

## **Perceptions of cheating and self-reported cheating behaviors of first-year and third-year pharmacy students**

Patrick C. Hardigan, PhD, Executive Director for Assessment, Evaluation and Faculty Development, Health Professions Division, Nova Southeastern University, Ft. Lauderdale, Florida

Paul L. Ranelli, PhD, Professor, College of Pharmacy Duluth, University of Minnesota, Duluth Minnesota

### **Abstract**

**Introduction:** Despite the interest in and number of studies examining cheating within the university system, little has appeared in the literature regarding academic dishonesty among professional students, such as pharmacy students. The authors examined the differences between first-year and third-year pharmacy students relating to perceptions of cheating and participation in cheating-related behaviors.

**Methods:** A nonproportional quota sample of pharmacy students was selected to complete the attitude toward cheating scale (ATC). Statistical analysis was used to model the effects of students and student-related characteristics on perceptions of cheating and participation in cheating-related behaviors.

**Results:** Statistical differences were found between first- and third-year pharmacy students in both perceptions of cheating and participation in cheating-related behaviors. Additionally, both groups report rates of cheating statistically greater than zero.

**Conclusion:** First-year and third-year students had dissimilar views about cheating. The professionalization and normative processes of a pharmacy school curriculum appeared to influence students' participation in academic cheating, since third-year students generally reported less cheating than first-year students.

**Key words:** cheating, professionalization, teaching, learning, curriculum, pharmacy students

### **Introduction**

The literature on academic cheating is replete with statements that include words like "epidemic," "on the rise," and "increasing numbers." [1-3] McCabe, founder of the Center for Academic Integrity at Duke University, has researched the incidence of cheating since the 1960s and has discovered some interesting facts. [2] Of students surveyed in 1993, 87% admitted to cheating on written work and 70% on classroom exams. Fifty-nine percent collaborated with others on assignments, 52% copied from others, and 26% plagiarized.

The incidence and causes of cheating have also been investigated. Reported cheating was more common in men than women, more common with students who possess low grade point averages, more common in younger students than mature ones, and more common in science and technology students than those in other disciplines. [4] Nevertheless, student motivations for cheating vary. Evidence suggests that those with high achievement motivation are more likely to cheat than those with lower levels. [4,5] Research also indicates that moral development is related to cheating.

It has been found that scores on moral reasoning tests correlate negatively with the occurrence of cheating. [6] For example, Kohlberg evaluated cheating behaviors among students at 2 levels of moral reasoning—pre-conventional and post-conventional. [7] Pre-conventional students behave according to socially acceptable norms and obedience is compelled by threat or punishment. This level is characterized by a view that correct behavior means acting in one's best interest. [8] Approximately 70% of the students at this level were found to cheat. [7] Students at the post-conventional level demonstrate an understanding of social mutuality and a genuine interest in the welfare of others. About 15% of students at this level demonstrated cheating-related behaviors. [7]

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Despite the interest and number of studies examining cheating within the university system, little has appeared in the literature regarding academic dishonesty among professional students, such as pharmacy students. In a study examining attitudes toward cheating, Hardigan found that pharmacy students guided by intrinsic motivations possess more conservative attitudes toward cheating-related behaviors than those motivated by external considerations.[9] Efforts by academic and professional organizations to promote the professionalization of pharmacy have addressed this issue from a holistic perspective. This approach, while not addressing cheating specifically, details the expected behaviors of pharmacy professionals. Among these prescribed behaviors is the mandate for ethically sound decision-making.[10]

This study helps to broaden and advance the research related to the study of ethical decision-making by pharmacy students. Specifically, the methodology examined the differences between first-year and third-year pharmacy students relating to perceptions of cheating and participation in cheating-related behaviors. Because a close relationship exists between professionalization and cheating, this study adds empirical data to the study of pharmacy students as ethical decision makers.

## Methods

In the fall of 2002, a nonproportional quota sample of pharmacy students was selected to complete a questionnaire about cheating (QC). Non-proportional quota sampling allows the researcher to specify the number of sampling units they want in each category (i.e., gender, ethnicity, age, first- and third-year students). This sampling method helps to ensure that smaller groups are adequately represented in the sample. The authors identified 9 colleges of pharmacy that they felt best represented a cross-section of pharmacy education. In choosing the sites, specific attention was placed on whether the college was a public or private institution, whether it was located in an urban or rural setting, and its geographic location. Coordination was initiated with a faculty member at each college to determine if he/she would participate with the data collection process. Once a faculty member agreed to participate, he/she was mailed the requisite number of surveys along with directions for administration. Every attempt was made to standardize the data collection process and maintain student anonymity. The standardization process included a list of instructions that described how students should receive the survey, complete the survey, and submit the completed survey to the faculty member for return mailing. The faculty members who participated in the data collection process were given an honorarium for their participation.

