (N=39)	Percentage
Age		
≤ 25 years	15	38.5
26 – 30 years	10	25.6
31 – 35 years	10	25.6
36 – 40 years	2	5.1
41 – 45 years	1	2.6
> 50 years	1	2.6
Mean ± SD = 29.03 ± 6.19 years, Range = 22 – 51 years		
Gender		
Male	12	30.8
Female	27	69.2
Marital status		
Single	28	71.8
Married	9	23.1
Divorced/Separated	2	5.1
Educational level		
Bachelor degree	34	87.2
Master degree	5	12.8
Years after graduation		
≤ 5 years	23	59.0
6 – 10 years	8	20.5
11 – 15 years	6	15.4
16 – 20 years	1	2.6
> 20 years	1	2.6
Mean ± SD = 6.13 ± 5.65 years, Range = 1 – 27 years		
Grade Point Average (GPA)		
≤ 2.00	1	2.6
2.01 – 2.50	9	23.1
2.51 – 3.00	16	41.0
3.01 – 3.50	10	25.6
3.51 – 4.00	3	7.7
Mean ± SD = 2.85 ± 0.43, Range = 2.00 – 3.80		

Characteristics	Frequency (N=39)	Percentage
Influential person on choosing Pharmacy school		
Parents	16	41.0
Friends	3	7.7
Himself/herself	20	51.3
Educational; Father		
Primary school or lower	20	51.3
Secondary school	1	2.6
High school	4	10.3
Certificate	10	25.6
Bachelor degree or equivalence	3	7.7
Master degree or higher	1	2.6
Educational; Mother		
Primary school or lower	26	66.7
Secondary school	2	5.1
High school	4	10.3
Certificate	4	10.3
Bachelor degree or equivalence	3	7.7
Occupation; Father		
Physician	1	2.6
Pharmacist	0	0
Government officer	17	23.1
Business/merchant	5	43.6
Private company/employee	5	12.8
Farmer/agriculture	5	12.8
Not working	2	5.1
Occupation; Mother		
Physician	0	0
Pharmacist	0	0
Government officer	3	7.7
Business/merchant	22	56.4
Private company/employee	2	5.1
Farmer/agriculture	6	15.4
Not working	6	15.4

Table 10: Internal consistency reliability and discrimination power of pretest scales (N=39).

Scale	α Conbach's coefficient	Discrimination power	
		t-value	p-value
Professionalism (32 items) 5 = strongly agree, 1 = strongly disagree	0.7823	9.445	< 0.001
Social and Academic Integration (25 items) 5 = strongly agree, 1 = strongly disagree	0.8863	6.960	< 0.001
Moral reasoning (12 items) 5 = the most important, 1 = not important	0.7874	17.934	< 0.001

Table 11: Test-retest reliability of moral reasoning scale (N=14)

Item of moral reasoning	Test-retest reliability
1. Hasn't Mr. Thompson been good enough for such a long time to prove he isn't a bad person?	0.7143
2. Everytime someone escapes punishment for a crime, doesn't that just encourage more crime?	0.5571
3. Wouldn't we be better off without prisons and the oppression of our legal systems?	0.5286
4. Has Mr. Thompson really paid his debt to society?	0.7857
5. Would society be failing what Mr. Thompson should fairly expect?	0.7857
6. What benefits would prisons be apart from society, especially for a charitable man?	0.5000
7. How could anyone be so cruel and heartless as to send Mr. Thompson to prison?	0.5000
8. Would it be fair to all the prisoners who had to serve out their full sentences if Mr. Thompson was let off?	0.7143
9. Was Mrs. Jones a good friend of Mr. Thompson?	0.8571
10. Wouldn't it be a citizen's duty to report an escaped criminal, regardless of the circumstances?	0.8571
11. How would the will of the people and the public good best be served?	0.7857
12. Would going to prison do any good for Mr. Thompson or protect anybody?	0.8571
All items	0.6786

Part 2. Model testing

The main results of this part were divided into three sessions. First, the response rates of the three groups of sample were described. Second, the perception of three groups towards pharmacy profession was described. Finally, the characteristics and the construct validity of the developed questionnaire were tested, and then the statistical results of each group were shown.

Response rate

Three groups of samples in this final mail survey were practicing pharmacists, pharmacy students, and role model pharmacists. Of the 1,250 mail questionnaires, 736 of them were returned with a response rate of 58.9 percent. Of the 2,667 questionnaires distributed to pharmacy students, a total of 1,440 (54.0%) were returned. Finally, 100 mail questionnaires were sent to a group of role model pharmacists. Fifty of them were returned with a response rate of 50.0 percent. Table 12 shows the response rates of these surveys.

Table 12: Response rates of five mail surveys for professionalism model.

Survey	Number of delivered mails	Number of usable mails	Response rate (%)
1. Conceptual survey of Thai pharmacy professionalism	100	47	47.0
2. Pretest for reliability	56	39	69.6
3. Pharmacist	1,250	736	58.9
1) Public hospital	500	347	69.4
2) Private hospital	120	87	72.5
3) Pharmaceutical marketing	150	57	38.0
4) Law enforcement	100	66	66.0
5) Community pharmacy	200	104	52.0
6) Pharmaceutical industry	100	35	35.0
7) Pharmacy education	80	39	48.8
4. Pharmacy student	2,667	1,440	54.0
1) Bachelor of Science or Pharmacy (B.Sc.)	2,224	1,234	55.5
Government university	1,524	873	57.3
1.1 Private university	700	361	51.6
2) Doctor of Pharmacy (Pharm.D.)	443	206	46.5
5. Role model pharmacist	100	50	50.0

Perception of who are pharmacy professions

In this part, all of 2,226 respondents were asked whether who are pharmacy professions among these six professional fields including hospital pharmacist, industry pharmacist, community or drugstore pharmacist, marketing pharmacist, pharmacy educator, and law enforcement. The result in Table 13 shows that more than 90 percent of respondents identified hospital pharmacists and community pharmacists to be pharmacy profession (94.8% and 94.7% respectively). Industry pharmacist was chosen to be pharmacy profession with 76.9%, followed by law enforcement with 68.9%. Data showed pharmacy educator and marketing pharmacist were the two groups that had the lowest perception of being pharmacy profession (61.8% and 62.8% respectively).

Table 13: Perception of who are pharmacy professions.

Pharmacy profession	Pharmacy student (N=1,440)		Pharmacist (N=736)		Role model (N=50)		Total (N=2226)	
	N	%	N	%	N	%	N	%
Hospital pharmacist								
Yes	1281	93.2	713	97.4	50	100.0	2044	94.8
No	93	6.8	19	2.6	0	0	112	5.2
Community pharmacist								
Yes	875	92.7	709	96.9	50	100.0	1634	94.7
No	69	7.3	23	3.1	0	0	92	5.3
Pharmaceutical industrial pharmacist								
Yes	651	69.0	630	86.2	45	90.0	1326	76.9
No	293	31.0	101	13.8	5	10.0	399	23.1
Law enforcement								
Yes	578	61.2	572	78.2	38	76.0	1188	68.9
No	366	38.8	159	21.8	12	24.0	537	31.1
Pharmaceutical marketing pharmacist								
Yes	538	56.9	511	69.8	36	72.0	1085	62.8
No	407	43.1	221	30.2	14	28.0	642	37.2
Pharmacy educator								
Yes	483	51.2	550	75.3	32	64.0	1065	61.8
No	461	48.8	180	24.7	18	36.0	659	38.2
Other pharmacist (other business)								
Yes	26	2.8	43	5.9	2	4.0	71	4.1
No	918	97.2	682	94.1	48	96.0	1648	95.9

Difference of perception among three groups

Among three groups; pharmacy students, pharmacists, and role model pharmacists, there were differences in two aspects; first was the order of perception and second was the percentage of their perception. For the first three orders, three groups showed the same pattern. They perceived hospital, community, pharmaceutical industrial pharmacists were pharmacy professions with the high perception respectively. Even though pharmacy students perceived pharmaceutical industrial pharmacists to be a pharmacy profession, they showed their perception with only 69%. Role model accepted pharmacist of two professional fields; hospital and community pharmacists, were pharmacy profession with 100%, whereas they gave industrial pharmacist with 90%. The last group that had the lowest perception to be profession, pharmacy students and role model pharmacists showed pharmacy educator were the last group to be pharmacy profession, whereas pharmacists perceived pharmaceutical marketing pharmacists to be the last group.

Characteristics of the study instrument

Good characteristics of four study scales; professionalism, social and academic integration, social integration in workplace, and moral reasoning were evaluated by statistical procedures including factor analysis; both Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), for construct validity, Cronbach's alpha coefficient for internal consistency reliability, discrimination power for classifying correction. Among the good characteristics, construct validity was analyzed for only two latent variables; professionalism and social and academic integration. Internal consistency reliability for subscale confirmation and discrimination power was described for all four study instruments. Moral reasoning showed only its characteristics of reliability and discrimination power. A set of the results was shown in table 14 - 18.

2.1 Construct validity

1) Exploratory Factor Analysis (EFA)

Under the Exploratory Factor Analysis (EFA), this study used Principal Components Analysis (PCA) with Oblimin rotation to explore the number of latent variables. Using the EFA, the Kaiser Meyer-Olkin (KMO) Measure of Sampling Adequacy is calculated to determine the factorability of the data, whereas the eigenvalue is the amount of variance accounted for by each of the latent variables for the entire instrument. The higher the KMO value approaching to 1.0, the better is the item representing the adequacy of sample. On the other hand, the higher the eigenvalue of more than 1.0, the better is the latent variable to explain the variance of the study instrument.

Table 14 shows the EFA results of professionalism variables among pharmacy students and practicing pharmacists. This study identified six latent variables (professional organization as a major referent, belief in public service, belief in self-regulation, sense of calling, belief in autonomy, and belief in continuing competence) that explained 47.5 percent of pharmacy students and practicing pharmacists' professionalism variance. Each of the six latent variables was found to explain 5.7, 16.6, 11.6, 5.6, 4.6, and 4.5 percent of professionalism variances respectively. The KMO value was 0.842 for professionalism and eigenvalues for all six latent variables were between 1.84 and 2.66. The communality values of all 32 items were between 0.18 – 0.71. In terms of factor loading, three latent variables had a high factor loading of more than the acceptable value of 0.3. Whereas the other three of latent variable, belief in public service (item 7), belief in autonomy (item 25 and 26) and belief in continuing competence (item 29 and 30) deviated from their remaining items. Only one item (item 7) had a lower factor loading (see Table 14).

Table 15 shows the EFA results of pharmacy students and pharmacists' social and academic integration variables. The EFA identified four latent variables (peer group interaction, faculty interaction, academic development, and faculty concern) that explained 45.3 percent of social and academic integration variance. Each of the four

latent variables was found to explain 21.3, 8.0, 6.8 and 9.2 percent of social and academic integration variances respectively. The KMO value was 0.837 and eigenvalues were more than one (between 2.42- 3.30). The communality values of all 25 items were between 0.16 and 0.70. 20 items of four latent variables (except item 5, 16, 17, 24 and 25) had a high factor loading of more than the acceptable value. Only one item (item 15 of academic development factor) deviated from its group.

2) Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis was performed to prove the empirical data structures in the form of a specified theory or model. Based on Schack and Helper's professionalism model (32), there were six latent variables explained professionalism including professional organization as a major referent, belief in public service, belief in self-regulation, sense of calling, belief in autonomy, and belief in continuing competence. Social and academic integration (SAI) model which based on Tinto's model (14) comprised of four latent variables (Peer group interaction, Faculty interaction, Academic development, and Faculty concern).

Table 15 shows the CFA results of a professionalism model and a social and academic integration model of pharmacy students and pharmacists. The professionalism model showed the chi-square value of 295.31 with 260 degrees of freedom and p-value of 0.075 indicated that the model fit well. A number of goodness-of-fit measures was proposed and calculated to assess the fit of the model including Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), and Normed Fit Index (NFI). These values that were indicative of a good-fitting model (greater than 0.90) were 0.98, 0.96, 0.99, and 0.97 respectively. Two residuals, Root Mean Square Residual (RMR) and Standardized RMR were 0.03 and 0.03, respectively. Root Mean Square Error of Approximation (RMSEA) was 0.01.

Table 14: Exploratory Factor Analysis of professionalism variables (Oblimin) (N=2,226)

Factor/variable	Factor loading						Communality (h ²)
	Component						
	1	2	3	4	5	6	
Professional Organization as a major referent							
Item 1	0.67						0.53
Item 2	0.71						0.59
Item 3	0.71						0.59
Item 4	0.75						0.61
Item 5	0.64						0.47
Belief in public service							
Item 6		0.51					0.29
Item 7		0.27			0.42		0.31
Item 8		0.51					0.27
Item 9		0.44					0.26
Item 10		0.65					0.46
Item 11		0.63					0.47
Belief in self-regulation							
Item 12			0.74				0.55
Item 13			0.77				0.61
Item 14			0.74				0.55
Item 15			0.31				0.34
Item 16			0.57				0.51
Sense of calling							
Item 17				0.68			0.57
Item 18				0.59			0.50
Item 19				0.69			0.57
Item 20				0.83			0.69
Item 21				0.58			0.49
Item 22				0.68			0.54
Belief in autonomy							
Item 23					0.55		0.35
Item 24					0.69		0.51
Item 25		0.55					0.28
Item 26		0.33					0.28
Belief in continuing competence							
Item 27						0.45	0.41
Item 28						0.51	0.58
Item 29		0.35					0.18
Item 30					0.61		0.48
Item 31						0.78	0.66
Item 32						0.84	0.71
Eigenvalues	2.62	2.59	2.52	2.66	2.23	1.84	
% Variance	5.70	15.64	11.56	5.61	4.56	4.46	
Cum. Variance	5.70	21.34	32.90	38.51	43.07	47.53	

KMO = 0.842

Barlett's test of Sphericity $\chi^2 = 16349.89$ (df=496), p-value < 0.001

Table 15: Exploratory Factor Analysis (EFA) of social and academic integration (Oblimin) (N=2,226)

Factor/variable	Factor loading				Communality (h ²)
	Component				
	1	2	3	4	
Peer group interaction					
Item 1	0.73				0.57
Item 2	0.76				0.61
Item 3	0.67				0.53
Item 4	0.53				0.43
Item 5	0.24			0.45	0.26
Item 6	0.32			0.44	0.31
Faculty interaction					
Item 7		0.86			0.70
Item 8		0.86			0.70
Item 9		0.81			0.63
Item 10		0.63			0.47
Item 11		0.66			0.53
Academic development					
Item 12			0.65		0.54
Item 13			0.57		0.47
Item 14			0.70		0.59
Item 15				0.51	0.28
Item 16	0.33		0.23		0.17
Item 17	0.45		0.21		0.32
Item 18			0.56		0.34
Item 19			0.63		0.36
Item 20			0.64		0.43
Faculty concern					
Item 21				0.75	0.58
Item 22				0.75	0.58
Item 23				0.68	0.50
Item 24		0.34		0.24	0.25
Item 25				0.21	0.16
Eigenvalues	2.55	2.42	3.30	2.63	
% Variance	21.27	8.02	6.76	9.22	
Cum. Variance	21.27	29.29	36.05	45.27	

KMO = 0.837

Barlett's test of Sphericity $\chi^2 = 15026.80$ (df=300), p-value < 0.001

These three indices were in acceptable range for a good-fitting model (Tabachnick and Fidell, 1996). For social and academic integration model, the CFA results showed that the goodness-of-fit statistics were all acceptable. The chi-square of 211.70 with 188 degrees of freedom indicated the acceptable model. All fit indices including GFI, AGFI, CFI, and NFI were 0.98, 0.95, 0.99 and 0.95 respectively. All residual based fit indices including RMR, Standardized RMR, and RMSEA were 0.04, 0.04, and 0.01, respectively. It was concluded that the model of social and academic development fit well and represented a reasonably close approximation in the population.

Table 16: Goodness of fit statistics of confirmatory factor analysis (CFA) of social and academic integration (SAI) and professionalism of pharmacy students (N=2,226)

Goodness of fit statistics	SAI model	Professionalism
Chi-square (p-value)	211.70(p = 0.254)	295.31 (p = 0.075)
Degrees of freedom of Chi-square	188	260
Goodness of Fit Index (GFI)	0.98	0.98
Adjusted Goodness of Fit Index (AGFI)	0.96	0.95
Comparative Fit Index (CFI)	0.99	0.99
Normed Fit Index (NFI)	0.97	0.95
Root Mean Square Residual (RMR)	0.03	0.04
Standardized RMR	0.03	0.04
Root Mean Square Error of Approximation (RMSEA)	0.01	0.01
Number of factors	4	6

2.2 Reliability

Cronbach's alpha coefficients that assess internal consistency of the entire scale were measured. Table 17 shows these internal consistency reliability coefficients of the four study instruments. The professionalism scale had six factors with 32 items, social and academic integration had four factors with 25 items, moral reasoning had 12 items, and social integration in workplace had five items. Among 1,440 pharmacy students, social integration in workplace had the highest internal consistency ($\alpha=0.8202$) in comparison to the social and academic integration ($\alpha=0.7775$), moral reasoning ($\alpha=0.7771$) and professionalism ($\alpha=0.6672$). On the other hand, 736 practicing

pharmacists and 50 role model pharmacists showed that the social and academic integration had the highest Cronbach's alpha reliability coefficients of 0.8574 and 0.8833 respectively, followed by moral reasoning (0.8483 and 0.8322), social and academic integration (0.8109 and 0.7755), and professionalism (0.7673 and 0.7574). The generally agreed with the lower limit for Cronbach's alpha was 0.70 (Hair, 1998, 118), but it may decrease to 0.60 in exploratory research. Moreover, DeVellis (144) suggested a range of minimally acceptable bound for alpha, between 0.65 and 0.70. From the results, all internal consistency reliability coefficients were in the acceptable value.

Table 17: Internal consistency reliability (α Conbach's coefficient) of final scales.

Scale	Pharmacy student (N=1,440)	Pharmacist (N=736)	Role model (N=50)
Professionalism (32 items)	0.6672	0.7673	0.7574
Factor 1: Professional organization as a referent (5 items)	0.6849	0.8054	0.8302
Factor 2: Belief in public service (6 items)	0.5738	0.6466	0.6091
Factor 3: Belief in self-regulation (5 items)	0.6379	0.6954	0.6490
Factor 4: Sense of calling (6 items)	0.7311	0.8026	0.7605
Factor 5: Belief in autonomy (4 items)	0.5481	0.5592	0.5440
Factor 6: Belief in continuing competence (6 items)	0.5216	0.6216	0.6034
Social and academic integration (25 items)	0.7775	0.8574	0.8833
Factor 1: Peer group interaction (6 items)	0.6242	0.6065	0.6946
Factor 2: Faculty interaction (5 items)	0.8219	0.8670	0.8177
Factor 3: Academic development (9 items)	0.6383	0.7509	0.7889
Factor 4: Faculty concern (5 items)	0.5920	0.7800	0.7985
Social integration in work (5 items)	0.8202	0.8109	0.7755
Moral reasoning (12 items)	0.7771	0.8483	0.8322

Discrimination power

Table 18 shows the discrimination power of the four study instruments. All of them had a significant different power to discriminate between the highest score and the lowest score groups. These results revealed that four study instruments had the good discrimination power or correct classification.

Table 18: Discrimination power of final scales.

Scale	Mean difference		
	Pharmacy student (N=1,440)	Pharmacist (N=736)	Role model (N=50)
Professionalism (32 items)	20.56*	24.27*	22.25*
Social and academic integration (25 items)	21.86*	25.10*	28.36*
Social integration in work (5 items)	6.19*	6.58*	5.08*
Moral reasoning (12 items)	69.06*	66.70*	54.55*

* Significant difference by t-test at $p < 0.001$

2.3 The statistical results of three sample groups

With three groups of sample in the final study; practicing pharmacists, pharmacy students, and role model pharmacists, the results of each group were shown step by step following the statistical techniques as below.

- 1) Characteristics of the sample
- 2) Correlation among study variables
- 3) Structural Equation Modeling (SEM)

Practicing pharmacists

1) Characteristics

Of the 736 pharmacists, more than half of them were female (61.1%), single (51.0%), born in other provinces (not Bangkok) (71.9%), and had a bachelor degree (74.2%). While studying in pharmacy school, 18.5 percent of respondents had a part-time job. The mean age was 36.30 ± 10.57 years old, the mean number of graduation year was 12.98 ± 10.03 , and the mean monthly income was $31,104.15 \pm 31,352.57$ Baht. On average, the sample had a grade point average (GPA) of 2.76 ± 0.41 . This sample comprised 58.9 percent of hospital pharmacists (47.1% public hospital and 11.8% private hospital), 14.1 percent of community pharmacists, 9.0 percent of law pharmacists, 7.7 percent pharmaceutical sales representatives or marketing pharmacists, 4.8 percent pharmaceutical industry or manufacturing pharmacists, 2.2 percent pharmacy educators, and 3.3 percent of others. In terms of the person who influenced the respondent's

decision of choosing pharmacy school, more than half indicated himself or herself (57.2%), and 24.2 percent their parents. A majority of the subjects' fathers (49.9%) and mothers (64.0%) had an education lower than high school level and almost half of the subjects' fathers (49.0%) and mothers (44.0%) had their own business. Related to health professional occupations, 0.4 percent of the subjects' fathers and 0.4 percent of the subjects' mother were pharmacists, 0.4 percent and 0.3 percent were physicians, and 1.9 percent and 2.3 were other health professionals. In terms of work position, more than one-third of the pharmacists were middle managers (39.6%) and almost one-third staff pharmacists (32.5%). Almost everyone in the sample graduated from government university (99.0%). The top three universities where the pharmacists graduated were Chulalongkorn University (27.1%), Mahidol University (21.8%), and Chiang Mai University (17.4%). Table 19 shows the demographic variables of the 736 practicing pharmacist.

Table 19: Characteristics of practicing pharmacists (N=736)

Variable	N	%
Gender		
Male	286	38.9
Female	450	61.1
Education level		
Bachelor degree	543	74.2
Master degree	180	24.6
Doctoral degree	9	1.2
Marrital status		
Single	375	51.0
Married	349	47.5
Divorced/Separated	11	1.5
Have a part-time job		
Yes	136	18.5
No	596	81.5
Birthplace		
Bangkok	207	28.1
Other provinces	529	71.9
Current professional field		
Public hospital	347	47.1
Community Pharmacy	104	14.1
Private hospital	87	11.8
Law enforcement	66	9.0
Pharmaceutical marketing	57	7.7
Pharmaceutical industry	35	4.8
Pharmacy education	16	2.2
Others (Business)	24	3.3
Influential person for choosing pharmacy school		
Parents	178	24.2
Relatives	26	3.5
Siblings	48	6.5
Friends	30	4.1
Himself/Herself (None)	421	57.2
Other	31	4.2
Education; father		
Primary school or lower	367	49.9
Secondary school	68	9.2
High school	90	12.2
Certificate	73	9.9
Bachelor or equivalence	113	15.4

Variable	N	%
Master or higher	17	2.3
Education; mother		
Primary school of lower	471	64.0
Secondary school	49	6.7
High school	59	8.0
Certificate	50	6.8
Bachelor or equivalence	92	12.5
Master or higher	7	1.0
Occupation; father		
Physician	3	0.4
Pharmacist	3	0.4
Health Professional	14	1.9
Government	162	22.0
Business/merchant	361	49.0
Private/employee	71	9.6
Agriculturer	81	11.0
Do not work	38	5.2
Occupation; mother		
Physician	2	0.3
Pharmacist	3	0.4
Health Professional	17	2.3
Government	104	14.1
Business/merchant	324	44.0
Private/employee	27	3.7
Agriculturer	75	10.2
Do not work	182	24.7
Work position		
Executive	136	18.8
Middle manager	287	39.6
Staff pharmacist	235	32.5
Drugstore owner	66	9.1
University attended		
Chulalongkorn	197	27.1
Chiang Mai	127	17.4
Prince of Songkla	79	10.9
Khon Kaen	48	6.6
Mahidol	159	21.8
Silpakorn	38	5.2
Hauchiew Chalermprakiet	7	1.0
Srinakharinwirot	4	0.5
Rangsit	27	3.7

Variable	N	%
Naresuan	26	3.6
Ubonratchathanee	9	1.2
Oversea university	7	1.0
	Mean	SD
Age of respondents	36.30	10.57
Years after graduation	12.98	10.03
Grade point average (GPA)	2.76	0.41
Monthly income	31,104.15	31,352.57

2) Correlation

Of the 34 variables, eight of them were dependent variables and 26 were independent variables. All eight dependent variables and 12 independent variables were continuous (see Table 20). Pearson correlation coefficient was used to determine the relationship between two continuous variables, while Contingency coefficient was used to determine the relationship between two categorical variables and a categorical and a continuous variable. Table 19 shows the correlation matrix of Pearson correlation coefficient. First, peer group interaction had a highest significant relationship with social integration in workplace ($r=0.21$; $p<0.01$). Second, faculty interaction had a strong significant relationship with social integration in workplace ($r=0.25$; $p<0.01$), and sense of calling ($r=0.25$; $p<0.01$). Third, academic development had a high significant relationship with social integration in workplace ($r=0.32$; $p<0.01$), sense of calling ($r=0.35$; $p<0.01$). Fourth, faculty concern had the highest significant relationship with sense of calling ($r=0.22$; $p<0.01$).

Using professionalism as a point of reference, professional organization had the highest correlation with academic development ($r=0.27$; $p<0.01$), social integration in workplace ($r=0.25$; $P<0.01$), faculty concern ($r=0.21$; $p<0.01$). Belief in public service had the highest significant relationship with social integration in workplace ($r=0.34$; $p<0.01$). Sense of calling had a significant relationship with academic development ($r=0.35$; $p<0.01$) and social integration in workplace ($r=0.33$; $p<0.01$). Belief in autonomy had a strong significant relationship with faculty

interaction ($r=0.13$; $p<0.01$). Belief in continuing competence had a strong significant relationship with academic development ($r=0.11$; $p<0.01$).

Moral reasoning had no relationship with any of the continuous variables in the model. Knowledge applicability had a high significant relationship with academic development ($r=0.21$; $p<0.01$), and sense of calling ($r=0.21$; $p<0.01$). Perception of public acceptance for pharmacy profession had a strong significant relationship with professional organization ($r=0.28$; $p<0.01$), and sense of calling ($r=0.27$; $p<0.01$). Professional satisfaction had the highest significant relationship with knowledge applicability ($r=0.36$; $p<0.01$). GPA had the highest significant relationship with academic development ($r=0.15$; $p<0.01$).

Table 21 shows the relationship between continuous and categorical variables. It was found that gender had the highest relationship with faculty concern ($C=0.20$, $p<0.05$). Marital status had the highest significant relationship with professional satisfaction ($C=0.45$, $p<0.001$). Education level had the highest significant relationship with knowledge applicability ($C=0.37$, $p<0.001$). Birthplace had the highest significant with sense of calling ($C=0.23$, $p<0.001$). Education of mother had the highest significant relationship with knowledge applicability ($C=0.46$, $p<0.001$). Occupation of father had the highest significant relationship with belief in public service ($C=0.43$, $p<0.001$) and occupation of mother had the highest significant relationship with belief in continuing competence ($C=0.62$, $p<0.001$). Professional satisfaction had the highest significant relationship with an influential person for choosing the pharmacy ($C=0.43$; $p<0.001$). Professional field had the highest significant relationship with the knowledge applicability ($C=0.56$; $p<0.01$). Work position had a significant relationship with professional satisfaction ($C=0.39$; $p<0.01$).

Of 13 categorical variables, The contingency coefficient between each two categorical variables were shown in Table 22. Gender of respondent had a strong significant relationship with marital status and professional field ($C=0.30$, $p<0.01$). Professional field correlated significantly with education level ($C=0.42$), birthplace ($C=0.31$, $p<0.01$), whether have a part-time job while studying in pharmacy school

($C=0.15$, $p<0.01$), both father's occupation ($C=0.38$) and mother's occupation ($C=0.34$, $p<0.01$).



Table 20: Correlation matrix of model variables by practicing pharmacists (N=736)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Peer group interaction	1.00															
2. Faculty interaction	0.37 ^b	1.00														
3. Academic Development	0.38 ^b	0.42 ^b	1.00													
4. Faculty concern	0.24 ^b	0.34 ^b	0.35 ^b	1.00												
5. Social integration in workplace	0.21 ^b	0.25 ^b	0.32 ^b	0.09 ^a	1.00											
6. Professional organization	0.17 ^b	0.16 ^b	0.27 ^b	0.21 ^b	0.25 ^b	1.00										
7. Belief in public service	0.19 ^b	0.23 ^b	0.27 ^b	0.11 ^b	0.34 ^b	0.36 ^b	1.00									
8. Belief in self-regulation	-0.09 ^a	0.01	0.06	0.02	0.01	-0.02	-0.05	1.00								
9. Sense of calling	0.14 ^b	0.25 ^b	0.35 ^b	0.22 ^b	0.33 ^b	0.27 ^b	0.31 ^b	0.10 ^a	1.00							
10. Belief in autonomy	0.03	0.13 ^b	0.09 ^a	-0.03	0.16 ^b	0.02	0.15 ^b	0.13 ^b	0.10 ^b	1.00						
11. Belief in continuing competence	0.01	0.07	0.11 ^b	0.08 ^a	0.14 ^b	0.33 ^b	0.29 ^b	-0.01	0.16 ^b	0.05	1.00					
12. Moral reasoning	0.04	-0.01	0.02	0.00	0.06	-0.01	0.01	0.00	0.02	0.00	0.00	1.00				
13. Knowledge application	0.13 ^b	0.06	0.21 ^b	0.11 ^b	0.17 ^b	0.15 ^b	0.10 ^b	0.00	0.21 ^b	0.00	0.02	0.02	1.00			
14. Public acceptance	0.15 ^b	0.19 ^b	0.20 ^b	0.17 ^b	0.19 ^b	0.28 ^b	0.21 ^b	0.01	0.27 ^b	-0.03	0.08 ^a	-0.01	0.18 ^b	1.00		
15. Professional satisfaction	0.16 ^b	0.17 ^b	0.20 ^b	0.08 ^a	0.29 ^b	0.09 ^a	0.15 ^b	-0.07	0.45 ^b	-0.02	0.02	0.02	0.36 ^b	0.25 ^b	1.00	
16. Grade point Average	0.09 ^a	0.02	0.15 ^b	0.08 ^a	0.00	0.08 ^a	0.01	-0.01	0.00	0.04	0.05	0.00	0.10	0.05	-0.03	1.00

^a Pearson Correlation is significant at the 0.05 level (2-tailed)

^b Correlation is significant at the 0.01 level (2-tailed).

Table 21: Correlation between categorical variables and continuous variables of practicing pharmacists (N=736)

Categorical variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Gender	0.17	0.16	0.19	0.20 ^a	0.11	0.19	0.12	0.18	0.14	0.16 ^a	0.19	0.12	0.18	0.19	0.20
2. Marital status	0.18	0.23	0.27	0.22	0.24 ^a	0.21	0.18	0.33 ^c	0.25	0.14	0.27	0.15	0.20	0.29 ^b	0.45 ^c
3. Education level	0.25 ^a	0.19	0.26	0.26	0.15	0.31 ^b	0.18	0.18	0.26	0.12	0.22	0.11	0.37 ^c	0.23	0.19
4. Birthplace	0.22 ^b	0.21 ^a	0.16	0.22 ^a	0.14	0.16	0.14	0.23 ^b	0.24 ^b	0.16 ^a	0.20	0.01	0.16	0.16	0.18
5. Have a part-time job	0.13	0.21 ^a	0.17	0.14	0.14	0.20 ^a	0.15	0.16	0.13	0.15	0.19	0.12	0.15	0.19	0.18
6. Education; Father	0.30	0.36	0.38	0.30	0.34 ^a	0.34	0.29	0.32	0.39	0.20	0.40	0.25	0.37	0.35	0.38
7. Education; Mother	0.27	0.33	0.41	0.32	0.32	0.33	0.24	0.31	0.35	0.28	0.39	0.27	0.46 ^c	0.35	0.42 ^b
8. Occupation; Father	0.36	0.35	0.45	0.37	0.33	0.34	0.43 ^c	0.31	0.43	0.32	0.40	0.24	0.42	0.38	0.40
9. Occupation; Mother	0.34	0.40	0.45	0.33	0.32	0.44 ^b	0.39	0.34	0.45	0.31	0.62 ^c	0.28	0.39	0.37	0.36
10. Influential person in choosing pharmacy school	0.31	0.33	0.40	0.36	0.37 ^b	0.33	0.39 ^c	0.33	0.42 ^b	0.26	0.42 ^b	0.25	0.31	0.39 ^a	0.43 ^b
11. Professional field	0.41 ^a	0.41	0.47	0.41	0.31	0.47 ^c	0.36	0.40	0.42	0.30	0.44	0.32 ^a	0.56 ^c	0.42	0.43
12. University	0.11	0.14	0.16	0.13	0.11	0.10	0.15	0.15	0.15	0.10	0.10	0.13	0.14	0.17	0.14
13. Work position	0.29 ^a	0.30	0.32	0.29	0.21	0.28	0.24	0.29	0.31	0.19	0.29	0.23 ^a	0.30	0.28	0.39 ^c

^a Correlation (Contingency coefficient) is significant at the 0.05 level (2-tailed).

^b Correlation is significant at the 0.01 level (2-tailed)

^c Correlation is significant at the 0.01 level (2-tailed)

1 = Peer group interaction, 2 = Faculty interaction, 3 = Academic development, 4 = Faculty concern, 5 = Social integration in workplace,

6 = Professional organization, 7 = Belief in public service, 8 = Belief in self-regulation, 9 = Sense of calling, 10 = Belief in autonomy,

11 = Belief in continuing competence, 12 = Moral reasoning, 13 = Knowledge applicability, 14 = Perception of public acceptance for pharmacy profession, 15 = Professional satisfaction.

Table 22: Correlation matrix of categorical variables of practicing pharmacists (N=736)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Gender	1.00												
2. Marital status	0.30 ^b	1.00											
3. Education level	0.01	0.09	1.00										
4. Birthplace	0.02	0.04	0.12 ^b	1.00									
5. Have a part-time job	0.06 ^b	0.03	0.02	0.04	1.00								
6. Education; father	0.22 ^b	0.21 ^b	0.09	0.07	0.09	1.00							
7. Education; mother	0.21 ^b	0.25 ^b	0.09	0.09	0.09	0.71 ^b	1.00						
8. Career; father	0.22 ^b	0.16	0.21 ^b	0.28 ^b	0.18 ^b	0.56 ^b	0.51 ^b	1.00					
9. Career; mother	0.19 ^b	0.21 ^b	0.11	0.22 ^b	0.15 ^a	0.57 ^b	0.66 ^b	0.80 ^b	1.00				
10. The influential person for choosing pharmacy	0.13 ^a	0.16	0.14	0.08	0.10	0.28 ^b	0.27 ^b	0.28 ^b	0.29 ^b	1.00			
11. Professional field	0.30 ^b	0.34 ^b	0.42 ^b	0.31 ^b	0.15 ^b	0.27 ^b	0.05	0.38 ^b	0.34 ^b	0.24	1.00		
12. University	0.06	0.07	0.03	0.06	0.07	0.09	0.09	0.12	0.10	0.14	0.23 ^b	1.00	
13. Work position	0.16 ^b	0.13 ^b	0.14 ^a	0.02	0.10	0.16	0.18	0.15	0.18	0.16	0.56 ^b	0.11 ^a	1.00

^a Correlation (Contingency coefficient) is significant at the 0.05 level (2-tailed)

^b Correlation is significant at the 0.01 level (2-tailed).

3) Structural Equation Modeling (SEM)

This method is used to evaluate whether or not the model provides a reasonable fit to the data, and to determine the contribution of each of the independent variables on the dependent variables. In this study, SEM using LISREL software was conducted to examine the relationship among several factors in the professionalism model. Figure 3 shows the hypothesized model of professionalism, while Figure 7 and 8 show fit statistics and standardized parameter estimates for the two final modified professionalism models. Figure 7 shows the first level of professionalism model and Figure 8 shows the second level model. In the hypothesized model, three variables of social and academic integration, perception of public acceptance for pharmacy profession, moral reasoning could only be used to explain professionalism. However, the SEM procedure suggested that social integration in workplace could be explained by knowledge applicability. Moreover, perception of public acceptance for pharmacy profession in this study could explain social integration in workplace, while professionalism could be used to explain moral reasoning. From adding the three pathways, Chi-square reduced from 222.08 to 111.89 with a non-significant p-value.

The revised first-level model after three pathway modification was shown in Figure 7 and the goodness of fit statistics of the model were shown in Table 23. With regarding to the direct effect illustrated in Figure 7, the direct effect of GPA on social and academic integration ($\beta=0.11$, $p<0.05$) and social and academic integration on professionalism ($\beta=0.47$, $p<0.05$) and social integration in workplace ($\beta=0.40$, $p<0.05$), social integration in workplace on professionalism ($\beta=0.54$, $p<0.05$) and professional satisfaction ($\beta=0.47$, $p<0.05$), and professionalism on moral reasoning ($\beta=0.07$) and professional satisfaction ($\beta=0.28$, $p<0.05$) are shown. In other words, an increase in one unit of GPA would increase 0.11 unit in social and academic integration. According to the parameter, it could explain that an increase in one unit of social and academic integration would increase 0.40 unit in social integration in workplace and 0.47 unit in professionalism. Beginning with perception of public acceptance for pharmacy profession, it had the direct effects on professionalism ($\beta=0.21$, $p<0.05$). For knowledge

applicability, two variables that it had the direct effects on were social integration in workplace ($\beta=0.12$, $p<0.05$) and professional satisfaction ($\beta=0.25$, $p<0.05$). With regarding to both direct and indirect effects of main variable on professionalism and professional satisfaction, the results were shown in Table 23-27. Table 23 shows the structural standardized parameters in term of both direct effect and indirect effect of the first level of professionalism model, Table 24 shows these parameters of the second level of the model and Table 25 shows for the second order of moral reasoning and professional satisfaction. Table 26 shows the goodness of fit statistics for the hypothesized model and the two final modified models. For the first order model, the chi-square with 79 degree of freedom was 111.89 with nonsignificance ($p>0.05$) and normed chi-square (chi-square/df) was less than 2.0, Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), and Normed Fit Index (NFI) were 0.98, 0.97, 0.98, and 0.93 respectively. These values indicated that the model was fit well. Moreover, Root Mean Square Residual (RMR) and Root Mean Square Error of Approximation (RMSEA) were 0.028 and 0.024 respectively. These two indices should have a range of 0 to 1 and the value of 0.05 or less is desired for a good-fitting model (Tabachnick and Fidell, 1996). Based on all goodness of fit statistics with an acceptable range, it could be concluded that the first level professionalism model was fit well.

