

RESEARCH ARTICLES

An Assessment of the Ethical Reasoning of United States Pharmacy Students: A National Study

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Submitted July 15, 2003; accepted September 9, 2003; published April 28, 2004.

Objectives. To measure and compare the ethical reasoning of pharmacy students on a national basis, and to assess differences in ethical reasoning based on years of professional pharmacy education and gender.

Methods. A letter inviting participation of a randomly assigned first professional or third professional year class was sent to 84 schools of pharmacy in the United States. The schools were asked to administer the Defining Issues Test (DIT) to the randomly assigned class. The DIT was used as a surrogate measure of a student's ethical reasoning skills.

Results. Of the 84 schools asked to participate, 30 indicated that they would and, in the final analysis, 24 schools actually participated. After internal checks on subject reliability were performed, 755 usable protocols from first year professional students and 809 usable protocols from third year students comprised the sample. Students were delineated by geographical regions. Students from schools in the Southeast scored significantly lower than those from schools in the Northeast, Northwest, and Midwest. Females scored significantly higher than males, and there was no significant difference in scores between the first professional class and the third one. However, the mean score of the total sample was less than that of other health professional students and adults in general.

Conclusions. Pharmacy students at schools from the Southeast region of the United States scored significantly lower on ethical reasoning than students from other regions. Overall, first and third year pharmacy students may not be as morally developed as those students in other health professions. Three explanations are advanced for the results obtained, along with suggestions on the steps pharmacy schools can take to improve on these results.

Keywords: Ethical reasoning, ethics, pharmacy students, defining issues test

INTRODUCTION

For at least the past 2 decades the pharmacy profession has been undergoing a paradigm change from a product-focused profession, the primary function of which was prescription dispensing, to a more patient-focused one; one that emphasizes a shared responsibility between the patient and pharmacist for optimal drug therapy outcomes. Pharmaceutical care reflects this shift and is defined as "the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life."¹ It attempts to improve drug therapy outcomes by requiring pharmacists, in cooperation with their patients and other health professionals, to design, implement, and monitor patient

drug therapy.¹

Providing pharmaceutical care requires, in part, the development of an ethical covenant between the pharmacist and the patient.² The highlight of this ethical covenant is the *shared* responsibility for positive drug outcomes between the pharmacist and patient. Ethically, it is not enough for the pharmacist to assume they know the patient's best interests; the patient must provide input and be part of the decision-making process.² For example, a patient might present a prescription to a pharmacist with a dosage regimen of 4 times per day. A problem occurs if the patient is unable or unwilling to take the medication 4 times a day. However, by reducing the dosing regimen to twice a day, the patient might be more willing to comply with it. If pharmacists do not ask the question, "Can you take this medication 4 times a day?" they will not know the potential adherence problem and its possible resolution.

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When pharmacists are asked to expand their professional roles to encompass pharmaceutical care, opportunities for ethical problems may become more prevalent. Often, when a task is nonstandardized or a situation is ill-defined, as is often the case in the provision of pharmaceutical care, individuals who do not have adequate conceptual tools for handling ethical or social situations often find themselves "in over their heads."³ These conceptual tools are a measure of an individual's ethical cognition or developmental level. Stated differently, individuals using more advanced ethical reasoning skills possess *better* conceptual tools or frameworks for making sense of social and moral situations, thus, these skills guide their decision-making processes. These ethical developmental skills often translate into superior clinical decision making.⁴⁻⁸ In fact, at least 2 studies have demonstrated that ethical reasoning may be a stronger predictor of clinical performance than traditional admission criteria, such as grade point averages and aptitude test scores.⁴⁻⁶ Clinical performance in these studies was measured using standardized instruments to assess components of clinical performance. For example, Krichbaum et al used the Clinical Evaluation Tool (CET) to assess students' clinical performance across settings at various levels of a nursing program.⁴ The CET has been shown to be reliable and valid. A stepwise multiple regression of the mean CET scores for the combined junior and senior years showed that DIT scores accounted for 34% of the variance associated with senior nursing clinical performance.⁴ Similarly, we have used an expert panel to develop a disguised shopper observation methodology to assess a component of clinical performance related to pharmacists' counseling.⁷

