Research

Recherche

Changes in students' moral development during medical school: a cohort study

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Abstract

Introduction: The requirements of professionalism and the expected qualities of medical staff, including high moral character, motivate institutions to care about the ethical development of students during their medical education. We assessed progress in moral reasoning in a cohort of medical students over the first 3 years of their education.

Methods: We invited all 92 medical students enrolled at the University of Sherbrooke, Que., to complete a questionnaire on moral reasoning at the start of their first year of medical school and at the end of their third year. We used the French version of Kohlberg's Moral Judgment Interview. Responses to the questionnaire were coded by stage of moral development, and weighted average scores were assigned according to frequency of use of each stage.

Results: Of the 92 medical students, 54 completed the questionnaire in the fall of the first year and again at the end of their third year. The average age of the students at the end of the third year was 21 years, and 79% of the students included in the study were women. Over the 3-year period, the stage of moral development did not change substantially (i.e., by more than half a stage) for 39 (72%) of the students, shifted to a lower stage for 7 (13%) and shifted to a higher stage for 8 (15%). The overall mean change in stage was not significant (from mean 3.46 in year 1 to 3.48 in year 3, $p = 0.86$); however, the overall mean change in weighted average scores showed a significant decline in moral development ($p = 0.028$).

Interpretation: Temporal variations in students' scores show a levelling process of their moral reasoning. This finding prompts us to ask whether a hidden curriculum exists in the structure of medical education that inhibits rather than facilitates the development of moral reasoning.

The requirements of professionalism and the expected qualities of medical staff, including high moral character, motivate institutions to care about the ethical development of students during their medical education.[1,2] Ethics is thus one of several expected physician skills related to the acquisition of scientific and technical knowledge.[3–6]

The results of studies performed in the United States and elsewhere suggest a negative trend in the progress of ethical skills during medical training.[7–10] These studies, which used 3 different instruments, yielded divergent results, showing sometimes decreased ethical sensitivity[11] and sometimes inhibited development in moral reasoning.[12–15] Some of the results demonstrated a strong correlation between low levels of moral reasoning and the number of legal proceedings for malpractice (unpublished data). In one survey, nearly half of the students reported that they felt pressure to act unethically,[16] and in another survey of 665 third- and fourth-year medical students, 62% of them felt that their ethical principles had been seriously eroded or had disappeared.[17] The situation does not appear to improve once medical education is completed.[18]

In light of growing concern about ethics in medical practice, it is important to have a better understanding of the divergence between the natural progression of moral reasoning that comes with maturity[19] and education,[20] including pedagogical measures taken to promote ethical skills, and the degradation observed during medical education. Many have attempted to explain this divergence in order to better intervene during medical education.[21–23] Studies have been published on the moral development of American medical students,[12–15] but only one used longitudinal data.[13] In that study, the expected increase in scores for moral reasoning did not occur over the 4 years of medical education, which suggests that the students' education experience somehow inhibited rather than facilitated the development of their moral reasoning.

We conducted a study to determine whether findings similar to those from the US studies would be observed in a cohort of students enrolled in a Quebec medical school. Using a longitudinal approach, in which the same subjects were surveyed over time, we examined the impact of the first 3 years of medical studies on the development of moral reasoning expected to occur with maturity and involvement in university studies. As well, a longitudinal approach enabled us to identify potential effects of medical education on a single cohort and compare them to those found in the US longitudinal study.[13]

Methods

We invited all 92 students entering medical school at the University of Sherbrooke, Que., to complete the Moral Judgment Interview (MJI) questionnaire upon registration. Participation was voluntary, and we assured respondents of confidentiality. We invited the same individuals to complete the questionnaire again at the end of their third year of medical studies.

Table 1: Kohlberg's stages of moral development

Preconventional morality

Stage 1   Avoidance of physical punishment and deference to authority figures (e.g., parents, teachers): The physical consequences of an act wholly determine the goodness or badness of that act.

Stage 2   Instrumental exchange: Right actions are those that instrumentally satisfy one's own needs. People are valued in terms of their utility.