The QC is a self-report instrument consisting of 17 questions regarding situations/actions that could be considered cheating (Figure 1).[10] Questions were presented using a dichotomous (yes/no) format asking the student if they considered the actions to be cheating. An additional statement was attached to each question which asked the students if they had participated in this behavior prior to (first-year students) or during pharmacy school (third-year students). Evidence of the instrument's reliability and validity was established in an earlier study.[10] Demographic data collected from respondents included gender, ethnicity, age, religiousness, educational background, current enrollment year, and grade point average. Religiousness was a self-reported measure (yes/no) of whether or not students considered themselves religious persons.

The independent variables included in the model were student gender, ethnicity, age, religiousness, educational background, current enrollment year, and grade point average. Two nominal variables were used as dependent variables: (1) a yes or no variable that asked students if they considered a behavior to be cheating, and (2) a yes or no variable that asked students if they engaged in this behavior. Chi-square analysis and t-tests were conducted to determine if the demographic characteristics between first- and third-year students were significantly different. Logistic regression models were calculated using the independent variables as covariates and yes or no questions as dependent variables; the *a priori* level of significance was  $p < 0.05$ .

Additionally, we tested the hypothesis that students in each group cheated at a rate greater than zero. We performed this analysis because we wanted to see if pharmacy students cheated at a rate greater than what would be expected by chance ( $H_0: \mu_1=0$ --nil value).

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IS THIS BEHAVIOR CHEATING?	YES	NO	I ENGAGED IN THIS BEHAVIOR
Looking at notes during a test	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Arranging to give or receive answers by signal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Copying during an exam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Taking a test for someone else	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Asking for an answer during an exam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Giving answers during an exam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Copying someone else's term paper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allowing a student to copy on a test	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having someone write a term paper for you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Obtaining a copy of an exam and memorizing the answers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Writing a paper for someone else	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Giving test questions to a student in a later session	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Getting answers from a student in an earlier session	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Not contributing a fair share in a group project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allowing someone to copy homework	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using an old test to study without the teacher's knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using a paper for more than one class	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Figure 1:** Survey Instrument

## Results

A total of 844 students completed the survey. Of these, 823 were used for analysis; the other 21 surveys were not usable because of missing or incomplete data. Fifty-three percent were first-year students.

As shown in Table 1, 67% of respondents were female, 74% considered themselves to be religious and the mean GPA was 3.3. The relevant chi-square or t-test demonstrated no statistical differences across the demographic variables of age, gender, GPA, religiousness, and educational background. The only difference found to be significant was the variable ethnicity; more non-Hispanic and Hispanic whites were found within the first-year student cohort, while more Asian Americans were in the third-year cohort ( $\chi^2=36.82, p < 0.01$ ). This would indicate that other than enrollment year, the groups were comparable.

**Table 1.** Description of students participating in survey

<b>Background Variables</b>	<b>1st Students (n = 434)</b>	<b>3rd Students (n = 389)</b>	<b>Total (n = 823)</b>
Age (mean $\pm$ S.D.)	23.7 $\pm$ 4.6	24.6 $\pm$ 3.5	23.8 $\pm$ 4.1
Grade point average (mean $\pm$ S.D.)	3.4 $\pm$ 0.3	3.1 $\pm$ 0.4	3.3 $\pm$ 0.4
Gender (% female)	68.4%	64.1%	66.4%
Religiousness (% considered religious)	73.7%	75.8%	74.6%
<b>Ethnicity (%)</b>			
Non-Hispanic black	3.9%	5.8%	4.8%
Asian American	7.4%	17.9%	12.4%
Non-Hispanic white	68.6%	56.9%	63.0%
Hispanic	14.7%	8.8%	11.9%
Other	5.1%	10.4%	7.6%
<b>Highest degree earned (%)</b>			
None	58.3%	54.6%	56.5%
AA	18.3%	16.3%	17.4%
BS or BA	19.7%	21.9%	20.7%
MA or MS	2.3%	1.3%	1.8%
Doctorate	1.1%	0.5%	3.3%

Table 2 shows the students' perceptions of 17 behaviors as cheating. Using the adjusted logistic model, more first-year students than third-year students believed that not contributing a fair share in a group project ( $\chi^2=18.03$ ,  $p < 0.01$ ) and allowing someone to copy homework were cheating ( $\chi^2=6.83$ ,  $p < 0.01$ ). More third-year students believed that using an old test to study without the teacher's knowledge was cheating ( $\chi^2=7.72$ ,  $p < 0.01$ ). Other than these differences, first-year and third-year students had similar views about cheating. Seventy to 90% of respondents in each class considered the 10 behaviors related to test-taking as cheating. Similarly, 81-88% of respondents in each class believed the 3 behaviors related to writing term papers were cheating.