Because many pharmacists are employed in organizational settings (community settings such as chain or independent drug stores), an inherent conflict often exists between professional values and organizational demands. For example, the primary remuneration in the community setting comes from prescription dispensing. Because more time is required to perform pharmaceutical care activities (time that may take away from the primary revenue activity, prescription dispensing) a conflict may exist between professional and organizational demands. Thus, the present reward system inherent in many practice settings may result in *ethical ambivalence*.⁹ Ethical ambivalence is a form of sociological ambivalence in which the behaviors, attitudes, and norms that are shaped by the organizational reward system conflict with the behaviors, attitudes, and norms congruent with the ethical values and judgments of the organizational stakeholders. For example, if organiza-

tional rewards for prescription volume results in an attenuation of patient care, pharmacists may experience an inconsistency with their professional values (ie, code of ethics), patient values, and society at large. Thus, the way in which a pharmacist perceives the problem and resolves the conflict may result in judgments consistent with his or her level of ethical reasoning. Cognitive moral development theory posits that pharmacists at lower levels of ethical reasoning are more sensitive to work-related pressures, and will be more likely to acquiesce to them. This may result in dysfunctional clinical decision-making behavior. Those at higher levels of ethical reasoning will show greater resilience to work-related pressure under identical conditions and will be less likely to engage in dysfunctional clinical decision-making. Ethical reasoning assessment evaluates the conceptual adequacy of ethical thinking.¹⁰ It attempts to tap the basic conceptual frameworks that individuals use when analyzing social-moral problems and to judge the proper course of action. Higher levels of ethical reasoning may be particularly important in professions such as pharmacy, where tasks are often ambiguous and nonstandardized.

There are 2 major theoretical approaches to studying ethical reasoning: (1) behaviorism and (2) cognitive-developmental theory. Behaviorism psychology posits that all behavior is the result of operant conditioning, or some sort of modeling of relationships between stimulus conditions and behavior. Ethical reasoning is explained by the different types and amounts of reinforcement that one has experienced.¹¹

Cognitive developmental theory is the basis for this investigation for 2 reasons. First, the author concurs with Kohlberg's notion that morality must be assessed through knowing an individual's point of view and intentions, rather than through conformity with prevailing social norms.¹² Therefore, Kohlberg argues, morality is a philosophical concept rather than a behavioral one. This theory posits that individuals advance in their moral reasoning development along an invariant sequence of cognitive levels. Rather than being concerned with what society determines is morally right or wrong, cognitive moral development theorizes that it is the individual who determines right from wrong. The individual interprets situations, derives meaning from social events, and makes moral judgments. Cognitive-developmental theory is the most widely used of all moral reasoning theories.^{3,13} In addition, the theory appears to include the most reliable and valid of all moral reasoning instruments, the Defining Issues Test (DIT). In this investigation, the DIT was used as a surrogate measure of phar-

macy students' ethical reasoning.

The terms clinical decision making, clinical performance, patient-focused care, and pharmaceutical care are used interchangeably and refer to components of clinical behavior and pharmaceutical care. For example, counseling behavior can be referred to as a component of clinical behavior, pharmaceutical care, patient-focused care, or clinical performance.

This investigation had 2 specific objectives:

1. To measure and compare the ethical reasoning of pharmacy students on a national basis; and
2. To assess differences in ethical reasoning based on years of professional pharmacy education and gender.

The remainder of this paper reviews the relevant literature pertaining to clinical decision-making predictors and the psychology of ethical reasoning. Three hypotheses are advanced, their methods are described and their results, limitations, and implications are discussed within the framework of embracing patient-focused care.

Determinants of Clinical Decision-making

Previous studies in the health professions have attempted to predict and explain clinician performance. These, by and large, have used cognitive measures to study clinical performance. For example, school grades and performance on aptitude tests have been used as proxies for the prediction of physicians' clinical performance skills. Unfortunately, the results of these studies have offered little insight. A review of 27 studies performed between 1955 and 1972 found little relationship between school grades and subsequent performance.¹⁴

In the health professions, several studies have stated that as students move from the lecture hall to their clerkships and then to their practice settings, cognitive factors such as GPA and aptitude test scores become considerably less important, and noncognitive factors, such as integrity and altruism, become more important.¹⁵⁻¹⁸

In addition, 2 studies corroborate the mediocre relationship between traditional admission criteria (ie, school grades and aptitude test scores) and clinical performance. Krichbaum et al assessed in part the relationship between baccalaureate nursing students' scores on a clinical performance instrument, high school grade point average, and college aptitude scores.⁴ Neither aptitude scores nor high school grade point average accounted for a significant portion of the variance associated with clinical performance scores when analyzed by stepwise multiple regression.

