Cognitive Moral Development and Clinical Performance: Implications for Pharmacy Education

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Pharmaceutical care has been incorporated into the mission statements of virtually every pharmacy organization, including the American Association of Colleges of Pharmacy (AACP). As such, a major objective of pharmacy educators is to graduate pharmacists who are both capable and willing to render pharmaceutical care. The present investigation explores the notion that the moral reasoning skills are of consequence to the rendering of pharmaceutical care. Specifically, two classes of pharmacy students' moral reasoning were examined as part of the admissions requirements of a large southeastern school of pharmacy. The scores of these students were then compared to the moral reasoning scores of a systematic random sample of pharmacy practitioners who had scored high on both a self-report measure of pharmaceutical care and two measures of actual clinical decision-making. Results indicated that the average score of the admitted students was significantly lower on moral reasoning than those clinicians scoring at the highest levels of clinical performance. This is disconcerting in light of the fact that investigations in pharmacy and several other health professions have consistently demonstrated that high moral reasoners rarely perform poorly on clinical performance measures. Additionally, comparisons on moral reasoning with a baseline of healthcare students revealed that these two classes of pharmacy students appear to be less morally developed than their counterparts in other health professions. Implications of the study include the possibility of using moral reasoning as one criterion in the admissions process of students to pharmacy schools and introducing curriculum changes to increase the probability of increasing students' moral development during their pharmacy education.
INTRODUCTION

Pharmaceutical care 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 has been incorporated into the mission statements of virtually every pharmacy organization, including the American Association of Colleges of Pharmacy (AACP). As such, a major goal of pharmacy educators is to graduate pharmacists who can and will render pharmaceutical care.

Pharmaceutical care, in part, requires an ethical covenant between the patient and pharmacist(2). This covenant requires shared responsibility between the patient and the pharmacist for rational drug therapy outcomes. Essentially, the pharmacist and patient enter into a contract with both detailing their respective responsibilities and actions for preventing and solving the patient’s drug-related problems(2). Thus, one prerequisite of effective pharmaceutical care practice may center around moral development. Indeed, since the expansion of the role of pharmacists to include pharmaceutical care, opportunities for ethical problems have become more prevalent(3,4). When tasks are nonstandardized and situations ill-defined, such is often the case with clinical decision-making, pharmacists who do not have appropriate conceptual tools for handling ethical or social situations may find themselves in “over their heads.”(5) These conceptual tools comprise an individual’s moral reasoning or development. Therefore, in the long run, those pharmacists at more advanced levels of moral reasoning may possess the requisite conceptual tools to guide their decision-making processes pertaining to patient care.

Empirical evidence from several health professions, including nursing, pharmacy, medicine, and physical therapy, has demonstrated that moral reasoning is of consequence to clinical performance(6-9). In addition, recent interest in the moral development of physicians has resulted in several studies examining the influence of the educational process on the moral development of both medical and veterinarian students(10-12). The above investigations of various health professions regarding moral reasoning and clinical performance consistently suggest that those health professionals at the highest levels of moral reasoning are rarely found at the lowest levels of clinical performance. Therefore, the present study explores the moral development of two classes of a large southeastern university of pharmacy, and compares their moral reasoning scores to the moral reasoning of community pharmacists who have scored at the highest levels of clinical performance. Previous pharmacy studies have assessed pharmacists and students’ moral reasoning(13-15) and have linked moral reasoning to community practitioners’ clinical performance(7). The present research extends these studies by examining the moral reasoning of pharmacy students at a large southeastern school of pharmacy, and then compares them to the moral reasoning scores of a systematic random sample of pharmacy practitioners who scored high on both self-report and observational clinical performance instruments.

The remainder of this paper is organized as follows. In the next section, studies and theories concerning predictors of clinical performance and the psychology of moral reasoning and its relationship to health professionals’ clinical performance are reviewed. Then, studies relating moral reasoning to education are reviewed and the methods of the present research are described. Finally, results and their implications are discussed.

