Cheating in Medical School: A Survey of Second-year Students at 31 Schools

DeWitt C. Baldwin, Jr., MD, Steven R. Daugherty, PhD, Beverley D. Rowley, PhD, and M. Roy Schwarz, MD

Abstract

Background. Although there have been a number of studies of cheating in universities, surprisingly little has appeared recently in the literature regarding academic dishonesty among medical students.

Method. To assess the prevalence of cheating in medical schools across the country, class officers at 31 of 40 schools contacted distributed a survey in the spring of 1991 to their second-year classmates. The survey consisted of questions about the students' attitudes toward cheating, their observations of cheating among their classmates, and whether they had themselves cheated. The results were analyzed using contingency tables, t-tests, Pearson correlations, and one-way analysis of variance.

Results. Of the 3,975 students attending the 31 schools, 2,459 (62%) responded. Thirty-nine percent of the respondents reported witnessing some type of cheating among classmates during the first two years of medical education, while 66.5% reported having heard about such cheating. When reporting about themselves, 31.4% admitted cheating in junior high school, 40.5% in high school, 16.5% in college, and only 4.7% in medical school. Reports of cheating varied across medical schools, but no relationship was found between rates of cheating and medical school characteristics. Men were more likely to report having cheated than were women. The best predictor of whether someone was likely to cheat in medical school was whether they had cheated before, although the data strongly support the role of environmental factors. Medical school honor codes exercised some effect on cheating behavior, but the effect was not large.

Conclusion. About 5% of the medical students surveyed reported cheating during the first two years of medical school. The students appeared resigned to the fact that cheating is impossible to eliminate, but they lacked any clear consensus about how to proceed when they became aware of cheating by others. The guidance students appear to need concerns not so much their own ethical behaviors as how and when to intervene to address the ethical conduct of their peers. Acad. Med. 1996; 71:267–273.

Although there have been a number of studies of cheating by students in U.S. colleges and universities, surprisingly little has appeared in the literature regarding academic dishonesty among medical students. More than a decade ago, Sierles and colleagues surveyed 428 fourth-year students at two medical schools, finding that 58% of the respondents admitted cheating at least once during medical school and 88% at least once in college. These figures suggest that cheating is pervasive, even normative. Other work, however, indicates that reports of the prevalences of cheating may be either overstated or subject to wide variations among different institutions. A less frequently referenced survey, conducted at the University of Utah School of Medicine, found substantially lower rates of reported cheating. Students were more likely to report cheating in the two clinical years (27%) than during preclinical instruction (17%).

While not offering empirical data on the prevalence of academic dishonesty at their institution, Anderson and Obenshain describe substantial agreement between students and faculty as to what constituted "unethical behavior." Some 10% of their respondents believed that there was a significant amount of academic dishonesty at their school, most commonly in relation to cheating on examinations. While there was agreement as to what constituted academic dishonesty, both students and faculty seemed less certain as to what constituted an appropriate response. The authors state that the prevalence of cheating at their institution is probably no higher than those at other medical schools but comment on the lack
of comparable data to support their claim.

Unfortunately, most of the existing data on cheating in medical school appear outdated or are limited to a single school. Given the apparent increases in ethical misconduct elsewhere in society during the past decade, the need for current information is obvious. What is the prevalence of cheating in medical school today? Do rates of reported cheating differ substantially among schools? If rates of cheating differ, are there particular features of medical schools that are associated with higher or lower rates of reported cheating?

METHODS

Sample

Any assessment of academic dishonesty by medical students faces several major obstacles. Cheating is by definition a covert activity and one for which serious sanctions apply. Given the high academic and financial investments of most medical students, these problems are even more formidable. Furthermore, except for sophisticated methods of personal or computer surveillance, there is little opportunity to obtain such data except through self-report.

In addition, for large-scale studies, students are hard to reach even to obtain such self-reports. There is no national list or register of students' home addresses. Many students use school addresses as their mailing addresses due to the uncertainty of their housing conditions. Finally, it is exceedingly difficult to contact third-year medical students on clerkships located at multiple sites, while fourth-year students are often on electives or visiting institutions across the country. This means that any large study of cheating among medical students will be more successful if targeted to students in their preclinical years.