Sisola compared ethical reasoning to clinical performance in physical therapy.⁶ The author collected data

on 58 students entering 3 physical therapy programs and specifically compared moral reasoning and conventional admission variables with subsequent clinical performance. Sisola reported that moral reasoning accounted for 19.4% of the variance associated with clinical performance in the physical therapy students (significantly greater than grade point average and aptitude test scores).

In pharmacy, this author utilized both questionnaire and observation methodologies to assess the relationship between the ethical reasoning of practicing pharmacists and components of clinical performance.⁷ The DIT was used as a surrogate measure of pharmacists' ethical reasoning. Phase 1 of the investigation used the Behavioral Pharmaceutical Care Scale (BPCS) to assess the self-reported clinical performance behavior of pharmacists.¹⁹ Phase 2 of the study utilized a disguised shopper design, whereby the author posed as a patient of all consenting pharmacists who responded to phase 1 of the study. The goal was to evaluate pharmacists' counseling behavior during a "live" encounter and in a natural setting. Both phases of the study revealed that those pharmacists with higher levels of ethical reasoning demonstrated higher levels of clinical performance.

Another weak predictor of clinical performance has been medical knowledge. In studying the prescribing habits of physicians, Brown and Uhl reported that sampled physicians inappropriately prescribed antibiotics to a significant portion of their patients.²⁰ Yet, no knowledge deficit was found when examining the physicians' medical knowledge.

In a systematic report of a medical staff's performance in properly following up on laboratory abnormalities, one study found that almost 90% of the abnormalities were not further addressed.²¹ This same group of physicians had enthusiastically endorsed an educational conference directly addressing competence on this issue. Despite the conference, the staff's overall level of performance did not improve.

The failure to predict health professional performance is dramatically summarized in the work of Price et al.²² The authors examined 3000 correlations between a myriad of predictors and a variety of physician performance measures. Nearly all correlations could be explained by mere chance.

These studies clearly demonstrate that school grades and aptitude tests are, at best, mediocre predictors of health professional performance. The studies further demonstrate a gap between knowledge and performance.

Perhaps part of the failure of previous cognitive efforts to accurately predict health professional perform-

Table 1. Six Stages in the Concept of Cooperation*

Stage 1	The morality of obedience: Do what you're told.
Stage 2	The morality of instrumental egoism and simple exchange: Let's make a deal.
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.
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.

*As reported in Rest and Narvaez, 1994, *Moral Development in the Professions*, (see ref 3).

ance can be attributed to not measuring the professional's social or moral reasoning skills. Ethical reasoning has long been assumed to be important to clinical performance.²³ Price et al found that the most distinguishing characteristic of poor physician performance was moral failing (ie, negligence in monitoring patients).²²

A critical determinant of pharmacists' clinical performance is integrity, not so much in the narrow sense of telling the truth, but in the sense of consistency between internal values and external behavior. Integrity is a key concept in all interpersonal relationships, and it is central to the pharmacist-patient relationship. Perhaps pharmacists with higher internal standards and values will behave in a more caring and humane way with their patients. These pharmacists may put the patient's concerns above personal or organizational interests. This may be a critical attribute if pharmacists are to reduce preventable drug-related morbidity and mortality by preventing, identifying, and resolving their patients' drug-related needs.

In summary, ethical reasoning is of consequence in clinical decision-making. Those pharmacists at higher levels of ethical reasoning may demonstrate greater resilience to work-related pressures and, consequently, may be less likely to engage in questionable clinical decision-making behavior. Thus, by assessing the current state of ethical reasoning in schools of pharmacy, interventions, if needed, may be designed to enhance ethical reasoning and perhaps increase the probability of graduating pharmacists who are predisposed to providing an optimal level of patient care.

Psychology of Ethical Reasoning

The psychology of ethical reasoning provides a theory that explains the human decision-making process prior to moral behavior.¹² Moral reasoning is concerned with the processes individuals go through to arrive at decisions (as opposed to what is socially or morally right or wrong).