According to the second level model of professionalism, its goodness of fit statistics proposed that the model fitted the data well. Normed chi-square was less than 2.0, and GFI, AGFI, CFI, and NFI were 0.99, 0.97, 0.99, and 0.96 respectively. The acceptable RMR and RMSEA were 0.028 and 0.020.

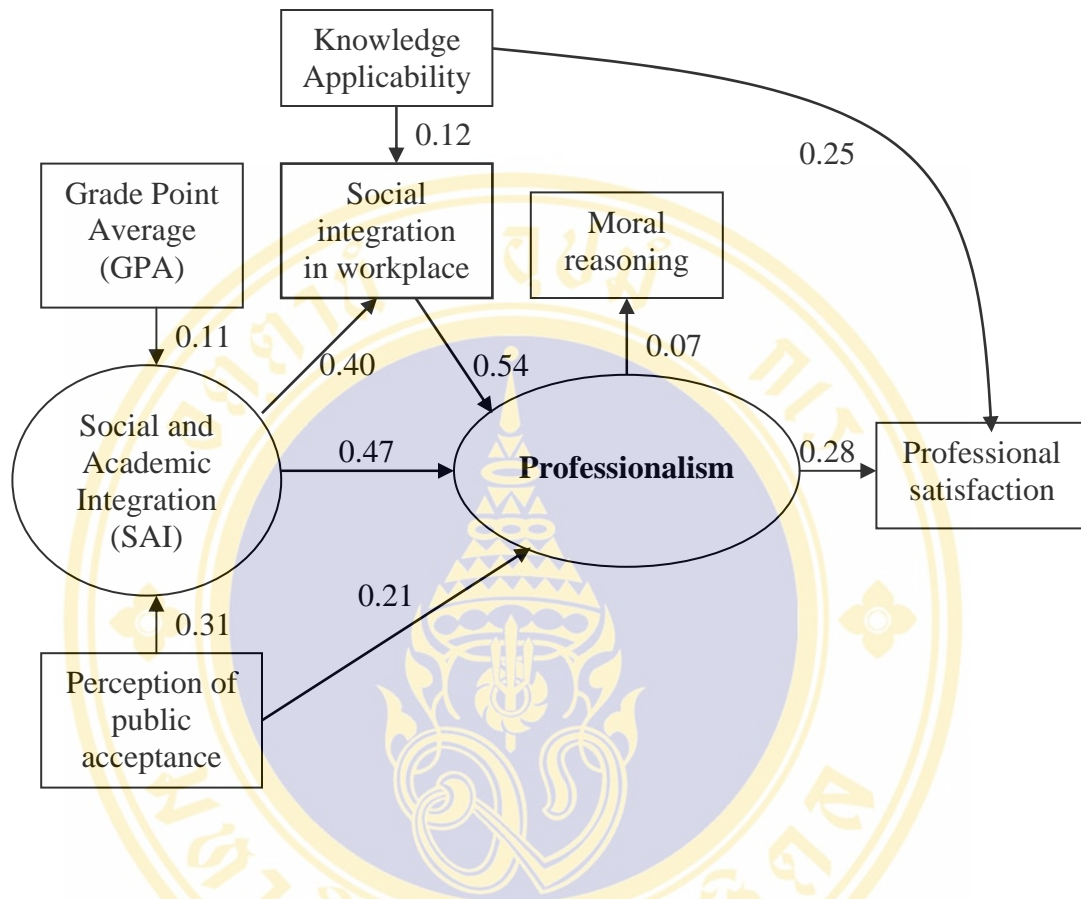


Figure 7. First level of professionalism model of practicing pharmacist

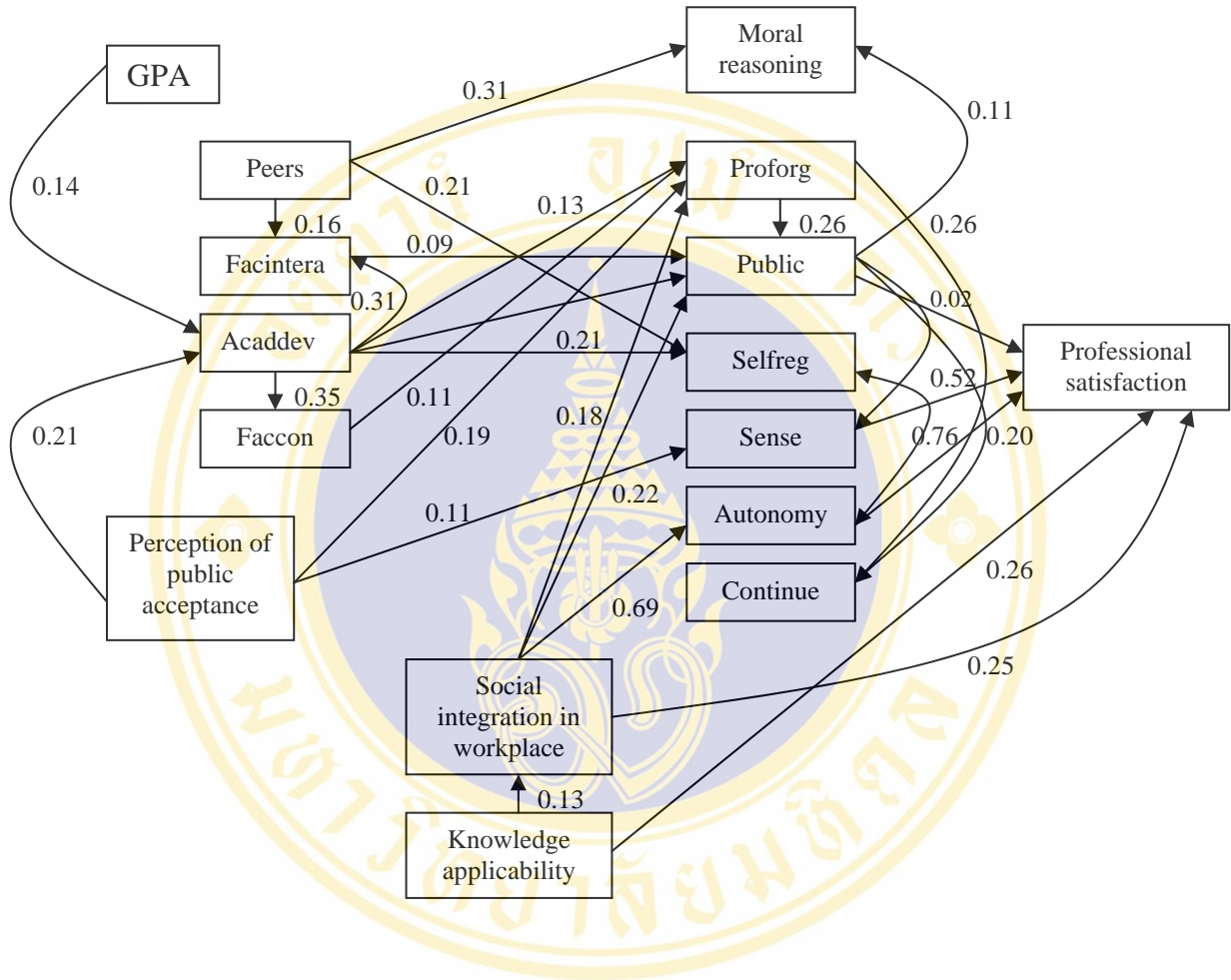


Figure 8. Second level professionalism model of practicing pharmacist.

Peers=Peers group interaction, Facintera=Faculty interaction, Adaddev=Academic development, Faccon=Faculty concern
 Proforg=Professional organization, Public=Belief in public service, Selreg=Belief in self-regulation, Sense=Sense of calling,
 Autonomy=Belief in autonomy, Continue=Belief in continuing competence, GPA=Grade point average.

Table 23: Structural standardized parameters^a (Direct effects and indirect effects) of the first level of professionalism and professional satisfaction among practicing pharmacists (N=736)

Model variable	Professionalism		Moral Reasoning		Professional satisfaction	
	Direct effect	Indirect effect	Direct effect	Indirect effect	Direct effect	Indirect effect
Grade Point Average		0.07		0.001		0.02
Social and academic integration	0.47	0.21		0.05		0.19
Social integration in workplace	0.54			0.04		0.15
Knowledge applicability		0.06			0.25	0.02
Perception of public acceptance	0.21	0.22		0.03		0.12
Professionalism			0.07		0.28	
R ²	0.88		0.01		0.18	

Table 24: Structural standardized parameters^a (Direct effects and indirect effects) of the second level of professionalism among practicing pharmacists (N=736)

Model Variable	Professionalism											
	1		2		3		4		5		6	
	D	I	D	I	D	I	D	I	D	I	D	I
Grade Point Average		0.03		0.04		0.01		0.05		0.01		0.01
Social and academic integration												
Peer group interaction				0.01	-0.23		-0.20		0.14			
Faculty interaction		0.03	0.09	0.04		0.01		0.11	0.07	0.03		0.04
Academic development	0.13	0.09	0.10	0.16	0.21		0.22	0.10		0.20	0.04	0.04
Faculty concern	0.11			0.03			0.09				0.01	0.03
Social integration in workplace	0.18		0.22	0.05		0.01	0.69	0.01	0.11	0.01	0.02	0.10
Moral reasoning								0.001				0.001
Knowledge applicability		0.02		0.03				0.09		0.02		0.02
Perception of public acceptance	0.19	0.05		0.10		0.01	0.11	0.07		0.02		0.08
Professionalism												
Professional organization			0.26					0.01			0.26	0.05
Belief in public service							0.02				0.20	
Belief in self-regulation									0.96			
Sense of calling										0.11		
Belief in autonomy					0.11	0.01						
Belief in continuing Competence							0.02					

1=Professional organization as a referent, 2=Belief in public service, 3= Belief in self-regulation, 4=Sense of calling, 5=Belief in autonomy, 6=Belief in continuing competence
 D=Direct effect, I=Indirect effect

Table 25: Structural standardized parameters^a (Direct effects and indirect effects) of the second level of professional satisfaction among practicing pharmacists (N=736)

Model Variable	Moral reasoning		Professional satisfaction	
	Direct effect	Indirect effect	Direct effect	Indirect effect
Grade Point Average				0.02
Social and academic integration				
Peer group interaction	0.03			0.03
Faculty interaction		0.01		0.08
Academic development		0.04		0.12
Faculty concern				
Social integration in workplace		0.03	0.25	0.44
Moral reasoning				0.001
Knowledge applicability			0.26	0.03
Perception of public acceptance		0.01		0.08
Professionalism				
Professional organization		0.03		
Belief in public service	0.11		0.02	0.01
Belief in self-regulation				0.01
Sense of calling			0.52	
Belief in autonomy			0.76	
Belief in continuing competence				0.01

Table 26: The goodness of fit statistics of the first order and the second order professionalism model among practicing pharmacists (N=736)

Goodness of Fit Statistics	Hypothesized Model	First order model	Second order model
Chi square/df	222.08/77	111.89/79	77.06/60
Goodness of Fit Index (GFI)	0.96	0.98	0.99
Adjusted goodness-of-fit index (AGFI)	0.94	0.97	0.97
Comparative fit index (CFI)	0.91	0.98	0.99
Normed fit index (NFI)	0.87	0.93	0.96
Root Mean Square Residual (RMR)	0.058	0.028	0.028
Root Mean Square Error of Approximation (RMSEA)	0.051	0.024	0.020

Pharmacy students

1) Characteristics

Of the 1,440 pharmacy students in the final study, 75.3 percent of them were female. The mean age was 20.48 ± 1.68 years while the mean monthly allowance was $5,324.49 \pm 3,658.37$ Baht. On average, the students had a grade point average (GPA) of 2.99 ± 0.43 . Almost everyone in the sample did not have a part-time job (91.1%). More than half (56.3%) of all students have joined in extracurricular activities and were born in other provinces (71.9%). When the students were asked whether which the professional field that they are interested to work in the future. It was found that the highest frequency of all students (28.9%) were interested in hospital pharmacy, followed by pharmaceutical industry or industry (26.3%) and community pharmacy (23.1%). However, the result showed that 1.3 percent of all pharmacy students had no idea about their future choices.

In terms of an influential person for choosing pharmacy school, more than half of students (55.7%) had themselves or no one to be the influential person, and more than one-third of them (35.8%) had parents as the influential person. Almost one-third of the subjects' fathers (35.0%) had an education of bachelor degree or equivalence and worked in the field of business (39.6%). For the respondent's mothers, almost one-third of the students' mother had an education (33.1%) in primary school or lower and worked in the field of business (35.7%). The characteristics of pharmacy students were shown in Table 27.

Table 27: Characteristics of pharmacy students in the final study (N=1,440)

Variable	N	%
Gender		
Male	355	24.7
Female	1,085	75.3
Study year		
First year	336	23.3
Second year	318	22.1
Third year	309	21.5
Fourth year	214	14.9
Fifth year	263	18.3
Join in extracurricular activities		
Yes	791	56.3
No	615	43.7
Have a part-time job		
Yes	124	8.9
No	1272	91.1
Birthplace		
Bangkok	404	28.1
Other provinces	1036	71.9
Professional field interested		
Hospital	415	28.9
Public hospital	248	17.3
Private hospital	167	11.6
Pharmaceutical industry	378	26.3
Community Pharmacy	332	23.1
Pharmaceutical marketing	200	13.9
Education	35	2.4
Law enforcement	27	1.9
Others (Business)	30	2.1
No idea	18	1.3
Influential person for choosing pharmacy		
Parents	513	35.8
Relatives	54	3.8
Siblings	26	1.8
Friends	24	1.7
Himself/Herself (None)	798	55.7
Other	17	1.2

Variable	N	%
Education; father		
Primary school or lower	332	23.5
Secondary school	104	7.4
High school	177	12.5
Certificate	173	12.2
Bachelor or equivalence	495	35.0
Master or higher	132	9.3
Education; mother		
Primary school or lower	468	33.1
Secondary school	94	6.7
High school	140	9.9
Certificate	167	11.8
Bachelor or equivalence	451	31.9
Master or higher	92	6.5
Occupation; father		
Physician	8	0.6
Pharmacist	17	1.2
Health Professional	13	0.9
Government	444	31.1
Business/merchant	566	39.6
Private/employee	179	12.5
Agriculturer	106	7.4
Do not work	57	4.0
Dead	38	2.7
Occupation; mother		
Physician	4	0.3
Pharmacist	12	0.8
Health Professional	38	2.7
Government	357	25.0
Business/merchant	510	35.7
Private/employee	107	7.5
Agriculturer	99	6.9
Do notwork	282	19.7
Dead	20	1.4
	Mean	SD
Age of respondents	20.48	1.68
Grade point average (GPA)	2.99	0.43
Monthly allowance	5,324.49	3,658.37

2) Correlation

Table 28 shows the correlation matrix of correlation coefficients between two of continuous variables. Table 29 and 30 show the contingency coefficients between two of categorical variables and between a continuous and a categorical variable. With several correlation results, the significant association at the 0.01 level were reported. The results revealed that peer group interaction had the highest significant relationship with faculty concern ($r=0.24$) and professional satisfaction ($r=0.24$). Faculty interaction correlated significantly with academic development ($r=0.32$) and social integration in workplace ($r=0.27$), academic development proposed the highest association with sense of calling ($r=0.40$). In terms of social integration in workplace, it showed the high correlation with belief in public service ($r=0.30$). Using professionalism as a point, professional organization as a major referent had a strong relationship with sense of calling ($r=0.35$). Belief in public service had a good correlation with sense of calling ($r=0.28$). Belief in self-regulation showed its significant negative relationship with professional organization as a major referent ($r=-0.17$) and belief in continuing competence ($r=-0.17$). For sense of calling, the highest correlation with professional satisfaction ($r=0.47$) was found. Belief in autonomy had a strong correlation with belief in public service ($r=0.23$). the last attribute of professionalism, belief in continuing competence, had a good relationship with belief in public service ($r=0.24$). Regarding to four of the rest variables, moral reasoning had a significant negative correlation with only belief in self-regulation ($r=-0,09$), whereas perception of public acceptance for pharmacy profession showed a significant association with professional satisfaction ($r=0.29$). Finally, GPA was found a good relationship with peer group interaction ($r=0.16$) and academic development ($r=0.12$).

Based on Table 29, regarding to the four factors of social and academic integration, three factors including peer group interaction, faculty interaction, and academic development had a high association with professional field that students are interested to work in the future ($C=0.38$, 0.38 , and 0.43 respectively), whereas faculty concern correlated strongly with occupation of respondent's father ($C=0.38$). In terms of

social integration in workplace, it was found to have a significant correlation with professional fields ($C=0.54$). For six attributes of professionalism, professional organization as a major referent showed its strong relationship with education of respondent's father ($C=0.29$), whereas belief in public service correlated with type of university ($C=0.19$). Belief in self-regulation had a strong correlation with occupation of respondent's parents. Sense of calling had a high association with professional field that students are interested ($C=0.42$). Belief of autonomy and belief in continuing competence showed the relationship with type of university ($C=0.17$ and 0.20). Professional satisfaction was found to have a strong relationship with an influential person for choosing pharmacy school ($C=0.51$).

The association between each of two categorical variables was analyzed. Table 30 shows that gender of respondent had an association with study year of students ($C=0.11$). Respondents' birthplace and study year had significant association with type of university whether government or private university ($C=0.20$ and 0.32). Education of respondent's parents correlated significantly with the parents' occupations. Respondents' university type had a correlation with an influential person for choosing pharmacy school ($C=0.27$) and professional field ($C=0.42$). These association results were a baseline data for the multivariate and advance statistical techniques.

Table 28: Correlation matrix of model variables by pharmacy students (N=1,440)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Peer group interaction	1.00														
2. Faculty interaction	0.22**	1.00													
3. Academic Development	0.37**	0.32**	1.00												
4. Faculty concern	0.24**	0.18**	0.21**	1.00											
5. Social integration in workplace	0.16**	0.27**	0.32**	0.04	1.00										
6. Professional organization	0.19**	0.15**	0.29**	0.24**	0.18**	1.00									
7. Belief in public service	0.20**	0.18**	0.22**	0.15**	0.30**	0.33**	1.00								
8. Belief in self-regulation	-0.04	-0.02	0.02	-0.14**	0.03	-0.17**	-0.17**	1.00							
9. Sense of calling	0.23**	0.16**	0.40**	0.16**	0.26**	0.35**	0.28**	0.10**	1.00						
10. Belief in autonomy	0.05	0.10**	0.14**	0.01	0.18**	0.08**	0.23**	0.02	0.19	1.00					
11. Belief in continuing competence	0.14**	0.10**	0.11**	0.10**	0.09	0.16**	0.24**	-0.17**	0.10**	0.11**	1.00				
12. Moral reasoning	0.04	0.01	-0.03	0.05	-0.07	0.02	0.03	-0.09**	-0.05	0.03	0.02	1.00			
13. Public acceptance	0.15**	0.03	0.18**	0.06*	0.10*	0.19**	0.08**	0.03	0.23**	0.04	0.03	-0.01	1.00		
14. Professional satisfaction	0.24**	0.14**	0.35**	0.13**	0.16**	0.31**	0.17**	-0.02	0.47**	0.11**	0.05	0.01	0.29**	1.00	
15. Grade point Average	0.16**	0.08**	0.12**	0.05	-0.11*	-0.01	0.04	0.01	0.02	-0.001	-0.02	0.05	0.04	-0.01	1.00

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

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

Table 29: Correlation between categorical variables and continuous variables of pharmacy students (N=1,440)

Categorical variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Gender	0.16**	0.11	0.13	0.16*	0.17	0.18**	0.16**	0.19**	0.13	0.08	0.12	0.12*	0.22**	0.24**
2. Study year	0.29**	0.31**	0.31**	0.28**	0.30	0.26*	0.22	0.29**	0.31	0.17	0.28**	0.16	0.39**	0.33
3. Birthplace	0.10	0.14	0.16	0.09	0.16	0.17**	0.14*	0.13	0.14	0.11	0.14	0.11*	0.19	0.18
4. Have a part-time job	0.12	0.08	0.14	0.11	0.14	0.08	0.12	0.13	0.09	0.06	0.13	0.11*	0.22**	0.17
5. Join extracurricular activities	0.17**	0.11	0.25**	0.12	0.16	0.13	0.11	0.13	0.14	0.09	0.11	0.08	0.19*	0.19
6. Education; Father	0.27	0.24	0.33*	0.24	0.41*	0.29*	0.22	0.25	0.27	0.19	0.28*	0.18	0.36	0.35
7. Education; Mother	0.27	0.28*	0.27	0.25	0.40	0.23	0.20	0.26	0.25	0.18	0.27	0.16	0.33	0.36
8. Occupation; Father	0.25	0.28	0.31	0.38**	0.35	0.24	0.25	0.33**	0.27	0.24*	0.28	0.20	0.34	0.39
9. Occupation; Mother	0.24	0.28	0.32	0.32	0.39	0.26	0.22	0.36**	0.29	0.21	0.23	0.20	0.35	0.38
10. Influential person for choosing pharmacy school	0.28	0.26	0.38	0.29	0.42	0.31	0.27	0.32*	0.34	0.21	0.29	0.19	0.44	0.51**
11. Professional field	0.38**	0.38**	0.43**	0.33	0.54**	0.33	0.30	0.31	0.42**	0.25	0.35*	0.25	0.43	0.49**
12. University	0.22**	0.23**	0.25**	0.20*	0.19	0.24**	0.19**	0.20**	0.29**	0.17**	0.20**	0.16**	0.32**	0.35**

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

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

1 = Peer group interaction, 2 = Faculty interaction, 3 = Academic development, 4 = Faculty concern, 5 = Social integration in workplace, 6 = Professional organization, 7 = Belief in public service, 8 = Belief in self-regulation, 9 = Sense of calling, 10 = Belief in autonomy, 11 = Belief in continuing competence, 12 = Moral reasoning, 13 = Perception of public acceptance for pharmacy profession, 14 = Professional satisfaction.

Table 30: Correlation matrix of categorical variables of pharmacy students (N=1,440)

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	1.00											
2. Study year	0.11**	1.00										
3. Birthplace	0.02	0.13**	1.00									
4. Have a part-time job	0.07*	0.13**	0.07**	1.00								
5. Join extracurricular activities	0.08**	0.12**	0.04	0.02	1.00							
6. Education; Father	0.05	0.14	0.11**	0.09*	0.04	1.00						
7. Education; Mother	0.07	0.17**	0.15**	0.11**	0.05	0.70**	1.00					
8. Occupation; Father	0.08	0.14	0.28**	0.09*	0.06	0.49**	0.42**	1.00				
9. Occupation; Mother	0.10	0.16	0.18**	0.13**	0.08	0.51**	0.59**	0.82**	1.00			
10. Influential person for choosing pharmacy	0.11*	0.17	0.06	0.06	0.07	0.21**	0.20*	0.16	0.18	1.00		
11. Professional field	0.12*	0.22**	0.25**	0.11	0.12*	0.18	0.21*	0.31**	0.26**	0.28**	1.00	
12. University	0.10**	0.20**	0.32**	0.09**	0.09**	0.13*	0.10	0.25	0.22**	0.27**	0.42**	1.00

*Correlation (Contingency coefficient) is significant at the 0.05 level (2-tailed)

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

3) Structural Equation Modeling (SEM)

Figure 4 shows the hypothesized professionalism model of pharmacy students. Figure 9 and 10 show fit statistics and standardized parameter estimates for the modified first order professionalism models and the second order model of all students respectively. Figure 11 and 12 show the first level professionalism model and the second level of the fourth and fifth year pharmacy students. In the hypothesized model, three variables of moral reasoning, perception of public acceptance for pharmacy profession, and social and academic integration could explain professionalism. After conducting SEM, it suggested that perception of public acceptance for pharmacy profession could be used to explain professionalism indirectly through social and academic integration. It meant that perception of public acceptance for pharmacy profession in this study could explain social and academic integration, while professionalism could be explained by social and academic integration. From adding this pathway, Chi-square reduced from 206.91 to 147.29 with a non-significant p-value. The revised first-level model of all students after a pathway modification was shown in Figure 9 and the first level model of only the fourth and fifth year students was shown in Figure 11. The goodness of fit statistics of the model were shown in Table 31. With regarding to the direct effect illustrated in Figure 9, the direct effect of GPA on social and academic integration ($\beta=0.28$, $p<0.05$) and social and academic integration on professionalism ($\beta=0.71$, $p<0.05$).

Moral reasoning had an effect to professionalism with a standardized parameter of 0.001, while profession satisfaction was explained by professionalism ($\beta=0.43$, $p<0.05$) and perception of public acceptance for pharmacy profession ($\beta=0.14$, $p<0.05$). On the other hand, the first level professionalism of the fourth year and the fifth year students was found that an added variable, social integration in workplace had the direct effect to social and academic integration ($\beta=0.95$, $p<0.05$) and professionalism ($\beta=0.94$, $p<0.05$). These two new pathways were added into a professionalism model of the fourth and fifth year students. The modified model of professionalism showed the significant direct effects and nine pathways among model variables. Beginning with GPA, it had the direct effects on social and academic integration ($\beta=0.32$, $p<0.05$), while social and academic integration showed its direct

effect on professionalism only ($\beta=0.07$, $p<0.05$). For professionalism, besides social and academic integration, three variables that had the direct effects on were social integration in workplace ($\beta=0.94$, $p<0.05$), moral reasoning ($\beta=0.04$, $p<0.05$), and perception of public acceptance for pharmacy profession ($\beta=0.25$, $p<0.05$). With regarding to the two groups of student samples, 1,440 of pharmacy students and 477 of the fourth and fifth year students, the direct and indirect effects of main variables of professionalism and professional satisfaction for the first group of samples and second group were shown in Table 31-37.

Table 31 and 32 show the structural standardized parameters in term of both direct effect and indirect effect of the first level professionalism model, Table 33 and 34 show these parameters of the second level model of professionalism and Table 35 and 36 show for the second level of moral reasoning and professional satisfaction. Table 37 and Table 38 show the goodness of fit statistics for the hypothesized model and the two final modified models. These were the results of all pharmacy students. For the first level model, the chi-square with 45 degree of freedom was 147.29 with nonsignificance ($p>0.05$) and normed chi-square (chi-square/df) was 3.27, Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), and Normed Fit Index (NFI) were 0.99, 0.97, 0.96, and 0.94 respectively. These values indicated that the model was fit quite well. Moreover, Root Mean Square Residual (RMR) and Root Mean Square Error of Approximation (RMSEA) were 0.030 and 0.040 respectively. These goodness of fit statistics revealed that the first level professionalism model was fit well. According to the second level model of professionalism, its goodness of fit statistics proposed that the model fitted the data well. Normed chi-square (84.93/33) was 2.57, and GFI, AGFI, CFI, and NFI were 0.99, 0.97, 0.98, and 0.96 respectively. The acceptable RMR and RMSEA were 0.031 and 0.033.

Regarding to a group of the fourth and fifth year students, the first level model, the chi-square with 63 degree of freedom was 103.21 with nonsignificance ($p>0.05$) and normed chi-square (chi-square/df) was less than 2.0, Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), and Normed Fit Index (NFI) were 0.97, 0.95, 0.95, and 0.89 respectively. These values indicated that the model was fit quite well. Moreover,

Root Mean Square Residual (RMR) and Root Mean Square Error of Approximation (RMSEA) were 0.038 and 0.037 respectively. These goodness of fit statistics revealed that the first level professionalism model was fit well. According to the second level model of professionalism, its goodness of fit statistics proposed that the model fitted the data well. Normed chi-square (92.73/58) was less than 2.0, and GFI, AGFI, CFI, and NFI were 0.97, 0.95, 0.96, and 0.91 respectively. The acceptable RMR and RMSEA were 0.044 and 0.035.

From the SEM results of both all pharmacy students and the fourth and the fifth year students only, it could be concluded that the models of them were fit well and could be applied in the further study.

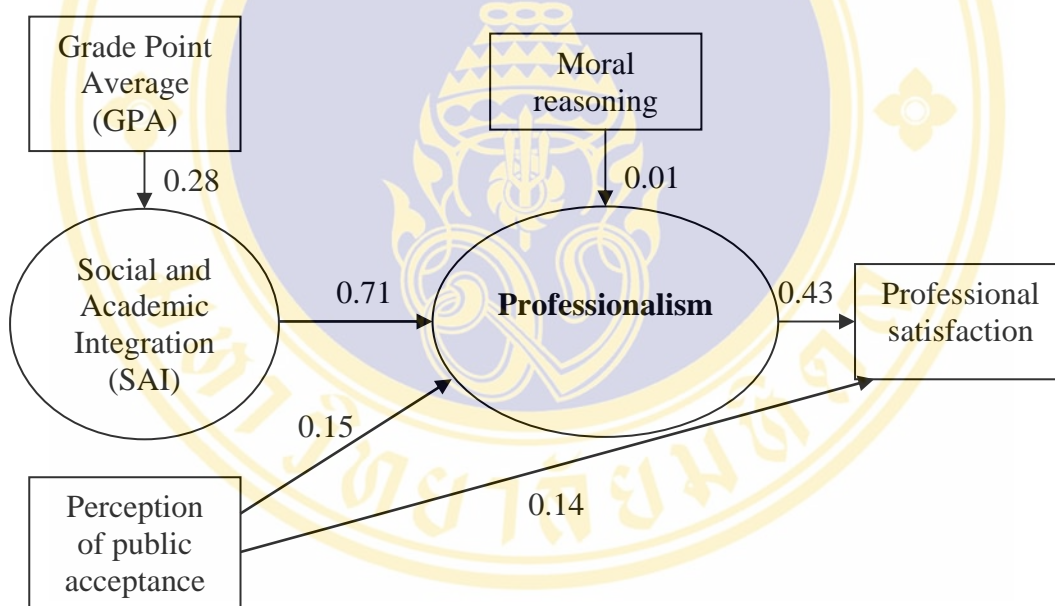


Figure 9. First level professionalism of all pharmacy students

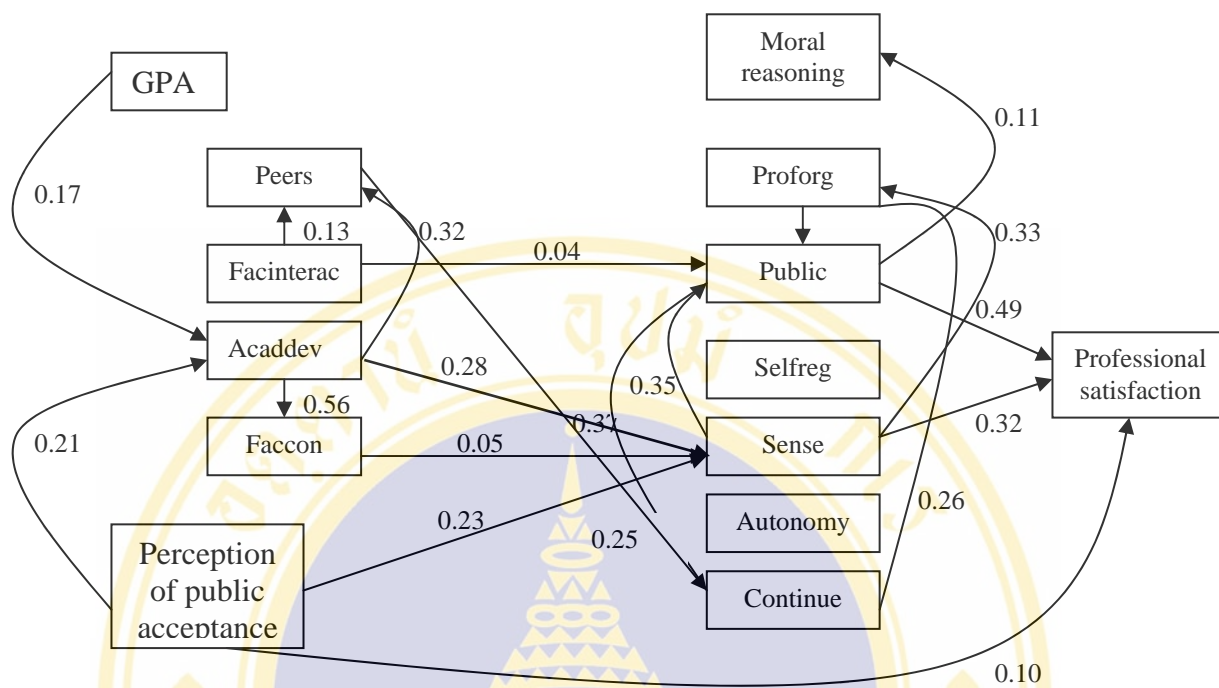


Figure 10. Second level professionalism of all pharmacy students

Peers=Peers group interaction, Facinterac=Faculty interaction, Acaddev=Academic development, Faccon=Faculty concern
 Proforg=Professional organization, Public=Belief in public service, Selreg=Belief in self-regulation, Sense=Sense of calling,
 Autonomy=Belief in autonomy, Continue=Belief in continuing competence, GPA=Grade point average.