With these issues in mind, we decided that the most effective method for reaching a large national sample of students was to contact a random sample of medical schools across the country. Accordingly, 40 schools were selected by a list of random numbers, and second-year class officers at each school were contacted by a member of the research team. All the class officers agreed to cooperate, and surveys were mailed to them with the suggestion that they be distributed at a lecture or class meeting. Second-year students were selected as being the only ones who had been enrolled for sufficient time to have achieved some sort of experience with academic dishonesty in medical school and at the same time to be able to be contacted as a group. Surveys were distributed by the class officers near the end of the second year, collected by them, and returned to the research team.

Survey Instrument

Given that medical students are frequently over-sampled with regard to questionnaires, we decided to limit the survey to a single side of one page. The sensitive nature of the topic also dictated that the survey be anonymous. It consisted of three parts. First, students were asked a set of 11 items dealing with attitudes toward cheating. Students responded by indicating the degree to which they agreed or disagreed with each of the 11 statements, using a seven-point Likert-type scale (ranging from 1, strongly disagree, to 7, strongly agree). Attitude items included such statements as "Everyone cheats in medical school at one time or another" and "I would cheat if I were certain I would not get caught."

Second, students were asked to report on their personal observations of cheating among classmates. The students were given nine examples of well-known cheating behaviors in an effort both to assess the medical school environment and to sensitize the students to the definitions of cheating in which the survey was interested. The behaviors included everything from copying answers during a test to turning in another person's work or using a "cheat sheet."

For each of these, the students were requested to indicate whether they had personally observed such behavior among classmates. Following this, they were asked whether they had personally heard about these behaviors in others around them.

At the end of the questionnaire, the students were asked to indicate whether they themselves had ever cheated while in junior high school, high school, college, or medical school. A final set of questions assessed the students' awareness of the presence or absence of an honor code at their school and asked their age and gender. The sequence of the questions was intentional, allowing respondents first to answer relatively nonthreatening attitudinal items and then to respond to somewhat more sensitive reports about the behaviors of others before addressing the most sensitive questions regarding their own conduct. (A copy of the questionnaire may be secured from the corresponding author.)

Analysis

The survey results were first analyzed using frequency distributions to detail the pattern of responses. Relationships between items were assessed by use of contingency tables or t-tests as appropriate. Differences in responses due to gender and age were also assessed by t-test or contingency table analyses. Analyses of differences across schools made use of Pearson correlations and one-way analysis of variance.

RESULTS

Class officers at 31 of the 40 schools contacted distributed and returned the questionnaires. Non-participants included three schools that belatedly declined to participate, and three that did not return the completed question-
naries in spite of repeated follow-up attempts. The officers at three other schools either claimed not to have received the questionnaires or stated that their classmates were already on clinical rotations and impossible to reach.

The total number of second-year students attending the responding schools was 3,975. Of these, 2,459 students completed individual survey forms, providing an overall response rate of 62% (the actual rate may have been higher, since it is not known how many students were absent from class on the day when the surveys were distributed). There was a decided difference in the response rates across individual schools. One school recorded a response rate of 97%, and nine schools recorded response rates of more than 80%. At the other end of the continuum, five schools recorded response rates of less than 50%, three of these with rates under 25%. The mean age of the respondents was 25.2 years, with a range of 19 to 44 years. There was no difference in mean ages between men and women. The sample consisted of 1,510 men and 916 women (33 students who responded to the survey did not indicate their gender), a distribution closely approximating that for all second-year medical school students in the country.

Attitudes toward Cheating

The percentages of students agreeing and disagreeing with each of the attitude items, along with the mean ratings and standard deviations, are presented in the left side of Table 1. The students as a whole strongly disagreed with the statements that they would cheat if given the chance and that cheating doesn’t hurt anyone. They showed the strongest agreement with the statements that cheating is impossible to eliminate and that cheaters end up hurting themselves in the long run.