Conventional morality

Stage 3   Interpersonal conformity: Right actions are those that conform to the behavioural expectations of one's society or peers, for the purpose of gaining the approval of others.

Stage 4   Law and order: Right actions consist of doing one's duty, showing respect for authority and maintaining the given social and institutional order for its own sake. Deviation from rules will lead to social chaos.

Postconventional morality

Stage 5   Social contract: Behaviour is guided by a sense of obligation because of a social contract to make and abide by laws for the welfare of all and for the protection of all people's rights. There is a feeling of contractual commitment, freely entered upon, to family relationships, friendships and work obligations. Laws and duties should be based on a rational calculation of overall utility: "The greatest good for the greatest number."

Stage 6   Universal ethical principles: Right actions are defined in terms of universal moral principles (justice, equality of human rights and respect for the dignity of human beings as individuals) and a sense of personal commitment to them.

The MJI scale, developed by Lawrence Kohlberg in 1958,[24,25] was designed to measure changes in the logic of moral reasoning that usually occur over years. According to Kohlberg's theory, people proceed through stages of reasoning as they mature (Table 1). The sequence does not vary, although the rate of progression and the end stage reached vary by individual. Only the type of justification provided, or the logic of the reasoning used, is important in assigning a stage score, not a particular set of values or moral beliefs. What is being tested is the participant's capacity for moral reasoning and not the person's particular set of moral beliefs and values. For example, a person could be at stage 4 and have either conservative or liberal values; indeed, whether a person holds conservative or liberal values has no bearing on the reasoning capacities for supporting whatever values are held.

Kohlberg's MJI scale has been validated across many cultures and in a variety of socioeconomic situations around the world. We therefore considered it suitable for use in a Canadian population of students pursuing medical studies in Quebec. We used a paper-and-pencil version of form B of the questionnaire. (There are 3 forms [A, B and C], each of which presents 3 ethical dilemmas with predefined central issues. The forms differ in the way the issues are defined.) A paper-and-pencil version allows for group testing. Each of the 3 dilemmas consists of 6 development questions dealing with various aspects of moral reasoning applicable to that dilemma. Participants are given 75 minutes to complete the questionnaire.

We coded responses according to parameters defined by Colby and Kohlberg.[19] A stage of development was first attributed to each response. The stage attributed most frequently in a student's questionnaire constituted the individual's dominant stage. When students invoked 2 stages with equal frequency, an intermediate category falling halfway between the 2 stages was created (e.g., intermediate stage 3–4). These intermediate categories were not viewed as particular structures of moral judgement constituting true stages, but rather as phases of transition from one stage to another. In a third step, we converted recorded stages to numerical scores (weighted average scores) according to the frequency of use of each stage. An individual could see her or his numeric score increase or decrease while staying at the same stage, depending on the distribution of the different stages reached among all the students. Given the characteristics of the instrument, Colby and

Table 2: Stages of moral reasoning at year 1 and year 3 among students who completed the Moral Judgment Interview questionnaire in their first and third year of medical school*

Stage at year 1	Stage at year 3; no. of students				
	Intermediate stage 2–3 n = 7	Stage 3 n = 7	Intermediate stage 3–4 n = 28	Stage 4 n = 5	Intermediate stage 4–5 n = 7
Intermediate stage 2–3 (n = 2)	–	–	1	–	1
Stage 3 (n = 13)	3	1	7	1	1
Intermediate stage 3–4 (n = 31)	2	5	16	4	4
Stage 4 (n = 3)	1	–	2	–	–
Intermediate stage 4–5 (n = 5)	1	1	2	–	1

*Blue cells = group 1 (no substantial change in stage of moral reasoning from year 1 to year 3); yellow cells = group 2 (increase in stage from year 1 to year 3); green cells = group 3 (decrease in stage from year 1 to year 3). For example, 3 of the 13 students who were at stage 3 at the start of medical school shifted down to intermediate stage 2–3 by the end of their third year; the cell is coloured blue because the change was by only half a stage and thus was not considered significant. In another example, 2 of the 31 students who were at intermediate stage 3–4 in their first year shifted down to intermediate stage 2–3 at the end of their third year, denoting a full-stage shift (green cell).