Table 31: Structural standardized parameters^a (Direct effects and indirect effects) of the first order of professionalism and professional satisfaction among pharmacy students (N=1,440)

Model variable	Professionalism		Professional satisfaction	
	Direct effect	Indirect effect	Direct effect	Indirect effect
Grade Point Average		0.02		0.08
Social and academic integration	0.71			0.30
Moral reasoning	0.01			0.001
Perception of public acceptance	0.15	0.22	0.14	0.16
Professionalism			0.43	
R ²	0.57		0.24	

Table 32: Structural standardized parameters^a (Direct effects and indirect effects) of the second level of professionalism among pharmacy student (N=1,440)

Model Variable	Professionalism											
	1		2		3		4		5		6	
	D	I	D	I	D	I	D	I	D	I	D	I
Grade Point Average		0.04		0.03				0.04		0.01		0.01
Social and academic integration												
Peer group interaction		0.12				-0.02					0.29	
Faculty interaction			0.04	0.05								0.01
Academic development		0.23		0.08			0.28			0.04		0.07
Faculty concern		0.09		0.06	-0.17	0.03	0.05					
Social integration in workplace												
Moral reasoning					0.15							
Perception of public acceptance		0.12		0.06		0.02	0.23			0.03		0.07
Professionalism												
Professional organization					0.19			0.09			0.18	
Belief in public service		0.02										
Belief in self-regulation	-0.68	0.05		0.02				0.07				
Sense of calling	0.33		0.35		0.07				0.18			0.03
Belief in autonomy												
Belief in continuing competence	0.26		0.37		-0.16							

1=Professional organization as a referent, 2=Belief in public service, 3= Belief in self-regulation, 4=Sense of calling, 5=Belief in autonomy, 6=Belief in continuing competence

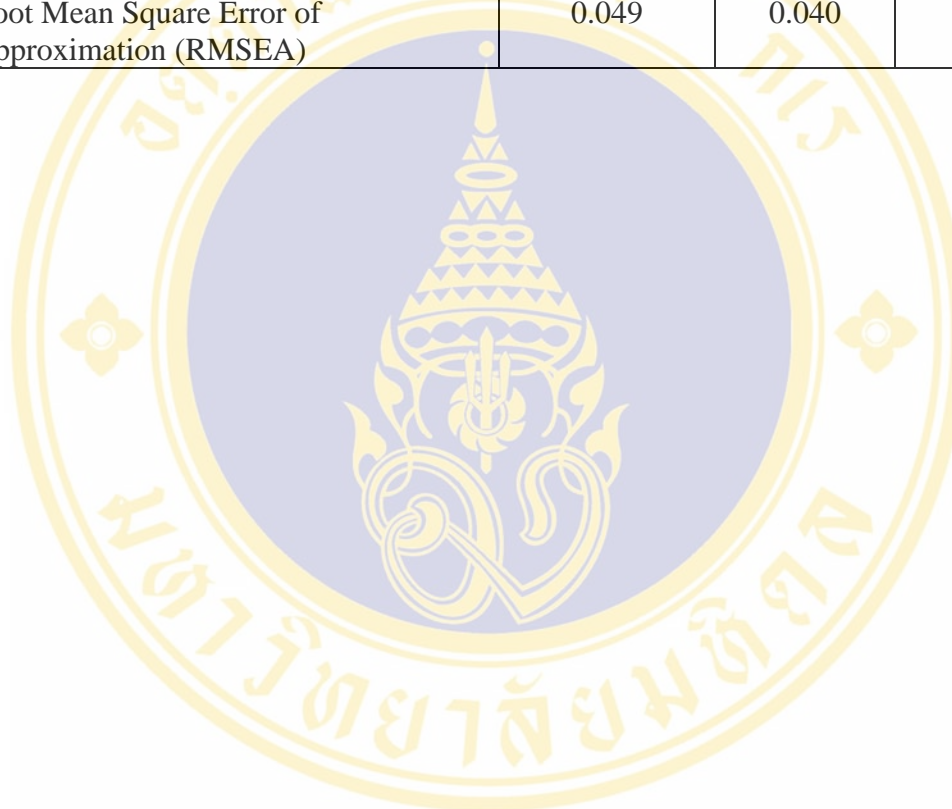
D=Direct effect, I=Indirect effect

Table 33: Structural standardized parameters^a (Direct effects and indirect effects) of the second level of professional satisfaction among pharmacy students (N=1,440)

Model Variable	Moral reasoning		Professional satisfaction	
	Direct effect	Indirect effect	Direct effect	Indirect effect
Grade Point Average				0.03
Social and academic integration				
Peer group interaction				
Faculty interaction				
Academic development		0.02		0.16
Faculty concern		0.05		0.05
Social integration in workplace				
Moral reasoning				
Perception of public acceptance			0.10	0.21
Professionalism				
Professional organization				
Belief in public service		0.02	0.49	
Belief in self-regulation	-0.32			
Sense of calling			0.32	
Belief in autonomy				
Belief in continuing competence		0.01		

Table 34: The goodness of fit statistics of the first level and the second level professionalism model among pharmacy students (N=1,440)

Goodness of Fit Statistics	Hypthesized Model	First level model	Second level model
Chi square/df	206.91/46	147.29/45	84.93/33
Goodness of Fit Index (GFI)	0.98	0.99	0.99
Adjusted goodness-of-fit index (AGFI)	0.95	0.97	0.97
Comparative fit index (CFI)	0.93	0.96	0.98
Normed fit index (NFI)	0.92	0.94	0.96
Root Mean Square Residual (RMR)	0.042	0.030	0.031
Root Mean Square Error of Approximation (RMSEA)	0.049	0.040	0.033



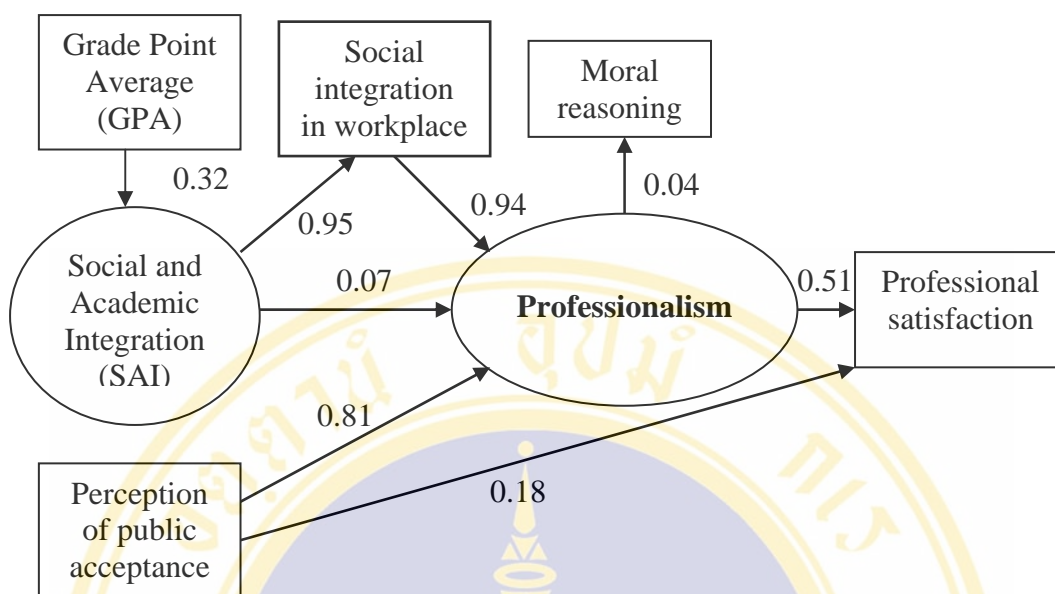


Figure 11. First level professionalism model of 4th and 5th year pharmacy students

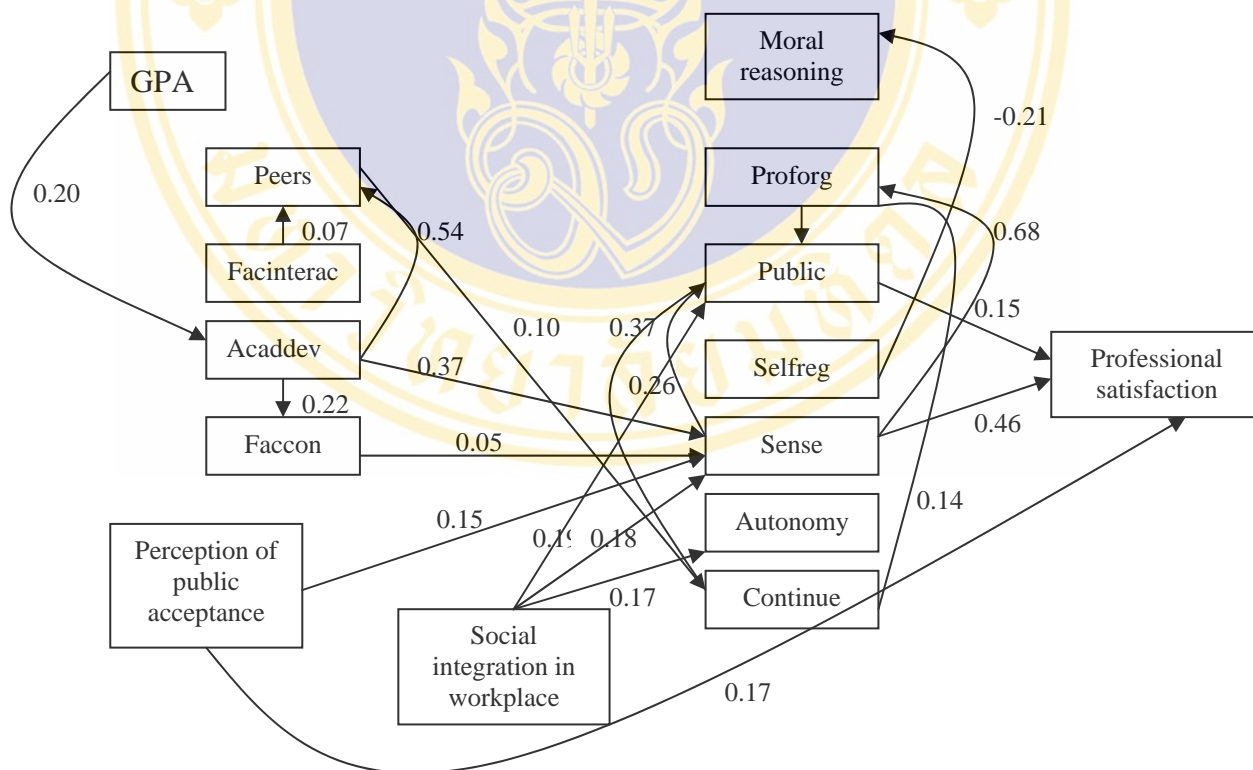


Figure 12. Second level professionalism model of 4th and 5th year pharmacy students

Peers=Peers group interaction, Facinterac=Faculty interaction, Adaddev=Academic development, Faccon=Faculty concern
 Proforg=Professional organization, Public=Belief in public service, Selreg=Belief in self-regulation, Sense=Sense of calling,
 Autonomy=Belief in autonomy, Continue=Belief in continuing competence, GPA=Grade point average.

Table 35: Structural standardized parameters^a (Direct effects and indirect effects) of the first level of professionalism and professional satisfaction among the 4th – 5th year pharmacy students (N= 477)

Model variable	Professionalism		Professional satisfaction	
	Direct effect	Indirect effect	Direct effect	Indirect effect
Grade Point Average		0.02		0.01
Social and academic integration	0.07			0.04
Social integration in workplace	0.94	0.07		0.52
Moral reasoning	0.04			0.02
Perception of public acceptance	0.81	0.06	0.18	0.44
Professionalism			0.51	
R ²	0.74		0.35	

Table 36: Structural standardized parameters^a (Direct effects and indirect effects) of the second level of professionalism among the 4th – 5th year pharmacy students (N= 477)

Model Variable	Professionalism											
	1		2		3		4		5		6	
	D	I	D	I	D	I	D	I	D	I	D	I
Grade Point Average		0.04		0.02				0.06		0.01		0.01
Social and academic integration												
Peer group interaction		0.01				-0.01					0.10	
Faculty interaction			0.04									0.01
Academic development		0.21		0.08		0.01	0.37			0.04		0.07
Faculty concern		0.05		0.01	-0.10	0.01	0.05					
Moral reasoning					0.15							
Perception of public acceptance		0.08		0.03		0.01	0.15			0.02		0.01
Professionalism												
Professional organization					0.19			0.09			0.18	
Belief in public service		0.02										
Belief in self-regulation	-0.24	0.06		0.02				0.07				
Sense of calling	0.68		0.26		0.09				0.13			0.04
Belief in autonomy												
Belief in continuing competence	0.14		0.05		-0.18							
Social integration in workplace		0.17	0.19	0.07			0.18	0.07	0.17	0.03		0.07

1=Professional organization as a referent, 2=Belief in public service, 3= Belief in self-regulation, 4=Sense of calling, 5=Belief in autonomy, 6=Belief in continuing competence
 D=Direct effect, I=Indirect effect

Table 37: Structural standardized parameters^a (Direct effects and indirect effects) of the second level of professional satisfaction among the 4th – 5th year pharmacy students (N= 477)

Model Variable	Moral reasoning		Professional satisfaction	
	Direct effect	Indirect effect	Direct effect	Indirect effect
Grade Point Average				0.03
Social and academic integration				
Peer group interaction				
Faculty interaction				
Academic development		0.02		0.17
Faculty concern		0.02		0.02
Social integration in workplace				0.13
Moral reasoning				
Perception of public acceptance			0.17	0.07
Professionalism				
Professional organization				
Belief in public service		0.01	0.15	
Belief in self-regulation	-0.21			
Sense of calling			0.46	
Belief in autonomy				
Belief in continuing competence		0.03		

Table 38: The goodness of fit statistics of the first level and the second level professionalism model among the 4th – 5th year pharmacy students (N= 477)

Goodness of Fit Statistics	Hypothesized Model	First order model	Second order model
Chi square/df	146.98/65	103.21/63	92.73/58
Goodness of Fit Index (GFI)	0.96	0.97	0.97
Adjusted goodness-of-fit index (AGFI)	0.93	0.95	0.95
Comparative fit index (CFI)	0.91	0.95	0.96
Normed fit index (NFI)	0.85	0.89	0.91
Root Mean Square Residual (RMR)	0.046	0.038	0.044
Root Mean Square Error of Approximation (RMSEA)	0.051	0.037	0.035

Role model pharmacists

1) Characteristics

Role model pharmacists were a group of pharmacists that the practicing pharmacists named their names for being a person who succeeded in pharmacy professional field. The data from a group of role model pharmacists were collected for testing the consistency of the professionalism model and using as a standard referent data.

Of the 50 role model pharmacists in the final study, almost half of samples were female (48.0%) and were born in Bangkok (56.0%). The mean age was 51.20 ± 11.37 years with the mean monthly income of $77,639.33 \pm 104,640.36$ Baht. The role model pharmacists showed the mean grade point average (GPA) of 2.86 ± 0.39 . Almost everyone in the sample did not have a part-time job (91.8%). Almost one-third (32.0%) of role model pharmacists have worked in the professional field of education and one-fifth (20.0%) of them have worked in public hospital. All role model pharmacists graduated from government university. Regarding to an influential person on choosing pharmacy, more than fifty percent (59.6%) had no one to be an influential person, they chose pharmacy school by themselves, but 19.1 percent and 12.8 percent of role model had been influenced by their parents and siblings respectively. For the respondent's parents, most of their father (62.5%) and mother (79.2%) had an education in primary school or lower. Most of their parents (65.3% and 53.1%) currently worked in a business field. The characteristics of all 50 role model pharmacists students were shown in Table 39.

Table 39: Characteristics of role model pharmacists (N=50)

Variable	N	%
Gender		
Male	26	52.0
Female	24	48.0
Have a part-time job while studying in pharmacy school		
Yes	4	8.2
No	45	91.8
Birthplace		
Bangkok	28	56.0
Other provinces	22	44.0

Variable	N	%
Current career field		
Public hospital	10	20.0
Pharmacy education	16	32.0
Community Pharmacy	8	16.0
Law enforcement	4	8.0
Manufacturing	3	6.0
Pharmaceutical marketing	3	6.0
Others (Business)	4	8.0
Retired	2	4.0
Influential person for choosing pharmacy		
Parents	9	19.1
Relatives	2	4.3
Siblings	6	12.8
Friends	2	4.3
Himself	28	59.6
Education; father		
Primary school of lower	30	62.5
Secondary school	5	10.4
High school	4	8.3
Certificate	2	4.2
Bachelor or equivalence	6	12.5
Master or higher	1	2.1
Education; mother		
Primary school of lower	38	79.2
Secondary school	2	4.2
High school	3	6.3
Certificate	3	6.3
Bachelor or equivalence	2	4.2
Master or higher	0	0.0
Occupation; father		
Physician	1	2.0
Pharmacist	0	0
Health Professional	1	2.0
Government	6	12.2
Business/merchant	32	65.3
Private company/employee	7	14.3
Agriculturer	2	4.1
Do not work	0	0
Dead	0	0

Variable	N	%
Occupation; mother		
Physician	0	0
Pharmacist	0	0
Health Professional	2	4.1
Government	1	2.0
Business/merchant	26	53.1
Private company/employee	0	0
Agriculturer	2	4.1
Do not work	17	34.7
Dead	1	2.0
	Mean	SD
Age of respondent	51.20	11.37
Grade Point Average	2.86	0.39
Monthly income/allowance	77,639.33	104,640.36

2) Chi-square test among three groups

The characteristics of role model pharmacists were used to be a reference for comparing with practicing pharmacists and pharmacy students. By using the chi-square, several significant differences of categorical characteristics among three groups including role model pharmacists, practicing pharmacists and pharmacy students, were found and shown in Table 40.

Compared with role model pharmacists, the majority of pharmacy students and practicing pharmacists were female (75.3% and 61.1%) and had a birthplace in the other provinces (except Bangkok) (71.9% and 71.9%), while more than half of role model were male (52.0%) and had Bangkok as a birthplace (56.0%). Most of role model worked in education field, but practicing pharmacists worked in hospital especially public hospital. For students, the top three fields that they were interested were hospital (28.9%) pharmaceutical industry or manufacturing (26.3%) and community pharmacy (23.1%). With the same pattern among three groups, the highest influential person for choosing pharmacy school of these three groups were themselves. Parents had more influence on the students than practicing pharmacists and role model pharmacists.

3) MANOVA among three groups

Using the role model pharmacists as a referent group for comparison with a group of practicing pharmacists and a group of pharmacy students, MANOVA of all model variables was performed for these comparisons. The results were shown in Table 41. Among three groups, role model pharmacists had the highest score of total professionalism and moral reasoning, especially, two attributes of professionalism; belief in autonomy and belief in continuing competence. When compared between practicing pharmacists and pharmacy students, It was found that students showed their significant higher score on three attributes of professionalism; belief in public service, sense of calling, belief in continuing competence, total score of professionalism, moral reasoning and professional satisfaction than practicing pharmacists. It can be concluded that these variables decreased gradually after pharmacy students graduated from school and since they were coming to work in real practice. At this point, it should be concerned by pharmacy education as well as a leading pharmacy organization to maintain and foster professionalism, moral reasoning and professional satisfaction among pharmacy students.

Table 40: The characteristics of three groups of the final samples

Variable	Pharmacy student (N=1,440)		Pharmacist (N=736)		Role model (N=50)	
	N	%	N	%	N	%
Gender ^c						
Male	355	24.7	286	38.9	26	52.0
Female	1085	75.3	450	61.1	24	48.0
Have a part-time job while studying in pharmacy school ^c						
Yes	124	8.6	136	18.5	4	8.0
No	1272	88.3	596	81.0	45	90.0
Birthplace ^c						
Bangkok	404	28.1	207	28.1	28	56.0
Other provinces	1036	71.9	529	71.9	22	44.0
University ^c						
Government with B.Sc	873	60.6	729	99.0	50	100.0
Government with Pharm.D	206	14.3	0	0	0	0
Private&foriegn with B.Sc	361	25.1	7	1.0	0	0

Variable	Pharmacy student (N=1,440)		Pharmacist (N=736)		Role model (N=50)	
	N	%	N	%	N	%
Professional field ^c						
Hospital	416	28.9	434	58.9	10	20.0
Public hospital	248	17.2	347	47.1	10	20.0
Private hospital	168	11.7	87	11.8	0	0
Marketing	200	13.9	57	7.7	3	6.0
Law enforcement	27	1.9	66	9.0	4	8.0
Community	332	23.1	104	14.1	8	16.0
Manufacturing	378	26.3	35	4.8	3	6.0
Education	35	2.4	16	2.2	16	32.0
Others (Business)	30	2.1	24	3.3	4	8.0
Retired	0	0	0	0	2	4.0
Can not choose	17	1.2	0	0	0	0
Influential person for choosing pharmacy ^c						
Parents	513	35.6	178	24.2	9	18.0
Relatives	54	3.8	26	3.5	2	4.0
Siblings	26	1.8	48	6.5	6	12.0
Friends	24	1.7	30	4.1	2	4.0
Himself/herself	798	55.4	421	57.2	28	56.0
Other	17	1.2	31	4.2	2	4.0
Education; father ^c						
Primary school or lower	332	23.1	367	49.9	30	60.0
Secondary school	104	7.2	68	9.2	5	10.0
High school	177	12.3	90	12.2	4	8.0
Certificate	173	12.0	73	9.9	2	4.0
Bachelor or equivalence	495	34.4	113	15.4	6	12.0
Master or higher	132	9.2	17	2.3	1	2.0
Education; mother ^c						
Primary school or lower	468	32.5	471	64.0	38	76.0
Secondary school	94	6.5	49	6.7	2	4.0
High school	140	9.7	59	8.0	3	6.0
Certificate	167	11.6	50	6.8	3	6.0
Bachelor or equivalence	451	31.3	92	12.5	2	4.0
Master or higher	92	6.4	7	1.0	0	0

Variable	Pharmacy student (N=1,440)		Pharmacist (N=736)		Role model (N=50)	
	N	%	N	%	N	%
Occupation; father ^c						
Physician	8	0.6	3	0.4	1	2.0
Pharmacist	17	1.2	3	0.4	0	0
Health Professional	13	0.9	14	1.9	1	2.0
Government	444	30.8	162	22.0	6	12.0
Business/merchant	566	39.3	361	49.0	32	64.0
Private company/employee	179	12.4	71	9.6	7	14.0
Agriculturer	106	7.4	81	11.0	2	4.0
Do not work	57	4.0	38	5.2	0	0
Dead	38	2.6	0	0	0	0
Occupation; mother ^c						
Physician	4	0.3	2	0.3	0	0
Pharmacist	12	0.8	3	0.4	0	0
Health Professional	38	2.6	17	2.3	2	4.0
Government	357	24.8	104	14.1	1	2.0
Business/merchant	510	35.4	324	44.0	26	52.0
Private company/employee	107	7.4	27	3.7	0	0
Agriculturer	99	6.9	75	10.2	2	4.0
Do not work	282	19.6	182	24.7	17	34.0
Dead	20	1.4	0	0	1	2.0

^c Significant difference by Chi-square at the 0.001 level.

Table 41: MANOVA results of model variables among three groups of samples

Variable ^a	Pharmacy student (N=1,440)		Pharmacist (N=736)		Role model (N=50)	
	Mean	SD	Mean	SD	Mean	SD
Age of respondent ^b	20.48	1.68	36.30	10.57	51.20	11.37
Grade point average ^c	2.99	0.43	2.76	0.41	2.86	0.39
Monthly income/allowance ^d	5,324.49	3,658.37	31,104.15	31,352.57	77,639.33	104,640.36
Social and Academic Integration						
Peer group interaction ^e	22.32	2.61	22.98	2.58	23.85	2.45
Faculty interaction ^f	19.41	3.02	19.32	3.30	20.86	2.94
Academic development	33.23	3.76	33.45	4.19	34.23	4.75
Faculty concern ^h	16.42	3.32	15.37	3.49	14.22	3.92
Total social&academic integration	91.40	8.49	91.16	9.82	93.20	11.20

Variable ^a	Pharmacy student (N=1,440)		Pharmacist (N=736)		Role model (N=50)	
	Mean	SD	Mean	SD	Mean	SD
Professionalism						
Professional organization ⁱ	18.42	2.53	18.73	2.93	19.81	3.05
Belief in public service ^k	24.99	2.69	24.64	2.79	25.78	2.44
Belief in self regulation	15.05	3.08	14.53	2.88	14.32	2.69
Sense of calling ^l	21.10	3.09	20.04	3.57	21.83	3.54
Belief in autonomy ^m	14.11	1.63	13.83	1.68	14.75	1.97
Belief in continuing competence ⁿ	19.83	2.52	20.78	3.41	21.86	2.81
Total score of professionalism ^o	113.48	7.91	110.71	9.40	118.02	9.00
Moral reasoning ^p	45.55	23.45	43.70	22.04	52.44	16.65
Social integration in workplace ^q	21.16	2.52	20.92	2.35	22.35	2.16
Knowledge applicability ^r	-	-	64.15	22.10	67.40	24.95
Professional satisfaction ^s	81.95	14.88	73.24	17.92	78.50	23.63
Perception of public acceptance for pharmacy profession	67.28	18.18	63.90	15.66	63.18	20.56

^a Significance after control for multiple comparison by Bonferroni correction

^t Compare mean difference by independent t-test

^e Model>student, pharmacist>student, (F,2=21.44, p<0.001)

^f Model>student, pharmacist, (F,2=5.61, p<0.001)

^h Student>Model, pharmacist, (F,2=30.15, p<0.001)

ⁱ Model>student, pharmacist>student, (F,2=8.50, p<0.001)

^k Student>pharmacist, role model>pharmacisr, (F,2=6.70, p<0.01)

^l Model, student> pharmacist, (F,2=7.89, p<0.001)

^m Model>student, model>pharmacist, (F,2=27.34, p<0.001)

ⁿ Model>student>pharmacist, (F,2=11.13, p<0.001)

^o Model>student>pharmacist, (F,2=35.29, p<0.001)

^p Model>student>pharmacist, (F,2=34.00, p<0.001)

^q Model>student, pharmacist, (F,2=4.24, p<0.05)

^r Model>student, model>pharmacist, (F,2=8.57, p<0.001)

^s Student>pharmacist,model, model>pharmacist, (F,2=70.22, p<0.001)

CHAPTER 6

DISCUSSION

In this chapter, the discussion of the analyzed data were presented in two parts; 1) questionnaire development and 2) model testing and factors affecting pharmacy students' professionalism and moral reasoning, factors affecting practicing pharmacists' professionalism and moral reasoning.

1. Questionnaire development
2. Model testing and factors affecting professionalism and moral reasoning

Questionnaire development

The study instrument comprised of five main sections; 1) a 25-item social and academic integration scale, 2) a 32-item professionalism, 3) one dilemma with 12-item moral reasoning, 4) a 5-item social integration in workplace, and 5) respondent's demographics and related factors.

From questionnaire development, the content validity with a 47-pharmacist survey and a 5-expert focus group (see appendix A) indicated the differences of the professionalism concept between Thai pharmacists and the western pharmacists, especially in the belief in self-regulation and the belief in professional organization as a major referent. Thai pharmacists seemed likely to have less belief and involvement in these two aspects than the western pharmacist. One of the experts explained this phenomenon that Thai pharmacists perceived pharmacy organization as a major referent both work life and their identity less than usual because Thai formal pharmacy organizations (such as the Pharmacy Council) were in an embryonic of developing stage and needed more time to develop and be perceived by their members and public. Moreover, with the several fields of pharmacy profession in Thailand, it was unclear in self-regulation management in each group especially when compared with only one united group of medicine profession and nursing. This weak point of pharmacy profession was explained more by Kithi Pitaknitinunt in the second

Thailand Pharmacy Congress during 22nd – 23rd November 2003. He stated that a new Pharmacy Profession Act should determine the standard practice of each field and the pharmacy council should have a role to urge and control the construction of each standard and ethics.

The reliability testing results with a 39-pharmacist pretest showed alpha Cronbach coefficients of the first three scales with the acceptable range (0.89, 0.78, and 0.89, respectively). Moreover, the results of model testing phase also showed the acceptable alpha coefficients range of 0.67-0.88. These results confirmed that all subscales of those three scales and five subscales of social integration in workplace were reliable with coefficients between 0.52 and 0.87. For the discrimination power, four scale revealed the good discrimination power with the significant t tests. Belief in autonomy and belief in continuing competence subscales of professionalism scale showed low coefficients. These results also were found in the study of Schack and Hepler (32) and Lerkiatbundit (23). The reasons were: 1) the effect of the few items and 2) the low correlation among items of the subscale. Belief in autonomy subscale has only four items, whereas the correlation among items of belief in continuing competence was poor. Even though the results of reliability and discrimination power testing of four study scales were acceptable, when using this study instrument in the other group of sample, it still needs to evaluate these basic characteristics.

From construct validity, professionalism model that comprised of six components showed the similar components as the modified model of Schack and Helper. Moreover, the exploratory factor analysis revealed the similar results with Schack and Helper's. First, item 25 and 26 that deviated from the remaining items of belief in autonomy to the subscale of belief in public service were also found the same pattern of deviation in Schack and Hepler's result. Second, item 30 that deviated from belief in continuing competence to belief in autonomy was also found in the study of Schack and Hepler. From these results, it could be explained that those three items had the meanings or content quite similar to the subscale that they rotated on it. Therefore, they should be concerned their content before using in the further study.

When consider the difference of factor analysis of professionalism model between pharmacists and pharmacy students (see appendix D), it was found the differences of the item deviation. For pharmacy students, item 25, 26 and 30 deviated

from their remaining items, whereas for pharmacist, only item 25 and 29 deviated from their subscales.

Model testing and factors affecting professionalism and moral reasoning

Model testing

1) Pharmacy students' professionalism model

For all pharmacy students, the professionalism model comprised of six model variables; grade point average, social and academic integration, perception of public acceptance, moral reasoning, professionalism, and professional satisfaction. The most powerful factor that can explain pharmacy students' professionalism was social and academic integration ($\beta=0.71$), especially academic development ($\beta=0.28$) and peers group interaction ($\beta=0.25$) with the support of faculty interaction and faculty concern. It can be explained that academic development and peers group interaction were the important and influential factors to shape students' idea, concept and attitude. From Ajzen's theory of the reasoned action (40), person's attitude was formed from his/her experiences, norms and cultures and would affect to intention and his/her action. Therefore, the students' attitude to their profession (professionalism) would be formed and shaped by their experiences in pharmacy school, university, extracurricular activities, professional organization activities, and also the experiences with their peers and faculty members. From this reason, the students who had the high academic development along their school life with peers, would have the high professionalism, especially belief in public service and sense of calling that specially need the high commitment to their profession. Moreover, belief in public service and sense of calling revealed their significant direct effects on professional satisfaction. For moral reasoning and its relationship with pharmacy students' professionalism, the standardized coefficient revealed the pathway from professionalism to moral reasoning with $\beta=0.01$. Kohlberg explained that moral reasoning in adolescence and young adult rests on an individual's real-life experiences, especially in college, this moral development will affect their attitude and performance in their future works. Moral reasoning will be formed and shaped career identity and commitment through socialization and training in school.

For the fourth and fifth year pharmacy students, the professionalism model comprised of six model variables (as above) and an added variable, social integration in workplace, a variable from their clerkship experience. The model revealed two main factors influencing professionalism that were social integration in workplace ($\beta=0.94$) and perception of public acceptance ($\beta=0.81$). From the study of Hall (29) and Epstein (110), they explained the importance of work experiences, work climate, and good relationships among professional peers and staff on professionalism of institution's members, then the factors in workplace were crucial and necessary for professionalism development. Moreover, Buerki (81) found that students' perception on social acceptance has affected their aspiration and professional attitudes (professionalism) and McCook and Speranza's study (117) also found the positive perception on pharmacy's role in society that developed both in professional education and practical experience during the externship influence students' status and professionalism. A study of Jerry Bennett and Robert Hunter (119) concluded that the change of pharmacy students' perception of career status and its role in society has affected their professional behavior and professionalism. From these evidences, social integration in workplace and perception of public acceptance that were gained from real work setting experiences were the most influential factors on professionalism.

2) Pharmacists' professionalism model

For practicing pharmacists, the professionalism model comprised of eight model variables; grade point average, social and academic integration, perception of public acceptance, social integration in workplace, knowledge applicability, moral reasoning, professionalism, and professional satisfaction. Two main factor that showed the highest influence on professionalism were social integration in workplace ($\beta=0.54$) and social and academic integration ($\beta=0.47$). From these results, they showed the importance of workplace or practice setting on practitioners' professionalism, especially belief in autonomy ($\beta=0.69$), belief in public service ($\beta=0.22$), and professional organization ($\beta=0.18$). Hall's results also showed that the setting and work situation were the important factor that had impacted on autonomous of profession. For social and academic integration, this model also shows the same relationship as the students' model. Academic development and

peers group interaction were still to be two main factors that can predict professionalism, but faculty interaction and faculty concern were also found to be the important factor that can predict professionalism. In this model, we found that moral reasoning was influenced by peers group interaction, this results confirmed the idea of Latif and Berger (90) who found the positive effect of group discussion among students on students' moral reasoning. The relationship between professionalism and professional satisfaction was also revealed, we found three components of professionalism that were the significant predictors of professional satisfaction. They were belief in public service, sense of calling, and belief in autonomy. Because belief in autonomy will be gained more when pharmacists had experiences from their practices, it would much affect to pharmacists' professional satisfaction. The factors that were found to impact on practitioners' satisfaction were social integration in workplace and knowledge applicability. These two factors were also occurred during practice life, then work and practice were crucial parts for developing professionalism and professional satisfaction among pharmacists.

Factors affecting professionalism and moral reasoning

1) Pharmacy students' professionalism and moral reasoning

From the results of MANOVA and multivariate regression of professionalism and moral reasoning (see appendix E), it can be concluded that the important factors that affected to pharmacy students' professionalism were gender, university's program, study year, social and academic integration, perception of public acceptance, and influential person for choosing pharmacy. Whereas the significant factor affected moral reasoning was professionalism.

1.1 Gender

From the significant t-test results, it can be concluded that gender had the effect to professionalism. Female students tended to have higher score on all six attributes of professionalism except belief in self-regulation. Female students had the significant higher score of use professional organization as a major referent and belief in public service than male students. With the high positive association between professionalism and professional satisfaction and also perception

of public acceptance, then female students were more likely to have higher score of professional satisfaction and perception of public acceptance than male students. There were three explanations for this phenomenon, first was the effect of social and academic integration, because female students can integrate in the social and academic aspects better, they had the significant higher score on peer group interaction and perception of faculty concern than male student, and these results had a later effect to students' professionalism. The second reason was the service manner, one of the six attributes of professionalism, belief in public service, needed the students with high commitment to public service or having good service mind. With the nature of feminine, female students showed their high commitment to public service when compared with male students. The final reason was the pre-professional commitment, most of male students chose their career choice by themselves, but pharmacy was rarely to be their first choice, especially when compared with engineering and medicine. This reason inhibits the pre-professional commitment and affects to their attempt to develop pharmacy professionalism. Moreover, there was a difference of moral reasoning between male and female students. Carol Gilligan (1982) has explained the sex difference in moral development that while men tend to think more in terms of justice and fairness, women tend to think more about specific people and responsibilities (132). Women seem to develop and identify a different sequence of moral development when compare with men.

1.2 University's program

From the MANOVA among three groups of university's program including (1) government B.Sc students, (2) government Pharm.D students and (3) private B.Sc students, It can be concluded that Pharm. D students had the highest score of belief of public service, whereas private students had the highest score of sense of calling and government B.Sc students showed the highest score of self-regulation. In terms of use of professional organization as a major referent, both private and Pharm.D students had higher score than B.Sc students. Moreover, when considered total score of professionalism, private students present the highest score than government students with a significance. The same result was revealed by Sooksriwongse and her colleagues in 1994, private students had a significant higher professionalism than government students. There were two explanations, first was

students' pre-college commitment, the private students seemed to choose pharmacy as their first choice, whereas most of government students chose pharmacy as the second choice after a higher entrance score choice of medicine. The difference of pre-professional commitment had an impact to both students' professionalization and their professionalism development. Second was students' social and academic integration during pharmacy school, private students were more likely to have higher social and academic integration than government students, especially academic development from extracurricular activities involvement and the opportunity to have the non-classroom interaction with faculty, these impacted on students' professionalism development during their pharmacy school life. Moreover, with the several of pharmacy curricular and teaching techniques from twelve pharmacy schools, the detailed information of each curriculum of twelve universities was shown in appendix F, these had the effect to students' characteristics and their competencies. The differences between government and private university's curricular that affecting professionalism, first was the amount of required credits, the government B.Sc. program focused on the amount of required credits, with an average of 186 credits, whereas private B.Sc. had lower amount of credits, an average of 176 credits. With the loaded credits, government B.Sc. students had fewer time to spend on the extracurricular activities and professional associations' activities as well as non-classroom interaction with their faculty, so they had a fewer opportunity to develop professionalism through those professional socialization. Moreover, the difference of the expectation between government and private students might be another factor affecting professionalism.

1.3 Study year

When compared among five study years, students tended to have regressive score in four attributes of professionalism, use of professional organization, belief in self-regulation, and sense of calling, especially sense of calling, first year students had the highest score and decreased regressively until the fifth year students. Regarding to the score of belief in public service, first year students had higher score than second and third year students, but the fifth and fourth year students showed the score with the same level of first year students. With the same result, Lerkiatbundit also found that the freshmen had the decrease of sense of calling after

one year of schooling. It can be explained that the socialization during school life was not effective to enhance students' professionalism. Professionalization was not occurred and promoted in schools. One of the reasons was the unprovided supportive system such as facilities, integrative curricula between theory and practice, extracurricular activities, and the non-classroom interaction with faculty and peers which were necessary for professionalism enhancement. The another reason was the lack of faculty's concern about the importance of students' professionalism on the future of pharmacy profession. In terms of moral reasoning, there was no curricular focused on this term and its importance and also its relation to students' professionalism, the content of the curricular stressed on providing students in theoretical knowledge and the amount of required credits more than focusing on practicability competence, particularly the development of the moral reasoning skills in their practice.

1.4 Social and academic integration

From the regression analyses (see appendix E), it can be concluded that all four attributes of social and academic integration, especially academic development, were significant predictors of professionalism. Academic development, only one factor, could explain 15.5% variance of professionalism. Grade Point Average was one visible academic performance that could explain academic development. The same idea was revealed by Lerkiatbundit, in 2000, he indicated the effects of social and academic integration was a good predictor of professionalism and most of professionalism variance was explained by academic development.

1.5 Perception of public acceptance

Besides the integration in both social and academic systems, perception of public acceptance was also a significant predictor of professionalism. It can be concluded that students' perception in their professional role and status which was viewed by society had impact on the students' attitudes on pharmacy profession. This perception was formed before their pharmacy school life and was stable during school life and until they came to the real practice from professional practice training in work setting, their perception was reshaped through their knowledge applicability, their met expectation and the relationships with other health professionals, staff, preceptors, and customers in practice setting. From the

study surveys of the samples' perception whether who are pharmacy profession, the students had different responses when compared with practicing pharmacists and role model pharmacists. They indicated the lowest response for all seven professional fields, especially pharmaceutical marketing, law enforcement and pharmacy educators that they were not included in pharmacy professions. It can be concluded that students' perception of public acceptance or professional status in the public's eyes was reformed when students had experiences from social contracts and involvement with professional practice. It can be concluded that the perception of pharmacy role before entry to pharmacy school and the work experience from real settings affected the students' perception of their future roles and responsibility. A study of Bennett and Hunter (1980) also revealed the same relationship between practical experience such as clinical clerkship and pharmacy externship and the perception of pharmacists' role in the society.

1.6 Influential person for choosing pharmacy

Students whose parents was an influential person for choosing pharmacy were more likely to have a score of professionalism lower than students who had chosen by themselves. The professional socialization was a process that needed the willingness to involvement by members, so the students who have chosen pharmacy to be their future profession, they were likely to show their high professional commitment and good attitude on their career which referred to their high professionalism. Robers (1989) indicated the same idea, she summarized that student who have chosen pharmacy school by themselves would show the higher professionalism. The highest commitment to career was occurred when the person made a decision to choose the career by their own.

1.7 Social integration in workplace

For students in the fourth and fifth study year, the externship and clerkship with the preceptors in the real situation of work were the important factor for forming the students' professionalism. Hall suggested in his study (1968) that the work condition and environment were the crucial factors in the professionalism and professional satisfaction in the students. Robers' study was also concluded that educational experiences under the direct supervision of the faculty have had more impact on the students' professionalism. The good participation and

relationship with preceptors, work staff and customers during the professional training was a positive effect on students' professionalism. From that point, Pharm.D students with a curriculum that focused on more practice in real work setting were more likely to have opportunities to strengthen their attitudes and professionalism. The social integration in workplace also impacted on motivation in work. In a study of Lerkiatbundit's, he summarized that the significant factors affecting professionalism and motivation to work among pharmacy externs were preceptors interaction in work setting. We can concluded that the social and academic integration or professional socialization occurs within both education and practice, the students' attitudes would be more developed when they attempt to apply skills or knowledge acquired in the classroom to a real-life practice situation.

2) Pharmacists' professionalism and moral reasoning

From statistical analyses of professionalism and moral reasoning (see appendix E), it can be concluded that the important factors that affected to practicing pharmacists' professionalism were gender, professional fields and its approach to patient, social and academic integration, social integration in workplace, perception of public acceptance, and knowledge applicability, and moral reasoning. With the same conclusion from pharmacy students, the detailed information were explained two factors; gender and professional fields and its approach to patient.

2.1 Gender

There was a little significant difference of two attributes of professionalism between male and female practitioners, even there was no difference of the total professionalism between them. First, use of professional organization as a major referent, female pharmacists had a significant higher score than male pharmacists. Second, belief in self-regulation, male pharmacist showed the significant higher score than female pharmacists. These results were also revealed by Segal and colleague (1987) that male pharmacists showed a higher score on belief in self-regulation than female pharmacists. From the study of Gilligan (1982) about gender-related attitudes and behaviors, males have traditionally defined themselves in terms of separation and autonomy but females seem to achieve identity through relationships and attachment. Gilligan's theory can explain that men seem to have

autonomy and self control but women seem to make the relationship with peers and colleagues so it is a reason why female pharmacists have joined in professional organization and use it as their major referent.