Kohlberg based a theory of cognitive moral develop-

ment (CMD) on Piaget's seminal work with children concerning cognitive development and their subsequent development.²⁴ A key hallmark of the cognitive development approach posited by Piaget is that an individual's perception of reality is cognitively constructed as opposed to being the sole function of prevailing group norms. A second tenet is that developmental progression results from mastering more advanced conceptual skills for making sense of social and moral problems.

Kohlberg's Stages of Moral Development

Based on the extensive interviewing and observation of adolescents, Kohlberg derived a model that conceptualized ethical judgment, which he defined as a series of developmental stages.¹² Kohlberg's theory of cognitive moral development (CMD) posits that individuals advance along a stage-sequence continuum that represents a series of cognitive levels akin to the rungs of a ladder. Most individuals move upwardly through these developmental levels beginning with what is termed "pre-conventional morality" to the second termed "conventional morality" and sometimes to the highest level, called "postconventional morality." Each level has 2 developmental stages (6 total). CMD theory posits that developmental stages cannot be skipped (eg, an individual at the "preconventional" level of moral development cannot reason at the conventional level). The reason for this is that, if an individual's problem-solving strategies only include the use of simple concepts, he or she will not possess the conceptual tools to handle more complex situations. For example, a student must first master simple addition and subtraction before excelling in long division. Addition and subtraction presupposes the ability to do long division. Similarly, not possessing the requisite conceptual tools for handling difficult moral and social issues will increase the probability of responding in a less than optimal manner when faced with an ethical dilemma.

Rest and Narvaez state that one can conceptualize Kohlberg's 6 stages of cognitive moral development by

viewing them in terms of 6 conceptions of how to organize cooperation in society (Table 1).³ The focus at pre-conventional level of moral development is on the self. The person at this level is most impressed by the prestige and power of others. For example, a child's parents make demands on the child and the child quickly realizes that disobedience brings punishment. This level highlights the morality of obedience and self-interest ("doing good" is what is instrumentally satisfying to me). Pharmacists at the pre-conventional level of moral reasoning may fill inappropriate prescriptions (eg, one that is essentially unharmed but will not benefit the patient when another drug would) because they fear negative reaction from questioning a physician's prescribing habits.

The focus at the conventional level of cognitive moral development is on relationships. The general theme for cooperation is loyalty and commitment to a relationship. The individual realizes that life is more than a series of one-shot deals. People establish long-term relationships that involve loyalty and mutual caring. People do not keep "score" of favors (ie, who owes who what favor). In addition, the conventional level of cognitive moral development provides guidelines for cooperating with strangers, competitors, and enemies. The solution to the problem of morality is to develop a scheme of cooperation for society in general, not merely for cooperating with friends and loved ones. The law is public and knowable to everyone in a society and categorically applies to everyone. Laws exist so that we can count on individuals to behave in socially prescribed ways. Laws create a cooperative order on a society-wide basis. Pharmacists reasoning at the conventional level of moral development might fill inappropriate prescriptions (eg, one that is essentially unharmed but will not benefit the patient when another drug would) because the owner of the pharmacy would be pleased with the added revenue (as long as doing so does not violate state or government laws).

The focus at the post-conventional level of moral development is on universal principles. Although, specific laws often are based on principles, when there is a violation, the post-conventional person acts in accordance with his own principles (eg, the actions of those involved in the American civil rights movement of the 1960s). Post-conventional pharmacists would probably not fill inappropriate prescriptions (eg, one that is essentially unharmed but will not benefit the patient when another drug would) under any circumstance simply because it might be harmful to the patient.