Determinants of Clinical Performance

Researchers have attempted to isolate the factors that predict and explain clinical performance. For example, school grades and performance on aptitude tests have been used as proxies for the prediction of physicians’ clinical performance skills. Early studies using these proxies suggest that there is little relationship between student grade point average, aptitude test scores, and subsequent clinical performance. A review of twenty-seven studies performed between 1955 and 1972 found little relationship between school grades and subsequent performance(6).

Two recent studies in the health professions have supported Wingard and Williamson’s review of studies exploring the relationship between health professional students’ grades and subsequent clinical performance. First, Krichbaum et al., in part, the relationship between baccalaureate nursing students’ scores on a clinical performance instrument, high school grade point average and college aptitude scores(6). 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.

Second, Sisola collected data on 58 students entering three physical therapy programs with the objective of comparing moral reasoning and conventional admission variables with subsequent clinical performance(9). Results revealed that overall grade point average was not related to physical therapists’ clinical performance (r = -0.037). Interestingly, even science grade point averages were not found to be strongly related to clinical performance (r=0.054). However, moral reasoning was shown to account for 19.4 percent of the variance associated with the clinical performance of the physical therapy students. 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(17). Yet, no knowledge deficit was found when examining the physicians’ medical knowledge. These studies clearly demonstrate that school grades and aptitude test scores are, at best, weak predictors of health professional performance. The studies further demonstrate a gap between knowledge and performance.

The failure to predict health professional performance is dramatically summarized in the work of Price and colleagues(18). The authors examined 3,000 correlations between a myriad of predictors and a variety of physician performance measures. Results indicated that nearly all correlations could be explained by mere chance. Perhaps part of the failure of previous cognitive efforts to predict health professional performance can be attributed to not measuring the professional’s social or moral reasoning skills. Moral reasoning has long been assumed to be important to clinical performance(19,20). Thus, a fruitful line of inquiry regarding clinical performance may include the examination of moral development.
The Psychology of Moral Reasoning

Emanating from the field of cognitive development, the psychology of moral reasoning provides a theory that explains the human decision-making process prior to moral behavior(5). 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. The psychology of moral reasoning was initially based on the seminal work of child psychologist Jean Piaget, who posited that children pass through three stages in the development of their reasoning: the intuitive, the concrete operational, and the formal operational(21).

Based on Piaget's work, Kohlberg developed a model that emphasizes the cognitive decision making process, and the reasons an individual uses to justify a moral choice, rather than the outcomes of the decision(22). Kohlberg's work focused on individual thinking processes; it examined how people construct reality and meaning from different social situations.

The stage-sequence model of cognitive moral development proposed by Kohlberg is best viewed by first looking at the three broad levels of moral development: the pre-conventional, the conventional, and the post-conventional levels, respectively. The pre-conventional level is essentially the cognitive capacity of children. The focus at this level is on oneself. For example, a child's parents make demands on the child and the child quickly realizes that disobedience brings punishment. To cooperate with others, one must do what one is told.

Individuals at the conventional level strive to uphold the norms and rules of authority because such action conforms to the norms of society. The focus at this level is on relationships. 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. Law creates a cooperative order on a society-wide basis.

The post-conventional individual believes that universal moral principles should guide decision-making. They also understand and usually accept the laws and agreements of society. However, when the rules of society sharply contrast with those universal moral principles, the post-conventional person sides with universal principles.

A challenge to cognitive moral development theory was mounted during the late 1970s and early 1980s. The primary proponent of this challenge, Gilligan stated that Kohlberg's theory was irrelevant to females because the theory was based exclusively of longitudinal studies of young males(23). Gilligan hypothesized that women primarily reasoned through a caring orientation rather than a justice one (which is the basis for cognitive moral development theory). This premise has not been empirically supported(24). Indeed, continuing studies using the Defining Issues Test as a proxy for an individual's moral reasoning, demonstrate that, on average, females score a half of a percent higher than males(5). Kohlberg's three levels of moral development are further delineated into six stages (two stages for each level). Figure 1 summarizes the six stages of moral development(22).

It is important that one differentiate the meaning of "moral" and "ethical" from the ideal behavior espoused by philosophers(25). Moral psychology pertains to the cognitive processes and conceptual frameworks underlying moral reasoning and judgment formulation. Put another way, it provides a road map of the processes used by individuals when resolving difficult dilemmas.