2.2 Professional field and its approach to patient

Professional fields and its approach to patient were found to affect practicing pharmacists' professionalism even the total professionalism among seven professional fields was not found the significant difference. Two attributes of professionalism that found the significant differences were use of professional organization as a major referent and belief in continuing competence. First, hospital and community pharmacy, fields that approach to patient directly, had the significant higher score of use of professional organization as a major referent than the professional fields that approach to patient indirectly including industrial, marketing, law enforcement, and education. Second, hospital and community pharmacy, fields of direct approach to patient, and industrial pharmacy, only one field of indirect approach to patient, were found to have the significant higher score of belief in continuing competence than three fields of indirect approach of patient including marketing, law enforcement, and education.

There were three explanations for these differences. First was the leading professional association, professional fields such as hospital and community pharmacy that have their professional associations for representing the major source of ideas and judgements for the members and reinforcing the values, beliefs, and identity of the profession and helping the members to develop their works under its standard practice would have a major referent to maintain professionalism and control their moral decisions. Then the formation of a leading professional organization and the definition of professional standard practice was the first step of maintenance and enhancement the members' professionalism. The fields that do have the leading professional association such as industrial pharmacy, pharmaceutical marketing, law enforcement, and education would affect to their professionalism.

The second explanation was knowledge applicability and pattern of practice. With the dynamic change of the practice and knowledge concepts such as new disease management, technology, pharmaceutical products, new pharmaceutical services, the field with direct approach to patient have to apply those

knowledge through the role in the responsibility of caring the patients and achieving optimal therapeutic outcomes, to exercise their profession ideas and moral reasoning when involving in individual patient' problem and decision, and to improve their competence through continuing-education programs and other new practice options. These continuous improvement their competencies, professional ideas, attitudes, moral thinking have affected to pharmacists' professionalism. Whereas, the indirect approach to patient fields had their own specific stable standard and basic knowledge for their procedures.

The third explanation was perception of public acceptance, the fields with the direct approach to patient were easily perceived their roles by society. The perception of professional role and status has impacted on professionalism and satisfaction in profession. Final explanation was the conflict on interests or laws of survivor, these factors inhibit professionalism development. Pharmaceutical marketing and industrial pharmacy were facing these problems as well as community pharmacy, so these factors may affect the practicing pharmacists in those fields.

2.3 Moral reasoning

With the contrast pathway between moral reasoning and professionalism, pharmacy students' model showed the pathway from moral reasoning to professionalism, whereas pharmacists' model illustrated the pathway from professionalism to moral reasoning. Kohlberg' s moral development theory has identified the explanation for this difference. Adolescence develops his or her moral idea and judgement from school experience and peer interactions, whereas young adulthood developed his or her moral decision from experiences he or she gained from work, professional peers, organizational cultures and public regulations.

From all factors affecting professionalism among pharmacy students and pharmacists, we concluded that to develop professionalism among all pharmacy members, we should concern all significant factors in professionalism model. Attitudinal professionalism is a crucial character of all pharmacists and affects to the behavioral professionalism and their practices. It can not be learned from any lecture and any textbooks, it was developed through the professional socialization or

professionalization that occurs within both education system and practice system. In the education system, social and academic integration is the most powerful factor of the professionalism development. Four domains of social and academic integration including peer group interaction, faculty interaction, academic development and faculty concern were the important factors for professionalism development. Moreover, the students' attitudes will be developed more when students have an opportunity to apply skills or knowledge acquired in the classroom to a real-life practice situation, or can be called as the social integration in workplace during their externship or clerkship. The good environment in pharmacy school such as facilities, role model educators and administrators, extracurricular activities, integrative curricula are necessary for aspiring the students' professionalism. These components in school environment are the most important variables that forming the students' social and academic integration which impacts to students' professionalism. With the continuous process of professionalization from education to the real practice, in the practice system, the graduates' professionalism and moral value should be maintained and strengthened before they will be inhibited by the reality shock from the big gap between the ideal system of education and the real practice and between business and profession concepts. Then, the focuses on pharmacy education, the moral reasoning and value, and enhancement of the links between attitudinal professionalism and service to society were the crucial core of professionalism development.

To enhance and foster the professionalism among pharmacy students and practicing pharmacist, all stakeholders should involve and take the action. With two systems of professionalism development, education system and practice system, the main stakeholders of professionalism and moral development in pharmacy education system are faculties, school administrators, preceptors, the leading organizations such as the Pharmacy Education Consortium of Thailand (PECT), and particularly, all pharmacy students. For practice system, the main stakeholders to develop and maintain practicing pharmacists' professionalism and moral reasoning are professional organizations and associations in all seven professional fields such as the Association of Hospital Pharmacy (Thailand), the Association of Community Pharmacy, pharmacy administrators, and all practicing pharmacists. The role of each stakeholders will be recommended in the chapter VII

3) Different attributes among three groups of samples

Four attributes that discriminated role model pharmacist from pharmacy students and practicing pharmacists were two attributes of professionalism; belief in autonomy and belief in continuing competence, moral reasoning, and knowledge applicability. Role model pharmacist had the highest score on professionalism, moral reasoning, and knowledge applicability among three groups. With their high commitment and involvement in professional organizations as well as responsibility to pharmacy profession, role model pharmacists are the good examples of pharmacy profession.

Whereas, pharmacy students and practicing pharmacists had the differences in six attributes including four attributes of professionalism (use professional organization as a major referent, belief in public service, sense of calling and belief in continuing competence), moral reasoning and professional satisfaction. Students had the significant higher score on six attributes than practicing pharmacists, those attributes were belief in public service, sense of calling, belief in continuing competence, moral reasoning and professional satisfaction. Practicing pharmacists had a significant higher score on only the use of professional organization as a major referent. Roberts revealed the same results that pharmacy students had a significant higher score on public service and continuing competence than practicing pharmacists. Two explanations, first, the high professionalism and moral reasoning from professionalization in education system may be decreased by the deprofessionalization in practice system. Second, practicing pharmacists had more opportunity of the involvement in professional organization activities, then they showed the higher score on the use of professional organization as a major referent.

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

This chapter provides the conclusions and recommendations. The conclusions will be presented in two parts; study instrument and professionalism model. The recommendation will be presented in three parts; policy recommendations, recommendations for education system and practice system, and the recommendations for the further study. This chapter also includes the limitation of this study.

This study was a cross-sectional, analytical research with three groups of samples; 1,440 pharmacy students, 736 practicing pharmacists, and 50 role model pharmacists. Three main objectives of this study were to develop professionalism model, to find the factors affecting professionalism, and to find the pathway relationships among model variables. The study procedures included three phases; theoretical model development, questionnaire development, and model testing. Based on three main theories; professionalism model of Schack and Hepler's (32), social and academic integration model of Tinto's (14), and moral reasoning concept from Lawrence Kohlberg's theory (58) of cognitive moral development (CMD). The Structural Equation Modeling (SEM) was used as the main technique of statistical analysis. The results showed three professionalism models. The first model is a model for all pharmacy students, whereas the second model was developed for the fourth and fifth year pharmacy students. The final model is a professionalism model for practicing pharmacists. Three significant variables in the model were professionalism social and academic integration and moral reasoning. The other five related variables were perception of public acceptance, social integration in workplace, knowledge applicability, professional satisfaction, and grade point average. There is no effect of socioeconomic status on any factors in the model.

Study instruments

Four study scales including 32-item professionalism scale, 25-item social and academic integration scale, 5-item social integration in workplace, and one ethical dilemma with 12-item of moral reasoning scale had the good characteristics of content validity, internal consistency reliabilities and discrimination power. Among pharmacy students (N=1,440), all instruments had alpha Cronbach coefficients range between 0.67 and 0.82 and practicing pharmacists (N=736) had alpha Cronbach coefficients range between 0.77 and 0.86. For construct validity, factor analyses revealed good model fit for four components of social and academic integration (peers group interaction, faculty interaction, academic development, and faculty concern) that can explain 45.3% of social and academic integration variances. For professionalism, factor analysis revealed six components (use professional organization as a major referent, belief in public service, belief in self-regulation, sense of calling, belief in autonomy, and belief in continuing competence) with 47.5% of explained variance. Only one item of social and academic integration (item 15) and four items of professionalism (item 25, 26, 29 and 30) that corresponded to other dimensions revealed the empirical overlap of the scale's dimensions.

It can be concluded that this study instrument has the good characteristics of content validity, reliability, construct validity, and can be generalized in both pharmacy students and pharmacists.

Professionalism model

Pharmacy students' professionalism model comprised of seven factors; grade point average, social and academic integration, social integration in workplace, perception of public acceptance, moral reasoning, professionalism and professional satisfaction. Whereas pharmacists' professionalism model comprised of eight factors which were those seven factors in students' model and one additional factor, knowledge applicability.

Structural equation modeling analyses of first and second level professionalism models revealed good model fit in both pharmacy students' model and pharmacists' model. The goodness-of-fit index (GFI) ranged 0.97-0.99,

comparative fit index (CFI) ranged 0.95-0.98, root mean square residual (RMR) was <0.05, root mean square error of approximation (RMSEA) was <0.05.

The model can indicate the priority and importance of all variables on professionalism. These conclusions were shown in Table 42.

Table 42: The priority and importance of model variables on professionalism by The standardized coefficient (β)

Model variable	Pharmacy students (N=1,440)		Practicing pharmacists (N=736)	
	Direct effect	Indirect effect	Direct effect	Indirect effect
Social integration in workplace	0.94	0.07	0.54	0.10
Social and academic integration	0.71		0.47	0.21
Academic development	0.28	0.23	0.22	0.16
Peer groups interaction	0.29	0.12	0.14	0.01
Faculty concern	0.05	0.09	0.11	0.03
Faculty interaction	0.04	0.05	0.09	0.11
Perception of public acceptance	0.15	0.07	0.21	0.22
University and program	0.16			
Professional fields or direct and indirect Approach to patient	0.10		0.17	
Grade Point Average		0.02		0.07
Influential person for choosing pharmacy	-0.08			
Knowledge applicability				0.06
Moral reasoning	0.01			0.001

Policy recommendations

From the results and the good characteristics of study instrument, policy recommendations were proposed for pharmacy professionalism development.

1. It can be used as an instrument for assessing students' professionalism in admission and recruitment processes.
2. It can be used as an instrument for evaluating teaching, curricula and socialization processes in pharmacy school.
3. It can be used as an instrument for assessing members' professionalism in every professional fields and setting as a standard procedure for evaluating effectiveness of professional organization activities and interventions on members' professionalism.

4. Model variables can be used for setting goals for professionalism enhancement and maintenance in both pharmacy students and practicing pharmacists. For example the Pharmaceutical Association under Royal Patronage set social integration in workplace to be a goal to enhance members' professionalism, then the strategies to promote and supports a good environment in workplace, and also the climate of long-life learning and organization learning with the good involvement of all partners and stakeholders will be prepared and provided for their members.

5. The model shows pathway relationships between educational factors and practice factors that can explain roles and responsibilities of both systems and good collaboration between all stakeholders.

Recommendations for education system and practice system

1. Education system

Stakeholders of professionalism and moral development in education system included pharmacy education, faculties, administrators, professional organizations especially in education, preceptors, and pharmacy students

1.1 Pharmacy education

Pharmacy education was the most important factor affecting pharmacy students' aspiration and professionalism. They should contribute the good environment, professional activities and integrative curricular in the pharmacy school that can promote and support the students' professionalism. They also have a responsibility to investigate the best method of patient-oriented services. Extracurricular activities are a crucial part of professionalization, both pharmacy educators and administrators in pharmacy education should develop the curricula and extracurricular programs necessary to aspire the professional attitudes, behaviors, and identity. Pharmacy education and educators should plan for the new professional programs to enhance professionalism such as recruitment, admissions, educational programs, and practice training.

1.2 Faculty and administrators

Faculty members must make an effort to inform the importance of professionalism and should involve in professional activities especially being the role model for pharmacy students. Faculties should urge administrators to provide

and support the integrative curricula and extracurricular programs in education system. The professionalism should be discussed formally among faculties and students, as well as the small-group discussion of moral dilemmas for improving moral reasoning skill in students. Professionalism and moral reasoning should be measured in pharmacy students every year to evaluate the effects of provided education and professionalization in education system.

1.3 Professional organizations

Professional organizations should promote its significant role on professionalism through their activities which can enhance pharmacy student professionalism. The leading organization of education such as PECT should willingness to be a leader of professionalism enhancement in pharmacy students by being a partner with pharmacy education to develop programs and integrative curricula, to measure students' professionalism continuously and evaluate quality and effectiveness of curricula on professionalism and moral decision development.

1.4 Preceptors

Preceptors should aware of their crucial role in professional socialization, and should discuss with the students in the subject of professionalism and provide examples of professionalism in patient care through the preceptor relationship. The professionalism and moral decision should be discussed formally during practice training among preceptors and students and it should be evaluated while student's practice training.

1.5 Pharmacy students

Pharmacy students are crucial for our future profession. They should participate in extracurricular activities, involve in professional organizations or associations activities that can help them to develop their professionalism, and being the good examples for their junior students.

2. Practice system

Stakeholders of professionalism development and moral development in practice were professional organizations or associations, administrative pharmacists, all practicing pharmacists.

2.1 Professional organization

First, we should form the national organization in professionalism and moral development because we need the leader role of defining Thai pharmacy professionalism. This organization should have the roles to build a discussion about professionalism to the society stage, to be a bridge between profession and public perception and to improve all pharmacists' perception on the profession.

Second, with several differences standards and the variation of practice patterns among seven professional fields. These multiple standards through varied regulative norms and different professional associations' missions possibly inhibit professionalism (Hall, 1968). This weak point of our profession was also presented in the 2th Thailand Pharmacy Congress on 22nd- 23rd November 2003. A representative of the pharmacy council suggested that professional association of each field should take a role to set up their own standard, core of knowledge, special practices and competencies under the supervision and control by the pharmacy council (Pitaknitinunt, 2003). Then each pharmacy associations should be the leader of professional development, professionalism enhancement in their members.

2.2 Administrative pharmacists

Work environment is a crucial factor of professionalism and moral development among practicing pharmacists, then the administrative pharmacist has a challenge role to promote and support the professionalism enhancement and moral decision in the workplace. The important roles of administrative pharmacist are encouragement the change and innovation in their practice sites, giving the positive factors influencing pharmacy practice rather than the negative one such as inadequate staffing and compensation, and making a departmental strategic plan for development the practice competence and professionalism of the personnel. Another role is encouragement organizational commitment by providing promotion opportunities and leadership of job duties.

The good relationship between the staff and the administrative pharmacist through the coaching, assigning the challenge tasks, career counseling, providing opportunity for advancement and professional ideas development, rewarding or giving good incentives for stimulating professionalism development in

pharmacy team, all presented strategies may help manager enhancing and fostering professionalism among pharmacy team.

2.3 Practicing pharmacists

The practicing pharmacists should exercise their profession ideas and moral decision, have a commitment to patient care rather than a routine dispensing of a product, and intent to improve their competence through continuing education programs and other new practice options. They should be the good examples to pharmacy students.

For the sustained development of professionalism and moral decision among pharmacy students and practicing pharmacists, all stakeholders, both in education system and practice system, should show their willingness to take actions and do their roles continuously.

Recommendations for the further study

1. With the importance of social integration in workplace on professionalism, the further study should develop this scale with multidimensional subscales such as professional peers interaction, administrator interaction, professional idea and practice development, skill utilization, organization climate, client interaction, other health professional interaction, and reevaluate the importance of each subscale on professionalism. The results will shows the importance and priority of all subscales which is useful for management and planning in the future.

2. In this study, the perception of public acceptance was assessed from pharmacy perspective, it need to know the perception of public acceptance for pharmacy profession from societal perspective or the other professionals' perspective. Moreover, the relationship of societal and other health professionals' perception on pharmacy profession and professionalism and other factors should be explained.

Limitations

1. With the nature of the cross-sectional study and the limitation of its data, the causal relationship among model variables and the structural equation modeling application to find the causal pathways in the present study should be concerned, the longitudinal study for drawing the causal conclusion must be performed.

2. Nonresponse bias form mail survey technique, we acknowledge the fact that the sample was self-selected into the study from their mail response, which may have contributed to some unknown form of response bias. Those who choose to complete the survey may have differed in important ways from nonrespondents.



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APPENDIX A**LIST OF EXPERTS**

Name	Professional field
1. Professor Dr. Jomjin Juntarasakul	Pharmaceutical industry and education
2. Mrs. Intira Kemakawatana	Pharmaceutical marketing
3. Mr. Katha Bunditanukul	Community pharmacy
4. Mr. Amnuoy Preukpakpoom	Hospital pharmacy
5. Dr. Yuppadee Jaorunglit	Law enforcement



APPENDIX B

QUESTIONNAIRE

แบบสอบถามวัดทัศนคติต่อ "ความเป็นวิชาชีพเภสัชกรรม" สำหรับเภสัชกร

เรียนเภสัชกรทุกท่าน

แบบสอบถามฉบับนี้เป็นส่วนหนึ่งของการทำวิทยานิพนธ์ของ นางสาวชนัดดา พลอยเลื่อมแสง นักศึกษาปริญญาเอก สาขาบริหารเภสัชกิจ คณะเภสัชศาสตร์ มหาวิทยาลัยมหิดล โดยมี รศ. ดร. เพชรรัตน์ พงษ์เจริญสุข เป็นอาจารย์ที่ปรึกษา วัตถุประสงค์ของการศึกษาเพื่อสร้างรูปแบบ "ความเป็นวิชาชีพเภสัชกรรม" สำหรับเภสัชกรผู้ประกอบการวิชาชีพเภสัชกรรมของประเทศไทย ข้อมูลที่ได้จากการศึกษานี้จะใช้เป็นข้อมูลพื้นฐานเพื่อพัฒนาระบบการศึกษาเภสัชศาสตร์ และระบบการจัดการเพื่อส่งเสริมความเป็นวิชาชีพในกลุ่มผู้ประกอบการวิชาชีพเภสัชกรรมต่อไป

ด้วยเหตุผลดังที่แจ้งมาแล้วนั้น ข้าพเจ้าจึงใคร่ขอความร่วมมือจากท่าน กรุณาให้ข้อมูลของท่านตามความเป็นจริงเพื่อใช้ในการศึกษาครั้งนี้ด้วย จักเป็นพระคุณยิ่ง โดยข้อมูลส่วนตัวของท่านจากแบบสอบถามฉบับนี้ ทางผู้วิจัยจะเก็บไว้เป็นความลับ

เนื้อหาของแบบสอบถามประกอบด้วย 4 ส่วนคือ

- 1) ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม
- 2) ข้อคำถามเรื่องการบูรณาการทางด้านสังคมและองค์ความรู้
- 3) ข้อคำถามความเป็นวิชาชีพเภสัชกรรม
- 4) ข้อคำถามเรื่องความคิดอย่างมีศีลธรรม

แบบสอบถามนี้เป็นแบบสอบถามพร้อมตอบกลับที่มีชื่อที่อยู่ พร้อมติดอากรไปรษณีย์เพื่อส่งกลับ ถ้าท่านตอบแบบสอบถามครบถ้วนแล้ว กรุณาส่งกลับภายในวันที่ด้วย จักเป็นพระคุณยิ่ง

ส่วนที่ 1 ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม

1. ปัจจุบันท่านอายุปี
2. เพศ ชาย หญิง
3. สถานภาพสมรส โสด สมรส ม่าย/หย่าร้าง
4. ท่านจบการศึกษาสูงสุดระดับ ปริญญาตรี ปริญญาโท ปริญญาเอก
5. ท่านจบการศึกษาเภสัชศาสตร์บัณฑิตปี พ.ศปี
6. ท่านจบการศึกษาเภสัชศาสตร์ด้วยเกรดเฉลี่ย (GPA) หรือ % เท่าใด
7. ท่านมีภูมิลำเนาเดิมอยู่ที่จังหวัด
8. ท่านทำงานเพื่อหาทุนการศึกษา ขณะเรียนเภสัชศาสตร์หรือไม่ ทำงาน ไม่ได้ทำงาน
9. การศึกษาสูงสุดของบิดาและ/หรือมารดา บิดา มารดา
 - ประถมศึกษาหรือต่ำกว่า
 - มัธยมศึกษาตอนต้น
 - มัธยมศึกษาตอนปลาย
 - อนุปริญญา/ ปวช./ปวส.
 - ปริญญาตรี หรือเทียบเท่า
 - ปริญญาโท หรือสูงกว่า
10. อาชีพของบิดาและ/หรือมารดา ขณะท่านกำลังศึกษาอยู่ บิดา มารดา
 - แพทย์
 - เภสัชกร
 - บุคลากรทางการแพทย์อื่นๆ ระบุ.....
 - ข้าราชการ/รัฐวิสาหกิจ
 - ทำธุรกิจ/ค้าขาย
 - พนักงานเอกชน/รับจ้าง
 - เกษตรกรกรรม
 - ไม่ได้ทำงาน
11. บุคคลที่มีผลในการเลือกเรียนเภสัชศาสตร์ของท่านมากที่สุด (เลือกเพียง 1 ข้อ) บิดา/มารดา ผู้ปกครอง/ญาติ พี่น้อง เพื่อนๆ ตัวท่านเอง อื่นๆ ระบุ.....
12. ปัจจุบันท่านทำงานในด้านใดเป็นงานหลัก (เลือกเพียง 1 ข้อ) โรงพยาบาลรัฐ ขนาด.....เตียง โรงพยาบาลเอกชน ขนาด.....เตียง คும்ครองผู้บริโภคร/ดูแลกฎหมาย ร้านขายยา/เภสัชชุมชน

22. ท่านจบการศึกษาเภสัชศาสตรบัณฑิตจากสถาบัน

- จุฬาลงกรณ์มหาวิทยาลัย
 มหาวิทยาลัยขอนแก่น
 มหาวิทยาลัยเชียงใหม่
 มหาวิทยาลัยนเรศวร
 มหาวิทยาลัยมหาสารคาม
 มหาวิทยาลัยมหิดล
 มหาวิทยาลัยรังสิต
 มหาวิทยาลัยศรีนครินทรวิโรฒ
 มหาวิทยาลัยศิลปากร
 มหาวิทยาลัยสงขลานครินทร์
 มหาวิทยาลัยหัวเฉียวเฉลิมพระเกียรติ
 มหาวิทยาลัยอุบลราชธานี

ส่วนที่ 2 ข้อคำถามการบูรณาการทางด้านสังคมและองค์ความรู้

โปรดใส่ ✓ ในช่องตามความคิดเห็นของท่าน ถึงเรื่องราวขณะที่ท่านกำลังศึกษาเภสัชศาสตรบัณฑิต

ข้อคำถาม	เห็นด้วย อย่างยิ่ง (5)	เห็น ด้วย (4)	ไม่แน่ ใจ (3)	ไม่เห็น ด้วย (2)	ไม่เห็นด้วย อย่างยิ่ง (1)
1. ฉันมีมิตรภาพที่ดีกับเพื่อนๆ นักศึกษา ขณะเรียนในคณะเภสัชศาสตร์					
2. ฉันพอใจกับมิตรภาพระหว่างเพื่อนนักศึกษาขณะเรียนในคณะเภสัชศาสตร์					
3. ความสัมพันธ์ส่วนตัวกับเพื่อนนักศึกษาขณะเรียน ส่งผลดีต่อการพัฒนาตนเอง ทักษะคิด และคุณค่าในตัวเอง					
4. ความสัมพันธ์ส่วนตัวกับเพื่อนนักศึกษาขณะเรียน ส่งผลดีต่อความฉลาด รอบรู้ของฉัน					
5. เวลาฉันมีปัญหาส่วนตัวขณะเรียน จะมีเพื่อนนักศึกษาบางคนเท่านั้นที่ยินดีจะช่วยเหลือ					
6. กลุ่มเพื่อนนักศึกษาในมหาวิทยาลัยส่วนใหญ่มีทัศนคติและแนวคิด ที่แตกต่างจากฉัน					
7. ความสัมพันธ์กับอาจารย์นอกชั้นเรียน มีผลดีต่อการพัฒนาตนเอง ความมีคุณค่า และทัศนคติที่ดีของฉัน					
8. ความสัมพันธ์กับอาจารย์นอกชั้นเรียน มีผลที่ดีต่อความฉลาด รอบรู้ และแนวคิดใหม่ๆ ของฉัน					

ข้อคำถาม	เห็นด้วย อย่างยิ่ง (5)	เห็น ด้วย (4)	ไม่แน่ ใจ (3)	ไม่เห็น ด้วย (2)	ไม่เห็นด้วย อย่างยิ่ง (1)
9. ความสัมพันธ์กับอาจารย์นอกชั้นเรียน มีผลที่ดีต่อการสร้างเป้าหมายของการประกอบอาชีพ และแรงบันดาลใจของฉัน					
10. ตั้งแต่เข้ามาเรียนในคณะเภสัชศาสตร์ ฉันสร้างความสัมพันธ์ที่ดีกับอาจารย์อย่างน้อย 1 ท่าน					
11. ฉันรู้สึกพอใจกับช่วงเวลาและโอกาสที่ได้ทำความรู้จักและสร้างสัมพันธ์อย่างเป็นกันเองกับอาจารย์					
12. ฉันรู้สึกพอใจกับความรอบรู้ และองค์ความรู้ของฉันที่เพิ่มพูนมากขึ้น นับตั้งแต่เข้ามาเรียนในคณะเภสัชศาสตร์					
13. ประสบการณ์และสิ่งต่างๆ ที่ได้เรียนรู้มา มีผลดีต่อความฉลาด รอบรู้ รวมทั้งแนวความคิดใหม่ๆ ของฉัน					
14. ฉันรู้สึกพอใจกับประสบการณ์ต่างๆ ด้านวิชาการของฉัน ขณะที่เรียนอยู่ในคณะเภสัชศาสตร์					
15. มีกระบวนการวิชาเรียนจำนวนน้อยที่ช่วยกระตุ้น สนับสนุนให้เกิดพัฒนาการทางความคิดของฉัน					
16. ฉันได้ร่วมงานวัฒนธรรม กิจกรรมต่างๆ ของมหาวิทยาลัย เช่น การจัดการบรรยาย หรือการแสดงศิลปะต่างๆ ขณะเรียนในคณะเภสัชศาสตร์มากกว่าก่อนที่ฉันจะเข้ามาเรียน					
17. การร่วมกิจกรรมของมหาวิทยาลัย ช่วยส่งเสริมพัฒนาการความฉลาดรอบรู้ และความคิดของฉัน					
18. ฉันสามารถทำงานด้านวิชาการได้ดีเท่ากับที่ฉันคาดหวังเอาไว้					
19. ขณะเรียนในคณะเภสัชศาสตร์ ฉันเชื่อมั่นมากขึ้นทุกวันว่าฉันมีความรู้มากขึ้น พอที่จะออกไปประกอบวิชาชีพได้					
20. ฉันมีความเข้าใจความสำคัญของวิชาการที่เรียนมากยิ่งขึ้น					
21. อาจารย์ที่ฉันได้รู้จักใกล้ชิด มีจำนวนไม่มากนักที่ให้ ความสนใจอย่างจริงจังเกี่ยวกับนักศึกษา					
22. อาจารย์ที่ฉันได้รู้จักใกล้ชิด มีน้อยคนที่มีความสามารถ ในการถ่ายทอดความรู้ และประสบการณ์ต่างๆ ให้เข้าใจได้ง่าย และนำไปใช้ได้จริง					

ข้อคำถาม	เห็นด้วย อย่างยิ่ง (5)	เห็น ด้วย (4)	ไม่แน่ ใจ (3)	ไม่เห็น ด้วย (2)	ไม่เห็นด้วย อย่างยิ่ง (1)
23. อาจารย์ที่ฉันได้รู้จักใกล้ชิด มีไม่มากนักที่ยินดีจะใช้เวลา นอกห้องเรียนมานั่งคุย วิเคราะห์วิจารณ์เรื่องราวต่างๆ ที่น่าสนใจ และมีความสำคัญต่อนักศึกษา					
24. อาจารย์ที่ฉันรู้จักใกล้ชิด ส่วนใหญ่สนใจที่จะช่วยให้นัก ศึกษามีพัฒนาการในหลายๆ ด้านมากกว่าเฉพาะด้าน ความรู้และวิชาการ					
25. อาจารย์ที่ฉันได้รู้จักใกล้ชิด ส่วนใหญ่ให้ความสนใจใน การสอนอย่างแท้จริง					
26. ตั้งแต่เริ่มทำงาน ฉันมีมิตรภาพ และความสัมพันธ์ที่ดีกับ เพื่อนร่วมวิชาชีพ					
27. ฉันพอใจกับการเรียนรู้ ความรอบรู้ ประสบการณ์ที่เพิ่ม พูนมากขึ้นนับตั้งแต่เริ่มทำงาน					
28. การปฏิบัติงานวิชาชีพทำให้ฉันได้พัฒนาตนเอง มีคุณค่า และมีทัศนคติที่ดี					
29. ความสัมพันธ์กับเพื่อนร่วมวิชาชีพมีผลดีต่อการสร้างเป้า หมายในการทำงานวิชาชีพของฉัน					
30. ความสัมพันธ์กับผู้รับบริการ ทำให้ฉันได้เรียนรู้ และมี พัฒนาการในการทำงานมากขึ้น					

ส่วนที่ 3 ข้อคำถามความเป็นวิชาชีพเภสัชกรรม

โปรดใส่ ✓ ในช่องตามความคิดเห็นของท่าน

ข้อคำถาม	เห็นด้วย อย่างยิ่ง (5)	เห็น ด้วย (4)	ไม่แน่ ใจ (3)	ไม่เห็น ด้วย (2)	ไม่เห็นด้วย อย่างยิ่ง (1)
1. องค์กรวิชาชีพทางเภสัชกรรม* เป็นแหล่งอ้างอิงที่ดีใน การประกอบวิชาชีพของฉัน					
2. องค์กรวิชาชีพเภสัชกรรม* ของฉันไม่ได้ส่งเสริมให้เกิด ความก้าวหน้าแก่วิชาชีพเภสัชกรรม					
3. องค์กรวิชาชีพเภสัชกรรม* ของฉันไม่มีบทบาทในการ ประกันคุณภาพการประกอบวิชาชีพเภสัชกรรม					
4. องค์กรวิชาชีพเภสัชกรรม* ของฉันมีส่วนส่งเสริม เพิ่ม คุณค่าและความเชื่อมั่นต่อวิชาชีพให้มากยิ่งขึ้นสำหรับ ฉัน					

ข้อคำถาม	เห็นด้วย อย่างยิ่ง (5)	เห็น ด้วย (4)	ไม่แน่ใจ (3)	ไม่เห็น ด้วย (2)	ไม่เห็นด้วย อย่างยิ่ง (1)
5. ข้อความ ประกาศ และมาตรฐานวิชาชีพจากองค์กรวิชาชีพเภสัชกรรม* เป็นแนวทางสำคัญต่อการปฏิบัติงานของฉันทัน					
6. ถ้าเภสัชกรไม่ได้ปฏิบัติวิชาชีพ อาจทำให้เกิดผลลัพธ์ที่ไม่พึงประสงค์ขึ้นกับผู้รับบริการได้					
7. ถ้าเภสัชกรไม่ได้ให้คำแนะนำหรือให้ข้อมูลทางด้านเภสัชกรรมที่สำคัญ ก็ไม่ส่งผลเสียใดๆ ต่อผู้รับบริการ					
8. ถ้าเภสัชกรไม่ได้ให้ข้อมูลเภสัชกรรมแก่แพทย์ การให้บริการแก่ผู้รับบริการอาจเกิดปัญหา					
9. ผู้รับบริการอาจไม่พึงพอใจ ถ้าเภสัชกรไม่ได้ปฏิบัติหน้าที่					
10. การปฏิบัติวิชาชีพของเภสัชกร พึงยึดถือประโยชน์ของผู้รับ บริการเหนือประโยชน์ส่วนตัว					
11. งานบริการของเภสัชกรช่วยให้สังคมไทยได้รับประโยชน์สูงสุดจากการใช้จ่าย					
12. มาตรฐานในการปฏิบัติงานวิชาชีพของเราควรจัดทำขึ้นโดยฉันทันและเพื่อนร่วมวิชาชีพเท่านั้น					
13. คนที่สามารถตัดสินความเหมาะสมในการทำงานของฉันทันก็คือเภสัชกรด้วยกัน					
14. เภสัชกรที่ทำผิดมาตรฐานวิชาชีพควรได้รับการพิจารณาความผิดจากเพื่อนร่วมวิชาชีพด้วยกันเท่านั้น					
15. ประชาชนควรมีส่วนแสดงความคิดเห็น ในการควบคุมการประกอบวิชาชีพของพวกฉันทัน					
16. ฉันทันจะปรับปรุงมาตรฐานวิชาชีพที่ใช้เป็นแนวทางในการทำงานของฉันทันเฉพาะเมื่อมีข้อเสนอแนะจากเพื่อนร่วมวิชาชีพเท่านั้น					
17. บ่อยครั้งที่ฉันทันปรารถนาจะทำงานอาชีพอื่น					
18. ไม่มีอาชีพไหนที่ดีไปกว่าวิชาชีพเภสัชกรรม					
19. ฉันทันมีความภาคภูมิใจและพึงพอใจในการปฏิบัติงานวิชาชีพเภสัชกรรม					
20. ถ้าให้ฉันทันเลือกงานใหม่ ฉันทันก็ยังคงเลือกทำงานวิชาชีพเภสัชกรรม					

ข้อคำถาม	เห็นด้วย อย่างยิ่ง (5)	เห็น ด้วย (4)	ไม่แน่ใจ (3)	ไม่เห็น ด้วย (2)	ไม่เห็นด้วย อย่างยิ่ง (1)
21. ฉันภาคภูมิใจที่เป็นส่วนหนึ่งของทีมงานสุขภาพ (Health care team)					
22. ฉันอยากให้คนอื่น ๆ เข้ามาเป็นเภสัชกร เพราะฉัน ภาคภูมิใจในวิชาชีพเภสัชกรรม					
23. นายจ้าง/ผู้บังคับบัญชาของฉันควรจัดทำแนวทางปฏิบัติ งานเฉพาะ เพื่อใช้ประกอบการตัดสินใจทางวิชาชีพใน งานของฉัน					
24. นายจ้าง/ผู้บังคับบัญชาของฉันมีสิทธิในการทบทวนและ เปลี่ยนแปลงการตัดสินใจด้านวิชาชีพของฉัน					
25. ฉันสามารถเสนอแนะเพื่อการปรับปรุงนโยบายของนาย จ้าง/ผู้บังคับบัญชา ถ้าฉันพิจารณาแล้วว่ามี สำคัญต่อวิชาชีพเภสัชกรรม					
26. นายจ้าง/ผู้บังคับบัญชาของฉันไม่มีสิทธิในการจำกัด อำนาจตัดสินใจของฉันที่เป็นเรื่องเกี่ยวกับวิชาชีพ					
27. การศึกษาต่อเนื่อง เช่น การศึกษาด้วยตนเอง การเข้า ร่วม ประชุมสัมมนา มีความสำคัญต่อความสามารถใน การทำงานของฉัน					
28. ฉันสามารถรักษามาตรฐานการปฏิบัติวิชาชีพของฉันได้ โดยไม่ต้องทำการศึกษาต่อเนื่อง					
29. การปฏิบัติงานประจำวันของฉันก็คือการศึกษาต่อเนื่อง เพิ่มพูนความรู้ที่ฉันต้องการ					
30. ฉันจะเข้าร่วมสัมมนา การศึกษาต่อเนื่อง ก็ต่อเมื่อ สิ่งเหล่านี้มีผลต่อการต่ออายุใบประกอบวิชาชีพเท่านั้น					
31. ฉันเชื่อว่าการศึกษาต่อเนื่องเป็นทางเดียวที่เราจะยก ระดับความเป็นมืออาชีพ ให้ทันสมัยและมีคุณภาพอยู่ ตลอดเวลา					
32. ถ้าฉันไม่ทำการศึกษาต่อเนื่อง ฉันอาจประสบปัญหาใน การปฏิบัติวิชาชีพได้					

ข้อความ	สำคัญ มากที่สุด	สำคัญ มาก	สำคัญ	สำคัญ น้อย	ไม่ สำคัญ
10. เป็นหน้าที่ของพลเมืองที่ต้องแจ้งเรื่องนักโทษแหกคอก โดยไม่จำเป็นต้องสนใจว่าเขาจะเป็นคนดี ทำดีมาขนาดไหน					
11. ขึ้นกับว่าจะทำอย่างไรให้เกิดประโยชน์สูงสุดต่อสังคมส่วนรวม					
12. ถ้ากลับไปติดคุกแล้ว จะดีและเป็นประโยชน์กับตัวนาย ก นั้นหรือและมันจะช่วยปกป้องใครได้บ้าง เพราะนาย ก ไม่ได้เป็นคนที่ยังอันตรายแล้ว					

จากข้อความข้างบนทั้ง 12 ข้อ กรุณาเลือก 4 ข้อที่ท่านเห็นว่าสำคัญที่สุด
 สำคัญที่สุดคือข้อที่.....
 สำคัญรองลงมาคือข้อที่.....
 สำคัญเป็นอันดับสามคือข้อที่.....
 สำคัญเป็นอันดับสี่คือข้อที่.....