Kohlberg's cognitive moral development theory has its detractors. Most often cited is the contention that,

since the theory is based on justice, and because Kohlberg's initial research was done with males, it is irrelevant to females (who reason through a "caring" orientation).²⁵ Typically, a justice orientation is characterized by notions of equality and inequality.³ This assertion has not been empirically demonstrated. In fact, several investigations in the health professions have revealed that females score significantly higher than males on the DIT.²⁶⁻²⁸

James Rest developed a recognition type instrument in the assessment of moral reasoning.²⁹ He called the instrument the Defining Issues Test (DIT). Rest writes:

The first hypothesis predicted that pharmacy students at different geographically located schools in the United States would not score significantly different on ethical reasoning. In addition, cognitive moral development theory predicts that years of formal education should have a positive effect on moral development.²⁹

Therefore, it was hypothesized that third year pharmacy students would score significantly higher on ethical reasoning than first year students. Since females make up a much larger percentage of pharmacy schools, gender differences in ethical reasoning may have important implications. Although most studies have shown no significant differences in ethical reasoning skills between men and women, several health profession studies have shown that women score higher.²⁶⁻²⁸ Therefore, the final hypothesis is that females in schools of pharmacy will score significantly higher on ethical reasoning than males in schools of pharmacy.

METHODS

The stated goal of this investigation was to analyze the ethical reasoning of pharmacy students in schools of pharmacy throughout the United States. Thus, the unit of analysis was the individual pharmacy student. After obtaining approval from the Health Sciences Review Board (HSRB) at Shenandoah University, the sample was gathered as follows. First, in January 2002 the researcher sent letters to designated faculty members at each of the schools of pharmacy (coordinators) in the continental United States to solicit their assistance in conducting this study. The letter briefly described the study and all details of administering the questionnaire. If no response was received from a designated individual within a month, the researcher attempted to contact them to obtain an agreement to participate in the investigation.

Immediately after receiving coordinator agreements from as many schools of pharmacy as possible, a random assignment of schools was done whereby approximately

half the participating schools were asked to administer the DIT to first professional year students, while the other half was asked to administer it to their third professional year students. Bulk mailings were then sent to the participating schools of pharmacy. Each mailing consisted of a cover letter, a coordinator questionnaire, and a sufficient number of student questionnaires for the target school's first or third professional year class. The rationale for randomly choosing the first and third year classes was to examine the effect the pharmacy curricula, if any, might have on students' ethical reasoning skills.

The cover letter to faculty coordinators provided the rationale for the study and provided instructions for its administration. It assured students of anonymity and stated that participation was voluntary. In addition, the estimated time needed to complete the questionnaire was provided. The coordinator was also asked to complete a coordinator questionnaire. This questionnaire asked questions about the existence of ethics courses in the curriculum, types and weighting of admissions criteria employed, the number of applicants admitted (and the number rejected), and the current enrollment of each of the first 3 classes at the school of pharmacy. Those schools not responding within 3 weeks after sending the cover letter out were contacted in an attempt to encourage participation and maximize response rates to the survey.

Differences in ethical reasoning were examined according to geographical region of pharmacy schools, professional class, and gender. Data analysis included descriptive statistics, student's *t*-tests, and one-way ANOVAs. The data were analyzed using SPSS version 11 software.

Defining Issues Test

The Defining Issues Test (DIT) was used as the surrogate measure of respondents' ethical reasoning skills.²⁹ The DIT is a widely used psychometric measurement instrument that measures an individual's moral reasoning skills according to the cognitive developmental theories posited by Piaget, Kohlberg, and Rest.^{3,12,24} Its reliability and validity are well established.²⁸

The DIT is a self-administered questionnaire that measures subjects' ethical reasoning according to cognitive developmental theory.²⁹ It consists of 6 hypothetical dilemmas. A short-form version includes 3 dilemmas and an updated version of the DIT comprises 5 dilemmas. According to the Center for the Study of Ethical Study the updated and long-form versions of the DIT, along with the short-form version have similar psychometric

properties and are highly correlated ($r=0.93$).³⁰ Each dilemma is followed by a series of 12 statements about the dilemma. For each dilemma, subjects must select and rank order those issues that have, in their opinion, the most significant influence on the dilemma's resolution. The 4 highest ranked items are included in scoring the DIT. Of these 4 items, only those that represent principled thinking are included in a DIT Principled (DIT P) score. The DIT P score is defined as "the relative importance a subject gives to principled considerations in making a decision about ethical dilemmas."¹⁰ The DIT has been used in more than 1000 studies, and its reliability and validity has been well documented.³ Cronbach's alpha is generally in the upper 0.70s, and the correlational patterns of the moral reasoning support both the divergent and convergent validity of the instrument.²⁹

RESULTS

Of the 84 cover letters sent out, 30 schools indicated that they would participate in this investigation. The data were collected by the target schools and mailed back to the author. One school of pharmacy routinely administers the DIT to their students and sent students' DIT P scores and other descriptive data to the author. Unfortunately, 12 of the responding schools had their data inadvertently discarded by the housekeeping staff at the author's institution. Of these 12 schools, 6 administered the DIT to either first or third professional year students the following year. Thus, 24 schools of pharmacy ultimately participated in the study.