Measure of Moral Reasoning

The most widely used of all moral reasoning instruments is the Defining Issues Test (DIT) (5). It is a psychometric measurement instrument that measures an individual's moral reasoning skills according to cognitive developmental theory. The short-form DIT consists of three moral dilemmas versus six moral dilemmas for the long-
form. Each dilemma is followed by a series of 12 statements about the dilemma representing the six cognitive stages posited by Kohlberg’s Cognitive Moral Development (CMD) theory. Subjects then assess the importance of each statement in determining the action they would take. The four highest ranked items are included in scoring the DIT. Of these four items, only those that represent Stage 5 or Stage 6 reasoning are included in the “P” score. The “P” score is defined as “the relative importance a subject gives to principled considerations in making a decision about ethical dilemmas.” (26) The short-form DIT correlates 91 to 93 percent with the long-form DIT. Generally, test-retest reliability for the short-form DIT correlates 91 to 93 percent with the long-form DIT. Cronbach’s Alpha is generally in the high 0.70’s, or low 0.80’s. Cronbach’s Alpha is generally in the high 0.70’s, and criterion group and longitudinal validity have been well established (26).

Approximately 38 to 52 percent of variance on the DIT can be accounted for by education and/or age (27). Thus, as students proceed through college, one would expect increased moral reasoning scores. Table 1 provides a baseline of moral reasoning for various ages and occupations.

**Moral Reasoning and Clinical Performance**

As discussed previously, moral reasoning has been shown to be of consequence to the study of health professionals’ clinical performance. For example, Krichbaum et al. compared faculty ratings of clinical performance of nursing students to their moral reasoning scores (6). Clinical performance was measured by the Clinical Evaluation Tool (CET), an instrument developed to assess students’ clinical performance across settings at various levels of the nursing program. A stepwise multiple linear regression of the mean CET scores for the combined junior and senior years showed that their moral reasoning scores accounted for 34 percent of the variance associated with senior nursing clinical performance.

Sheehan et al. compared the medical faculty ratings of the clinical performance of residents with the residents’ moral reasoning (8). The moral reasoning ability of the 244 pediatric residents was found to be a significant predictor of clinical performance. The authors concluded that high moral reasoning appeared to virtually exclude the possibility of poor clinical performance, and that the highest level of clinical performance was rarely achieved by those at the lowest level of moral reasoning.

Sisola compared moral reasoning to clinical performance in physical therapy. Sisola collected data on 58 students entering three physical therapy programs (9). She specifically compared moral reasoning and conventional admission variables with subsequent clinical performance. It was reported that moral reasoning accounted for 19.4 percent of the variance associated with clinical performance in the physical therapy students.

Additionally, Sisola divided moral reasoning and clinical performance scores into three different categories, high, medium, and low (High=DIT P%≥50.0, Medium=P% 40-49, Low=P%<39) (9). Results of a chi-square analysis indicated that fewer subjects than expected were in the cell correlating high moral reasoning with low clinical performance, and no subjects were found in the cell linking low moral reasoning with high clinical performance. This empirical evidence corroborated Sheehan’s et al. results, and partially supports their contention that high moral reasoning virtually excludes the possibility of poor clinical performance (8).

Latif et al. correlated the moral reasoning of community pharmacists with measures of clinical performance that utilized both questionnaire and observation methodologies (7). It was concluded that those pharmacists at higher moral reasoning levels performed significantly better than those at lower levels on measures of clinical performance. The observation phase of this investigation, in part, utilized a disguised shopper format to evaluate the extent to which practitioners warned of a potential drug disease contraindication. Interestingly, 80 percent of those pharmacists in the low moral reasoning category (xP% =23) failed to warn of the contraindication, whereas 100 percent of those in the high moral reasoning category (xP% =50) warned of the contraindication. These results further support the suggestion by Sheehan et al. that higher moral reasoners rarely perform poorly on measures of clinical performance (8).

**Moral Reasoning and Education**

Rest, in a review of 57 moral reasoning studies concerning the effect of education interventions, concluded that peer discussion of moral dilemmas facilitates modest growth in moral judgment (5). 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.