ขอขอบคุณที่กรุณาให้ข้อมูล

แบบสอบถามวัดทัศนคติต่อ "ความเป็นวิชาชีพเภสัชกรรม" สำหรับนักศึกษา

สวัสดีน้องนักศึกษาเภสัชศาสตร์ทุกคน

แบบสอบถามฉบับนี้เป็นส่วนหนึ่งของการทำวิทยานิพนธ์ของ นางสาวชนัดดา พลอยเลื่อมแสง นักศึกษาปริญญาเอก สาขาบริหารเภสัชกิจ คณะเภสัชศาสตร์ มหาวิทยาลัยมหิดล โดยมี รศ. ดร. เพชรรัตน์ พงษ์เจริญสุข เป็นอาจารย์ที่ปรึกษา วัตถุประสงค์ของการศึกษาเพื่อสำรวจทัศนคติของผู้ประกอบวิชาชีพเภสัชกรรมต่อ "ความเป็นวิชาชีพเภสัชกรรม" ข้อมูลที่ได้จากการศึกษาครั้งนี้จะใช้เป็นข้อมูลพื้นฐานเพื่อการพัฒนากระบวนการศึกษาเภสัชศาสตร์ และระบบการจัดการเพื่อส่งเสริมความเป็นวิชาชีพในกลุ่มนักศึกษาเภสัชศาสตร์และผู้ประกอบวิชาชีพเภสัชกรรมต่อไป

เนื้อหาของแบบสอบถามประกอบด้วย 4 ส่วนคือ

- 5) ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม
- 6) ข้อคำถามเรื่องการบูรณาการทางด้านสังคมและองค์ความรู้
- 7) ข้อคำถามความเป็นวิชาชีพเภสัชกรรม
- 8) ข้อคำถามเรื่องความคิดอย่างมีศีลธรรม

หากน้องๆ ตอบแบบสอบถามนี้ครบถ้วนแล้ว ขอน้องช่วยกรุณาส่งกลับที่.....ภายในวันที่ด้วย จักเป็นพระคุณยิ่ง

ส่วนที่ 1 ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม

1. ปัจจุบันท่านอายุปี
2. เพศ ชาย หญิง
3. ท่านกำลังศึกษาเภสัชศาสตรบัณฑิตในชั้นปีที่
4. ท่านมีผลการศึกษาระดับปริญญาตรีด้วยเกรดเฉลี่ย (GPA)
5. ท่านมีภูมิลำเนาเดิมอยู่ที่จังหวัด
6. ขณะเรียนเภสัชศาสตร์ ท่านทำงานเพื่อหาทุนการศึกษา ทำงาน ไม่ได้ทำงาน
7. การศึกษาสูงสุดของบิดาและ/หรือมารดา บิดา มารดา
- ประถมศึกษาหรือต่ำกว่า
- มัธยมศึกษาตอนต้น
- มัธยมศึกษาตอนปลาย
- อนุปริญญา/ ปวช./ปวส.
- ปริญญาตรี หรือเทียบเท่า
- ปริญญาโท หรือสูงกว่า
8. อาชีพของบิดาและ/หรือมารดา ขณะท่านกำลังศึกษาอยู่ บิดา มารดา
- แพทย์
- เภสัชกร
- บุคลากรทางการแพทย์อื่นๆ ระบุ.....
- ข้าราชการ/รัฐวิสาหกิจ
- ทำธุรกิจ/ค้าขาย
- พนักงานเอกชน/รับจ้าง
- เกษตรกร
- ไม่ได้ทำงาน
9. บุคคลที่มีผลในการเลือกเรียนเภสัชศาสตร์ของท่านมากที่สุด บิดา/มารดา ผู้ปกครอง/ญาติ
- (เลือกเพียง 1 ข้อ) เพื่อนๆ ตัวท่านเอง
- พี่น้อง อื่นๆ ระบุ.....
10. ในอนาคตท่านสนใจทำงานในด้านใดเป็นงานหลัก โรงพยาบาลรัฐ
- (เลือกเพียง 1 ข้อ) โรงพยาบาลเอกชน
- การตลาดยา
- คุ้มครองผู้บริโภค/ดูแลกฎหมาย
- ร้านขายยา/เภสัชชุมชน
- อุตสาหกรรมยา
- ภาคการศึกษา
- อื่นๆ ระบุ.....

11. ค่าใช้จ่ายทั้งหมดในการเรียนเภสัชศาสตร์ของท่านประมาณบาท/เดือน
12. ท่านร่วมทำกิจกรรม หรือทำงานสโมสรนักศึกษาของคณะเภสัชศาสตร์ ไม่ได้ทำ ทำ
13. ท่านมีความพึงพอใจในวิชาชีพเภสัชกรรม% (ไม่พึงพอใจคือ 0% - พึงพอใจมากที่สุดคือ 100%)
(กรุณาระบุร้อยละของความพึงพอใจของท่าน)
14. ท่านรู้จักหรือมีส่วนร่วมในการทำงานในองค์กรวิชาชีพใดบ้าง สภาเภสัชกรรม
 เภสัชกรรมสมาคมแห่งประเทศไทย
 สมาคมเภสัชกรรมโรงพยาบาล
 สมาคมเภสัชกรรมชุมชน
 กลุ่มเภสัชกรอุตสาหกรรม
 กลุ่มเภสัชกรการตลาด
 กลุ่มเภสัชกรงานคุ้มครองผู้บริโภค
 อื่นๆ ระบุ.....
15. การพัฒนาวิชาชีพควรเป็นหน้าที่หรือบทบาทของ (โปรดระบุตัวเลขตามลำดับความสำคัญ เช่น 1 สำคัญที่สุด)
 องค์กรวิชาชีพเภสัชกรรม อันดับที่.....
 ภาคการศึกษาเภสัชศาสตร์ อันดับที่.....
 เภสัชกรทุกคน อันดับที่.....
 อื่นๆ ระบุ.....
16. ท่านคิดว่าปัจจุบันสังคมให้การยอมรับวิชาชีพเภสัชกรรมมากน้อยเพียงใด (กรุณาระบุร้อยละของการยอมรับ)
.....% (ไม่ยอมรับ คือ 0% - ยอมรับมากที่สุด คือ 100%)
17. ตามความเห็นของท่าน ผู้ประกอบวิชาชีพเภสัชกรรม คือ (เลือกได้มากกว่า 1 ข้อ)
 เภสัชกรโรงพยาบาล
 เภสัชกรอุตสาหกรรม
 เภสัชกรชุมชน/ร้านขายยา
 เภสัชกรการตลาดยา/บริษัทยา
 เภสัชกรภาคการศึกษา
 เภสัชกรงานคุ้มครองผู้บริโภค
 อื่นๆ ระบุ.....
18. ท่านกำลังศึกษาเภสัชศาสตร์ในสถาบัน
 จุฬาลงกรณ์มหาวิทยาลัย
 มหาวิทยาลัยขอนแก่น
 มหาวิทยาลัยเชียงใหม่
 มหาวิทยาลัยนเรศวร
 มหาวิทยาลัยมหาสารคาม
 มหาวิทยาลัยมหิดล
 มหาวิทยาลัยรังสิต

- มหาวิทยาลัยศรีนครินทรวิโรฒ
- มหาวิทยาลัยศิลปากร
- มหาวิทยาลัยสงขลานครินทร์
- มหาวิทยาลัยหัวเฉียวเฉลิมพระเกียรติ
- มหาวิทยาลัยอุบลราชธานี

ส่วนที่ 2 ข้อคำถามการบูรณาการทางด้านสังคมและองค์ความรู้

โปรดใส่ ✓ ในช่องตามความคิดเห็นของท่าน ถึงเรื่องราวขณะที่ท่านกำลังศึกษาเภสัชศาสตร์

ข้อคำถาม	เห็นด้วย อย่างยิ่ง (5)	เห็น ด้วย (4)	ไม่แน่ ใจ (3)	ไม่เห็น ด้วย (2)	ไม่เห็นด้วย อย่างยิ่ง (1)
1. ฉันมีมิตรภาพที่ดีกับเพื่อน ๆ นักศึกษา ขณะเรียนในคณะ เภสัชศาสตร์					
2. ฉันพอใจกับมิตรภาพระหว่างเพื่อนนักศึกษาระหว่างเรียนใน คณะเภสัชศาสตร์					
3. ความสัมพันธ์ส่วนตัวกับเพื่อนนักศึกษาระหว่างเรียน ส่งผลดีต่อ การพัฒนาตนเอง ทักษะคิด และคุณค่าในตัวเองของฉัน					
4. ความสัมพันธ์ส่วนตัวกับเพื่อนนักศึกษาระหว่างเรียน ส่งผลดีต่อ ความฉลาด รอบรู้ของฉัน					
5. เวลาฉันมีปัญหาส่วนตัวขณะเรียน จะมีเพื่อนนักศึกษาบางคน เท่านั้นที่ยินดีจะช่วยเหลือ					
6. กลุ่มเพื่อนนักศึกษาในมหาวิทยาลัยส่วนใหญ่มีทัศนคติและ แนวคิด ที่แตกต่างกับฉัน					
7. ความสัมพันธ์กับอาจารย์นอกชั้นเรียน มีผลดีต่อการพัฒนา ตนเอง ความมีคุณค่า และทัศนคติที่ดีของฉัน					
8. ความสัมพันธ์กับอาจารย์นอกชั้นเรียน มีผลดีต่อความฉลาด รอบรู้ และแนวคิดใหม่ๆ ของฉัน					
9. ความสัมพันธ์กับอาจารย์นอกชั้นเรียนมีผลดีต่อการสร้าง เป้าหมายของการประกอบอาชีพ และแรงบันดาลใจของฉัน					
10. ตั้งแต่เข้ามาเรียนในคณะเภสัชศาสตร์ ฉันสร้างความสัมพันธ์ ที่ดีกับอาจารย์อย่างน้อย 1 ท่าน					
11. ฉันรู้สึกพอใจกับช่วงเวลาและโอกาสที่ได้ทำความรู้จักและ สร้างสัมพันธ์อย่างเป็นกันเองกับอาจารย์					

ข้อคำถาม	เห็นด้วย อย่างยิ่ง (5)	เห็น ด้วย (4)	ไม่แน่ ใจ (3)	ไม่เห็น ด้วย (2)	ไม่เห็นด้วย อย่างยิ่ง (1)
12. ฉันรู้สึกพอใจกับความรอบรู้ และองค์ความรู้ของฉันที่เพิ่มพูนมากขึ้น นับตั้งแต่เข้ามาเรียนในคณะเภสัชศาสตร์					
13. ประสบการณ์และสิ่งต่างๆ ที่ได้เรียนรู้อะไร มีผลดีต่อความฉลาด รอบรู้ รวมทั้งแนวความคิดใหม่ๆ ของฉัน					
14. ฉันรู้สึกพอใจกับประสบการณ์ต่างๆ ด้านวิชาการของฉัน ขณะที่เรียนอยู่ในคณะเภสัชศาสตร์					
15. มีกระบวนการวิชาเรียนจำนวนน้อยที่ช่วยกระตุ้น สนับสนุนให้เกิดพัฒนาการทางความคิดของฉัน					
16. ฉันได้ร่วมงานวัฒนธรรม กิจกรรมต่างๆ ของมหาวิทยาลัย เช่น การจัดการบรรยาย หรือการแสดงศิลปะต่างๆ ขณะเรียนในคณะเภสัชศาสตร์มากกว่าก่อนที่ฉันจะเข้ามาเรียน					
17. การร่วมกิจกรรมของมหาวิทยาลัย ช่วยส่งเสริมพัฒนาการความฉลาดรอบรู้ และความคิดของฉัน					
18. ฉันสามารถทำงานด้านวิชาการได้ดีเท่ากับที่ฉันคาดหวังไว้					
19. ขณะเรียนในคณะเภสัชศาสตร์ ฉันเชื่อมั่นมากขึ้นทุกวันว่าฉันมีความรู้ที่มากขึ้นพอที่จะออกไปประกอบวิชาชีพได้					
20. ฉันมีความเข้าใจความสำคัญของวิชาการที่เรียนมากยิ่งขึ้น					
21. อาจารย์ที่ฉันได้รู้จักใกล้ชิดมีจำนวนไม่มากนักที่ให้ความสนใจอย่างจริงจังเกี่ยวกับนักศึกษา					
22. อาจารย์ที่ฉันได้รู้จักใกล้ชิดมีน้อยคนที่มีความสามารถในการถ่ายทอดความรู้ และประสบการณ์ต่างๆ ให้เข้าใจได้ง่าย และนำไปใช้ได้จริง					
23. อาจารย์ที่ฉันได้รู้จักใกล้ชิด มีไม่มากนักที่ยินดีจะใช้เวลานอกห้องเรียนมานั่งคุย วิเคราะห์วิจารณ์เรื่องราวต่างๆ ที่น่าสนใจ และมีความสำคัญต่อนักศึกษา					
24. อาจารย์ที่ฉันรู้จักใกล้ชิด ส่วนใหญ่สนใจที่จะช่วยให้นักศึกษามีพัฒนาการในหลายๆ ด้านมากกว่าเฉพาะด้านความรู้และวิชาการ					
25. อาจารย์ที่ฉันได้รู้จักใกล้ชิด ส่วนใหญ่ให้ความสนใจในการสอนอย่างแท้จริง					

ข้อคำถาม	เห็นด้วย อย่างยิ่ง (5)	เห็น ด้วย (4)	ไม่ แน่ ใจ (3)	ไม่ เห็น ด้วย (2)	ไม่เห็นด้วย อย่างยิ่ง (1)
สำหรับนักศึกษาชั้นปีที่ 4 และปีที่ 5 (ที่ผ่านการฝึกงานจากแหล่งฝึก)					
26. ตั้งแต่เริ่มฝึกงาน ฉันมีมิตรภาพ และความสัมพันธ์ที่ดีกับ อาจารย์แหล่งฝึก					
27. ฉันพอใจกับการเรียนรู้ ความรอบรู้ ประสบการณ์ที่เพิ่มพูน มากขึ้นนับตั้งแต่เริ่มฝึกงาน					
28. การฝึกปฏิบัติงานวิชาชีพทำให้ฉันได้พัฒนาตนเอง มีคุณค่า และมีทัศนคติที่ดี					
29. ความสัมพันธ์กับอาจารย์แหล่งฝึกมีผลดีต่อการสร้างเป้า หมายในการทำงานวิชาชีพของฉัน					
30. ความสัมพันธ์กับผู้รับบริการขณะฝึกปฏิบัติงาน ทำให้ฉันได้ เรียนรู้ และมีพัฒนาการในการทำงานมากขึ้น					

ส่วนที่ 3 ข้อคำถามความเป็นวิชาชีพเภสัชกรรม

โปรดใส่ ✓ ในช่องตามความคิดเห็นของท่าน

ข้อคำถาม	เห็นด้วย อย่างยิ่ง (5)	เห็นด้วย (4)	ไม่ แน่ ใจ (3)	ไม่ เห็น ด้วย (2)	ไม่เห็นด้วย อย่างยิ่ง (1)
1. องค์กรวิชาชีพทางเภสัชกรรม* เป็นแหล่งอ้างอิงที่ดีใน การประกอบวิชาชีพของฉัน					
2. องค์กรวิชาชีพเภสัชกรรม* ของฉันไม่ได้ส่งเสริมให้เกิด ความก้าวหน้าแก่วิชาชีพเภสัชกรรม					
3. องค์กรวิชาชีพเภสัชกรรม* ของฉันไม่มีบทบาทในการ ประกันคุณภาพการประกอบวิชาชีพเภสัชกรรม					
4. องค์กรวิชาชีพเภสัชกรรม* ของฉันมีส่วนส่งเสริม เพิ่มคุณค่า และความเชื่อมั่นต่อวิชาชีพให้มากยิ่งขึ้นสำหรับฉัน					
5. ข้อความ ประกาศ และมาตรฐานวิชาชีพจากองค์กรวิชา ชีพเภสัชกรรม* เป็นแนวทางสำคัญต่อการปฏิบัติงานของ ฉัน					
6. ถ้าเภสัชกรไม่ได้ปฏิบัติวิชาชีพ อาจทำให้เกิดผลลัพธ์ที่ไม่ พึงประสงค์ขึ้นกับผู้รับบริการได้					
7. ถ้าเภสัชกรไม่ได้ให้คำแนะนำหรือให้ข้อมูลทางด้านเภสัช กรรมที่สำคัญ ก็ไม่ส่งผลเสียใดๆ ต่อผู้รับบริการ					

ข้อคำถาม	เห็นด้วย อย่างยิ่ง (5)	เห็นด้วย (4)	ไม่แน่ใจ (3)	ไม่เห็น ด้วย (2)	ไม่เห็นด้วย อย่างยิ่ง (1)
8. การให้บริการแก่ผู้รับบริการอาจเกิดปัญหา ถ้าเภสัชกรไม่ได้ให้ข้อมูลเภสัชกรรมแก่แพทย์ผู้ให้บริการผู้ป่วย					
9. ผู้รับบริการอาจไม่พึงพอใจ ถ้าเภสัชกรไม่ได้ปฏิบัติหน้าที่					
10. การปฏิบัติวิชาชีพของเภสัชกร พึงยึดถือประโยชน์ของผู้รับบริการเหนือประโยชน์ส่วนตัว					
11. งานบริการของเภสัชกรช่วยให้สังคมไทยได้รับประโยชน์สูงสุดจากการใช้ยา					
12. มาตรฐานในการปฏิบัติงานวิชาชีพของเราควรจัดทำขึ้นโดยฉันและเพื่อนร่วมวิชาชีพเท่านั้น					
13. คนที่สามารถตัดสินความเหมาะสมในการทำงานของฉันก็คือเภสัชกร					
14. เภสัชกรที่ทำผิดมาตรฐานวิชาชีพควรได้รับการพิจารณาความผิดจากเพื่อนร่วมวิชาชีพด้วยกันเท่านั้น					
15. ประชาชนควรมีส่วนแสดงความคิดเห็น ในการควบคุมการประกอบวิชาชีพของพวกฉัน					
16. ฉันจะปรับปรุงมาตรฐานวิชาชีพที่ใช้เป็นแนวทางในการทำงานของฉันเฉพาะเมื่อมีข้อเสนอแนะจากเพื่อนร่วมวิชาชีพเท่านั้น					
17. บ่อยครั้งที่ฉันปรารถนาจะทำงานอาชีพอื่น					
18. ไม่มีอาชีพไหนที่ดีไปกว่าวิชาชีพเภสัชกรรม					
19. ฉันมีความภาคภูมิใจและพึงพอใจในการปฏิบัติงานวิชาชีพเภสัชกรรม					
20. ถ้าให้ฉันเลือกงานใหม่ ฉันก็ยังคงเลือกทำงานวิชาชีพเภสัชกรรม					
21. ฉันภาคภูมิใจที่เป็นส่วนหนึ่งของทีมงานสุขภาพ (Health care team) ที่ดูแลเรื่องสุขภาพ					
22. ฉันอยากให้คนอื่น ๆ เข้ามาเป็นเภสัชกร เพราะฉันภาคภูมิใจในวิชาชีพเภสัชกรรม					
23. นายจ้าง/ผู้บังคับบัญชาของฉันควรจัดทำแนวทางปฏิบัติงานเฉพาะ เพื่อใช้ประกอบการตัดสินใจทางวิชาชีพในงานของฉัน					
24. นายจ้าง/ผู้บังคับบัญชาของฉันมีสิทธิในการทบทวนและเปลี่ยนแปลงการตัดสินใจด้านวิชาชีพของฉัน					

ข้อความ	เห็นด้วย อย่างยิ่ง (5)	เห็นด้วย (4)	ไม่แน่ใจ (3)	ไม่เห็น ด้วย (2)	ไม่เห็นด้วย อย่างยิ่ง (1)
25. ฉันสามารถเสนอแนะเพื่อการปรับปรุงนโยบายของนาย จ้าง/ผู้บังคับบัญชา ถ้าฉันพิจารณาแล้วว่ามีมีความสำคัญ ต่อวิชาชีพเภสัชกรรม					
26. นายจ้าง/ผู้บังคับบัญชาของฉันไม่มีสิทธิในการจำกัด อำนาจการตัดสินใจของฉันที่เป็นเรื่องเกี่ยวกับวิชาชีพ					
27. การศึกษาต่อเนื่อง เช่น การศึกษาด้วยตนเอง การเข้า ร่วมประชุมสัมมนา มีความสำคัญต่อความสามารถในการ ทำงานของฉัน					
28. ฉันสามารถรักษามาตรฐานการปฏิบัติวิชาชีพของฉันได้ โดยไม่ต้องทำการศึกษาต่อเนื่อง					
29. การปฏิบัติงานประจำวันของฉันก็คือการศึกษาต่อเนื่อง เพิ่มพูนความรู้ที่ฉันต้องการ					
30. ฉันจะเข้าร่วมสัมมนา การศึกษาต่อเนื่อง ก็ต่อเมื่อมันมีผล ต่อการต่ออายุใบประกอบวิชาชีพเท่านั้น					
31. ฉันเชื่อว่าการศึกษาต่อเนื่องเป็นทางเดียวที่เราจะยก ระดับความเป็นมืออาชีพ ให้ทันสมัยและมีคุณภาพอยู่ ตลอดเวลา					
32. ถ้าฉันไม่ทำการศึกษาต่อเนื่อง ฉันอาจประสบปัญหาใน การปฏิบัติวิชาชีพได้					

ข้อความ	สำคัญมากที่สุด	สำคัญมาก	สำคัญ	สำคัญน้อย	ไม่สำคัญ
10. เป็นหน้าที่ของพลเมืองดีที่ต้องแจ้งเรื่องนักโทษแหกคุก โดยไม่จำเป็นต้องสนใจว่าเขาจะเป็นคนดี ทำดีมาขนาดไหน					
11. ขึ้นกับว่าจะทำอย่างไรให้เกิดประโยชน์สูงสุดต่อสังคมส่วนรวม					
12. ถ้ากลับไปติดคุกแล้ว จะดีและเป็นประโยชน์กับตัวนาย ก กิ่งหรือและมันจะช่วยปกป้องใครได้บ้าง เพราะนาย ก ไม่ได้เป็นคนที่ยันตรายแล้ว					

จากข้อความข้างบนทั้ง 12 ข้อ กรุณาเลือก 4 ข้อที่ท่านเห็นว่าสำคัญที่สุด

สำคัญที่สุดคือข้อที่.....

สำคัญรองลงมาคือข้อที่.....

สำคัญเป็นอันดับสามคือข้อที่.....

สำคัญเป็นอันดับสี่คือข้อที่.....

ขอขอบคุณที่กรุณาให้ข้อมูล

รายละเอียดของข้อคำถามในแบบสอบถาม

ชื่อสเกล	ชื่อภาษาไทย	จำนวนข้อ	ข้อคำถาม
Social and academic integration (4 องค์ประกอบ)	การบูรณาการสังคมและองค์ความรู้	32	1-25
1. Peer group interaction	การสัมพันธ์กับเพื่อน	6	1-6
2. Faculty interaction	ความสัมพันธ์กับคณาจารย์	5	7-11
3. Academic development	พัฒนาการทางด้านแนวคิดและองค์ความรู้	9	12-20
4. Faculty concern	การรับรู้ถึงความใส่ใจของคณาจารย์	5	21-25
Social integration in workplace	การบูรณาการสังคมในสถานที่ทำงาน	5	26-30
Professionalism (6 องค์ประกอบ)	ความเป็นวิชาชีพ	32	1-32
1. Professional organization	การใช้องค์กรวิชาชีพเป็นแหล่งอ้างอิง	5	1-5
2. Belief in public service	ความเชื่อต่อการให้บริการแก่สาธารณชน	6	6-11
3. Belief in self-regulation	ความเชื่อต่อกฎระเบียบในการดูแลตนเอง	5	12-16
4. Sense of calling	ความยึดมั่น ผูกพันต่อวิชาชีพ	6	17-22
5. Belief in autonomy	ความเชื่อต่อการอำนาจในการตัดสินใจ	4	23-26
6. Belief in continuing competence	ความเชื่อต่อการพัฒนาศักยภาพที่ต่อเนื่อง	6	27-32

APPENDIX C

PERCEPTION OF PHARMACISTS AND PHARMACY STUDENTS TO PHARMACY ORGANIZATION

Perception of pharmacists and pharmacy students to pharmacy organizations

Pharmacy organizations and their roles in pharmacy profession

Two groups of respondents; 736 practicing pharmacists and 50 role model pharmacists were asked what were the top three pharmacy organizations in which respondents have participated. The results of the ranking were shown in Table 43 and 44. While a group of 1,440 pharmacy students was asked what were pharmacy organizations in which the student have participate through their pharmacy school life. The result was shown in Table 45.

Table 43 revealed that the top three pharmacy organizations in which most practicing pharmacist respondents participated were Thai Pharmacy Council (32.6%), the Association of Hospital Pharmacy (23.9%) and the Pharmaceutical Association of Thailand (22.1%) respectively. Consider the first ranking of pharmacy organizations, Pharmacy Council was voted for this rank by the majority of practicing pharmacists (41.7%). The Pharmaceutical Association of Thailand under Royal Patronage was chosen to be the second order from 37.7% of respondents. Whereas the Association of Hospital Pharmacy (Thailand) was identified to be the third order (27.7%) of all pharmacy organizations. However some of respondents did not show the ranking of their selected pharmacy organization, 30.7 percent of them chose Pharmacy Council, 28.5 percent chose the Pharmaceutical Association, and 25.7 percent chose the Association of Hospital Pharmacy (see Table 43).

The result in Table 44 revealed that the top three organizations chosen by role model pharmacists were Pharmacy Council (30.8%), the Pharmaceutical Association (28.2%), and 22.2 percent of the Association of Hospital Pharmacy. In the first rank, the pharmacy organization that role model pharmacists had the highest participation was Pharmacy council (31.8%). The Pharmaceutical Association was the top organization for the second rank. And the third rank, both Pharmacy Council

and the Pharmaceutical Association were chosen with the high frequency of 25.0% (see Table 44). For pharmacy students, the top three organizations that they had participated were the Pharmacy council (58.0%), the Community Pharmacy Association (Thailand) (28.0%), and the Pharmaceutical Association of Thailand (21.5%) respectively (see Table 45).

When three groups of respondents including pharmacy students, practicing pharmacists and role model, were asked who was actively involved in the development of the pharmacy profession, all of them answered the pharmacists themselves to be the first group who should involve in profession development with 76.5%, 63.0%, and 56.0% of each group respectively. The professional organization was chosen by practicing pharmacists and role model pharmacists for being the second rank, while pharmacy students chose professional organization as the third rank. When consider the responsibility of pharmacy education, most of pharmacy students and practicing pharmacists chose as the third rank, while role model chose both pharmacy education and professional organization to be the second rank (see Table 46).

Table 43: Ranking of pharmacy organization by pharmacists (N=736)

Organization	First Rank		Second Rank		Third Rank		Not Rank		Total	
	N	%	N	%	N	%	N	%	N	%
Thai Pharmacy Council	248	41.7	78	22.1	46	25.0	55	30.7	427	32.6
Pharmaceutical Association under Royal Patronage	70	11.8	133	37.7	36	19.6	51	28.5	290	22.1
Thai Hospital Pharmacy Association	143	24.0	73	20.7	51	27.7	46	25.7	313	23.9
Community Pharmacy Association (Thailand)	81	13.6	48	13.6	36	19.6	15	8.4	180	13.7
Group of manufacturing pharmacists	21	3.5	8	2.3	8	4.3	4	2.2	41	3.1
Group of marketing pharmacists	9	1.5	6	1.7	5	2.7	3	1.7	23	1.8
Others	23	3.9	7	2.0	2	1.1	5	2.8	37	2.8

Note: The first rank refers to the highest involvement by the pharmacy respondent.

Table 44: Ranking of pharmacy organization by role model pharmacists (N=50)

Organization	First Rank		Second Rank		Third Rank		Not Rank		Total	
	N	%	N	%	N	%	N	%	N	%
Thai Pharmacy Council	14	31.8	13	33.3	7	25.0	2	33.3	36	30.8
Pharmaceutical Association under Royal Patronage	8	18.2	16	41.0	7	25.0	2	33.3	33	28.2
Thai Hospital Pharmacy Association	13	29.5	7	17.9	6	21.4	0	0.0	26	22.2
Community Pharmacy Association (Thailand)	8	18.2	2	5.1	2	7.1	1	16.7	13	11.1
Group of manufacturing pharmacists	0	0.0	0	0.0	3	10.7	1	16.7	4	3.4
Group of marketing pharmacists	0	0.0	1	2.6	2	7.1	0	0.0	3	2.6
Others	1	2.3	0	0.0	1	3.6	0	0.0	2	1.7

Note: The first rank refers to the highest participation by the pharmacy respondent.

Table 45: Participating in pharmacy organization by pharmacy students (N=1,440)

Organization	Have participation	
	N	%
Thai Pharmacy Council	835	58.0
Pharmaceutical Association under Royal Patronage	309	21.5
Thai Hospital Pharmacy Association	271	18.8
Community Pharmacy Association (Thailand)	403	28.0
Group of manufacturing pharmacists	104	7.2
Group of marketing pharmacists	104	7.2
Others	261	18.1

Table 46: Ranking of whose responsibility in the development of pharmacy profession

Responsibility	Pharmacy student (N=1,440)		Pharmacist (N=736)		Role model (N=50)	
	N	%	N	%	N	%
Professional organization						
The first rank	153	10.6	173	23.5	15	30.0
The second rank	557	38.7	237	32.2	17	34.0
The third rank	589	40.9	148	20.1	15	30.0
Not rank	141	9.8	23	3.1	0	0.0
Missing	0	0.0	155	21.1	3	6.0
Pharmacy education						
The first rank	128	8.9	64	8.7	7	14.0
The second rank	571	39.7	225	30.6	27	54.0
The third rank	589	40.9	247	33.6	13	26.0
Not rank	4	0.3	20	2.7	0	0.0
Missing	148	10.3	180	24.5	3	6.0
All pharmacists						
The first rank	1102	76.5	464	63.0	28	56.0
The second rank	170	11.8	85	11.5	3	6.0
The third rank	100	6.9	132	17.9	18	36.0
Not rank	14	1.0	23	3.1	0	0.0
Missing	54	3.8	32	4.3	1	2.0

Note: The first rank refers to those who are actively involved in the development of pharmacy profession

APPENDIX D

CONSTRUCT VALIDITY OF

SOCIAL AND ACADEMIC INTEGRATION AND PROFESSIONALISM

AMONG PHARMACY STUDENTS AND PHARMACISTS

Table 47 and Table 48 showed the EFA results of professionalism variables among pharmacy students and practicing pharmacists respectively. This study identified six latent variables (professional organization as a major referent, belief in public service, belief in self-regulation, sense of calling, belief in autonomy, and belief in continuing competence) that explained 46.8 percent of pharmacy students' professionalism variance and 48.4 percent of practicing pharmacists' professionalism variance. Among pharmacy students, each of the six latent variables was found to explain 4.5, 15.3, 12.8, 5.8, 4.0, and 4.6 percent of professionalism variances respectively. The KMO value was 0.843 for professionalism and eigenvalues for all six latent variables were between 1.61 and 3.50. The communality values of all 32 items were between 0.20 – 0.68. In terms of factor loading, three latent variables had a high factor loading of more than the acceptable value of 0.3. Whereas the other three of latent variable, belief in public service (item 7 and 9) belief in autonomy (item 23 and 24) and belief in continuing competence (item 29 and 30) had low factor loading. Only three item (item 23, 24 and 30) deviated from their remaining items of the group (see Table 66). While practicing pharmacists showed the explained variances of six latent variables of 16.9, 4.7, 8.9, 7.1, 5.1, and 5.7 percent respectively. The KMO value was 0.818 with communality values between 0.14 – 0.71. Four items (7, 25, 29 and 30) had a low factor loading of less than the acceptable value of 0.3. Only two items, item 25 of belief in autonomy and item 29 of belief in continuing competence had deviated from the remaining items of the group (see Table 67).

Table 49 shows the EFA results of pharmacy students' social and academic integration variables. The EFA identified four latent variables (peer group interaction, faculty interaction, academic development, and faculty concern) that explained 43.6

percent of social and academic integration variance. Each of the four latent variables was found to explain 19.5, 8.2, 6.1 and 9.8 percent of social and academic integration variances respectively. The KMO value was 0.819 and eigenvalues were more than one (between 2.38- 3.13). The communality values of all 25 items were between 0.09 and 0.68. 19 items of four latent variables (except item 5, 6, 16, 17, 24 and 25) had a high factor loading of more than the acceptable value. Only one item (item 15 of academic development factor) deviated from its group. Among practicing pharmacists, the EFA result was shown in Table 50. Four factors could explain 51.0 percent of social and academic integration variance. Each of the four factors showed the explained variance of 7.4, 25.6, 8.0 and 10.0 percent and eigenvalues of 2.7, 3.6, 3.1 and 2.6 respectively. The KMO value was 0.850 and communality values were between 0.22 and 0.74. Only one item (item 5) deviated from the remaining items of peer group interaction factor.

Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis was performed to prove the empirical data structures in the form of a specified theory or model. Based on Schack and Helper's professionalism model, there were six latent variables explained professionalism including professional organization as a major referent, belief in public service, belief in self-regulation, sense of calling, belief in autonomy, and belief in continuing competence. Social and academic integration (SAI) model which based on Tinto's model comprised of four latent variables (Peer group interaction, Faculty interaction, Academic development, and Faculty concern). Table 51 shows the CFA results of a professionalism model and a social and academic integration model of pharmacy students. The professionalism model showed the chi-square value of 990.94 with 223 degrees of freedom and p-value of 0.01 indicated that the model should be modified.

Table 47: Exploratory Factor Analysis (EFA) of professionalism variables (Oblimin) of pharmacy students (N=1,440)

Factor/variable	Factor loading						Communality (h ²)
	Component						
	1	2	3	4	5	6	
Professional Organization as a major referent							
Item 1	0.61						0.47
Item 2	0.68						0.61
Item 3	0.66						0.59
Item 4	0.72						0.58
Item 5	0.58						0.45
Belief in public service							
Item 6		0.52					0.28
Item 7		0.24					0.38
Item 8		0.47					0.24
Item 9		0.28					0.20
Item 10		0.61					0.44
Item 11		0.57					0.46
Belief in self-regulation							
Item 12			0.71				0.50
Item 13			0.75				0.57
Item 14			0.70				0.48
Item 15			0.30				0.38
Item 16			0.66				0.55
Sense of calling							
Item 17				0.74			0.56
Item 18				0.52			0.47
Item 19				0.58			0.57
Item 20				0.83			0.67
Item 21				0.44			0.47
Item 22				0.55			0.50
Belief in autonomy							
Item 23							0.39
Item 24							0.58
Item 25		0.55					0.36
Item 26		0.48					0.30
Belief in continuing competence							
Item 27						0.31	0.42
Item 28						0.42	0.48
Item 29						0.27	0.22
Item 30					0.24		0.45
Item 31						0.77	0.64
Item 32						0.80	0.68
Eigenvalues	2.60	3.50	2.43	1.72	2.32	1.61	
% Variance	4.46	15.31	12.75	5.75	3.96	4.55	
Cum. Variance	4.46	19.77	32.52	38.27	42.23	46.78	

KMO = 0.843

Barlett's test of Sphericity $\chi^2 = 10193.91$ (df=496), p-value < 0.001

Table 48: Exploratory Factor Analysis (EFA) of professionalism variables (Oblimin) of practicing pharmacist (N=736)

Factor/variable	Factor loading						Communality (h ²)
	Component						
	1	2	3	4	5	6	
Professional Organization as a major referent							
Item 1	0.68						0.55
Item 2	0.77						0.60
Item 3	0.81						0.65
Item 4	0.74						0.63
Item 5	0.60						0.50
Belief in public service							
Item 6		0.50					0.35
Item 7		0.29					0.21
Item 8		0.63					0.41
Item 9		0.57					0.40
Item 10		0.62					0.49
Item 11		0.61					0.52
Belief in self-regulation							
Item 12			0.76				0.57
Item 13			0.79				0.63
Item 14			0.78				0.60
Item 15			0.32				0.24
Item 16			0.47				0.39
Sense of calling							
Item 17				0.74			0.53
Item 18				0.66			0.51
Item 19				0.68			0.58
Item 20				0.86			0.72
Item 21				0.55			0.49
Item 22				0.69			0.57
Belief in autonomy							
Item 23					0.54		0.38
Item 24					0.75		0.56
Item 25		0.28					0.16
Item 26					0.47		0.35
Belief in continuing competence							
Item 27						0.50	0.44
Item 28						0.70	0.59
Item 29		0.26					0.14
Item 30						0.25	0.41
Item 31						0.74	0.62
Item 32						0.82	0.71
Eigenvalues	2.86	2.36	2.58	3.14	1.73	2.33	
% Variance	16.9	4.7	8.9	7.1	5.1	5.7	
Cum. Variance	16.9	21.6	30.5	37.6	42.7	48.4	

KMO = 0.818

Barlett's test of Sphericity $\chi^2 = 6136.19$ (df=496), p-value < 0.001

Table 49: Exploratory Factor Analysis (EFA) of social and academic integration (Oblimin) of pharmacy students (N=1,440)

Factor/variable	Factor loading				Communality (h ²)
	Component				
	1	2	3	4	
Peer group interaction					
Item 1	0.71				0.54
Item 2	0.74				0.58
Item 3	0.71				0.54
Item 4	0.59				0.43
Item 5	0.26			0.44	0.27
Item 6	0.23			0.49	0.30
Faculty interaction					
Item 7		0.85			0.68
Item 8		0.83			0.67
Item 9		0.77			0.59
Item 10		0.66			0.47
Item 11		0.69			0.54
Academic development					
Item 12			0.65		0.54
Item 13			0.55		0.50
Item 14			0.68		0.59
Item 15				0.51	0.26
Item 16	0.31		0.13		0.14
Item 17	0.44		0.21		0.29
Item 18			0.57		0.34
Item 19			0.57		0.29
Item 20			0.61		0.40
Faculty concern					
Item 21				0.74	0.56
Item 22				0.75	0.57
Item 23				0.75	0.59
Item 24		0.24		0.16	0.14
Item 25				0.16	0.09
Eigenvalues	2.52	3.13	2.38	2.54	
% Variance	19.47	8.22	6.14	9.77	
Cum. Variance	19.47	27.69	33.84	43.61	

KMO = 0.819

Barlett's test of Sphericity $\chi^2 = 8802.12$ (df=300), p-value < 0.001

Table 50: Exploratory Factor Analysis (EFA) of social and academic integration(Oblimin) of practicing pharmacists (N=736)

Factor/variable	Factor loading				Communality (h ²)
	Component				
	1	2	3	4	
Peer group interaction					
Item 1	0.78				0.63
Item 2	0.78				0.64
Item 3	0.68				0.58
Item 4	0.52				0.47
Item 5				0.46	0.23
Item 6	0.28				0.31
Faculty interaction					
Item 7		0.86			0.73
Item 8		0.88			0.74
Item 9		0.85			0.69
Item 10		0.61			0.53
Item 11		0.62			0.57
Academic development					
Item 12			0.66		0.55
Item 13			0.59		0.45
Item 14			0.69		0.61
Item 15			0.25		0.33
Item 16			0.20		0.22
Item 17			0.22		0.35
Item 18			0.53		0.32
Item 19			0.77		0.55
Item 20			0.71		0.50
Faculty concern					
Item 21				0.75	0.60
Item 22				0.74	0.62
Item 23				0.77	0.67
Item 24				0.31	0.49
Item 25				0.28	0.38
Eigenvalues	2.69	3.58	3.14	2.61	
% Variance	7.4	25.6	8.0	10.0	
Cum. Variance	7.4	33.0	41.0	51.0	

KMO = 0.850

Barlett's test of Sphericity $\chi^2 = 6867.79$ (df=300), p-value < 0.001

A number of goodness-of-fit measures was proposed and calculated to assess the fit of the model including Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), and Normed Fit Index (NFI). These values that were indicative of a good-fitting model (greater than 0.90) were 0.96, 0.90, 0.93, and 0.91 respectively. Two residuals, Root Mean Square Residual (RMR) and Standardized RMR were 0.065 and 0.066, respectively. Root Mean Square Error of Approximation (RMSEA) was 0.049. These three indices were in acceptable range for a good-fitting model (Tabachnick and Fidell, 1996). For social and academic integration model, the CFA results showed that the goodness-of-fit statistics were all acceptable. The chi-square of 376.54 with 186 degrees of freedom indicated the acceptable model.