The students appeared most divided in their attitudes toward what should be done with persons caught cheating. They were fairly evenly split between agree and disagree for “Anyone caught cheating in medical school should be immediately dismissed” and “If I became aware of a classmate cheating, I would turn him/her in to the proper authorities.” On the one hand, the students apparently felt that cheating was wrong and something they would not do. On the other, they thought that

<table>
<thead>
<tr>
<th>Item</th>
<th>% Disagree</th>
<th>% Agree</th>
<th>Rating Mean</th>
<th>Rating SD</th>
<th>Junior High School</th>
<th>High School</th>
<th>College</th>
<th>Medical School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everyone cheats in medical school at one time or another.</td>
<td>80.5</td>
<td>12.5</td>
<td>2.21</td>
<td>1.59</td>
<td>2.3†</td>
<td>2.3†</td>
<td>2.7†</td>
<td>4.0†</td>
</tr>
<tr>
<td>Anyone caught cheating in medical school should be immediately dismissed.</td>
<td>44.0</td>
<td>47.2</td>
<td>4.11</td>
<td>1.92</td>
<td>3.8†</td>
<td>3.9†</td>
<td>3.4†</td>
<td>2.9†</td>
</tr>
<tr>
<td>If I became aware of a classmate cheating, I would turn him/her in to the proper authorities.</td>
<td>38.3</td>
<td>42.0</td>
<td>4.03</td>
<td>1.73</td>
<td>3.8†</td>
<td>3.9†</td>
<td>3.6†</td>
<td>3.4†</td>
</tr>
<tr>
<td>Honor codes are an effective way to prevent cheating in medical school.</td>
<td>42.4</td>
<td>45.3</td>
<td>3.94</td>
<td>1.69</td>
<td>4.1†</td>
<td>3.9</td>
<td>3.7†</td>
<td>3.2†</td>
</tr>
<tr>
<td>Cheating is a normal outgrowth of the competitive nature of medical school.</td>
<td>62.9</td>
<td>29.7</td>
<td>3.02</td>
<td>2.00</td>
<td>3.1</td>
<td>3.1</td>
<td>3.4†</td>
<td>4.3†</td>
</tr>
<tr>
<td>I would cheat if I were certain I would not get caught.</td>
<td>88.7</td>
<td>5.4</td>
<td>1.72</td>
<td>1.32</td>
<td>2.0†</td>
<td>1.9†</td>
<td>2.4†</td>
<td>3.1†</td>
</tr>
<tr>
<td>In the long run cheating doesn’t really hurt anyone.</td>
<td>89.8</td>
<td>5.8</td>
<td>1.79</td>
<td>1.35</td>
<td>1.9†</td>
<td>1.9†</td>
<td>2.2†</td>
<td>2.7†</td>
</tr>
<tr>
<td>Cheating is impossible to eliminate.</td>
<td>33.2</td>
<td>59.3</td>
<td>4.48</td>
<td>1.93</td>
<td>4.7</td>
<td>4.8</td>
<td>5.0†</td>
<td>5.5†</td>
</tr>
<tr>
<td>Someone accused of cheating is probably guilty.</td>
<td>64.3</td>
<td>14.4</td>
<td>2.84</td>
<td>1.55</td>
<td>2.8</td>
<td>2.8</td>
<td>2.9</td>
<td>2.8</td>
</tr>
<tr>
<td>Not a single exam goes by without someone cheating on it.</td>
<td>42.6</td>
<td>32.4</td>
<td>3.70</td>
<td>1.81</td>
<td>3.8</td>
<td>3.8</td>
<td>4.1†</td>
<td>4.7†</td>
</tr>
<tr>
<td>Cheaters just end up hurting themselves in the long run.</td>
<td>19.5</td>
<td>74.0</td>
<td>5.40</td>
<td>1.93</td>
<td>5.3</td>
<td>5.3</td>
<td>5.2</td>
<td>5.1</td>
</tr>
</tbody>
</table>

*The students were asked to rate the attitude items on a seven-point Likert-type scale, ranging from 1, strongly disagree, to 7, strongly agree (with 4 indicating no opinion). In the table, percentages for “disagree” are of students who responded 1–3; percentages for “agree” are for students responding 5–7. Of the 2,459 students, 31.4% reported having cheated while in junior high school; 40.5%, while in high school; 16.5%, while in college; and 4.7%, while in medical school.