Nonresponse bias was assessed by the methodological procedure recommended by Churchill.³¹ It is based on the premise that *late* responders may be similar to nonresponders. By keeping track of those who responded to the initial mailing and subsequent reminders, the means of the variables of interest will be calculated and then compared among the different subgroups to determine if the subgroups are significantly different, based on the degree of difficulty experienced in making contact.³¹ If no discernable trend is evident, one can conclude that nonresponders are not systematically different from responders. Based on the obtained results, nonresponse bias did not appear to be a problem with this sample.

The DIT employs internal subject reliability checks.

Table 2. Number of Protocols by Class

Class	N	Protocols	
		Invalidated	Remaining
2003 (P3)	889	80	809
2005 (P1)	858	103	755

Table 3. Demographics and DIT P Scores by Region

Characteristic	N*	Mean(SD)
Ethical Reasoning (DIT P)		
Northeast	188	37.3 17.1
Northwest	105	40.0 13.8
Southeast	656	33.6 17.2
Midwest	615	36.8 19.5
Total	1564	35.7 35.7
Gender		
Northeast		
Female	108	
Male	78	
Northwest		
Female	74	
Male	31	
Southeast		
Female	449	
Male	190	
Midwest		
Female	453	
Male	149	
Total of all regions		
Male	448	
Female	1084	
Total Students	1532	
Age		
Northeast	188	23.4 (4.6)
Northwest	102	22.8 (4.4)
Southeast	618	24.0 (4.6)
Midwest	586	23.6 (4.1)
Total	1494	23.6 (4.4)

* N varies due to missing data

Rest advises to allow for ~15% of responding protocols to be invalidated due to inconsistencies in item responses and tendencies to place high importance on complex-sounding but meaningless answers.³ The number of protocols from each pharmacy class that were filled out, invalidated, and usable is depicted in Table 2.

The demographics of the sample are reported in Table 3, as well as the mean DIT P score of the total sample. The first research hypothesis predicted that pharmacy students from different geographical regions of the United States would not score significantly different on ethical reasoning. This resulted in a significant difference among the regions (using one-way ANOVA). The Levene's test for equality of variances revealed that the sample variances were significantly different at the 0.05 alpha level. Therefore, the Games-Howell post hoc test was used to determine which regions were significantly different from each other. As depicted in Tables 4 and 5, students from schools of pharmacy in the Southeast

scored significantly lower than students from the Northeast, Midwest, and Northwest. Students from the Midwest, Northeast, and Northwest did not score significantly different on the ethical reasoning.

The second research hypothesis compared ethical reasoning levels of first and third year students in schools of pharmacy in the United States. An independent student's *t*-test revealed that the 2 classes did not score significantly different from each other on ethical reasoning (Table 6).

The third research hypothesis predicted that female students would score significantly higher on ethical reasoning than male students. An independent student's *t*-test assessed this hypothesis and, as reported in Table 7, supported it.

DISCUSSION

The present investigation is the largest study to date that assessed the ethical reasoning skills of pharmacy students from diverse regions of the United States. The first hypothesis posited no significant differences between pharmacy students from different schools of pharmacy in different regions of the United States; however, the results did not support this. Students from Southeastern schools of pharmacy scored significantly lower than those from Northwest, Northeast, and Midwest schools. Although explanations are speculative, these results corroborate other studies with different groups that reported, in general, subjects from the Southeastern region of the United States score lower on the DIT.¹⁰ Rest stated that the conservative intellectual milieu dominant in this region may contribute to lower scores on the DIT.¹⁰ Lawrence provided support for this suggestion by reporting that fundamentalist seminarians relied on biblical tenets for justifying responses to DIT

Table 4. Demographics and Mean DIT P Between Regions.