All fit indices including GFI, AGFI, CFI, and NFI were 0.98, 0.96, 0.98 and 0.96 respectively. All residual based fit indices including RMR, Standardized RMR, and RMSEA were 0.03. It was concluded that the model of social and academic development fit well and represented a reasonably close approximation in the population. For practicing pharmacists, the CFA results of professionalism and social and academic integration model were shown in Table 52. The professionalism model showed the chi-square of 293.51 with 260 degrees of freedom, all four fit indices GFI, AGFI, CFI, NFI of 0.98, 0.95, 0.99, 0.95, and all three residual indices RMR, standardized RMR, and RMSEA of 0.042, 0.042, and 0.013, respectively. These indices indicated the professionalism model was fit well. For social and academic integration model, the chi-square was 201.72 with 188 degrees of freedom. All indices including GFI, AGFI, CFI, NFI, RMR, standardized RMR, and RMSEA were 0.98, 0.96, 0.99, 0.97, 0.027, 0.027, and 0.010, respectively. With the acceptable indices, the SAI model fit well and represented a reasonably close approximation in the population.

Table 51: Goodness of fit statistics of confirmatory factor analysis (CFA) of social and academic integration (SAI) and professionalism of pharmacy students (N=1,440)

Goodness of fit statistics	SAI model	Professionalism
Chi-square (p-value)	376.54(p = 0.001)	990.94 (p = 0.001)
Degrees of freedom of Chi-square	186	223
Goodness of Fit Index (GFI)	0.98	0.96
Adjusted Goodness of Fit Index (AGFI)	0.96	0.90
Comparative Fit Index (CFI)	0.98	0.93
Normed Fit Index (NFI)	0.96	0.91
Root Mean Square Residual (RMR)	0.03	0.065
Standardized RMR	0.03	0.066
Root Mean Square Error of Approximation (RMSEA)	0.03	0.049
Number of factors	4	6

Table 52: Goodness of fit statistics of Confirmatory Factor Analysis (CFA) of Social and Academic Integration (SAI) and professionalism of practicing pharmacists (N=736)

Goodness of fit statistics	SAI model	Professionalism
Chi-square (p-value)	201.72(p = 0.234)	293.51 (p = 0.075)
Degrees of freedom of Chi-square	188	260
Goodness of Fit Index (GFI)	0.979	0.976
Adjusted Goodness of Fit Index (AGFI)	0.963	0.951
Comparative Fit Index (CFI)	0.998	0.993
Normed Fit Index (NFI)	0.972	0.953
Root Mean Square Residual (RMR)	0.027	0.042
Standardized RMR	0.027	0.042
Root Mean Square Error of Approximation (RMSEA)	0.010	0.013
Number of factors	4	6

APPENDIX E

DIFFERENCES AMONG PHARMACISTS AND PHARMACY STUDENTS

Differences of study variables among practicing pharmacists

1. Chi-square results

Based on the previous relationships identified, Chi-square was used to determine the significant difference between two characteristic categorical variables. Table 53-55 show three results from the Chi-square analysis of practicing pharmacists. First, 736 practicing pharmacists were grouped into three groups by years after graduation (less to ten years, eleven to 20 years and more than 20 years) and the Chi-square analysis results between these three groups and each of categorical variables were shown in Table 53. Second, practicing pharmacists were grouped into seven professional fields (public hospital, private hospital, marketing, law enforcement, community pharmacy, industry, and education) and the result shows in Table 54. Third, with grouping pharmacists into two groups by type of patient approach; direct and indirect approach to patients, its Chi-square analysis result was shown in Table 55.

While grouping pharmacist into three groups by years after graduation which were less to ten years, eleven to 20 years and more than 20 years, the majority of the third group of respondents were male (51.4%) but the other two groups were female (72.4% and 51.3%) with significant difference of chi-square ($\chi^2, 2 = 39.16$; $p < 0.001$). For education level of respondents, pharmacists with years after graduation of 11-20 years were more likely to seek higher education than their counterparts ($\chi^2, 4 = 60.13$; $p < 0.001$). Most of pharmacists who graduated more than 20 years were married when compared with those pharmacists who graduated for less than 20 year ($\chi^2, 4 = 228.86$; $p < 0.001$). For birthplace, pharmacists with years after graduation of less than eleven years were born mostly in the other provinces when compared with the older years of graduation ($\chi^2, 2 = 24.12$; $p < 0.001$). Pharmacists in three groups of years after graduation had a significant different professional fields ($\chi^2, 14 = 185.84$; $p < 0.001$). Young pharmacists

were more likely to work in public hospitals, but the older worked in community pharmacy. Pharmacists with a different years of graduation had a significant different influential person for choosing pharmacy school ($\chi^2,10 = 39.83$; $p < 0.001$). The younger pharmacists were more likely to have parents, relatives, and siblings to be the influential person when comparing with the older pharmacists. Pharmacists in three groups of years after graduation had a significant different education and occupation of parents (see Table 53).

When male and female pharmacists choose different fields of work ($\chi^2,7 = 75.38$; $p < 0.001$) (see Table 54). While the majority of practicing pharmacists in three professional fields including public and private hospital pharmacists (71.8% and 75.9%) and education (62.5%) were female, two fields of marketing and community pharmacy (63.2% and 63.5%) were male. Pharmacists in the field of law enforcement and industry were equal in their gender (50.0% and 57.1%). Pharmacists in seven groups of professional fields had a significant different education level ($\chi^2,14 = 160.43$; $p < 0.001$). Pharmacists in the field of marketing and education were more likely to study in higher education than the other fields. Seven fields of pharmacists had a significant different marital status ($\chi^2,14 = 93.61$; $p < 0.001$), most of community pharmacists were married when compared with the other six professional fields. A pharmacist born between a capital city and other places had a significant effect on the pharmacist's professional field ($\chi^2,7 = 80.67$; $p < 0.001$). Marketing pharmacists were more likely to have a birthplace in Bangkok. Pharmacists in a different field had a significant different parents' occupation (father with $\chi^2,49 = 119.95$; $p < 0.001$ and mother with $\chi^2,49 = 99.65$; $p < 0.001$). Those pharmacists who worked in education were more likely to have government officer parents than the other fields.

When divided practicing pharmacists into two groups of patient approach; direct to patient and indirect to patient, the results shows that pharmacists in different patient approach had a significant different gender ($\chi^2,1 = 16.83$; $p < 0.001$), education level ($\chi^2,2 = 53.04$; $p < 0.001$), and birthplace ($\chi^2,1 = 29.37$; $p < 0.001$) (see Table 55). Direct approach pharmacists were likely to be female (65.6%) with bachelor degree

(81.0%), while indirect approach pharmacists were male (51.0%) and likely had a higher education (40.8% of master degree and 3.6% of doctoral degree). The majority of direct approach pharmacists (77.3%) were not born in the capital city, while more than 40 percent of indirect approach pharmacists were born in Bangkok.

Table 53: Characteristics of pharmacists grouping by years after graduation.

Variable	≤ 10 years (N=366)		11-20 years (N=197)		> 20 years (N=173)		Total (N=736)	
	N	%	N	%	N	%	N	%
Gender ^c								
Male	101	27.6	96	48.7	89	51.4	286	38.9
Female	265	72.4	101	51.3	84	48.6	450	61.1
Education level ^c								
Bachelor degree	309	84.9	110	55.8	124	72.5	543	74.2
Master degree	55	15.1	82	41.6	43	25.1	180	24.6
Ph.D.	0	0	5	2.5	4	2.3	9	1.2
Marrital status ^c								
Single	283	77.3	68	34.5	24	14.0	375	51.0
Married	82	22.4	128	65.0	139	80.8	349	47.5
Divorced/Separated	1	0.3	1	0.5	9	5.2	11	1.5
Have a part-time job								
Yes	77	21.1	45	23.1	14	8.1	136	18.5
No	288	78.9	150	76.9	158	91.9	596	81.0
Birthplace ^c								
Bangkok	73	19.9	72	36.5	62	35.8	207	28.1
Other provinces	293	80.1	125	63.5	111	64.2	529	71.9
Current professional field ^c								
Public hospital	231	63.1	70	35.5	46	26.6	347	47.1
Private hospital	50	13.7	27	13.7	10	5.8	87	11.8
Marketing	21	5.7	26	13.2	10	5.8	57	7.7
Law enforcement	33	9.0	24	12.2	9	5.2	66	9.0
Community Pharmacy	15	4.1	32	16.2	57	32.9	104	14.1
Industry	3	0.8	10	5.1	22	12.7	35	4.8
Education	8	2.2	3	1.5	5	2.9	16	2.2
Others (Business)	5	1.4	5	2.5	14	8.1	24	3.3

Variable	≤ 10 years (N=366)		11-20 years (N=197)		> 20 years (N=173)		Total (N=736)	
	N	%	N	%	N	%	N	%
Influential person for choosing pharmacy ^c								
Parents	109	29.9	25	12.8	44	25.4	178	24.2
Relatives	18	4.9	7	3.6	1	0.6	26	3.5
Siblings	13	3.6	18	9.2	17	9.8	48	6.5
Friends	15	4.1	5	2.6	10	5.8	30	4.1
Himself/Herself (None)	198	54.2	129	65.8	94	54.3	421	57.2
Other	12	3.3	12	6.1	7	4.0	31	4.2
Education; father ^c								
Primary school or lower	137	37.7	121	61.7	109	64.5	367	49.9
Secondary school	30	8.3	17	8.7	21	12.4	68	9.2
High school	50	13.8	22	11.2	18	10.7	90	12.2
Certificate	53	14.6	14	7.1	6	3.6	73	9.9
Bachelor or equivalence	78	21.5	21	10.7	14	8.3	113	15.4
Master or higher	15	4.1	1	0.5	1	0.6	17	2.3
Education; mother ^c								
Primary school of lower	192	52.9	146	74.5	133	78.7	471	64.0
Secondary school	26	7.2	8	4.1	15	8.9	49	6.7
High school	31	8.5	15	7.7	13	7.7	59	8.0
Certificate	37	10.2	9	4.6	4	2.4	50	6.8
Bachelor or equivalence	72	19.8	16	8.2	4	2.4	92	12.5
Master or higher	5	1.4	2	1.0	0	0.0	7	1.0
Occupation; father ^c								
Physician	1	0.3	1	0.5	1	0.6	3	0.4
Pharmacist	2	0.5	1	0.6	0	0	3	0.4
Health Professional	6	1.6	3	1.5	5	2.9	14	1.9
Government	109	29.9	33	16.9	20	11.6	162	22.0
Business/merchant	148	40.5	107	54.9	106	61.3	361	49.0
Private/employee	28	7.7	26	13.3	17	9.8	71	9.6
Agriculturer	54	14.8	16	8.2	11	6.4	81	11.0
Do not work	17	4.7	9	4.6	12	6.9	38	5.2

Variable	≤ 10 years (N=366)		11-20 years (N=197)		> 20 years (N=173)		Total (N=736)	
	N	%	N	%	N	%	N	%
Occupation; mother ^c								
Physician	0	0	1	0.5	1	0.6	2	0.3
Pharmacist	1	0.3	2	1.0	0	0	3	0.4
Health Professional	13	3.6	2	1.0	2	1.2	17	2.3
Government	73	19.9	19	9.7	12	7.0	104	14.1
Business/merchant	132	36.1	92	46.9	100	58.1	324	44.0
Private/employee	15	4.1	9	4.6	3	1.7	27	3.7
Agriculturer	48	13.1	16	8.2	11	6.4	75	10.2
Do not work	84	23.0	55	28.1	43	25.0	182	24.7

^a Significant difference by Chi-square at the 0.05 level

^b Significant difference by Chi-square at the 0.001 level

^c Significant difference by Chi-square at the 0.001 level

Table 54: Characteristics of pharmacist grouping by professional fields

Variable	Public hospital (N=347)		Private hospital (N=87)		Marketing (N=57)		Law enforcement (N=66)		Community pharmacy (N=104)		Industry (N=35)		Education (N=16)		Others (N=24)		Total (N=736)		
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
	Gender ^c																		
Male	98	28.2	21	24.1	36	63.2	33	50.0	66	63.5	20	57.1	6	37.5	6	25.0	286	38.9	
Female	249	71.8	66	75.9	21	36.8	33	50.0	38	36.5	15	42.9	10	62.5	18	75.0	450	61.1	
Education level ^c																			
Bachelor degree	276	80.0	75	86.2	24	42.9	42	63.6	83	79.8	24	68.6	3	20.0	16	66.7	543	74.2	
Master degree	68	19.7	12	13.8	32	57.1	24	36.4	20	19.2	8	22.9	8	53.3	8	33.3	180	24.6	
Doctoral degree	1	0.3	0	0	0	0	0	0	1	1.0	3	8.6	4	26.7	0	0	9	1.2	
Marrital status ^c																			
Single	223	64.5	45	51.7	27	47.4	33	50.0	18	17.3	11	31.4	8	50.0	10	41.7	375	51.0	
Married	119	34.4	40	46.0	30	52.6	33	50.0	85	81.7	22	62.9	8	50.0	12	50.0	349	47.5	
Divorced/Separated	4	1.2	2	2.3	0	0	0	0	1	1.0	2	5.7	0	0	2	8.3	11	1.5	
Have a part-time job ^a																			
Yes	79	22.9	16	18.4	10	17.5	13	19.7	7	6.8	4	11.8	4	25.0	3	12.5	136	18.5	
No	266	77.1	71	81.6	47	82.5	53	80.3	96	93.2	30	88.2	12	75.0	21	87.5	596	81.0	
Birthplace ^c																			
Bangkok	65	18.7	25	28.7	36	63.2	9	13.6	32	30.8	19	54.3	8	50.0	13	54.2	207	28.1	
Other provinces	282	81.3	62	71.3	21	36.8	57	86.4	72	69.2	16	45.7	8	50.0	11	45.8	529	71.9	
Years after graduation ^c																			
≤ 10 years	231	66.6	50	57.5	21	36.8	33	50.0	15	14.4	3	8.6	8	50.0	5	20.8	366	49.7	
11-20 years	70	20.2	27	31.0	26	45.6	24	36.4	32	30.8	10	28.6	3	18.8	5	20.8	197	26.8	
> 20 years	46	13.3	10	11.5	10	17.5	9	13.6	57	54.8	22	62.9	5	31.3	14	58.3	173	23.5	

Variable	Public hospital (N=347)		Private hospital (N=87)		Marketing (N=57)		Law enforcement (N=66)		Community pharmacy (N=104)		Industry (N=35)		Education (N=16)		Others (N=24)		Total (N=736)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Influential person for choosing pharmacy																		
Parents	84	24.3	29	33.3	16	28.1	14	21.2	22	21.2	6	17.1	4	25.0	3	13.0	178	24.2
Relatives	15	4.3	5	5.7	1	1.8	3	4.5	0	0	0	0	2	12.5	0	0	26	3.5
Sibling	15	4.3	4	4.6	9	15.8	6	9.1	7	6.7	5	14.3	0	0	2	8.7	48	6.5
Friends	12	3.5	2	2.3	3	5.3	3	4.5	5	4.8	1	2.9	1	6.3	3	13.0	30	4.1
Himself/Herself	203	58.7	43	49.4	27	47.4	37	56.1	67	64.4	22	62.9	9	56.3	13	56.5	421	57.2
Other	17	4.9	4	4.6	1	1.8	3	4.5	3	2.9	1	2.9	0	0	2	8.7	31	4.2
Education; father ^a																		
Primary school or lower	169	48.8	33	38.8	31	54.4	39	59.1	58	58.0	17	50.0	5	31.3	15	62.5	367	49.9
Secondary school	26	7.5	15	17.6	5	8.8	3	4.5	13	13.0	4	11.8	0	0	2	8.3	68	9.2
High school	36	10.4	10	11.8	6	10.5	10	15.2	16	16.0	4	11.8	4	25.0	4	16.7	90	12.2
Certificate	39	11.3	8	9.4	6	10.5	6	9.1	6	6.0	4	11.8	2	12.5	2	8.3	73	9.9
Bachelor or equivalence	69	19.9	17	20.0	8	14.0	4	6.1	6	6.0	5	14.7	3	18.8	1	4.2	113	15.4
Master or higher	7	2.0	2	2.4	1	1.8	4	6.1	1	1.0	0	0	2	12.5	0	0	17	2.3
Education; mother ^a																		
Primary school or lower	211	61.0	52	61.2	37	64.9	47	71.2	75	75.0	22	64.7	10	62.5	17	70.8	471	64.0
Secondary school	23	6.6	9	10.6	2	3.5	3	4.5	8	8.0	2	5.9	0	0	2	8.3	49	6.7
High school	22	6.4	6	7.1	8	14.0	8	12.1	9	9.0	4	11.8	0	0	2	8.3	59	8.0
Certificate	29	8.4	3	3.5	4	7.0	2	3.0	7	7.0	5	14.7	0	0	0	0	50	6.8
Bachelor or equivalence	57	16.5	14	16.5	6	10.5	5	7.6	1	1.0	1	2.9	5	31.3	3	12.5	92	12.5
Master or higher	4	1.2	1	1.2	0	0	1	1.5	0	0	0	0	1	6.3	0	0	7	1.0

Variable	Public hospital (N=347)		Private hospital (N=87)		Marketing (N=57)		Law enforcement (N=66)		Community pharmacy (N=104)		Industry (N=35)		Education (N=16)		Others (N=24)		Total (N=736)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
	Occupation; father ^c																	
Physician	0	0	1	1.1	0	0	0	0	0	0	2	5.7	0	0	0	0	3	0.4
Pharmacist	2	0.6	1	1.1	0	0	0	0	0	0	0	0	0	0	0	0	3	0.4
Health Professional	7	2.0	1	1.1	1	1.8	0	0	3	2.9	1	2.9	1	6.3	0	0	14	1.9
Government	93	27.0	19	21.8	10	17.9	15	22.7	9	8.7	4	11.4	8	50.0	4	16.7	162	22.0
Business/merchant	133	38.6	49	56.3	33	58.9	33	50.0	72	69.2	19	54.3	5	31.3	17	70.8	361	49.0
Private/employee	28	8.1	8	9.2	8	14.3	5	7.6	12	11.5	7	20.0	1	6.3	2	8.3	71	9.6
Agriculturer	59	17.1	2	2.3	4	7.1	9	13.6	6	5.8	0	0	1	6.3	0	0	81	11.0
Do not work	23	6.7	6	6.9	0	0	4	6.1	2	1.9	2	5.7	0	0	1	4.2	38	5.2
Occupation; mother ^c																		
Physician	0	0	1	1.1	0	0	0	0	0	0	1	2.9	0	0	0	0	2	0.3
Pharmacist	1	0.3	1	1.1	0	0	1	1.5	0	0	0	0	0	0	0	0	3	0.4
Health Professional	12	3.5	2	2.3	1	1.8	0	0	1	1.0	1	2.9	0	0	0	0	17	2.3
Government	61	17.6	9	10.3	6	10.5	9	13.6	6	5.8	2	5.7	6	37.5	5	20.8	104	14.1
Business/merchant	120	34.7	39	44.8	29	50.9	30	45.5	67	65.0	17	48.6	7	43.8	15	62.5	324	44.0
Private/employee	14	4.0	4	4.6	1	1.8	3	4.5	1	1.0	4	11.4	0	0	0	0	27	3.7
Agriculturer	53	15.3	3	3.4	3	5.3	10	15.2	4	3.9	1	2.9	1	6.3	0	0	75	10.2
Do not work	85	24.6	28	32.2	17	29.8	13	19.7	24	23.3	9	25.7	2	12.5	4	16.7	182	24.7

^a Significant difference by Chi-square at the 0.05 level

^b Significant difference by Chi-square at the 0.001 level

^c Significant difference by Chi-square at the 0.001 level

Table 55: Characteristics of pharmacist grouping by patient approach

Variable	Direct to patient (N=538)		Indirect to patient (N=198)		Total (N=736)	
	N	%	N	%	N	%
Gender ^c						
Male	185	34.4	101	51.0	286	38.9
Female	353	65.6	97	49.0	450	61.1
Education level ^c						
Bachelor degree	434	81.0	109.0	55.6	543	74.2
Master degree	100	18.7	80.0	40.8	180	24.6
Ph.D.	2	0.4	7	3.6	9	1.2
Marrital status						
Single	286	53.3	89	44.9	375	51.0
Married	244	45.4	105	53.0	349	47.5
Divorced/Separated	7	1.3	4	2.0	11	1.5
Have a part-time job while studying in pharmacy school						
Yes	102	19.1	34	17.3	136	18.5
No	433	80.9	163	82.7	596	81.0
Birthplace ^c						
Bangkok	122	22.7	85	42.9	207	28.1
Other provinces	416	77.3	113	57.1	529	71.9
Years after graduation ^c						
≤ 10 years	296	55.0	70	35.4	366	49.7
11-20 years	129	24.0	68	34.3	197	26.8
> 20 years	113	21.0	60	30.3	173	23.5
Influential person for choosing pharmacy ^a						
Parents	135	25.1	43	21.8	178	24.2
Relatives	20	3.7	6	3.0	26	3.5
Siblings	26	4.8	22	11.2	48	6.5
Friends	19	3.5	11	5.6	30	4.1
Himself/Herself	313	58.3	108	54.8	421	57.2
Other	24	4.5	7	3.6	31	4.2
Education; father						
Primary school lower	260	49.0	107	54.3	367	49.9
Secondary school	54	10.2	14	7.1	68	9.2
High school	62	11.7	28	14.2	90	12.2
Certificate	53	10.0	20	10.2	73	9.9
Bachelor or equivalence	92	17.3	21	10.7	113	15.4
Master or higher	10	1.9	7	3.6	17	2.3

Variable	Direct to patient (N=538)		Indirect to patient (N=198)		Total (N=736)	
	N	%	N	%	N	%
Education; mother						
Primary school lower	338	63.7	133	67.5	471	64.0
Secondary school	40	7.5	9	4.6	49	6.7
High school	37	7.0	22	11.2	59	8.0
Certificate	39	7.3	11	5.6	50	6.8
Bachelor or equivalence	72	13.6	20	10.2	92	12.5
Master or higher	5	0.9	2	1.0	7	1.0
Occupation; father						
Physician	1	0.2	2	1.0	3	0.4
Pharmacist	3	0.6	0	0	3	0.4
Health Professional	11	2.1	3	1.5	14	1.9
Government	121	22.6	41	20.8	162	22.0
Business/merchant	254	47.4	107	54.3	361	49.0
Private/employee	48	9.0	23	11.7	71	9.6
Agriculturer	67	12.5	14	7.1	81	11.0
Do not work	31	5.8	7	3.6	38	5.2
Occupation; mother						
Physician	1	0.2	1	0.5	2	0.3
Pharmacist	2	0.4	1	0.5	3	0.4
Health Professional	15	2.8	2	1.0	17	2.3
Government	76	14.2	28	14.1	104	14.1
Business/merchant	226	42.2	98	49.5	324	44.0
Private/employee	19	3.5	8	4.0	27	3.7
Agriculturer	60	11.2	15	7.6	75	10.2
Do not work	137	25.6	45	22.7	182	24.7

^a Significant difference by Chi-square at the 0.05 level

^b Significant difference by Chi-square at the 0.001 level

^c Significant difference by Chi-square at the 0.001 level

2. T-test

Table 56 shows the differences of a continuous variable between two groups of independent variable. Due to multiple t-tests, only the significant results of $p < 0.01$ were reported. Using professionalism as a dependent variable, female pharmacists had a significant higher professional organization score than male pharmacists ($t = 2.90$, $p < 0.01$). On the other hand, male pharmacists had a significant higher belief in self-enforcement score than female pharmacists ($t = 3.26$, $p < 0.01$). Pharmacists who approached patient directly had a significant higher score of professional organization ($t = 4.31$, $p < 0.001$), belief in continuing competence ($t = 2.97$, $p < 0.01$), and total score of professionalism ($t = 2.89$, $p < 0.01$) than those who approached patient indirectly. For pharmacy GPA, years after graduation, and monthly income, while female pharmacists had a significant GPA than male pharmacists ($t = 7.41$, $p < 0.001$), male pharmacists reported a higher significant monthly income ($t = 5.34$, $p < 0.01$) and years after graduation ($t = 5.66$, $p < 0.01$) than female pharmacists. While pharmacists those who directly approach to patients had a significant lower years after graduation ($t = 2.77$, $p < 0.01$) and monthly income ($t = 2.77$, $p < 0.01$) than those who approached their patients indirectly, indirect approach pharmacists were found to be a significant older ($t = 4.52$, $p < 0.001$) than those who direct approach to a patient. Finally, female pharmacists had a significant higher score of perception of public acceptance for pharmacy profession ($t = 2.77$, $p < 0.01$) and knowledge applicability ($t = 6.59$, $p < 0.001$) than male pharmacists (see Table 56).

3. Multivariate Analysis of Variance (MANOVA)

In this study, MANOVA was used to evaluate the significant differences in the means of 18 dependent variables including age of respondent, pharmacy grade point average, monthly income, peer group interaction, faculty interaction, academic development, perception of faculty concern, professional organization as a major referent, belief in public service, belief in self-regulation, sense of calling, belief in autonomy, belief in continuing competency, moral reasoning, social integration in workplace, professional satisfaction and perception of public acceptance for pharmacy profession. Once a significant difference was

identified by MANOVA, Scheffe post hoc comparison test was used to indicate where the significant difference lied between the two groups.

First, MANOVA was performed between 18 dependent variables and three groups of years after graduation (independent variable) including years after graduation of less than eleven years, 11-20 years, and more than 20 (see Table 57). It was found that those who graduated less than eleven years had a significant higher score on faculty interaction ($F,2 = 4.15, p<0.05$) faculty concern ($F,2 = 9.05, p<0.001$), total social and academic integration ($F,2 = 4.92, p<0.01$), and perception of public acceptance ($F,2 = 4.15, p<0.05$) than those who graduated between 11-20 years. On the other hand pharmacists who had years of graduation of 11-20 years showed a significant higher score on belief in self-regulation ($F,2 = 4.99, p<0.01$) and professional satisfaction ($F,2 = 9.74, p<0.001$) than those who had years of graduation of less than eleven years. In term of belief in public service, pharmacist with years after graduation of less than eleven years had a significant higher score than pharmacists with years after graduation more than 20 years ($F,2 = 4.38, p<0.05$).

Second, we used MANOVA to determine the significant relationship between the professional field (independent variable) with 18 dependent variables. Several significant differences were found. Of these 18 dependent variables, faculty interaction, professional organization as a major referent, belief in continuing competence, total professionalism, knowledge applicability, and perception of public acceptance for pharmacy profession had score with a significant difference among seven groups of professional fields. Pharmacists who work in education field had a significant higher score on faculty interaction than those pharmacists who work in public and private hospital, and law enforcement field ($F,7=2.95, p<0.01$). While professionalism was considered, it was found that public hospital pharmacists and community pharmacists had a significant higher score than pharmacists who work in law enforcement field ($F,7=3.41, p<0.01$). With the score of belief in continuing competence, both public and private hospital pharmacist had a significant higher score than law enforcement pharmacists ($F,7=3.78, p<0.001$). For total score of professionalism, hospital pharmacists in both public and private hospital had the score more than pharmacists who work with law enforcement ($F,7=2.53, p<0.05$).



Table 56: t-test results of practicing pharmacists between male and female, direct and indirect approach to patient

Variable	Gender			Patient approach				Total (N=736)		
	Male (N=286)		Female (N=450)		Direct (N=538)		Indirect(N=198)		Mean	SD
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Pharmacy Grade Point Average	2.62	0.41	2.84	0.38	2.75	0.40	2.78	0.43	2.76	0.41
Monthly income ^c	38,994.60	34,134.32	26,044.36	28,334.62	28,549.06	32,487.01	38,043.11	26,916.01	31,104.15	31,352.57
Years after graduation ^c	15.56	9.83	11.35	9.83	11.99	9.79	15.73	10.21	12.98	10.03
Social and academic integration										
Peer group interaction	22.71	2.50	23.15	2.61	22.96	2.55	23.04	2.66	22.98	2.58
Faculty interaction	19.41	3.46	19.26	3.20	19.22	3.26	19.59	3.41	19.32	3.30
Academic development	33.76	4.24	33.26	4.16	33.48	4.33	33.39	3.82	33.45	4.19
Faculty concern	14.98	3.18	15.62	3.65	15.44	3.50	15.17	3.46	15.37	3.49
Total social&academic integration	90.85	9.37	91.35	10.11	91.14	9.82	91.19	9.85	91.16	9.82
Professionalism										
Professional organization ^c	18.32	3.15	18.98	2.76	19.02	2.81	17.93	3.12	18.73	2.93
Belief in public service	24.52	2.70	24.73	2.85	24.71	2.82	24.45	2.73	24.64	2.79
Belief in self regulation	14.97	3.02	14.26	2.76	14.49	2.98	14.66	2.62	14.53	2.88
Sense of calling	20.07	3.58	20.03	3.58	20.11	3.66	19.85	3.32	20.04	3.57
Belief in autonomy ^a	13.99	1.75	13.74	1.63	13.75	1.69	14.06	1.64	13.83	1.68
Belief in continuing competence ^b	20.73	3.50	20.81	3.36	21.01	3.29	20.17	3.67	20.78	3.41
Total professionalism ^b	110.36	9.67	110.93	9.22	111.32	9.32	109.06	9.44	110.71	9.40
Moral reasoning	41.77	22.16	44.91	21.90	43.78	21.62	43.47	23.19	43.70	22.04
Social integration at work	21.07	2.22	20.83	2.42	20.93	2.38	20.90	2.28	20.92	2.35
Knowledge applicability ^c	61.56	22.44	65.81	21.75	67.64	19.94	54.65	24.82	64.15	22.10
Professional satisfaction ^a	74.93	17.12	72.16	18.36	72.37	18.38	75.63	16.43	73.24	17.92
Perception of public acceptance	61.89	16.32	65.18	15.11	64.03	14.98	63.56	17.41	63.90	15.66

^a Significant difference at the 0.05 level

^b Significant difference at the 0.001 level

^c Significant difference at the 0.001 level

Table 57: MANOVA result of practicing pharmacists grouping by years after graduation (N=736)

Variable ^t	≤ 10 years (N=366)		11-20 years (N=197)		> 20 years (N=173)		Total (N=736)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age of respondent	27.85	3.29	38.07	3.34	52.09	5.99	36.30	10.57
Grade point average	2.78	0.39	2.76	0.39	2.69	0.47	2.76	0.41
Monthly income	19,399.56	13,483.00	37,792.00	31,596.06	48,086.51	45,089.84	31,104.15	31,352.57
Social and Academic Integration								
Peer group interaction	23.06	2.51	22.86	2.80	22.96	2.46	22.98	2.58
Faculty interaction ^a	20.78	3.01	19.27	3.52	18.77	3.26	19.32	3.30
Academic development	33.61	4.20	34.29	4.85	33.53	4.24	33.45	4.19
Faculty concern ^b	15.91	3.61	14.63	3.42	15.16	3.11	15.37	3.49
Total social&academic integration ^c	92.19	9.83	89.46	9.96	90.92	9.41	91.2	9.8
Professionalism								
Professional organization as a referent	18.69	2.84	18.66	3.06	18.92	3.04	18.73	2.93
Belief in public service ^d	24.87	2.55	24.65	3.12	24.10	2.88	24.64	2.79
Belief in self regulation ^e	14.20	2.73	14.90	3.01	14.83	2.99	14.53	2.88
Sense of calling	20.21	3.38	19.67	3.64	20.20	3.92	20.04	3.57
Belief in autonomy	13.75	1.69	13.96	1.62	13.92	1.74	13.83	1.68
Belief in continuing competence	20.68	2.97	20.56	4.03	21.17	3.54	20.78	3.41
Total score of professionalism	110.37	8.49	110.34	9.92	111.87	10.56	110.7	9.4
Moral reasoning	43.43	22.63	46.43	22.49	41.15	19.92	43.70	22.04
Social integration in workplace	20.75	2.36	21.00	2.33	21.21	2.32	20.92	2.35
Knowledge applicability	63.18	22.27	64.45	21.57	65.86	22.37	64.15	22.10
Professional satisfaction ^f	70.27	17.29	75.86	16.97	76.54	19.31	73.24	17.92
Perception of public acceptance ^h	65.21	15.24	61.66	15.69	63.68	16.29	63.90	15.66

^t Applying Bonferroni adjustment for multiple comparisons

^a (1)>(2) with significance at p<0.05, ^b (1)>(2) with significance at p<0.001, ^c (1)>(2) with significance at p<0.01, ^d (1)>(3) with significance at p<0.05

^e (2)>(1) with significance at p<0.0, ^f (2)>(1), (3)>(1) with significance at p<0.001, ^h (1)>(2) with significance at p<0.05.

Table 58: MANOVA result of practicing pharmacists grouping by professional fields (N=736)

Variable ^t	Public hospital (N=347)		Private hospital (N=87)		Marketing (N=57)		Law enforcement (N=66)		Community pharmacy (N=104)		Industry (N=35)		Education (N=16)		Others (N=24)		Total (N=736)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
GPA	2.77	0.40	2.77	0.36	2.85	0.40	2.69	0.40	2.68	0.43	2.68	0.54	3.05	0.33	2.76	0.34	2.76	0.41
Monthly income	21,942.89	26,235.42	30,670.43	31,856.60	56,125.53	27,420.11	19,708.89	14,964.50	48,958.80	46,013.79	51,569.00	28,107.11	23,522.13	14,559.98	35,828.10	18,546.11	31,104.15	31,352.57
Years after graduation	9.40	8.28	10.33	7.49	14.51	8.75	11.10	8.17	21.40	9.73	22.90	9.23	14.07	11.70	20.10	10.99		
Social and academic integration																		
Peer group interaction	23.01	2.56	23.19	2.26	23.18	2.46	22.81	2.63	22.54	2.78	22.72	3.02	24.60	2.97	22.80	2.42	22.98	2.58
Faculty interaction ^b	19.30	3.27	19.00	3.31	19.78	2.91	18.94	3.55	19.46	3.26	20.28	2.68	21.93	3.47	19.25	4.23	19.32	3.30
Academic development	33.30	4.41	33.53	3.89	34.45	3.02	33.19	3.92	34.44	4.60	32.38	4.07	34.80	4.86	33.30	3.54	33.45	4.19
Faculty concern	15.75	3.45	15.19	4.04	15.47	3.13	14.70	3.57	14.82	3.30	15.52	3.24	15.60	4.26	15.20	3.29	15.37	3.49
Total Social&Academic integration	91.25	9.62	90.85	9.38	92.89	8.55	89.32	10.64	91.01	10.91	90.88	9.60	96.93	10.08	89.39	9.46	91.2	9.8
Professionalism																		
Professional organization ^c	19.13	2.80	18.68	2.78	17.84	3.03	17.62	2.83	19.28	2.99	17.59	3.04	17.93	4.85	19.00	2.64	18.73	2.93
Belief in public service	24.69	2.78	25.20	2.95	24.57	2.89	24.35	2.52	24.60	2.91	23.90	3.14	24.80	2.34	25.05	2.44	24.64	2.79
Belief in self regulation	14.28	2.81	14.44	2.91	14.82	3.09	14.68	2.35	15.23	3.61	14.14	2.82	14.47	2.53	15.10	2.47	14.53	2.88
Sense of calling	20.01	3.62	20.35	3.58	19.75	3.39	19.67	3.32	20.60	4.07	20.72	3.29	21.07	3.24	19.00	3.29	20.04	3.57
Belief in autonomy	13.58	1.76	13.89	1.49	14.22	1.60	13.87	1.80	14.14	1.52	14.41	1.70	13.67	1.45	14.10	1.33	13.83	1.68
Belief in continuing competence ^d	21.08	3.18	21.50	3.55	19.80	3.77	19.27	3.73	20.62	3.60	21.59	2.99	19.93	3.35	22.00	2.96	20.78	3.41

Variable ^t	Public hospital (N=347)		Private hospital (N=87)		Marketing (N=57)		Law enforcement (N=66)		Community pharmacy (N=104)		Industry (N=35)		Education (N=16)		Others (N=24)		Total (N=736)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	Total score of professionalism ^f	110.84	9.02	112.21	8.96	109.66	9.00	106.67	9.06	112.18	10.51	109.29	8.93	110.13	11.28	113.39	10.07	110.7
Moral reasoning	43.25	21.42	49.17	24.48	45.97	25.34	45.84	23.40	43.32	20.27	36.02	20.71	46.61	20.24	37.78	22.34	43.70	22.04
Social integration at work	20.82	2.38	21.48	2.18	20.78	2.11	20.59	2.35	21.07	2.47	21.52	2.11	22.27	2.31	20.55	2.58	20.92	2.35
Knowledge applicability ^g	67.40	19.41	66.74	20.85	52.06	19.75	41.59	22.27	71.56	20.43	71.52	16.87	81.33	15.41	55.40	29.74	64.15	22.10
Professional satisfaction	71.31	18.03	72.84	18.29	77.55	13.83	70.71	16.89	76.24	19.57	79.97	13.84	84.00	14.04	74.80	19.34	73.24	17.92
Perception of public acceptance ^h	64.48	14.41	64.75	16.17	69.12	14.38	60.95	16.89	63.45	15.84	63.93	16.58	60.67	18.70	61.50	18.72	63.90	15.66

^t Applying Bonferroni adjustment for multiple comparisons

^a Controlled for monthly income, years after graduation, and gender

^b Education >public, private hospital, law regulation with significance at p<0.05

^c Public hospital and community >law regulation with significance at p<0.01

^d Public and private hospital >law regulation with significance at p<0.01

^e Public and private hospital >law regulation with significance at p<0.05

^f Public and private hospital, community, manufacturing, education >marketing and law regulation with significance at p<0.01

^g Marketing >public hospital and law regulation with significance at p<0.05

When consider the rest of five dependent variables, two of them including knowledge applicability and perception of public acceptance for pharmacy profession were found the significant differences among seven fields. First, it was found that pharmacists who work in these five fields including public hospital, private hospital, community pharmacy, industry, and education had a significant higher score on knowledge applicability than pharmacists who worked in marketing and law enforcement field ($F_{7,7}=18.07, p<0.001$). Second, the results showed that marketing pharmacists had a significant higher score on perception of public acceptance for pharmacy profession than those who work in public hospital and law enforcement field ($F_{7,7}=2.56, p<0.05$). Table 57 and 58 show the multivariate analysis of variance for practicing pharmacists when they were grouped by three levels of years after graduation and seven different professional fields respectively.