Kohlberg[19] did not view a difference equal to or less than half a stage (0.5 stage) as a change. Finally, we divided the students into 3 groups according to their difference in stage scores from year 1 to year 3: group 1 = students who had no substantial change in stage (difference fell between –0.5 and 0.5); group 2 = students who had an increase in stage (difference was a negative value beyond –0.5); and group 3 = students who had a decrease in stage (difference was a positive value beyond 0.5).

For statistical analysis we used either Pearson or Spearman correlation coefficients,[26] depending on whether the normality assumption was met, to assess the relation between intra-individual measurements. Changes over time were also measured in terms of the mean change in stage and weighted average scores from the first to the third year of medical school. To assess the significance of these mean changes, we used the paired-sample t-test if the normality assumption was met in the stage and numerical score measurements; otherwise, we used the nonparametric counterpart procedure, the Wilcoxon signed rank test.[27]

Results

All 92 students entered medical school at the University of Sherbrooke after 2 years in CEGEP (junior/technical college in Quebec). Of these students, 54 (58%) completed the questionnaire upon entry in their first year and again in their third year. The study sample comprised 38 women (70.4%), although women normally constitute 58% of the medical student population in Quebec. The age of respondents at the end of their third year ranged from 20 to 31 years old (mean 21.3 [standard deviation (SD) 1.6] years). Most of the 38 students (mainly male) who were not included in the final sample had in fact participated in the study; however, their responses were excluded from the final analysis in large part because of incomplete data from the first or second questionnaire.

Table 2 shows the stages of moral reasoning the students were at in their first and third years of medical school. A total of 39 students (72%) were found to be in group 1 (signifying no change in stage [$n = 18$] or a change by half a stage up [$n = 11$] or by half a stage down [$n = 10$]). In all, 8 students (15%) ended up in group 2 (increase in stage) and 7 (13%) in group 3 (decrease in stage). None of the students attained an overall stage lower than intermediate stage 2–3.

The overall mean change in stage was not statistically significant (mean 3.46 [SD 0.45] in year 1 and 3.48 [SD 0.57] in year 3, $p = 0.86$) (Fig. 1, top). The overall mean change in weighted average scores was statistically significant (mean 348.04 [SD 36.56] in year 1 v. 330.06 [SD 43.96] in year 3, $p = 0.028$) (Fig. 1, bottom). As expected, the 7 students who experienced a decrease in stage also had a significant decrease in weighted average scores (mean change –111.71 [SD 31.13], $p < 0.001$). The 8 students whose stage increased also had a significant increase in weighted average scores (mean change 42.25 [SD 37.61], $p = 0.016$). However, a significant decrease in score (mean change –13.74 [SD 45.49], $p = 0.033$) was recorded for the 39 students in group 1, for whom no change or a change of

only half a stage occurred, even though stage and score measurements were strongly correlated.