†Cheaters differed from non-cheaters, p < .001; ‡cheaters differed from non-cheaters, p < .01;
cheating was impossible to eliminate, and they seemed ambivalent about what action should be taken to deal with it.

Women were significantly more likely than men to say that they would turn in a classmate for cheating (p < .0001) and to agree with the statement "Cheaters just end up hurting themselves in the long run." (p < .0001). On the other hand, men were significantly more likely to agree (p < .0001) with the statements that "Cheating is a normal outgrowth of the competitive nature of medical school," "I would cheat if I were certain I would not get caught," "In the long run, cheating doesn't really hurt anyone," and "Cheating is impossible to eliminate."

There were significant differences between the attitudes of younger (less than 25 years old) and older (more than 25 years old) students. Younger students were more likely to agree that honor codes are effective than were older students (p < .03) and also to agree with the statement that cheaters only hurt themselves (p < .02). Older students were more likely to believe that cheating is normal (p < .01) and that it doesn’t hurt anyone (p < .01).

Observations of Others’ Cheating in Medical School

Overall, 39% of the respondents reported having witnessed some type of cheating during their first two years of medical education (Table 2). The three types of cheating most frequently observed by the students were copying answers during a test (15.3%), obtaining prior information concerning a test (15.7%), and turning in someone else’s work (14.1%). On the other hand, 66.5% of the students reported having heard about such behaviors among classmates. Copying answers during a test (32.5%), securing prior information about a test (28.3%), and exchanging answers during a test (21.1%) were identified as the cheating behaviors most frequently heard about.

Students’ Reports of Their Own Cheating

Table 3 shows the percentages of the sample who reported that they themselves had cheated at least once during junior high school, high school, college, or medical school. Several patterns are clear. First, reported cheating in medical school was significantly lower (p < .0001) than that for any of the other levels of schooling. Also, these self-reported figures were somewhat lower than those generally reported in the media and in the literature, with 31.4% claiming to have cheated in junior high school, 40.5% in high school, 16.5% in college, and only 4.7% in medical school.

Second, the men were significantly more likely than were the women to report having cheated at all levels of schooling except medical school (p < .0001). Dividing the percentage of men who reported cheating by the percentage of men who reported cheating yields a ratio that highlights the difference. As Table 3 shows, the women reported having cheated prior to medical school only two-thirds as often as the men. During medical school this ratio rose. The men were still more likely to have reported cheating in medical school than were the women, but because of the relative small percentages, this difference is not statistically significant.

Factors Related to Reported Cheating in Medical School

Based on our results, the best single predictor of whether someone is likely to cheat during the first two years of medical school is whether he or she has cheated before. Forty-seven percent of the 114 students who reported cheating in medical school also reported having cheated in junior high; 70%, in high school; and 69%, in college. Overall, 82% of the 4.7% of the students who said they had cheated in medical school also reported cheating before entering medical school.

However, this does not mean that all persons who admitted prior cheating reported cheating in medical school. Using the terms of epidemiologic screening, the "prior cheating" index has great sensitivity but limited specificity. That is, while most of the people...
Table 3

Percentages of Male and Female Second-year Students Who Reported That They Had Cheated during the Course of Their Education: 31 U.S. Medical Schools, 1990–91