Interestingly, the empirical evidence suggests that interventions longer than 12 weeks do not seem to have any more of an impact on moral reasoning than do interventions of three to 12 weeks (5). However, periods of less than three weeks appear to be ineffective.

Penn argued that student moral reasoning can be enhanced by directly teaching the component skills of moral reasoning (28). Component skills of moral reasoning include skills of logic, role taking, and justice operations. The generality of Penn’s approach was tested in an unpublished study in 1994 by McNeel. The results from a sample of 28 students reported significant moral growth in ethical reasoning capabilities. Participants’ growth in principled reasoning, as measured by the DIT, increased from a pretest score of 41.7 to a posttest score of 50.6.

Self et al. examined the impact of small-group case-study discussion on medical students’ moral reasoning (29). The researchers examined the 729 medical students from the classes of 1991-1998, and tested the groups for moral reasoning skills both before and after the students participated in small-group case-study discussions of medical ethics. It was shown that students exposed to 20 or more hours of small-group case-study discussion demonstrated a significant increase in their moral reasoning, while those students exposed to less than 20 hours demonstrated no significant increase in moral reasoning. The authors concluded that moral reasoning skills are teachable and measurable, and that small-group discussion significantly increases moral reasoning skills.

The pharmacy education literature reports three studies that have measured moral reasoning skills. One, by Lindon and Draugalis, assessed the moral reasoning of 40 first-year and 31 fourth year PharmD students (15). Results...
indicated that the mean moral reasoning scores of this small sample was in the conventional level of reasoning.

A second pharmacy study that utilized cognitive moral developmental theory, Dolinsky and Gottlieb, asked fourth-year pharmacy students to describe two moral dilemmas that they had experienced in pharmacy practice, their actions to resolve the dilemmas, and the reasons for their actions(13). The dilemmas were then grouped into different categories of incidents in pharmacy practice (e.g., requests for medications without prescriptions) and analyzed according to Kohlberg’s six stages of cognitive moral development. Findings showed that two-thirds of the explanations for actions were classified as Stage Four, one-third or below; one-fifth of the reasons were classified as Stage Three or below; and the remaining justifications were classified as Stage Four. Finally, Latif and Berger examined a sample of 92 first year pharmacy students’ moral reasoning(14). Results indicated that the mean moral reasoning score represented conventional level reasoning.

METHODS
Pharmacy Student Sample
The present descriptive study examined the moral reasoning of the 1997 and 1998 entry classes of students at a large southeastern school of pharmacy. Ninety students comprised the 1997 admitting class, while eighty-seven students comprised the 1998 class. The two classes were administered the short-form version of the Defining Issues Test (DIT) as part of the admission process.

Community Practitioner Sample
Community pharmacists moral reasoning scores were collected as part of another investigation that examined the relationship between moral reasoning and clinical performance, which is reported elsewhere(7). It included two phases: a questionnaire phase and an observation phase. A brief synopsis of the two methodologies is presented.

Phase I: Questionnaire
The first phase included a systematic random sample of 450 licensed community pharmacists practicing in a large southeastern city. The justification for and sample size rationale is discussed elsewhere(7). The present study examined this data from another perspective: it divided moral reasoning scores into three groups as suggested by the developer of the DIT (Rest, 1990). The groups delineate “P” scores as follows: low (27 or less); middle (28 to 41); high (42 and above).

A one-way ANOVA was used to assess the DIT groups with the clinical performance variable, a subset of the Behavioral Pharmaceutical Care Scale (BPCS). The BPCS subset used in this study measured direct patient care activities of pharmacists. Specifically, it attempts to capture a pharmacist’s efforts to provide pharmaceutical care(30). The direct patient care dimension of the BPCS scale assesses five domains: documentation, patient assessment, implementation of therapeutic objectives, patient counseling, and the screening of patient records. These items assess pharmacists’ patient care activities related to their trying to provide pharmaceutical care. Possible scores on this dimension range from zero to 90. Reliability estimates of the five domains of the BPCS range from 0.72 to 0.90, and content validity has been shown to be 0.79(30).