For moral reasoning, high level executives, middle level executives, and staff pharmacists had a higher moral reasoning score than the drug store owner ($F=4.38; p<0.01$). Those who were married and had a social acceptance score between 76 and 100 had a higher social integration in workplace score than those who were single ($F=5.16; p<0.01$) and with a social acceptance score between 26 and 50 ($F=5.49; p<0.01$). In terms of job satisfaction, married pharmacists had a higher job satisfaction than single pharmacists ($F=16.35; p<0.001$). High level executives had a higher job satisfaction than the middle level executives and staff pharmacists ($F=15.50; p<0.001$). Those who had been working between 6 and 10 years and those who had been working 21 years or more had a higher job satisfaction than those who had been working five years or less ($F=6.41; p<0.01$). With regarding to age, those who were 36 and over had a higher job satisfaction than those who were 25 years or less ($F=5.64; p<0.001$). For social acceptance score, those who had a social acceptance score between 51 and 75 percent and between 76 and 100 percent had a higher job satisfaction than those with a social acceptance score of 50 or less ($F=16.06; p<0.001$). Finally, respondents who had a knowledge application score between 76 and 100 percent had a higher job satisfaction than those with a knowledge acceptance score of less than 76 ($F=31.91; p<0.001$) (see Table 58).

4. Multivariate regression analysis

Stepwise multivariate regression analysis was used to predict the relationship between one continuous dependent variable and several continuous or/and categorical independent variables of the study. Table 59 shows the multiple regression analysis of the six latent variables of professionalism and total professionalism. Overall, six variables accounted for 25.6 percent of variance of total professionalism. Only two variables, academic development and social integration in workplace accounted for 20.7 percent of variance, while the remaining four variables accounted for the other 4.9 percent of variance. For the belief in professional organization as a major referent, there was only two variables, academic development and perception of public acceptance for pharmacy profession accounted for the high variance (11.8 percent), while the other seven variables accounted for the other 8.2 percent of variance. Overall, these nine variables accounted for a total of 20.0 percent of belief in professional organization as a major referent variance.

With the variance of belief in public service, only one variables, social integration in workplace, accounted for the highest variance for belief in public service. The other five variables including academic development, perception of public acceptance, years after graduation, father with education level of certificate, and faculty interaction accounted for 6.6 percent of variance. Overall, these six variables explained the total variance of belief in public service with 18.8 percent. In terms of belief in self-regulation, all four variables accounted for a total of 4.1 percent of belief in self-regulation variance. While only two variables, gender of female and father with education level of bachelor degree or equivalence accounted for 2.6 percent variance of belief in self-regulation. For sense of calling, three main variables, academic development, social integration in workplace, and perception of public acceptance for pharmacy profession accounted for 20.6 percent of sense of calling variance. While the other five variables including birthplace in Bangkok, knowledge applicability, education level of master degree, mother with occupation of health professional, and monthly income accounted for 4.2 percent of sense of calling variance. Overall, sense of calling variance was accounted

for 24.8 percent. With regarding to belief in autonomy, five variables accounted for 7.0 percent variance of belief in autonomy. The major two variables including social integration in workplace and public hospital field accounted for 5.0 percent of belief in autonomy variance. For belief in continuing competence, all five variables including social integration in workplace, mother with occupation of agriculturer, siblings as a influential person for choosing pharmacy school, mother that works in private company officer and mother with education level of certificate accounted for a total of 5.1 percent variance of belief in continuing competence. Finally, moral reasoning was accounted for a total of 3.4 percent variance. The only two variables explained moral reasoning variance were owner drugstore pharmacist (2.4%) and monthly salary (1.0%).

Table 60 shows the multiple regression analysis of two dependent variables, moral reasoning and professional satisfaction. It was found that pharmacist whether he or she was a drugstore owner accounted for the highest variance of moral reasoning. However, pharmacists in the pharmaceutical marketing field appeared to show the least moral reasoning compared to the other six fields. Another variable contributed to the explanation the moral reasoning variance were monthly income. Overall, these three variables accounted for 3.5 percent of moral reasoning variance. Finally, Three variables including sense of calling, knowledge applicability, and the high executive position accounted for most of the variance (30.0%) of professional satisfaction while the other eight variables including monthly income, perception of public acceptance for pharmacy profession, middle executive position, public hospital pharmacist, belief in self-regulation, private hospital pharmacist, belief in autonomy and social integration in workplace, accounted for another 9.5 percent of variance of professional satisfaction. Overall, these eleven variables accounted for a total of 39.5 percent of professional satisfaction variance.

Table 59: Stepwise regression of Social and academic integration variables of practicing pharmacists (N=736)

Variable set	B ^a	β ^b	T value	R ²	ΔR ²	Adj R ²
Total score of professionalism^h						
Academic development	0.52	0.23	6.18 ^f	0.138	0.138	0.137
Social integration in workplace	1.02	0.25	7.07 ^f	0.207	0.069	0.204
Perception of public acceptance	0.10	0.17	4.83 ^f	0.235	0.028	0.231
Master degree	-2.38	-0.11	-3.25 ^d	0.244	0.009	0.240
Years after graduation	0.09	0.09	2.71 ^d	0.251	0.007	0.246
Faculty concern	0.20	0.07	2.02 ^c	0.256	0.005	0.249
Constant	62.03		18.21 ^f			
Professional organization as a referent^k						
Academic development	0.11	0.16	4.04 ^f	0.076	0.076	0.074
Perception of public acceptance	0.03	0.17	4.70 ^f	0.118	0.042	0.115
Social integration in workplace	0.23	0.18	4.93 ^f	0.140	0.022	0.137
Public hospital pharmacy	0.99	0.17	4.37 ^f	0.154	0.014	0.150
Community pharmacy	1.30	0.15	4.05 ^f	0.168	0.014	0.162
Female	0.64	0.11	2.95 ^d	0.179	0.011	0.172
Certificate level mother	-1.14	-0.10	-2.87 ^d	0.189	0.010	0.180
Faculty concern	0.07	0.09	2.35 ^c	0.195	0.006	0.185
Bangkok birthplace	0.50	0.08	2.15 ^c	0.200	0.005	0.190
Constant	6.06		5.44 ^f			
Belief in public service^l						
Social integration in workplace	0.33	0.28	7.51 ^f	0.122	0.122	0.120
Academic development	0.08	0.12	3.12 ^d	0.149	0.027	0.147
Perception of public acceptance	0.02	0.12	3.41 ^d	0.165	0.016	0.162
Years after graduation	-0.03	-0.11	-3.11 ^d	0.175	0.010	0.170
Certificate level father	-0.85	-0.09	-2.60 ^d	0.183	0.008	0.177
Faculty interaction	0.07	0.08	2.09 ^c	0.188	0.005	0.181
Constant	12.78		12.28 ^f			
Belief in self regulation^m						
Female	-0.65	-0.11	-2.89 ^d	0.016	0.016	0.015
Bachelor degree father	-0.76	-0.09	-2.47 ^d	0.026	0.010	0.023
Bangkok	0.61	0.10	2.55 ^d	0.035	0.009	0.031
Owner position	0.77	0.08	2.01 ^c	0.041	0.006	0.035
Constant	14.81		76.74 ^f			
Sense of callingⁿ						
Academic development	0.20	0.23	6.35 ^f	0.127	0.127	0.125
Social integration in workplace	0.32	0.21	5.88 ^f	0.179	0.052	0.177
Perception of public acceptance	0.04	0.15	4.45 ^f	0.206	0.027	0.202
Bangkok	-0.90	-0.11	-3.35 ^d	0.219	0.013	0.215
Knowledge applicability	0.01	0.09	2.63 ^d	0.227	0.008	0.222
Master degree	-0.77	-0.09	-2.80 ^d	0.236	0.009	0.229
Health professional mother	-1.89	-0.09	-2.63 ^d	0.244	0.008	0.236

Variable set	B ^a	β^b	T value	R ²	ΔR^2	Adj R ²
Monthly income	0.00	0.07	2.01 ^c	0.248	0.004	0.240
Constant	3.81		2.97 ^d			
Belief in autonomy^o						
Social integration in workplace	0.11	0.15	3.94 ^f	0.029	0.029	0.027
Public hospital pharmacy	-0.44	-0.13	-3.42 ^d	0.050	0.021	0.047
Faculty interaction	0.05	0.10	2.70 ^d	0.057	0.007	0.053
Agriculturer father	-0.45	-0.08	-2.20 ^c	0.064	0.007	0.059
Perception of public acceptance	-0.01	-0.08	-2.12 ^c	0.070	0.006	0.063
Constant	11.33		17.84 ^f			
Belief in continuing competence^p						
Social integration in workplace	0.19	0.13	3.52 ^f	0.021	0.021	0.019
Agriculturer mother	0.99	0.09	2.38 ^c	0.029	0.008	0.026
Siblings influence	-1.30	-0.09	-2.54 ^c	0.037	0.008	0.033
Private company officer mother	1.61	0.09	2.31 ^c	0.044	0.007	0.038
Certificate level mother	-1.13	-0.09	-2.28 ^c	0.051	0.007	0.044
Constant	16.85		14.74 ^f			

^a Unstandardized coefficient

^b Standardized coefficient

^c T-value is significant at $p < 0.05$, ^d $p < 0.01$, ^f $p < 0.001$

^h $F(df=6,736) = 37.45$, $p < 0.001$, Durbin-Watson=1.89

^k $F(df=9,736) = 19.03$, $p < 0.001$, Durbin-Watson=1.79

^l $F(df=6,736) = 26.59$, $p < 0.001$, Durbin-Watson=2.04

^m $F(df=4,736) = 7.29$, $p < 0.001$, Durbin-Watson=1.82

ⁿ $F(df=8,736) = 28.26$, $p < 0.001$, Durbin-Watson=2.07

^o $F(df=5,736) = 10.36$, $p < 0.001$, Durbin-Watson=1.98

^p $F(df=6,736) = 26.59$, $p < 0.001$, Durbin-Watson=2.04

Table 60: Stepwise regression of moral reasoning and professional satisfaction of practicing pharmacists (N=736)

Variable set	B ^a	β^b	T value	R ²	ΔR^2	Adj R ²
Moral reasoning^r						
Owner position	-12.08	-0.15	-4.05 ^f	0.018	0.018	0.016
Manufacturing pharmacy	-11.35	-0.10	-2.73 ^d	0.025	0.007	0.022
Monthly income	0.00	0.10	2.69 ^d	0.035	0.010	0.031
Constant	43.89		39.59 ^f			
Professional satisfaction^s						
Sense of calling	1.62	0.33	9.70 ^f	0.193	0.193	0.192
Knowledge applicability	0.22	0.27	8.48 ^f	0.268	0.075	0.266
Executive position	9.46	0.21	6.00 ^f	0.300	0.032	0.297
Monthly income	0.00	0.11	3.19 ^d	0.318	0.018	0.314
Perception of public acceptance	0.12	0.11	3.26 ^d	0.333	0.015	0.328
Middle executive position	5.57	0.15	4.47 ^f	0.344	0.011	0.338
Public hospital pharmacy	-6.79	-0.19	-5.30 ^f	0.358	0.014	0.351
Belief in self regulation	-0.60	-0.10	-3.14 ^d	0.369	0.011	0.361
Private hospital pharmacy	-6.88	-0.13	-3.74 ^f	0.380	0.012	0.372
Belief in autonomy	-1.05	-0.10	-3.13 ^d	0.388	0.007	0.378
Social integration in workplace	-0.74	0.10	2.92 ^d	0.395	0.008	0.385
Constant	24.76		3.56 ^f			

^a Unstandardized coefficient

^b Standardized coefficient

^c T-value is significant at $p < 0.05$, ^d $p < 0.01$, ^f $p < 0.001$

^r $F(df=3,736) = 8.26$, $p < 0.001$, Durbin-Watson=1.95

^s $F(df=11,736) = 38.76$, $p < 0.001$, Durbin-Watson=2.03

Differences of study variables among pharmacy students

1. Chi-square

From the correlation showed that found a strong relationship between type of university and between study year with other variables, the researcher decided to find out the differences between major categorical variables and three groups of university and its program (government university with B.Sc. program, government university with Pharm.D. program, and private university with B.Sc. program) and five study year (1st – 5th year) by using the chi-square analysis, these results were shown in Table 61 and Table 62.

Based on several chi-square results in Table 61, the only significance differences at the 0.001 level were reported. Among three groups of students, there was a significant difference in birthplace (Bangkok and other provinces) (χ^2 , 2=159.58, $p < 0.001$). The majority of the pharmacy students in the government university with Pharm.D. program (98.5%) and the private university with B.Sc. program (84.8%) had their birthplace outside Bangkok, whereas more than one-third of the students (39.6%) in the government university with B.Sc. program were born in Bangkok.

Regarding to the professional fields, It was found that the students in the different groups of university and its program had the significant different professional fields (χ^2 , 16=310.91, $p < 0.001$). More than half of Pharm.D. students (52.2%) were interested to work in hospitals. While the field of pharmaceutical industry or manufacturing was a main setting for about 40 percent of B.Sc. government students wanted to work in, around 43 percent of B.Sc. private students were interested in community pharmacy. With a significant difference of an influential person for choosing pharmacy school among three groups (χ^2 , 10=105.03, $p < 0.001$), more than half of B.Sc. private students (55.2%) had parents to be the highest influential person, whereas the government students with both B.Sc. and Pharm.D. program chose pharmacy school by themselves (64.1% and 55.8% respectively). Moreover, the student from the different university and program showed a significant difference of parents' occupation

(father's occupation with χ^2 , 16=110.99, $p<0.001$ and other's occupation with χ^2 , 16=88.43, $p<0.001$). About half of the private students (51.7% and 49.9%) had father and mother that worked in a business field, but most of Pharm.D. students had parents (father and mother) whom worked in the government sector (44.4% and 33.0%). Like the private students, most of the B.Sc. government students had parents (38.6% for father's occupation and 31.5% for mother's occupation) whom worked in the private business.

When five groups of the study year (1st – 5th study year) were explored, the results were illustrated in Table 62. It was found that the five study years had the significant differences in four categorical variables including whether they joined in extracurricular activities or not (χ^2 , 4=20.47, $p<0.001$), whether they had a part-time job or not (χ^2 , 4=24.27, $p<0.001$), birthplace (χ^2 , 4=22.87, $p<0.001$) and professional fields (χ^2 , 32=70.32, $p<0.001$). More than half of all students (except the fourth year students) have joined in the extracurricular activities. The fifth year students had a part-time job (15.3%) and lived in other provinces as a birthplace (80.2%) more than the other years. In terms of professional fields that the student are interested for the future, the fifth year students (34.9%) were more likely to choose hospital, whereas almost one-third of the first (30.1%) and second year students (32.7%) were interested in pharmaceutical industry. A field that all students showed the least interest was law enforcement. However, almost two percent of the third and fourth year students seemed to have no idea for choosing their preferred field.

Table 61: Characteristics of pharmacy students grouping by university type and its program

Variable	Government University				Private University		Total (N=1,440)	
	B.Sc. (N=873)		Pharm.D. (N=206)		B.Sc. (N=361)		N	%
	N	%	N	%	N	%		
Gender ^b								
Male	228	26.1	63	30.6	64	17.7	355	24.7
Female	645	73.9	143	69.4	297	82.3	1,085	75.3
Study year								
First year	234	26.8	53	25.7	49	13.6	336	23.3
Second year	185	21.2	50	24.3	83	23.0	318	22.1
Third year	184	21.1	52	25.2	73	20.2	309	21.5
Fourth year	129	14.8	33	16.0	52	14.4	214	14.9
Fifth year	141	16.2	18	8.7	104	28.8	263	18.3
Join in extracurricular activities ^b								
Yes	486	56.6	128	65.0	177	50.6	791	56.3
No	373	43.4	69	35.0	173	49.4	615	43.7
Have a part-time job ^b								
Yes	93	11.0	10	5.0	21	6.0	124	8.9
No	752	89.0	189	95.0	331	94.0	1272	91.1
Birthplace ^c								
Bangkok	346	39.6	3	1.5	55	15.2	404	28.1
Other provinces	527	60.4	203	98.5	306	84.8	1036	71.9
Professional field interested ^c								
Hospital	202	23.1	105	52.2	108	29.9	415	28.9
Public hospital	132	15.1	80	39.8	36	10.0	248	17.3
Private hospital	70	8.0	25	12.4	72	19.9	167	11.6
Marketing	134	15.3	20	10.0	46	12.7	200	13.9
Law enforcement	21	2.4	3	1.5	3	0.8	27	1.9
Community Pharmacy	140	16.0	37	18.4	155	42.9	332	23.1
Industry	320	36.7	19	9.5	39	10.8	378	26.3
Education	20	2.3	13	6.5	2	0.6	35	2.4
Others (Business)	26	3.0	2	1.0	2	0.6	30	2.1
No idea	10	1.1	2	1.0	6	1.7	18	1.3

Variable	Government University				Private University		Total (N=1,440)	
	B.Sc. (N=873)		Pharm.D. (N=206)		B.Sc. (N=361)		N	%
	N	%	N	%	N	%		
Influential person for choosing pharmacy ^c								
Parents	234	26.9	82	39.8	197	55.2	513	35.8
Relatives	32	3.7	5	2.4	17	4.8	54	3.8
Siblings	18	2.1	0	0	8	2.2	26	1.8
Friends	15	1.7	3	1.5	6	1.7	24	1.7
Himself/Herself	557	64.1	115	55.8	126	35.3	798	55.7
Other	13	1.5	1	0.5	3	0.8	17	1.2
Education; father								
Primary school	201	23.5	42	20.5	89	25.4	332	23.5
Secondary school	57	6.7	18	8.8	29	8.3	104	7.4
High school	96	11.2	25	12.2	56	16.0	177	12.5
Certificate	116	13.5	19	9.3	38	10.8	173	12.2
Bachelor or equivalence	295	34.4	77	37.6	123	35.0	495	35.0
Master or higher	92	10.7	24	11.7	16	4.6	132	9.3
Education; mother								
Primary school	265	30.9	71	34.8	132	37.7	468	33.1
Secondary school	55	6.4	10	4.9	29	8.3	94	6.7
High school	84	9.8	20	9.8	36	10.3	140	9.9
Certificate	107	12.5	20	9.8	40	11.4	167	11.8
Bachelor or equivalence	281	32.8	70	34.3	100	28.6	451	31.9
Master or higher	66	7.7	13	6.4	13	3.7	92	6.5
Occupation; father ^c								
Physician	7	0.8	0	0.0	1	0.3	8	0.6
Pharmacist	9	1.0	0	0.0	8	2.2	17	1.2
Health Professional	4	0.5	6	3.0	3	0.8	13	0.9
Government	262	30.1	88	44.4	94	26.1	444	31.1
Business/merchant	336	38.6	44	22.2	186	51.7	566	39.6
Private/employee	136	15.6	15	7.6	28	7.8	179	12.5
Agriculturer	51	5.9	31	15.7	24	6.7	106	7.4
Do not work	41	4.7	11	5.6	5	1.4	57	4.0
Dead	24	2.8	3	1.5	11	3.1	38	2.7

Variable	Government University				Private University		Total (N=1,440)	
	B.Sc. (N=873)		Pharm.D. (N=206)		B.Sc. (N=361)		N	%
	N	%	N	%	N	%		
Occupation; mother ^c								
Physician	3	0.3	0	0.0	1	0.3	4	0.3
Pharmacist	6	0.7	0	0.0	6	1.7	12	0.8
Health Professional	22	2.5	9	4.4	7	2.0	38	2.7
Government	223	25.7	67	33.0	67	18.8	357	25.0
Business/merchant	274	31.5	58	28.6	178	49.9	510	35.7
Private/employee	79	9.1	13	6.4	15	4.2	107	7.5
Agriculturer	50	5.8	29	14.3	20	5.6	99	6.9
Do not work	200	23.0	26	12.8	56	15.7	282	19.7
Dead	12	1.4	1	0.5	7	2.0	20	1.4

^b Significant difference by Chi-square at the 0.01 level

^c Significant difference by Chi-square at the 0.001 level

Table 62: Characteristics of pharmacy students grouping by study year

Variable	1 st year (N=336)		2 nd year (N=318)		3 rd year (N=309)		4 th year (N=214)		5 th year (N=263)		Total (N=1,440)	
	N	%	N	%	N	%	N	%	N	%	N	%
Gender ^b												
Male	102	30.4	71	22.3	78	25.2	34	15.9	70	26.6	355	24.7
Female	234	69.6	247	77.7	231	74.8	180	84.1	193	73.4	1,085	75.3
Join in extracurricular activities ^c												
Yes	205	63.5	173	55.3	169	55.8	93	44.1	151	59.0	791	56.3
No	118	36.5	140	44.7	134	44.2	118	55.9	105	41.0	615	43.7
Have a part-time job ^c												
Yes	26	8.1	12	3.8	24	8.1	23	10.9	39	15.3	124	8.9
No	295	91.9	300	96.2	273	91.9	188	89.1	216	84.7	1,272	91.1
Birthplace ^c												
Bangkok	117	34.8	73	23.0	96	31.1	66	30.8	52	19.8	404	28.1
Other provinces	219	65.2	245	77.0	213	68.9	148	69.2	211	80.2	1,036	71.9
Professional field interested ^d												
Hospital	109	29.5	80	25.4	80	26.1	65	30.4	92	34.9	405	28.9
Public hospital	62	18.5	39	12.4	49	16.0	34	15.9	64	24.3	248	17.3
Private hospital	37	11.0	41	13.0	31	10.1	31	14.5	28	10.6	167	11.6
Marketing	51	15.2	35	11.1	56	18.2	25	11.7	33	12.5	200	13.9
Law enforcement	9	2.7	5	1.6	5	1.6	4	1.9	4	1.5	27	1.9
Community Pharmacy	69	20.5	74	23.5	68	22.1	55	25.7	66	25.1	332	23.1
Industry	101	30.1	103	32.7	80	26.1	52	24.3	42	16.0	378	26.3
Education	3	0.9	9	2.9	6	2.0	3	1.4	14	5.3	35	2.4
Others (Business)	3	0.9	7	2.2	5	1.6	6	2.8	9	3.4	30	2.1
No idea	1	0.3	2	0.6	7	2.3	4	1.9	3	1.1	18	1.3

Variable	1 st year (N=336)		2 nd year (N=318)		3 rd year (N=309)		4 th year (N=214)		5 th year (N=263)		Total (N=1,440)	
	N	%	N	%	N	%	N	%	N	%	N	%
Influential person for choosing pharmacy												
Parents	106	31.7	119	37.4	122	39.9	76	35.7	89	34.1	513	35.8
Relatives	15	4.5	14	4.4	3	1.0	10	4.7	11	4.2	54	3.8
Siblings	3	0.9	6	1.9	8	2.6	5	2.3	4	1.5	26	1.8
Friends	4	1.2	5	1.6	3	1.0	3	1.4	9	3.4	24	1.7
Himself/Herself (None)	204	61.1	169	53.1	163	53.3	117	54.9	145	55.6	798	55.7
Other	2	0.6	5	1.6	7	2.3	2	0.9	3	1.1	17	1.2
Education; father ^a												
Primary school of lower	65	19.5	75	23.7	61	19.9	67	31.3	64	24.7	332	23.5
Secondary school	22	6.6	32	10.1	15	4.9	13	6.1	22	8.5	104	7.4
High school	43	12.9	39	12.3	41	13.4	22	10.3	32	12.4	177	12.5
Certificate	38	11.4	42	13.2	37	12.1	31	14.5	25	9.7	173	12.2
Bachelor or equivalence	133	39.9	97	30.6	110	35.8	63	29.4	92	35.5	495	35.0
Master or higher	29	8.7	28	8.8	34	11.1	18	8.4	23	8.9	132	9.3
Education; mother ^b												
Primary school of lower	100	29.9	95	30.2	92	29.9	84	39.4	97	37.2	468	33.1
Secondary school	11	3.3	29	9.2	22	7.1	13	6.1	19	7.3	94	6.7
High school	36	10.7	36	11.4	28	9.1	20	9.4	20	7.7	140	9.9
Certificate	35	10.4	41	13.0	44	14.3	23	10.8	24	9.2	167	11.8
Bachelor or equivalence	115	34.3	84	26.7	97	31.5	66	31.0	89	34.1	451	31.9
Master or higher	32	9.6	28	8.9	17	5.5	6	2.8	9	3.4	92	6.5

Variable	1 st year (N=336)		2 nd year (N=318)		3 rd year (N=309)		4 th year (N=214)		5 th year (N=263)		Total (N=1,440)	
	N	%	N	%	N	%	N	%	N	%	N	%
	Occupation; father											
Physician	3	0.9	2	0.6	1	0.3	1	0.5	1	0.4	8	0.6
Pharmacist	5	1.5	5	1.6	4	1.3	1	0.5	2	0.8	17	1.2
Health Professional	0	0	1	0.3	2	0.6	3	1.4	7	2.7	13	0.9
Government	103	31.0	101	32.5	91	29.4	63	29.4	86	32.8	444	31.1
Business/merchant	137	41.3	132	42.4	116	37.5	79	36.9	102	38.9	566	39.6
Private/employee	51	15.4	33	10.6	43	13.9	27	12.6	25	9.5	179	12.5
Agriculturer	18	5.4	22	7.1	24	7.8	17	7.9	25	9.5	106	7.4
Do not work	10	3.0	9	2.9	15	4.9	16	7.5	7	2.7	57	4.0
Dead	5	1.5	6	1.9	13	4.2	7	3.3	7	2.7	38	2.7
Occupation; mother												
Physician	3	0.9	0	0	0	0	0	0	1	0.4	4	0.3
Pharmacist	3	0.9	7	2.2	1	0.3	1	0.5	0	0	12	0.8
Health Professional	8	2.4	6	1.9	7	2.3	4	1.9	13	5.0	38	2.7
Government	88	26.2	80	25.6	79	25.8	49	23.0	61	23.4	357	25.0
Business/merchant	116	34.5	121	38.7	101	33.0	78	36.6	94	36.0	510	35.7
Private/employee	29	8.6	24	7.7	22	7.2	13	6.1	19	7.3	107	7.5
Agriculturer	17	5.1	16	5.1	24	7.8	20	9.4	22	8.4	99	6.9
Do not work	68	20.2	57	18.2	65	21.2	45	21.1	47	18.0	282	19.7
Dead	4	1.2	2	0.6	7	2.3	3	1.4	4	1.5	20	1.4

^a Significant difference by Chi-square at the 0.05 level

^b Significant difference by Chi-square at the 0.01 level

^c Significant difference by Chi-square at the 0.001 level

2. T-test

Based on the correlation results, model variables had a strong correlation with gender of respondents, professional fields especially direct patient approach fields (hospital and community pharmacy), whether they joined in extracurricular activities or not, and the students' birthplace (between Bangkok and other provinces). T-test analyses were performed to find the differences of main continuous variables between two groups of students. Table 63 shows the t-test results between different gender and patient approach and Table 64 shows the t-test results between whether the students have joined in extracurricular activities or not and the students' birthplace.

Based on Table 63, there were many significant differences so that only significant at the level of 0.001 were reported. Regarding to the different gender, female students had a significant higher score on professional organization as a major referent ($t=4.69$), belief in public service ($t=3.82$), perception of public acceptance for pharmacy profession ($t=4.37$) than male students. In addition, female had a significant higher GPA than male students ($t=4.35$). On the other hand, male students had a significant higher score on belief in self-regulation than female ($t=3.87$). When grouping professional fields into two groups of patient approach (direct and indirect approach), students who chose the direct approach field (hospital and community pharmacy) showed a significant higher score of professional organizational as a major referent ($t=3.51$) and sense of calling ($t=3.62$) when compared with the students who chose the indirect approach field. Moreover, the students with the direct approach field were more likely satisfied in pharmacy profession ($t=5.41$) and perceived that social accepted pharmacy profession much more than the students with the indirect approach field ($t=4.33$). In the contrast, the students who were interested in the indirect approach field had a significant higher GPA than the other one ($t=4.30$).

Based on Table 64, the results revealed that the students who joined in extracurricular activities showed the significant differences in peer group interaction, academic development, and total social and academic integration when compared with who did not join in those activities. The different birthplace (between Bangkok and other

provinces) had the effect significantly on GPA, monthly allowance, score on faculty interaction, professional organization as a major referent, belief in public service, and belief in self-regulation. The students who joined in the extracurricular activities had a significant higher score on peer group interaction ($t=5.69$), academic development ($t=8.59$) and total social and academic integration ($t=6.89$) than who did not join in those activities. While the students with Bangkok as a birthplace had a significant higher GPA than the students who had birthplace in other provinces, other province students had significant more monthly allowance ($t=4.82$) and higher score on faculty interaction ($t=3.46$), professional organization as a referent ($t=3.71$), belief in public service ($t=3.66$), and belief in self-regulation ($t=3.64$) than the students who lived and were born in Bangkok (see Table 64)

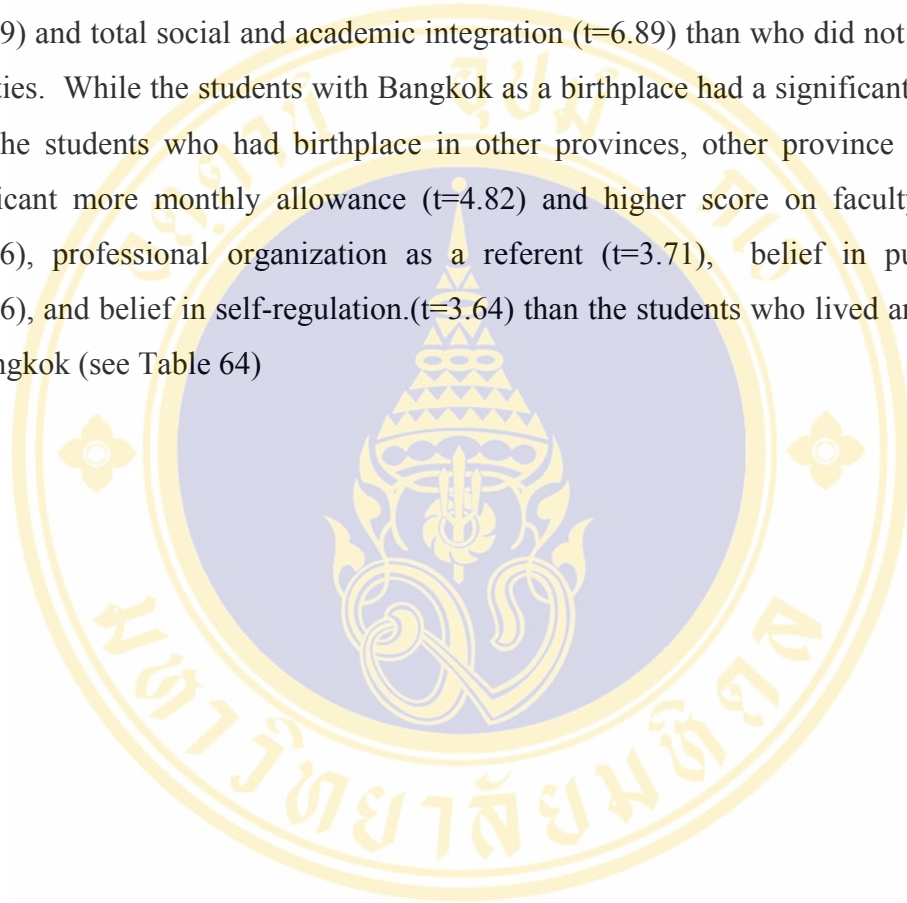


Table 63: t-test result of pharmacy students grouping by gender and patient approach

Variable	Gender				Patient approach				Total (N=1,440)	
	Male (N=355)		Female (N=1,085)		Direct (N=748)		Indirect (N=692)		Mean	SD
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age of respondent	20.46	1.75	20.48	1.66	20.70	1.84	20.24	1.45	20.48	1.68
Pharmacy Grade Point Average	2.91	0.42	3.02 ^b	0.42	2.95	0.45	3.04 ^c	0.40	2.99	0.43
Monthly allowance	5,590.41	4,911.30	5,236.37	3,132.71	5,574.16 ^b	4,055.27	5,046.58	3,138.29	5,324.49	3,658.37
Social and academic integration										
Peer group interaction	21.90	2.85	22.46 ^b	2.51	22.17	2.56	22.48 ^a	2.65	22.32	2.61
Faculty interaction	19.51	3.01	19.37	3.02	19.37	3.09	19.45	2.94	19.41	3.02
Academic development	33.34	3.97	33.20	3.69	33.19	3.63	33.28	3.90	33.23	3.76
Faculty concern	15.90	3.00	16.59 ^a	3.40	16.50	3.53	16.33	3.08	16.42	3.32
Total social and academic integration	90.68	8.72	91.63	8.41	91.23	8.60	91.57	8.38	91.40	8.49
Professionalism										
Professional organization	17.87	2.63	18.60 ^c	2.47	18.65 ^c	2.51	18.17	2.53	18.42	2.53
Belief in public service	24.49	2.88	25.16 ^c	2.60	25.13	2.65	24.85	2.72	24.99	2.69
Belief in self regulation	15.64 ^c	3.28	14.86	2.99	15.02	3.06	15.09	3.10	15.05	3.08
Sense of calling	20.89	3.20	21.16	3.06	21.39 ^c	3.01	20.79	3.15	21.10	3.09
Belief in autonomy	14.16	1.61	14.09	1.63	14.15	1.63	14.06	1.62	14.11	1.63
Belief in continuing competence	19.67	2.68	19.87	2.47	19.76	2.53	19.89	2.52	19.83	2.52
Total professionalism	112.79	8.47	113.71	7.70	114.10 ^b	7.81	112.82	7.97	113.48	7.91
Moral reasoning	43.24	23.97	46.31 ^a	23.24	45.36	23.68	45.76	23.21	45.55	23.45
Professional satisfaction	79.76	16.69	82.66 ^b	14.17	83.97 ^c	14.27	79.75	15.21	81.95	14.88
Perception of public acceptance	63.22	20.15	68.60 ^c	17.30	69.34 ^c	18.09	65.08	18.04	67.28	18.18

^aSignificant difference at p<0.05 by t-test

^bSignificant difference at p<0.01 by t-test

^cSignificant difference at p<0.001 by t-test

Table 64: t-test result of pharmacy students grouping by joining in extracurricular activity and birthplace

Variable	Join in extracurricular activities				Birthplace				Total (N=1,440)	
	Yes (N=791)		No (N=615)		Bangkok (N=404)		Other provinces (N=1,036)		Mean	SD
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Age of respondent	20.36	1.57	20.64	1.79	20.09	1.37	20.63	1.76	20.48	1.68
Pharmacy Grade Point Average	3.01	0.41	2.97	0.44	3.11 ^c	0.38	2.95	0.43	2.99	0.43
Monthly allowance	5,168.06	2,805.56	5,565.06	4,573.86	4,560.49	2,736.51	5,614.23 ^c	3,914.52	5,324.49	3,658.37
Social and academic integration										
Peer group interaction	22.67 ^c	2.54	21.88	2.63	22.33	2.62	22.32	2.60	22.32	2.61
Faculty interaction	19.63 ^b	2.98	19.12	3.06	18.97	2.87	19.58 ^c	3.06	19.41	3.02
Academic development	34.00 ^c	3.53	32.29	3.85	32.93	3.67	33.35	3.79	33.23	3.76
Faculty concern	16.54	3.34	16.27	3.29	16.20	2.93	16.51	3.46	16.42	3.32
Total social and academic integration	92.79 ^c	8.24	89.62	8.49	90.41	7.79	91.78 ^b	8.73	91.40	8.49
Professionalism										
Professional organization	18.51	2.45	18.31	2.65	18.03	2.42	18.58 ^c	2.56	18.42	2.53
Belief in public service	25.14 ^a	2.57	24.84	2.82	24.58	2.70	25.16 ^c	2.66	24.99	2.69
Belief in self regulation	14.83	2.97	15.29 ^b	3.19	15.53 ^a	3.10	14.86	3.05	15.05	3.08
Sense of calling	21.27 ^a	3.03	20.88	3.20	20.74	2.92	21.24 ^b	3.15	21.10	3.09
Belief in autonomy	14.23 ^b	1.62	13.97	1.63	13.97	1.63	14.16 ^a	1.62	14.11	1.63
Belief in continuing competence	19.91	2.57	19.73	2.50	19.79	2.43	19.84	2.56	19.83	2.52
Total professionalism	113.83	7.66	113.01	8.27	112.59	7.33	113.84 ^b	8.11	113.48	7.91
Moral reasoning	46.04	22.93	44.48	23.99	44.44	23.43	45.99	23.45	45.55	23.45
Professional satisfaction	83.17 ^b	13.72	80.52	15.97	81.63	13.37	82.07	15.43	81.95	14.88
Perception of public acceptance	68.06	17.88	66.30	18.65	66.18	17.99	67.70	18.24	67.28	18.18

^aSignificant difference at p<0.05 by t-test

^BSignificant difference at p<0.01 by t-test

^CSignificant difference at p<0.001 by t-test

3. Multivariate Analysis of Variance (MANOVA)

When analyzed the differences of continuous model variables among more than two groups (among three different universities and programs and among five study years), MANOVA were performed. Table 65-66 show the MANOVA results of pharmacy students.