Using the adjusted logistic model, there were statistical differences between first-year and third-year respondents for self-reported participation in 7 cheating behaviors (Table 2). Six of these pertained to test-taking behaviors. Compared with third-year students, more first-year students reported looking at notes during a test ( $\chi^2=17.31$ ,  $p < 0.01$ ), arranging to give or receive answers by signal ( $\chi^2=6.23$ ,  $p < 0.01$ ), giving answers during an exam ( $\chi^2=15.96$ ,  $p < 0.01$ ), allowing a student to copy a test ( $\chi^2=10.52$ ,  $p < 0.01$ ), and asking for an answer during an exam ( $\chi^2=7.72$ ,  $p < 0.01$ ). More third-year than first-year respondents reported obtaining a copy of an exam and memorizing answers ( $\chi^2=5.21$ ,  $p < 0.05$ ) and using an old test to study without the teacher's knowledge ( $\chi^2=36.29$ ,  $p < 0.01$ ).

Testing the null-hypothesis that students in each group cheated at a rate greater than zero indicated significant findings. For first-year students, 15 out of 17 showed statistical differences ( $p < 0.05$ ). The questions not statistically different from a zero response were taking a test for someone else and having someone write a term paper for you. For the third-year students, 14 questions were statistically different. The 3 questions not statistically different from a zero response were looking at notes during a test, taking a test for someone else, and having someone write a term paper for you.

## Discussion

The cheating behaviors listed in Table 2 were randomly listed in the survey instrument. When they were

**Table 2.** First-year and third-year pharmacy students' perceptions of behaviors as cheating and their self-reported participation in the behaviors

Possible Cheating Behaviors included in Survey	First-Year Students		Third-Year Students	
	Consider this Behavior Cheating (%)	Did this before Pharmacy School (%)	Consider this Behavior Cheating (%)	Did this during Pharmacy School (%)
<i>Test-Related Cheating Behaviors</i>				
Copying someone's test during an exam	88.97	7.82	90.59	6.33
Looking at notes during a test	87.62	5.75 <sup>a</sup>	90.16	0.79
Arranging to give or receive answers by signal	88.11	4.14 <sup>a</sup>	89.95	1.32
Taking a test for someone else	87.47	0.92	89.95	0.50
Giving answers during an exam	88.46	11.72 <sup>a</sup>	89.91	4.22
Allowing a student to copy on a test	87.50	12.67 <sup>a</sup>	88.50	6.07
Asking for an answer during an exam	86.82	7.36 <sup>a</sup>	86.63	3.17
Obtaining a copy of an exam and memorizing the answers	76.30	7.85 <sup>b</sup>	75.54	12.70
Giving test questions to a student in a later session	74.63	22.22	70.22	25.07
Getting answers from a student in an earlier session	73.83	23.09	70.64	24.60
<i>Paper-Related Cheating Behaviors</i>				
Copying someone else's term paper	87.41	3.45	88.53	3.17
Having someone write a term paper for you	84.15	2.07	84.00	1.32
Writing a paper for someone else	82.39	4.39	81.38	3.43
<i>Other Cheating-Related Behaviors</i>				
Allowing someone to copy homework	60.51 <sup>a</sup>	28.57	50.99	32.63
Not contributing a fair share in a group project	56.97 <sup>a</sup>	3.69	41.89	5.84
Using an old test to study without the teacher's knowledge	43.41 <sup>a</sup>	23.15 <sup>a</sup>	66.47	42.97
Using a paper for more than one class	31.89	15.90	27.03	17.94

<sup>a</sup>Comparison of first-year and third-year students was significantly different at  $p < 0.01$  using the (specify tests)

<sup>b</sup>Comparison of first-year and third-year students was significantly different at  $p < 0.05$  using the (specify tests)

put into categories, trends concerning respondents' beliefs about cheating became evident. Over 70% of respondents believed that all of the test-related and paper-related behaviors were cheating. For the 4 behaviors in the other category, however, there was less consensus that the behaviors were cheating; agreement ranged only from 27-60%. What is unique about these 4 behaviors is that they tend to fall into what may be considered a gray area. That is, individual variation, cultural norms, and professor expectations, may have played a large role in whether respondents considered allowing someone to copy homework, not contributing a fair share in a group project, using an old test to study without the teacher's knowledge, and using a paper for more than one class to be cheating. According to Wankat and Oreovicz[11] different cultures define the act of sharing answers with a friend differently, so professors need to share their definitions and rationales with the class. Other researchers have found that it is