Because self-reported responses on perceived socially expected behaviors, such as clinical performance, may result in an overstatement of the target behavior, a social desirability instrument was included as a control variable to assess the validity of the BPCS responses. A short-form version of Crowne and Marlowe’s social desirability index was used(31). The short-form version includes 13 true or false items (of which seven are reverse-coded) of the original 33 items making up the Marlowe-Crowne Social Desirability index(31). The key to this social desirability instrument is the use of words such as “always” and “never.” For example, included in the instrument are such statements as “I’m always willing to admit it when I make a mistake”. A true response to this item would be considered a socially desirable one because of the overwhelming probability that the vast majority of individuals, on occasion, may find it difficult to admit mistakes.

Phase II: Observation
Those pharmacists in Phase I who responded to the questionnaire phase, and gave permission to be “shopped,” became part of Phase II. This procedure resulted in 36 consenting pharmacists (of which 34 where actually shopped). The objective of Phase II was to assess both data-gathering and advice-giving behavior of pharmacists in a natural setting. Specifically, one of the authors posed as a person with diabetes who attempted to purchase an over-the-counter medication, Contac® capsules, for a cold. In people with diabetes, a decongestant such as Contac® capsules is contraindicated as a result of a drug-disease interaction. Phase II included two measures of clinician assessment: data-gathering, and warming advice. The data-gathering measure was designed to capture the actual data-gathering behavior of sampled pharmacists to the aforementioned scenario, while the warning advice assessed whether or not the pharmacists warned of the contraindication.

RESULTS
Pharmacy Student Sample
The developer of the DIT advises to allow for a 10-15 percent invalidation rate of responding DIT instruments due to the inconsistencies of item responses, and a tendency for some respondents to place high importance on complex sounding, albeit meaningless answers(26). This
procedure essentially acts as a social desirability check and increases the validity of the scored protocols.

Of the 90 and 87 students who filled out the short-form DIT for the 1997 and 1998 classes respectively, nine protocols were invalidated for the 1997 class, while one was invalidated for the 1998 admitting class. These protocols were invalidated due to excessive inconsistencies and/or a large number of meaningless responses. This resulted in the processing for statistical analysis of 81 protocols for the 1997 class and 86 for the 1998 class.

Table II reports both the demographics of both the 1997 and 1998 admitting classes to the sampled pharmacy school, and their DIT P% scores. The 1997 admitting class had a mean DIT P% score of 37.67, while the 1998 class had a mean DIT P% score of 36.17.

### Pharmacy Practitioner Sample

The procedure used to select this sample, including assessment of nonresponse bias, is presented elsewhere(7). Of the 450 DIT instruments mailed to the sampled practitioners, nine were returned as undeliverable. In addition, 29 pharmacists of a particular national chain did not participate in the investigation after being advised not to by the chain. Reasons for this decision could not be ascertained. Of the remaining 412 assumed to be delivered, 131 (31.8 percent) were completed and returned. Of these, 114 passed the various validation checks.

The social desirability index was correlated with the clinical performance measure, the BPCS, and the resulting coefficient was very low (r= -0.006). If this relationship was highly correlated (practitioners who scored high on social desirability also scored high on the BPCS), then the high responses to the BPCS may be deemed suspect because, as discussed previously, high scores on social desirability translate into overstating one’s true behavior. Thus, because of the low correlation, it appears that the respondents were not responding to the BPCS in a socially desirable manner.

As discussed previously, this sample was divided into three groups based on DIT P% scores in accordance with the developer’s suggestion(26). The three groups include those with relatively high, medium, and relatively low DIT P% scores. A one-way ANOVA demonstrated that those practitioners in the highest moral reasoning group had a mean DIT P% score of 51.44 while those in the medium and lowest groups had DIT P% scores of 34.60 and 18.04 respectively. As Table III reveals, those practitioners in the high group of moral reasoning did significantly better on clinical performance than those in the either the medium or low group.

A one-way ANOVA revealed that those pharmacists in the high group of moral reasoning (xP%=50) were significantly more likely to score high on Data-gathering than the pharmacists of either the middle group or low group (P=0.011).

A chi-square analysis was used to determine the relationship between moral reasoning and warning advice. As Table IV depicts, all pharmacists in the high moral reasoning category warned of the contraindication, which was significantly different from the expected frequency (P<0.001). On the other hand, only 20 percent of those pharmacists in the low moral reasoning category warned of the contraindication.