Table 65 shows the differences of model variables among three different type of university and its program. Before analyzing MANOVA among three groups, the effects of the different study years and gender to the students' model variables score were controlled by using MACOVA. The results revealed that students in private university were older than those at government university ($F,2=21.11, p<0.001$). In terms of GPA, B.Sc. government students had the highest mean of GPA ($F,2=53.26, p<0.001$). With the monthly allowance, private students got much more allowance than government students with both B.Sc. and Pharm.D. program ($F,2=66.17, p<0.001$). With regarding to faculty interaction, sense of calling, total professionalism and professional satisfaction, private students had a significantly higher score on these variables than government students with both B.Sc. and Pharm.D. program. ($F,2=7.24, p<0.01$; $F,2=14.45, p<0.001$; and $F,2=18.12, p<0.001$ respectively). Government Pharm.D. students were found to have a higher score on faculty concern than B.Sc. students both in government and private universities. Considering professionalism attribute, It was found that private students had a significant higher score on professional organization as a major referent than government B.Sc. students, whereas government Pharm.D. students had a significantly higher score on both professional organization as a major referent and belief in public service than government B.Sc. students ($F,2=11.99, p<0.001$; $F,2=4.75, p<0.01$). For the score of belief in self-regulation, only government B.Sc. students had a higher score than private students significantly ($F,2=3.36, p<0.05$). When the students were asked how many percent of social acceptance for pharmacy profession they perceived, among three groups, private students showed the significant highest percent of perception, whereas government B.Sc. students had the percent of perception significant higher than government Pharm.D. students ($F,2=27.85, p<0.001$).

Among five year students, several differences of model variables were found as shown in Table 65. In these analyses, the effects of gender and university type to the model variables were controlled. GPA decreased gradually with the advanced year in school. Using social and academic integration as a point, there were the significant differences in peer group interaction, faculty interaction, and total social and academic integration among five study years. The fifth year students were more likely to have higher score on all three variables of social and academic integration and total social and academic integration than the third year students. The fresh students had a significant higher score on peer group interaction than the third and fourth year students. In terms of faculty interaction, academic development and total score of social and academic integration, the fifth year had score higher than the other years. With regarding to professionalism and its six attributes, the results showed that the first year had a higher score of professional organization as a major referent, belief in self-regulation and sense of calling than the older year students. On the other hand, the fourth year students showed the significant higher score on belief in continuing competence than the other year students. For belief in public service, the second year students had lower score than the first year and the fourth year students. With the total score of professionalism, among five year students, the first year students had a higher score than the other year students.

For social integration in workplace which the data were collected only from the fourth and the fifth year students, the t-test result showed that the fifth year had a significant higher score than the fourth year ($t=2.74$, $p<0.01$). The difference among five year students was found from perception of public acceptance for pharmacy profession. The fifth and the fourth year students had a lower score than the younger students.

Table 65: MANOVA result of model variables among three groups of pharmacy students

Variable ^t	Gov. B.Sc. (N=873)		Gov. Pharm.D. (N=206)		Private B.Sc. (N=361)		Total (N=1,440)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age of respondent ^a	20.26	1.39	20.21	1.40	21.21	2.24	20.48	1.68
Pharmacy Grade Point Average ^b	3.09	0.38	2.92	0.36	2.79	0.50	2.99	0.43
Monthly allowance ^c	4,522.99	2,165.60	4,991.52	1,737.38	7,454.53	5,855.16	5,324.49	3,658.37
Social and Academic Integration								
Peer group interaction	22.42	2.50	22.03	2.70	22.22	2.78	22.32	2.61
Faculty interaction ^d	19.16	2.88	19.30	3.38	20.08	3.07	19.41	3.02
Academic development	33.07	3.55	33.33	4.13	33.70	3.93	33.23	3.76
Faculty concern ^f	16.32	2.98	17.34	4.13	16.11	3.52	16.42	3.32
Total social&academic integration	90.97	7.95	92.17	9.86	92.07	9.24	91.40	8.49
Professionalism								
Professional organization as a referent ^h	18.06	2.48	18.79	2.35	19.18	2.56	18.42	2.53
Belief in public service ^k	24.81	2.65	25.36	2.77	25.20	2.71	24.99	2.69
Belief in self regulation ^l	15.25	3.01	14.61	3.04	14.83	3.25	15.05	3.08
Sense of calling ^m	20.66	2.92	20.73	3.44	22.38	2.88	21.10	3.09
Belief in autonomy	14.04	1.62	14.13	1.63	14.25	1.66	14.11	1.63
Belief in continuing competence	19.82	2.41	19.70	2.93	19.91	2.59	19.83	2.52
Total score of professionalism ⁿ	112.70	7.51	113.69	8.91	115.64	7.71	113.48	7.91
Moral reasoning	45.57	23.84	48.17	23.84	43.96	22.49	45.55	23.45
Social integration in workplace	20.99	2.63	21.48	2.27	21.34	2.40	21.16	2.52
Professional satisfaction ^o	80.04	14.53	80.75	16.48	87.33	13.56	81.95	14.88
Perception of public acceptance ^p	66.64	17.08	60.89	20.64	73.07	17.96	67.28	18.18

^t Applying Bonferroni adjustment for multiple comparisons and controlling for study years and gender of respondents

^a Private Bsc>Gov.Bsc, Private Bsc>Gov.PharmD with significant p<0.001 from Scheffe Post Hoc test (F,2=21.11, p<0.001)

^b Gov.Bsc>Gov.PharmD>Private with significant p<0.001 (F,2=53.26, p<0.001)

^c Private>Gov.Bsc, Private>Gov.PharmD with significant p<0.001 (F,2=66.17, p<0.001)

^d Private>Gov.Bsc, Private>Gov.PharmD with significant p<0.001 (F,2=7.24, p<0.01)

- ^f Gov.PharmD>Gov.Bsc, Gov.PharmD>Private with significant $p<0.001$ (F,2=11.99, $p<0.001$)
- ^h Gov. PharmD>Gov.Bsc, Private>Gov.PharmD with significant $p<0.001$ (F,2=20.46, $p<0.001$)
- ^k Gov. PharmD>Gov.Bsc with significant $p<0.05$ (F,2=4.75, $p<0.01$)
- ^l Gov.Bsc >Gov.PharmD with significant $p<0.05$ (F,2=3.36, $p<0.05$)
- ^m Private>Gov.Bsc, Private>Gov.PharmD with significant $p<0.001$ (F,2=37.37, $p<0.001$)
- ⁿ Private>Gov.Bsc, Private>Gov.PharmD with significant $p<0.001$ (F,2=14.45, $p<0.001$)
- ^o Private>Gov.Bsc, Private>Gov.PharmD with significant $p<0.001$ (F,2=18.12, $p<0.001$)
- ^p Private>Gov.Bsc>Gov.PharmD with significant $p<0.001$ (F,2=27.85, $p<0.001$)



Table 66: MANOVA result of main variables among five study years of pharmacy students

Variable	1 st year (N=336)		2 nd year (N=318)		3 rd year (N=309)		4 th year (N=214)		5 th year (N=263)		Total (N=1,440)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	Age of respondent ^a	18.79	0.68	19.68	1.11	20.54	1.00	21.58	0.89	22.61	1.26	20.48
Pharmacy Grade Point Average ^b	3.19	0.34	3.00	0.40	2.97	0.40	2.91	0.41	2.82	0.50	2.99	0.43
Monthly allowance ^c	4,736.92	2,992.31	5,200.56	2,993.75	5,238.73	2,730.98	5,518.14	5,705.63	6,163.39	3,854.52	5,324.49	3,658.37
Social and Academic Integration												
Peer group interaction ^d	22.74	2.46	22.25	2.64	21.91	2.47	21.96	2.55	22.61	2.80	22.32	2.61
Faculty interaction ^e	18.32	3.07	19.34	2.98	19.48	2.70	19.88	3.28	20.43	2.73	19.41	3.02
Academic development ^f	33.72	3.34	32.82	3.72	32.83	3.90	32.90	3.90	33.98	3.68	33.23	3.76
Faculty concern	16.07	3.34	16.17	2.83	16.54	3.68	16.66	3.31	16.78	3.36	16.42	3.32
Total social&academic integration ^h	90.86	7.85	90.58	8.33	90.77	8.97	91.39	8.44	93.80	8.49	91.40	8.49
Professionalism												
Professional organization ⁱ	18.98	2.39	18.26	2.52	18.22	2.50	18.61	2.48	18.02	2.67	18.42	2.53
Belief in public service ^k	25.24	2.57	24.59	2.91	24.66	2.72	25.29	2.43	25.22	2.67	24.99	2.69
Belief in self regulation ^l	15.50	3.29	15.06	3.12	15.56	2.83	14.57	2.65	14.39	3.13	15.05	3.08
Sense of calling ^m	21.95	2.60	21.02	3.30	20.73	2.93	20.57	2.92	20.88	3.36	21.10	3.09
Belief in autonomy	14.19	1.62	14.23	1.58	13.95	1.64	14.07	1.71	14.06	1.62	14.11	1.63
Belief in continuing competence ⁿ	19.81	2.21	19.55	2.72	19.65	2.18	20.57	2.44	19.72	2.98	19.83	2.52
Total score of professionalism ^o	115.68	7.06	112.71	8.20	112.77	7.52	113.67	7.81	112.29	8.40	113.48	7.91
Moral reasoning	47.17	23.06	44.37	24.08	46.83	23.95	44.39	22.80	44.36	23.06	45.55	23.45
Social integration in workplace ^p	-	-	-	-	-	-	20.71	2.50	21.43	2.47	21.16	2.52
Professional satisfaction	83.22	12.69	80.98	16.79	80.45	15.36	81.84	13.82	83.34	15.11	81.95	14.88
Perception of public acceptance ^r	71.91	16.37	69.48	18.85	68.02	17.71	59.66	17.37	64.36	18.38	67.28	18.18

ⁱ Applying Bonferroni adjustment for multiple comparisons and controlling for university type and gender of respondents

^a significance difference at p<0.001 by Scheffe post hoc test (F,4=490.53, p<0.001)

^b 1>2, 1>3, 1>4, 1>5, 2>5 with significance at p<0.001 (F,4=25.23, p<0.001), ^c 5>1, 5>2, 5>3 with significance at p<0.001 (F,4=3.27, p<0.05)

^d 1>3, 1>4, 5>3 with significance at p<0.001 (F,4=5.94, p<0.001), ^e 5>2>1, 4>1 with significance at p<0.001 (F,4=15.77, p<0.001)

^f 1>2, 1>3, 5>2, 5>3, 5>4 with significance at p<0.001 (F,4=4.63, p<0.01), ^h 5>1, 5>2, 5>3, 5>4 with significance at p<0.001 (F,4=7.27, p<0.001)

ⁱ 1>2, 1>3, 1>5 with significance at p<0.001 (F,4=8.85, p<0.001), ^k 1>2, 4>2 with significance at p<0.01 (F,4=6.11, p<0.001)

^l 1>4, 1>5, 3>4, 3>5 with significance at p<0.001 (F,4=6.44, p<0.001)



^m 1>2, 1>3, 1>4, 1>5 with significance at p<0.001 (F,4=8.65, p<0.001)
ⁿ 4>1, 4>2, 4>3, 4>5 with significance at p<0.001 (F,4=3.10, p<0.05)
^o 1>2, 1>3, 1>4, 1>5 with significance at p<0.001 (F,4=8.99, p<0.001)
^p 5>4 with significance by t-test at p<0.001 (t=2.74, p<0.01)
^r 1>4, 1>5, 2>4, 2>5, 3>4 with significance at p<0.001 (F,4=20.55, p<0.001)

4. Multivariate Regression Analysis

Stepwise multiple regression analysis was used to predict the relationship between one continuous dependent variable and several continuous or/and categorical independent variables of the study. Table 67 shows the multiple regression analysis of the latent variables of professionalism and total overall professionalism. For overall of professionalism, ten independent variables accounted for 23.2 percent of variance of total professionalism. Five variables including academic development, perception of public acceptance for pharmacy profession, peer group interaction, private university and the fifth year of pharmacy study accounted for 20.2 percent of variance, while the remaining five variables accounted for the other 3.0 percent of variance. For the belief in professional organization as a major referent, there was only three variables, academic development, faculty concern and private university accounted for the high variance (13.5 percent), while the other eleven variables accounted for the other 7.6 percent of variance. Overall, these 14 variables accounted for a total of 21.1 percent of belief in professional organization as a major referent variance.

With the variance of belief in public service, only four variables, academic development, peer group interaction, Bangkok birthplace and second study accounted for a high variance for belief in public service. The other nine variables including female, having relatives as the influential person for choosing pharmacy school, faculty interaction, father with occupation of a private company officer, public hospital field, third study year, having parents as the influential person for choosing pharmacy school, private hospital field, and faculty concern accounted for 4.2 percent of variance. Overall, these six variables explained the total variance of belief in public service with 13.2 percent. In terms of belief in self-regulation, all seven variables accounted for a total of 6.8 percent of belief in self-regulation variance. While only three variables, faculty concern, gender of female and fifth study year accounted for 4.2 percent variance of belief in self-regulation. For sense of calling, three main variables, academic development, private university, and perception of public acceptance for pharmacy profession accounted for 28.1 percent of sense of calling variance. While the other five variables including birthplace in Bangkok, knowledge applicability, education level of master degree, mother with occupation of

health professional, and monthly income accounted for 4.2 percent of sense of calling variance. Overall, sense of calling variance was accounted for 24.8 percent. With regarding to belief in autonomy, only one variable, academic development accounted for 1.6 percent variance of belief in autonomy. For belief in continuing competence, three variables including peer group interaction, the fourth study year, and faculty interaction accounted for a total of 3.9 percent variance of belief in continuing competence. Finally, moral reasoning was accounted for a total of 3.4 percent variance. The only two variables explained moral reasoning variance were owner drugstore pharmacist (2.4%) and monthly salary (1.0%).

Table 78 shows the stepwise regression analysis of two dependent variables, moral reasoning and professional satisfaction. It was found all six independent variables accounted for 3.3 percent of moral reasoning variance. These variables included of belief in self regulation, whether the student had a part-time job while studying in pharmacy school, being the fourth study year and the second study year, gender of female, and mother with occupation of health professional. For professional satisfaction, ten dependent variables could account for 32.0 percent variance. Only four main variables, sense of calling, perception of public acceptance for pharmacy profession, academic development, and belief in professional organization as a major referent accounted for 30.0 percent of professional satisfaction variance.

Table 67: Stepwise regression of professionalism variables among pharmacy students

Variable set	B ^a	β^b	T value	R ²	ΔR^2	Adj R ²
Total score of professionalism^h						
Academic development	0.61	0.29	9.73 ^f	0.155	0.155	0.154
Perception of public acceptance	0.03	0.08	2.78 ^d	0.168	0.013	0.166
Peer group interaction	0.31	0.10	3.53 ^f	0.177	0.009	0.175
Private University	2.94	0.16	5.48 ^f	0.189	0.012	0.186
Fifth year	-2.89	-0.15	-5.28 ^f	0.202	0.013	0.198
Public hospital pharmacy	1.97	0.10	3.58 ^f	0.211	0.009	0.207
Faculty interaction	0.21	0.08	2.85 ^d	0.218	0.007	0.213
Faculty concern	0.17	0.07	2.66 ^d	0.223	0.005	0.218
Parents influence	-1.32	-0.08	-2.88 ^d	0.228	0.005	0.222
Relatives influence	-2.81	-0.06	-2.37 ^c	0.232	0.004	0.225
Constant	76.87		32.58 ^f			
Professional organization as a referent^k						
Academic development	0.14	0.21	6.88 ^f	0.088	0.088	0.087
Faculty concern	0.11	0.15	5.40 ^f	0.114	0.026	0.113
Private university	0.98	0.16	5.48 ^f	0.135	0.021	0.133
Fifth year	-1.51	-0.23	-6.56 ^f	0.152	0.017	0.149
Business mother	-0.49	-0.09	-3.40 ^d	0.164	0.012	0.160
Female	0.56	0.10	3.50 ^f	0.171	0.007	0.167
Perception of public acceptance	0.01	0.08	2.77 ^d	0.177	0.006	0.172
Government Pharm.D university	0.53	0.08	2.69 ^d	0.183	0.006	0.178
Second year	-0.97	-0.16	-4.63 ^f	0.188	0.005	0.182
Third year	-0.96	-0.15	-4.54 ^f	0.198	0.010	0.191
Faculty interaction	0.06	0.07	2.32 ^c	0.202	0.004	0.194
Fourth year	-0.58	-0.08	-2.43 ^c	0.205	0.003	0.196
GPA of graduation	-0.44	-0.07	-2.48 ^c	0.209	0.004	0.199
Peer group interaction	0.06	0.06	2.00 ^c	0.211	0.003	0.202
Constant	10.23		11.35 ^f			
Belief in public service^l						
Academic development	0.08	0.11	3.42	0.041	0.041	0.040
Peer group interaction	0.09	0.09	2.90	0.056	0.015	0.054
Bangkok birthplace	-0.56	-0.10	-3.24	0.067	0.011	0.065
Second year	-0.73	-0.11	-3.93	0.077	0.010	0.074
Female	0.56	0.09	3.29	0.086	0.009	0.081
Relatives influence	-1.62	-0.11	-3.84	0.094	0.008	0.089
Faculty interaction	0.09	0.10	3.41	0.101	0.007	0.096
Private company officer father	0.65	0.08	2.86	0.108	0.007	0.102
Public hospital pharmacy	0.56	0.08	2.82	0.114	0.006	0.107
Third year	-0.51	-0.08	-2.71	0.119	0.005	0.112
Parents influence	-0.41	-0.07	-2.62	0.125	0.006	0.116
Private hospital pharmacy	0.51	0.06	2.16	0.128	0.003	0.119
Faculty concern	0.05	0.06	2.03	0.132	0.004	0.122

Variable set	B ^a	β ^b	T value	R ²	ΔR ²	Adj R ²
Constant	17.92		21.03			
Belief in self regulation^m						
Faculty concern	-0.09	-0.10	-3.39	0.016	0.016	0.015
Female	-0.72	-0.10	-3.54	0.028	0.012	0.027
Fifth year	-1.01	-0.13	-4.48	0.042	0.014	0.039
Moral reasoning	-0.01	-0.10	-3.54	0.051	0.009	0.048
Fourth year	-0.73	-0.09	-2.94	0.058	0.007	0.054
Sibling influence	1.62	0.08	2.61	0.064	0.006	0.059
Business father	0.39	0.06	2.16	0.068	0.004	0.062
Constant	17.64		37.02			
Sense of callingⁿ						
Academic development	0.25	0.31	10.96	0.157	0.157	0.156
Private university	2.01	0.28	10.12	0.203	0.046	0.202
Perception of public acceptance	0.01	0.08	3.08	0.220	0.017	0.218
Faculty concern	0.09	0.10	3.90	0.231	0.011	0.228
Parents influence	-0.54	-0.08	-3.20	0.239	0.008	0.235
Fifth year	-1.49	-0.19	-5.95	0.246	0.007	0.242
Public hospital pharmacy	0.81	0.10	3.92	0.254	0.008	0.250
Peer group interaction	0.11	0.10	3.42	0.264	0.010	0.259
Fourth year	-1.11	-0.13	-4.18	0.268	0.004	0.262
Third year	-0.96	-0.13	-4.00	0.273	0.005	0.267
Second year	-0.65	-0.09	-2.76	0.278	0.005	0.271
Sibling influence	1.19	0.05	2.13	0.281	0.003	0.273
Constant	8.00		8.95			
Belief in autonomy^o						
Academic development	0.05	0.12	4.25	0.016	0.016	0.015
Constant	12.35		29.17			
Belief in continuing competence^p						
Peer group interaction	0.14	0.14	4.81	0.024	0.024	0.023
Fourth year	0.65	0.09	3.20	0.034	0.010	0.032
Faculty interaction	0.06	0.07	2.45	0.039	0.005	0.036
Constant	15.55		22.12			

^a Unstandardized coefficient

^b Standardized coefficient

^c T-value is significant at p < 0.05, ^d p < 0.01, ^e p < 0.001

^b F(df=6,736) = 37.45, p<0.001, Durbin-Watson=1.89, ^k F(df=9,736) = 19.03, p<0.001, Durbin-Watson=1.79

^l F(df=6,736) = 26.59, p<0.001, Durbin-Watson=2.04, ^m F(df=4,736) = 7.29, p<0.001, Durbin-Watson=1.82

ⁿ F(df=8,736) = 28.26, p<0.001, Durbin-Watson=2.07, ^o F(df=5,736) = 10.36, p<0.001, Durbin-Watson=1.98

^p F(df=6,736) = 26.59, p<0.001, Durbin-Watson=2.04

Table 68: Stepwise regression of moral reasoning and professional satisfaction

Variable set	B ^a	β^b	T value	R ²	ΔR^2	Adj R ²
Moral reasoning^r						
Belief in self regulation	-0.83	-0.11	-3.50	0.013	0.013	0.012
Have a part-time job	-6.04	-0.07	-2.37	0.017	0.004	0.016
Fourth year	-5.54	-0.08	-2.71	0.021	0.007	0.018
Second year	-4.04	-0.07	-2.29	0.025	0.004	0.022
Female	3.65	0.07	2.22	0.029	0.004	0.025
Health professional mother	-7.18	-0.06	-1.97	0.033	0.004	0.028
Constant	57.96		14.59			
Professional satisfaction^s						
Sense of calling	1.77	0.37	12.67	0.239	0.239	0.239
Perception of public acceptance	0.14	0.16	6.17	0.266	0.027	0.264
Academic development	0.52	0.13	4.72	0.287	0.021	0.285
Professional organization	0.77	0.13	4.68	0.300	0.013	0.298
Fifth year	3.22	0.09	3.31	0.304	0.004	0.301
Fourth year	3.72	0.09	3.42	0.310	0.006	0.306
Relatives influence	-4.20	-0.05	-2.02	0.312	0.002	0.308
Bangkok	1.78	0.05	2.12	0.315	0.003	0.310
Belief in continuing competence	-0.31	-0.05	-2.04	0.317	0.002	0.312
Moral reasoning	0.03	0.05	1.98	0.320	0.003	0.314
Constant	7.47		1.61			

^a Unstandardized coefficient

^b Standardized coefficient

^c T-value is significant at $p < 0.05$, ^d $p < 0.01$, ^e $p < 0.001$

^r $F(df=3,736) = 8.26$, $p < 0.001$, Durbin-Watson=1.95

^s $F(df=11,736) = 38.76$, $p < 0.001$, Durbin-Watson=2.03



Table 69: Twelve pharmacy schools in Thailand and their curricula

University	Faculty	Program	Curriculum	Credit	Total credit
1 Chulalongkorn University	Faculty of Pharmaceutical Sciences	Bachelor of Science in Pharmacy (B.Sc.)	General Education	30	188
			Special Education	155	
			Free Electives	3	
2 Chiang Mai University	Faculty of Pharmacy	Bachelor of Pharmacy (B.Pharm.)	General Education	35	185
			Special Education	144	
			Free Electives	6	
3 Mahidol University	Faculty of Pharmacy	Bachelor of Science in Pharmacy (B.Sc)	General Education	53	187
			Special Education	126	
			Free Electives	3	
4 Prince of Songkla University	Faculty of Pharmaceutical Sciences	Bachelor of Pharmacy (B.Pharm.)	General Education	52	183
			Special Education	128	
			Free Electives	3	
5 Khon Kaen University	Faculty of Pharmaceutical Sciences	Bachelor of Pharmacy (B.Pharm.)	General Education	30	186
			Special Education	150	
			Free Electives	6	
6 Silpakorn University	Faculty of Pharmacy	Bachelor of Pharmacy (B.Pharm.)	General Education	30	188
			Special Education	155	
			Free Electives	3	
7 Rangsit University	Faculty of Pharmacy	Bachelor of Pharmacy (B.Pharm.)	General Education	32	186
			Special Education	151	
			Free Electives	3	
8 Naresuan University	Faculty of Pharmaceutical Sciences	Doctor of Pharmacy (Pharmaceutical Care) (Pharm.D. (Pharm.Care))	General Education	31	223
			Special Education	186	
			Free Electives	6	

	University	Faculty	Program	Curriculum	Credit	Total credit
9	Hauchiew Chalermprakiet University	Faculty of Pharmaceutical Sciences	Bachelor of Pharmacy (B.Pharm.)	General Education Special Education Free Electives	32 143 3	176
10	Ubonratchathanee University	Faculty of Pharmaceutical Sciences	Bachelor of Pharmacy (B.Pharm.)	General Education Special Education Free Electives	32 152 3	187
11	Srinakharinwirot University	Faculty of Pharmacy	Bachelor of Pharmacy (B.Pharm.)	General Education Special Education Free Electives	30 152 3	185
12	Maharakham University	The Faculty of Pharmacy and Health Sciences	Doctor of Pharmacy (Pharm.D.)	General Education Special Education Free Electives	31 173 6	210

Table 70: The distribution of Thai pharmacy students from twelve pharmacy schools, the academic year of 2003.

University	Year 1 (2003)	Year 2 (2002)	Year 3 (2001)	Year 4 (2000)	Year 5 (1999)	Total
1. Chulalongkorn ^a	193	123	157	177	177	827
2. Chiang Mai ^a	157	145	147	120	128	697
3. Mahidol ^a	128	85	82	96	101	492
4. Prince of Songkla ^{a,b}						
- B.Pharm.	123	106	115	112	103	559
- Pharm. D.	31	34	-	-	-	65
5. Khon Kaen ^a	108	161	126	138	127	660
6. Silpakorn ^a	171	165	172	145	110	763
7. Rangsit ^{a,c}	127	148	167	120	94	656
8. Naresuan ^b	111	95	80	68	89	443
9. Hauchiew Chalermprakiet ^{a,c}	122	134	126	143	129	654
10. Ubonratchathane ^a	90	100	98	72	56	416
11. Srinakharinwirot ^a	101	81	71	54	49	257
12. Mahasarakham ^b	60	45	53	36	-	194
Total	1,522	1,422	1,394	1,281	1,158	6,683

^a Bachelor of Science in Pharmacy (B.Sc.) or Bachelor of Pharmacy (B.Pharm.) program

^b Doctor of Pharmacy (Pharm.D.) program

^c Private university



FIGURE 13. PROFESSIONALISM SCALE DEVELOPMENT

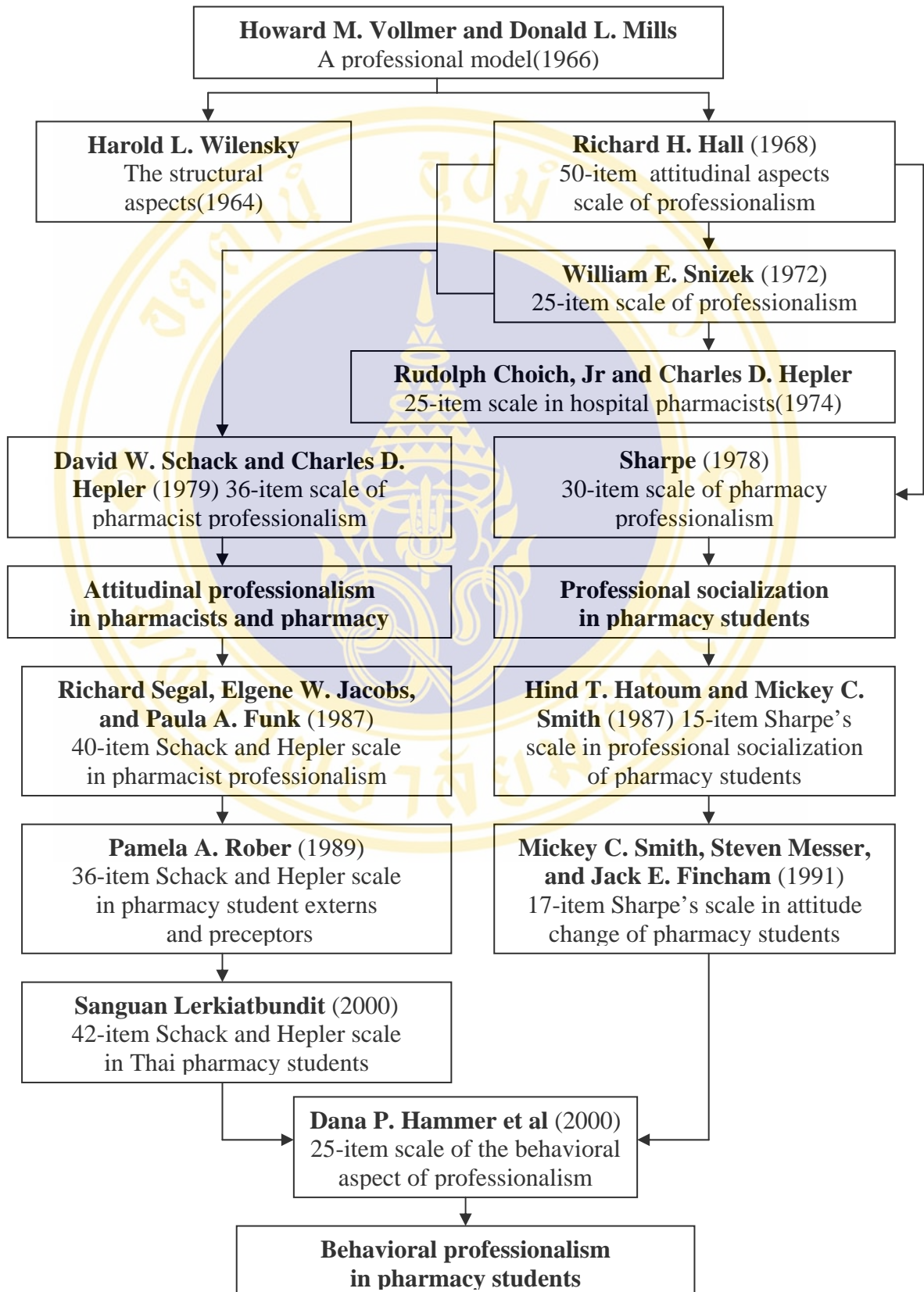


FIGURE 14. SOCIAL AND ACADEMIC INTEGRATION SCALE DEVELOPMENT

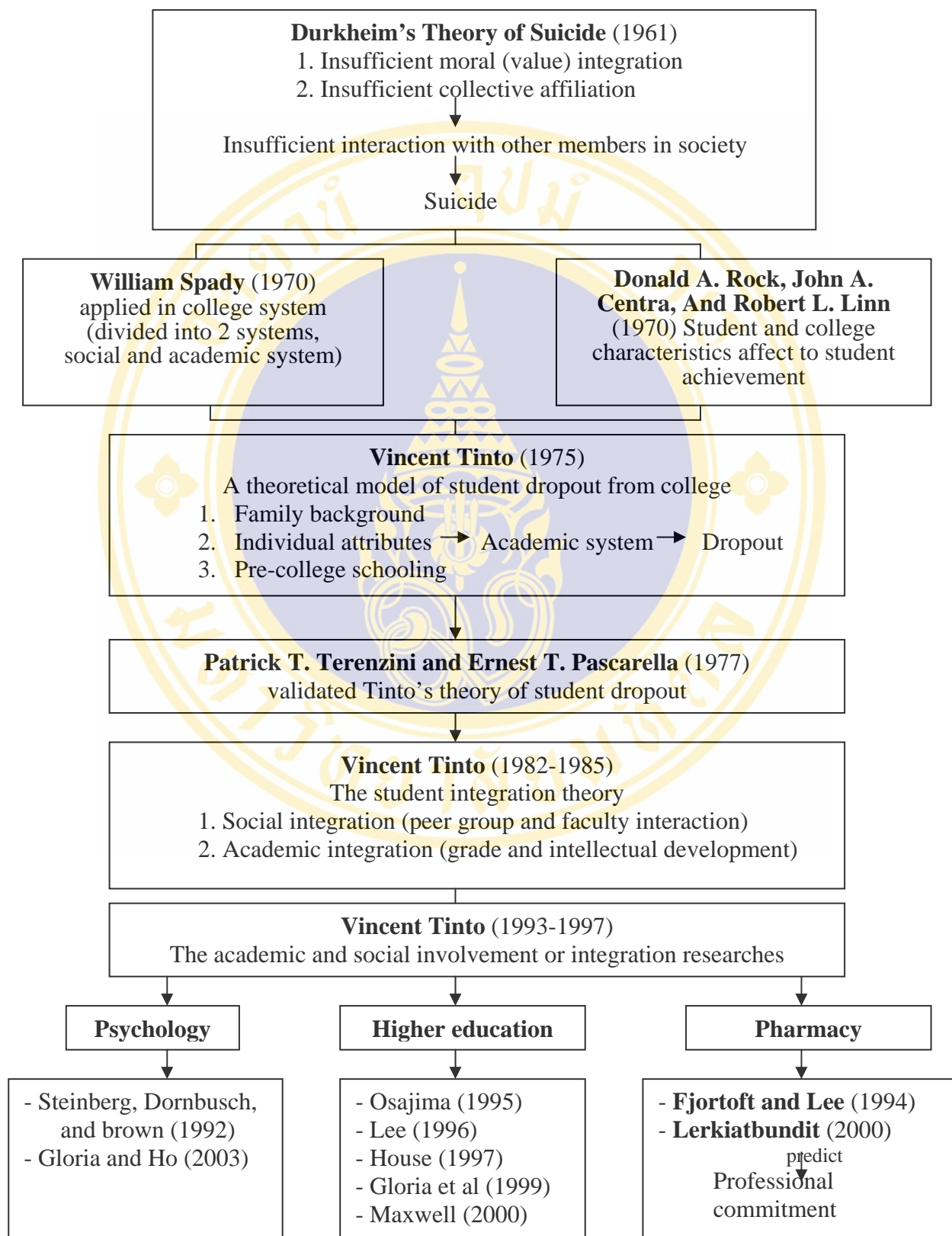
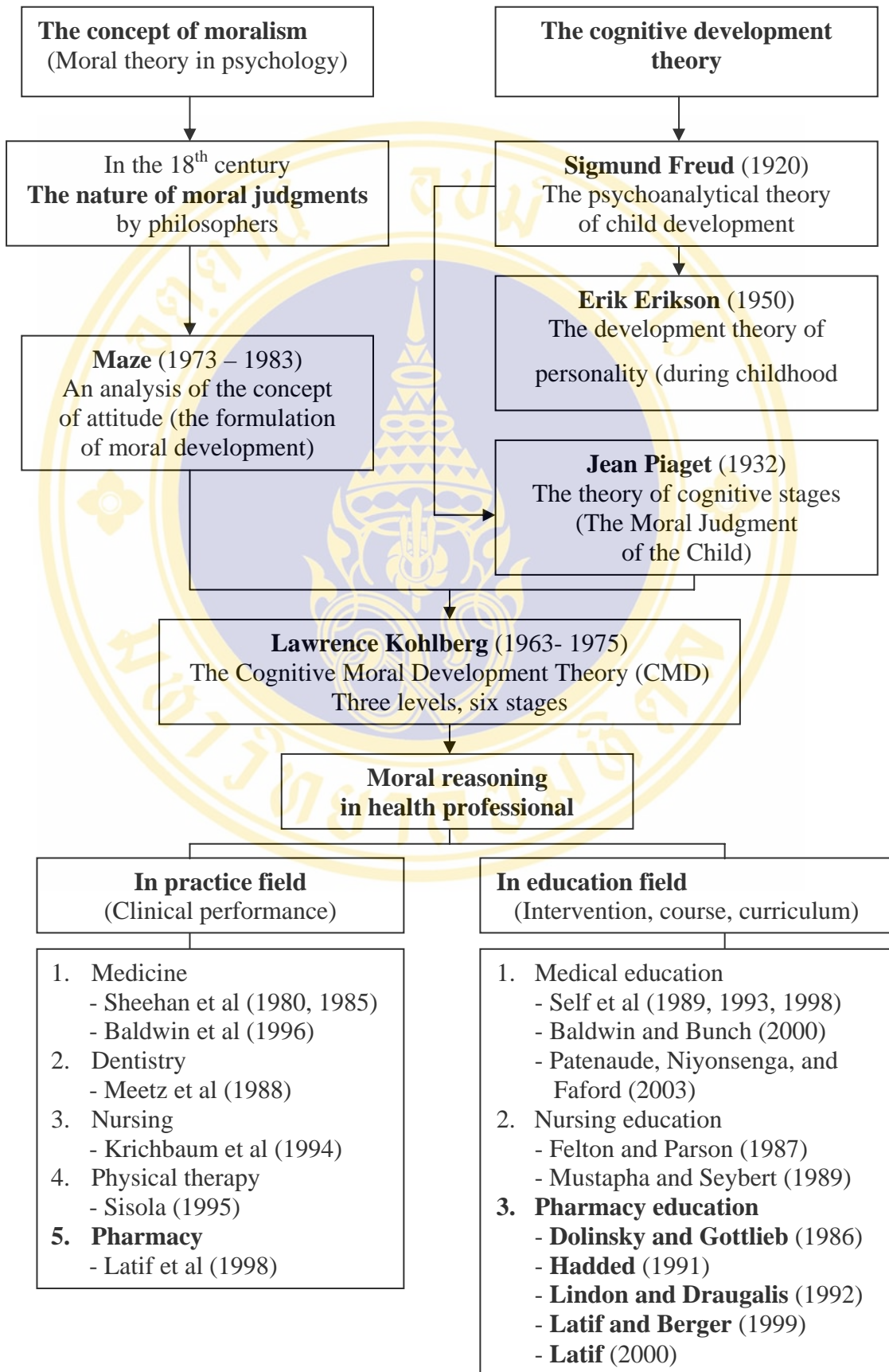


FIGURE 15. MORAL REASONING SCALE DEVELOPMENT



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