<table>
<thead>
<tr>
<th>Time of Cheating</th>
<th>Men (n = 1,510)</th>
<th>Women (n = 916)</th>
<th>Total (n = 2,426)</th>
<th>Ratio of Women to Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>During junior high school</td>
<td>38.1</td>
<td>23.8</td>
<td>31.4</td>
<td>.66†</td>
</tr>
<tr>
<td>During high school</td>
<td>46.8</td>
<td>30.2</td>
<td>40.5</td>
<td>.65†</td>
</tr>
<tr>
<td>During college</td>
<td>19.2</td>
<td>11.9</td>
<td>16.5</td>
<td>.62†</td>
</tr>
<tr>
<td>During medical school</td>
<td>5.1</td>
<td>4.0</td>
<td>4.7</td>
<td>.78</td>
</tr>
</tbody>
</table>

*The total number of men and women is less than the total number of survey respondents (2,459) shown in Tables 1 and 2 because 33 responding students did not indicate their gender; †rates of reported cheating were significantly different between men and women at p < .001.

Cheating across Medical Schools

Figure 1 shows the distribution across the 31 schools of students who admitted cheating in medical school. While the modal figure was 5%, three schools did not have a single student who admitted cheating. On the other hand, eight schools reported cheating levels ranging from 7% to 12%.

To identify factors that might have accounted for the different levels of cheating, rates from each school were compared with a number of variables, including response rate from the school, average age of the student body, percentage of enrollees who were women, region of the country, cost of tuition, whether the school was publicly or privately funded, age of the school, and amount of research dollars received annually. Using Pearson correlation coefficients, we determined that none of these factors differentiated schools with higher cheating rates from those with lower rates.

The survey results showed a wide variation in the percentages of students at the individual schools who had cheated prior to matriculation. Results for the individual schools ranged from a high of 66% to a low of 34%, with a median of 51%. However, the schools that had higher percentages of students who reported cheating prior to medical school did not have higher rates of cheating in medical school. The correlation between cheating prior to medical school and cheating in medical school was effectively zero (r = .05). Partial correlations that controlled for size of school, whether the institution was public or private, and age of the school still showed near-zero correlations between prior cheating and cheating in medical school. At the same time, students from larger schools were more likely to perceive cheating as a constant part of their environment. Larger schools were significantly more likely to have students who agreed that “Not a single exam goes by without someone cheating on it” (r = .64, p < .0001).

Figure 1. Percentages of responding second-year students in 31 schools who reported that they had cheated in medical school, 1990–91.
The only correlates with reports of cheating in particular medical schools were student observations of others' cheating and student attitudes about cheating. Schools whose students reported more cheating themselves also had more reports of students' observing others' cheating ($r = .31$, $p < .08$), apparently confirming the self-reports. In addition, the students at schools with higher rates of reported cheating registered less severe attitudes about the negative consequences of cheating. In particular, they were more likely to agree with statements that “Everyone cheats in medical school at one time or another” ($r = .41$, $p < .02$) and “Cheating is impossible to eliminate.” ($r = .35$, $p < .05$).

Effect of Honor Codes

Since the presence of honor codes in junior high school, high school, and college was not assessed, it was possible only to look at the medical school experience. Where there was an honor code (20 schools), cheating occurred among 3.8% of the students, compared with 7.7% in the 11 schools where there was no code ($p < .009$). Students who were unsure about whether there was an honor code reported an average cheating prevalence of 5.5%. When one looks at the previous cheating experiences of these students, there was no difference among the three groups. Nor was there any difference among their reports of cheating in either junior high school, high school, or college. The pattern of these results suggests that a medical school honor code does exercise some effect on cheating behavior, but the effect is not large.

DISCUSSION

Although cheating clearly occurs at most if not all medical schools, the current prevalence of the problem appears to be much lower than previously reported. This does not mean that the rates of reported cheating on this survey, ranging in different schools from zero to over 10%, are not cause for concern. Any cheating is undesirable. The data in this study suggest, however, that the key issue appears to be helping students to cope with cheating by their peers when they encounter it, rather than concern over the high prevalence of cheating.