The observed correlation coefficients suggested that there was little correlation between the first- and third-year values for the stage scores ($r = –0.05$, $p = 0.72$) and the weighted average scores ($r = –0.07$, $p = 0.60$) (Fig. 2). For the weighted average scores, observed correlation coefficients between first- and third-year scores within the 3 groups were as follows: $r = 0.20$ ($p = 0.21$), $r = 0.22$ ($p = 0.60$) and $r = 0.68$ ($p = 0.09$) respectively for group 1 (no change), group 2 (increase in stage) and group 3 (decrease in stage). We observed a significant association between
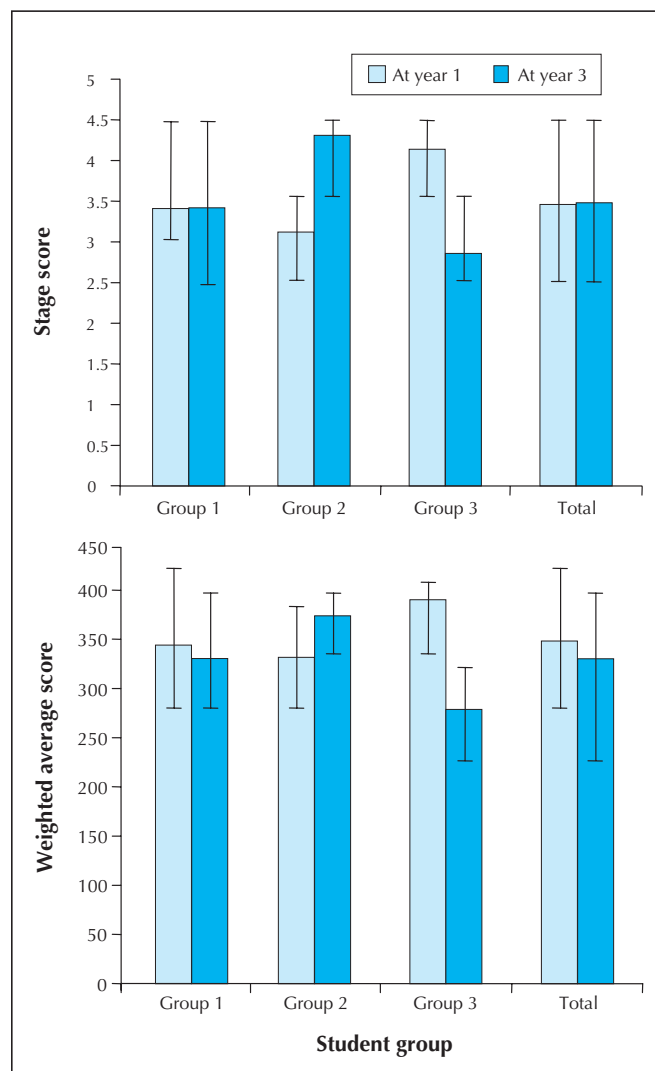

Fig. 1: Mean stage of moral development (top panel) and weighted average scores assigned to stages (bottom panel) in year 1 and year 3 of medical school among students at the University of Sherbrooke. Group 1 = students who had no substantial change in stage or weighted average score by year 3; group 2 = students who had an increase in stage or weighted average score by year 3; group 3 = students who had a decrease in stage or weighted average score by year 3.

changes in stage and age ($r = -0.28$, $p = 0.044$), whereas changes in weighted average scores were not significantly associated with sex or age.

Interpretation

As in the US longitudinal study,[13] we did not observe the increase in the development of moral reasoning that was expected with maturation and involvement in university studies. We found a significant decrease in weighted average scores after 3 years of medical education. Our findings do not, however, establish a direct causal relation between the observed decrease in moral development and medical education. Yet they do clearly indicate the occurrence over time of a levelling to a lower threshold of development than that expected for this age group. Colby and Kohlberg[19] stated that the conventional level of moral reasoning (represented by intermediate stage 3–4 and stage 4) is the one most commonly found in the adolescent and adult population. In contrast, among children and young adolescents, the preconventional level (represented by stages 1 to 3) prevails; at this level parental authority and the desire to avoid punishment are determinative. The postconventional level (represented by intermediate stage 4–5 and stage 5) is characterized by the adoption of a societal perspective and is found only in a minority of adults.