Region	Schools, n	Students, n	DIT P(SD)
Southeast	11	656	33.6 (17.2)
Midwest	8	615	36.7 (19.5)
Northeast	3	188	37.3 (17.1)
Northwest	3	105	40.0 (13.8)

Table 5. Differences in Mean DIT P Between the Southeast and Other Regions

Region	DIT P Mean Difference from	
	Southeast	P Value
Northeast	-3.69	0.047*
Northwest	-6.40	0.000†
Midwest	-3.16	0.012*

*Significant at 0.05 alpha level; †Significant at 0.01 alpha level.

Table 6. Class Differences on DIT P

Class	N	Mean (SD)	P Value
2003 (P3)	809	35.9 19.7	
2005 (P1)	755	35.5 16.0	0.636*

*Classes were not significantly different on DIT P scores at the 0.05 alpha level.

dilemmas, rather than on higher level reasoning that seemed salient to them.³² In other words, it appeared that seminarians' religious doctrine superseded their intuition in decision making.

The second hypothesis predicted that third year students would score significantly higher than first year students on ethical reasoning. Again, this hypothesis was not supported. Since cognitive moral development theory posits a positive relationship between years of education and ethical development, these results suggest that the pharmacy curricula may not foster ethical development in our schools of pharmacy. There are several explanations for this. Empirical evidence suggests that students' ethical reasoning can be enhanced most effectively through peer discussion of moral dilemmas. The logic behind this is that dilemma discussion gives students practice in moral problem solving. It provides them with an opportunity to understand and to appreciate higher levels of moral arguments made by their peers.²⁹ In an earlier study, this author used dilemma discussion of moral issues related to pharmacy ethical dilemmas and reported a significant pretest-posttest DIT P score increase between the beginning and end of the semester in a required communications course.³³

The third hypothesis predicted that female students would score significantly higher on ethical reasoning than male students. This hypothesis was supported. Since schools of pharmacy include significantly more females than males, this result warrants further investigation.

Although female students scored significantly higher than their male counterparts, they still scored much lower than students from other health professional programs, as well as other cohorts. As shown in Table 7, the mean DIT P scores of the 24 classes of pharmacy were lower than not only other health professional students but than adults in general. What are plausible explanations for these results? At least 3 explanations can be advanced. First, schools of pharmacy may overweight cognitive factors at the expense of noncognitive factors during the application process. Schools of pharmacy must ask the question, "Beyond a certain threshold of cognitive ability, what characteristics contribute most to graduating pharmacists who will embrace professional-

ism and their profession's code of ethics?" Because the real world of pharmacy practice is not made up of multiple choice test questions that require memorization of facts, it is very likely that the best future pharmacists are not restricted to the brightest students at pharmacy school application time.

A second explanation for the results is that a pharmacy career may attract students who possess lower ethical reasoning abilities. If potential pharmacy students have the perception that a pharmacist's job is primarily that of a dispenser of medication, rather than that of a health professional who practices patient-focused care and desires to further human welfare, then, perhaps admission of students with lower ethical reasoning abilities result. If this is the case, assessing noncognitive characteristics during the admissions process will ameliorate the likelihood of admitting lower ethical reasoners.

A third explanation may be that many pharmacy students have had only minimal exposure to liberal arts education such as courses in the humanities and social sciences. Perhaps instruction in these subjects would allow students to appreciate a wider range of points of view concerning complex social and moral issues.

Although the present investigation has several limitations, the lower DIT P scores obtained by this large sample of students is troubling. As discussed above, ethical reasoning has been pragmatically associated with clinical performance in several health professions.⁴⁻⁸ In addition, it has been suggested that those clinicians at lower levels of ethical reasoning are rarely associated with higher levels of clinical performance, and vice versa.⁵⁻⁷ Thus, it appears that schools of pharmacy in the United States are not selecting students who are predisposed to the provision of pharmaceutical care. Three remedies are suggested. First, schools of pharmacy could include ethical reasoning as one of the criteria used in their admission of pharmacy students, allowing for the admission of students who are predisposed to providing pharmaceutical care.

Second, through the admissions interview process, schools of pharmacy could emphasize personal characteristics, interpersonal skills, and tenets of professionalism. In fact, Benor et al demonstrated that, by heavily weighting these variables in admitting students to med-

Table 7. Gender Differences on DIT P

Gender	n	Mean (SD)	P Value
Females	1083	36.1 (17.0)	
Males	448	33.1 (17.1)	0.002*

*Groups were not significantly different on DIT P at the 0.01 alpha level.