There are several possible reasons for the lower rates of cheating reported in this paper, some methodologic and some substantive. First, in responding to a “single-shot” survey administered by classmates, the students may have felt that they should put their best foot forward. Or perhaps, by answering attitudinal items first, the students were prompted to answer in more socially acceptable ways. Second, despite their random selection, it is clear that the choice of schools at which the survey was conducted could have had an effect on the rates reported. In the present sample of 31 schools, there were noticeable variations in reported rates. It may be that some schools not included in the sample would have had significantly higher rates. Last, by sampling only second-year students, the study was limited to reports of cheating in the preclinical years. For reasons stated earlier, securing a national sample of junior and senior medical students would be extremely difficult and was deemed not feasible under the logistic and fiscal constraints of the project. Certainly, the literature suggests that unethical behavior, including academic dishonesty, occurs more often during the clinical years.4,5

As always, there is concern over self-reported data, although in the case of cheating, this appears to be the only way to secure large-scale information. We are reassured by the internal consistency between the self-reports of personal cheating and the observations of such behavior on the part of others. In addition, the method employed appeared to grant an even greater degree of anonymity than is possible at a single school.

Finally, there may be concern over the variable response rates at the different schools and the inclusion of all the data in reporting the results. This was done to preserve the integrity of the research design, a decision that is supported by the statistical analysis, which demonstrated no significant difference between high- and low-response schools.

While noting these caveats, we believe that the differences between the cheating rates reported in this survey and those published by others appear substantive.4,5 Much has changed in medical education over the past ten years. The old stereotype of “boys in white” less and less reflects the demographic make-up of the student body. The increased number of women enrolled in medical school may serve to reduce cheating in three ways. First, as our data suggest, women appear to cheat less, so that an increase in the number of women students should reduce the overall level of cheating. Second, in other studies, women medical students have been shown to demonstrate significantly higher levels of moral reasoning than their male classmates.2 Third, the increased number of women may serve to sensitize classmates to ethical issues or even to foster changes in behavior.6,9

In addition, students' perceptions of the benefits of cheating may be changing. The existence of the three-step licensing sequence means that students are required to do more than make it past course examination. As one student commented, “Cheating doesn't help because you really do need to know the stuff. Even if you get by the course, you still have to know the material for Boards.” This is consistent with the observation that many students who reported that they had cheated during high school or college did not report cheating in medical school.

The real effect of cheating is to be felt, not in the fact that some people get away with it, but in the overall tone
it creates within the educational institution. Even students who said that they did not cheat reported seeing or hearing about cheating by fellow students. The danger is that cheating by others seems to be accepted as a fact of life, unaccompanied by any moral indignation. Overall, the students' attitudes showed them to be resigned to the fact that cheating is impossible to eliminate, and to lack any clear consensus regarding how to proceed when they become aware of cheating by others. This lack of consensus in the face of observed cheating does not bode well for a profession that relies on peer review and self-policing to maintain its codes of conduct.

Clearly, the existence of an honor code does not prevent cheating. The students in this study were often uncertain about whether an honor code existed or not at their schools. It does not appear then that honor codes as such provide a standard that firmly guides the wayward back from the brink of academic dishonesty. On the other hand, honor codes may serve an indispensible function. For those students who do not cheat but observe such behavior in others, honor codes may provide some guidance as to how they should respond. In other words, honor codes do not prevent cheating; but they help students to know what constitutes proper behavior when faced with the ambivalence they apparently feel in evaluating the conduct of their peers.

Although prior cheating is a good predictor of cheating in medical school, those schools that matriculated more past cheaters did not evidence higher rates of cheating during medical school. In the "nature or nurture" debate over whether cheating is an individual trait or a situational response, these data suggest the need to focus more on the latter. There is little or no evidence to support the contention that schools have more cheaters simply because they admit people who have cheated in the past. Rather, cheating often seems to be an opportunistic response of an otherwise generally ethical student population. The reduction of cheating, then, depends not on better screening at admission but on a clearer articulation of standards during medical school. The goal must be to heighten students' sensitivity to standards of moral behavior, not just to police them into compliance. Medical school is a time for instruction in the ethics of the profession as well as in the diagnosis and treatment of disease. Their education must make it clear to students that they have an obligation to develop and foster moral behavior not only in themselves but also within the profession as a whole.

REFERENCES