The decrease in the weighted average scores we observed among 45 of the 54 students is explained by their more frequent use of arguments related to self-interest or their immediate environment (stage 1, 2 or 3). After 3 years of training, the students adopted the social perspective that considers ethical stakes (stage 4 or 5) in the decision-making process less frequently than they had upon entering medical school.
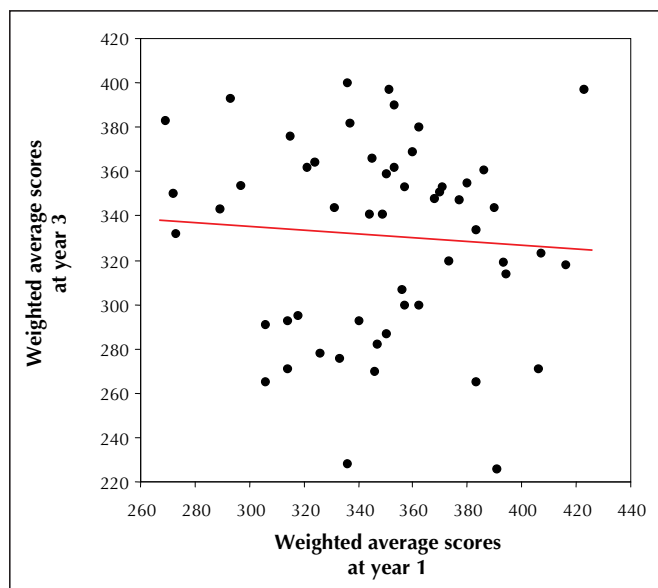

Fig 2: Correlation between weighted average scores for stages of moral development at year 3 and weighted average scores at year 1 ($r = -0.07$).

Our study had limitations, owing mainly to the observed response rate and the overrepresentation of women in the study population. However, we believe that the data were missing at random or for reasons not related to the study subject (e.g., length of question, amount of time needed to complete the questionnaire [75 minutes] and time of day chosen to administer it). The overrepresentation by female students in the study sample may indicate that women are more interested than men in ethical issues or that men have more difficulty than women in expressing themselves in writing, which may have led to the exclusion of some of the male respondents from the final sample.

Our findings appear to confirm the hypothesis that medical school constitutes a strong socializing experience. There was a strong likelihood of a decrease in stage of moral development by more than half a stage among the students rated as having a high stage (stage 4 or intermediate stage 4–5) upon entering medical school. Among these students, only 1 stayed at his or her initial stage after 3 years. The probability of a decrease in weighted average scores among these students was 100%. Inversely, the likelihood of an increase by more than half a stage among the students who were initially rated at lower stages (intermediate stage 2–3 and stage 3) was high. It seems reasonable to infer that a levelling effect occurred in moral reasoning over the 3 years of medical education. This levelling raises many questions of concern to medical students and their teachers that need to be addressed in further longitudinal studies. Such studies would help to differentiate the effect of peer influence, institutional influence and the influence of the system of medical education[28] on the development of students' moral reasoning. The challenge will be to develop a curriculum that will enable medical students to at least maintain their stage of moral development if not increase it through the medical education experience.

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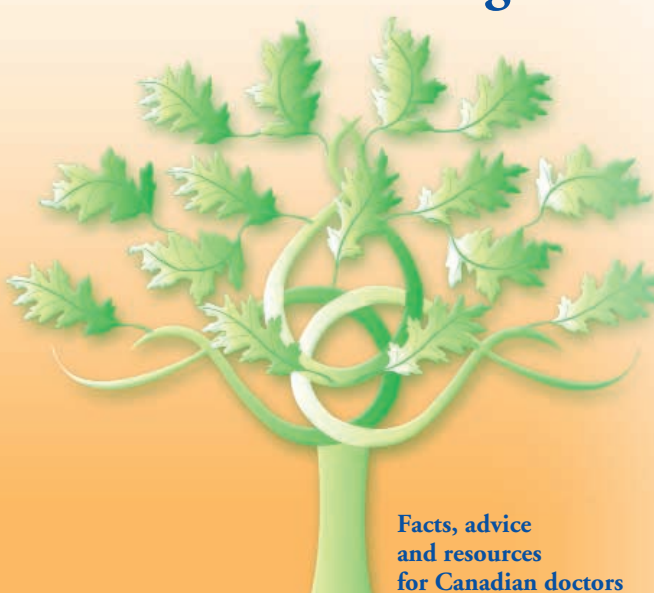4. *Skills for the new millennium: report of the Societal Needs Working Group. Can-*

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