Table 8. Pharmacy Students DIT P Compared with Other Groups³ not formatted properly.

First-Year Health Professional Student Group	DIT P(SD)	N	DIT% Category
Medical	47.3	39	High
Physical therapy	47.1	58	High
Dental	46.8	720	High
Veterinary	45.7	54	High
Nursing	44.6	155	High
Pharmacy	35.5 (16.0)	755	Middle
Other groups			
Pharmacy (third year)	35.9 (19.7)	809	Middle
College Graduate students	53.3	183	High
College Students	42.3	2479	High
Adults	40.0	1149	Middle

Modified from Rest and Narvaez, 1994, *Moral Development in the Professions*.³

ical school, a specific medical school successfully sorted out the higher morally developed applicants.³⁴

A third potential remedy requires that pharmacy educators focus on specific educational interventions that enhance students' ethical reasoning. Empirical evidence supporting this proposition has been previously discussed. In addition to this evidence, Duckett et al have successfully integrated a multi-course sequential learning curriculum in nursing ethics that incorporates integrated, planned learning activities throughout the nursing curriculum.³⁵ The result has been significant mean increases in ethical reasoning. A similar strategy, with similar results has been in progress for several years at the School of Dentistry at the University of Minnesota.³⁶

For comparison purposes, the ethical reasoning skills of 24 classes of pharmacy students were compared with those of a baseline sample of first year students from nursing, medicine, dentistry, physical therapy, and veterinarian medicine. To make this comparison, the mean DIT P scores from the sampled studies were averaged and all student scores from the various first year health professions were divided into 3 categories in accordance with instructions from the developer of the DIT.¹⁰ The categories comprise low (DIT P score = 0 to 27), middle (DIT P score = 28 to 41), and high (DIT P score = greater than 41) moral reasoning. As Table 8 depicts, each sampled health profession except pharmacy had weighted mean DIT P scores in the high category. For comparison purposes, mean DIT P baseline scores of college students, graduate students, and adults in general are shown.³

Interestingly, the scores of every other first-year health professional student group (ie, medicine, physical therapy, nursing, veterinarian medicine, and dentistry)

were in the highest level of ethical reasoning (Table 4). The mean DIT P scores of the 24 pharmacy classes, however, fell into the middle level of ethical reasoning and appeared to be significantly below all other sampled health professional mean DIT P scores.

Several limitations in the present study can be identified. First, although the sample was large, it only examined 24 of 84 American pharmacy schools and therefore limits the ability to generalize the results to all pharmacy students in the United States. Likewise, the results cannot be generalized to pharmacy schools in different countries. In addition, the DIT P scores obtained from the literature regarding the health professional students used in this investigation were taken from convenience samples of schools of medicine, veterinary medicine, physical therapy, nursing, and dentistry.

Second, the research design used makes it impossible to make direct comparisons among the health professional students. While the pharmacy sample and several of the health professions' samples involved several years' data, comparing the various students during the same time period may have yielded more meaningful data. In addition, since the comparison between first and third year pharmacy students was not based on longitudinal data (ie, they were not the same students followed for 2 years), individual differences in student characteristics or in school characteristics could be masking a change in students' ethical reasoning from the first to the third year.

A third caveat relates to hypothesis 2. Specifically, the author hypothesized that the number of years of education were positively correlated to ethical reasoning scores. However, since demographic data were not collected regarding prior years of schooling, students in their third professional year may not have had a greater number of years of formal education than those students in their first professional year.

Finally, the DIT P score was used as a surrogate measure of a subject's level of ethical reasoning. The DIT is based on a model that suggests that an individual's ethical cognition is capable of being measured. The degree to which the DIT errs in measuring an individual's actual ethical cognition has been discussed by Rest.²⁹

Despite these caveats, this investigation empirically demonstrates that a significant number of pharmacy students may not be as ethically developed as they could be. Future avenues of research should target possible educational interventions in the hopes of fostering the ethical development of pharmacy students in the United States.

ACKNOWLEDGEMENTS

The author greatly appreciates the financial support received from The Burroughs Wellcome Fund and the American Foundation for Pharmaceutical Education for this investigation.

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