### DISCUSSION

The goal of this descriptive paper was to examine the moral reasoning of two classes of pharmacy students at a large southeastern university, and then to compare their
scores with the moral reasoning scores of a group of practitioners who have scored highly on both self-report and observational measures of clinical performance.

The 1997 and 1998 classes of pharmacy students had mean DIT P% scores of 37.67 and 35.76 respectively. Two other studies that assessed first-year pharmacy students’ moral reasoning reported DIT P% scores of 41.6 and 42.47, respectively. Thus, the students in this study scored less on moral reasoning than two other classes of first-year pharmacy students. In addition, students in other health professions have scored significantly higher on moral reasoning than the admitted pharmacy students (see Table I).

The practitioner sample, as a group scored approximately the same on moral reasoning as the two admitted pharmacy classes. However, as revealed in Table III, those pharmacists’ in the high moral reasoning group (xDIT P% ≥51.44) scored significantly higher on clinical performance than did either the medium (x=34.6) or low (x=18.07) DIT groups. P% scores of 50 or higher represent post-conventional reasoning according to cognitive moral development theory(22). This result corroborates previous studies that suggest those practitioners at post-conventional moral reasoning levels will, in general, perform exceptionally well on clinical performance measures(8,9).

An interesting question is why do three separate investigations of pharmacy students reveal lower moral reasoning scores than other health professional students(14,15)? Perhaps pharmacy schools are admitting students who are at lower moral reasoning levels than students admitted to medicine, nursing, dentistry, and physical therapy. Or, perhaps professional schools of nursing and medicine (among others) are doing a better job of developing their students’ moral reasoning than are schools of pharmacy. Pharmacy educators may be able to positively impact the moral development of their students. As discussed previously, many studies have demonstrated that student moral reasoning can be enhanced by directly teaching the component skills of moral reasoning, including skills of logic, role-taking, and group dilemma discussion.

**IMPLICATIONS**

The present study suggests that pharmacy students may not be as morally developed as students in other health professions. Furthermore, based on the literature and results reported in this investigation, it appears that moral development is congruent with the development and functioning of highly effective clinicians. How might these results be used toward the goal of graduating pharmacists predisposed to practicing pharmaceutical care? There are two implications of the present study. First, the DIT could be used directly as one criterion in the admissions process. If future research continues to demonstrate that low DIT scores limit the potential for high clinical performance then applicants who score below a certain threshold on the DIT would be considered less likely to practice pharmaceutical care effectively. If used in this manner, those applicants scoring above the threshold would garner greater admission points then those scoring below the threshold. It is important to note that a low DIT P% score should not be interpreted as inadequate morality, and thus should not be used as a primary criterion in the admissions process(32).

Additionally, using the DIT as a significant criterion in the pharmacy process is problematic from a practical standpoint. Since pharmacists at the highest levels of clinical performance are found at the post-conventional level of moral reasoning (P%≥50), it would be desirable to only admit students who score at the post-conventional level. However, only about 20 percent of the population is at the post-conventional level of moral reasoning(33). In fact, the two classes of students included in the present investigation mirrored this percentage of post-conventional individuals. Therefore, especially in light of the decline of pharmacy student applicants, it may not be realistic to exclude students because of low DIT scores. However, students at the post-conventional level could receive higher admissions points in the same manner that students with higher grade point averages do.

A second approach is for pharmacy educators to focus on educational interventions that enhance students’ moral 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(34). The result has been significant mean increases in moral reasoning. A similar strategy, with similar results has been in progress for several years at the School of Dentistry at the University of Minnesota(35).

This paper sought to assess the moral reasoning of two classes of admitted applicants to a large southeastern school of pharmacy, and then to compare their scores to pharmacy practitioners who have scored well on a measure of clinical performance. Both the aforementioned literature and the results of this study suggests that pharmacy students are not as morally developed as those practitioners who have performed at a high level of clinical performance. Two major implications of these results for pharmacy education were discussed.

**References**

(11) Self, D.J., Wolinsky, F.D., and Baldwin, D.C. Jr., “The effect of teaching medical ethics on medical students’ moral reasoning,” ibid, 64,