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important to discuss the rules of plagiarism and cheating with students, preferably during the first class session.[11-14]

Interestingly, 3 of the 4 behaviors were statistically different between first-year and third-year respondents. Fewer third-year students considered allowing someone to copy homework and not sharing in a group project to be cheating, while fewer first-year students considered studying from an old test without the teacher's knowledge to be cheating. This possibly indicates that the professionalization found within pharmacy schools may play an important role in how students view cheating and other ethical behaviors.

An interesting point to consider is that in comparing the incidence of participating in these other cheating-related behaviors, only the practice of using an older test to study without the teacher's knowledge showed any significant difference between the 2 classes. This may indicate that despite differences between classes in the students' perceptions of what is cheating, their participation in these behaviors is not significantly different.

The question of whether the student engaged in each of the possible cheating behaviors formed the essence of the study, and the results show that there are differences in cheating behavior before and during pharmacy school. While the first-year and third-year students were not necessarily matched groups, trends between the 2 groups can give us an indication of how professionalization, academic rigor, and peer pressure may affect their behavior. It appears as if pharmacy students are not cheating at the extent to which other studies have reported this behavior. For example, McCabe and others reported that about 70% of undergraduate students have cheated on classroom exams. It may not be appropriate to compare cheating among pharmacy students with undergraduate students, since the environment of pharmacy school is different from the undergraduate classroom environment.[2,4,5,9]

If researchers of cheating behaviors take a closer look at the health professions, some parallels in cheating behaviors between pharmacy students and other health professional students can be seen. One study found that 16.5% of medical students reported cheating on classroom exams as undergraduates, but only 4.7% reported cheating in medical school.[15] In this study, cheating decreased for 5 of the seven behaviors showing statistical differences between first-year and third-year respondents. Most differences between first-year and third-year pharmacy students were found with cheating on classroom exams. First-year students were more likely to cheat during the exam. For instance, looking at notes during a test decreased from 5.75% to 0.79%, and giving answers during an exam decreased from 11.72% to 4.22%. Third-year students were more likely to engage in cheating behaviors before the exam, such as obtaining a copy of an exam and memorizing answers or using an old test to study without the teacher's knowledge. The various methods that might be employed to obtain a copy of an exam are best left to other researchers. Thus, it appears that the professionalization and norms of a pharmacy curriculum affect both pharmacy students' cheating behavior and their view of cheating.

A consistent pattern emerges with first- and third-year pharmacy students, in that both groups responded relatively homogeneously in regard to overall cheating behavior. The highest percentages of students in both classes cheat in the "gray zone." This area is defined as a gray zone because many respondents do not define the behavior as cheating.

### **Limitations**

This study has several limitations that may lessen the generalizability of the results to all pharmacy students. First, the study uses a non-random sample of pharmacy students. Careful selection of the 9 pharmacy schools, however, helped ensure representation of public, private, urban, rural, and geographically diverse schools.

Second, survey research relies on respondents answering questions honestly. To help students feel comfortable admitting to cheating, the authors worked with the faculty member at each school to assure anonymity. Even so, students may not have provided honest answers. In addition, the results do not

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describe the scope of cheating among pharmacy students, since they were simply asked whether they ever engaged in the behavior before or during pharmacy school, not the frequency of the behavior.

Third, the survey provides cross-sectional data of the behaviors of first-year and third-year pharmacy students. From this data, the authors are inferring that behavior changed from the first year of pharmacy school to the third year of pharmacy school. The 2 groups are relatively similar in background characteristics, making this inference plausible.

## Conclusion

Despite its limitations, this study provides insight into academic dishonesty among pharmacy students. First-year and third-year students at 9 schools of pharmacy indicated similar views about cheating, especially related to test-taking and paper-writing behaviors. Pharmacy students tended to report more cheating for behaviors for which they did not have consensus about defining the behavior as cheating. The professionalization and normative processes of a pharmacy school curriculum appeared to influence students' participation in academic cheating since third-year students generally reported less cheating than first-year students. Pharmacy educators should include discussions of academic dishonesty in their course curricula so that educators and students can share similar expectations. Similarly, a concerted effort by schools to add a professionalization component within the curriculum may help develop a culture that discourages cheating.

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