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Research Paper

Assessment of levels of moral reasoning in pharmacy students at different stages of the undergraduate curriculum

Cathal T. Gallagher

School of Pharmacy, University of Hertfordshire, Hatfield, Herts, UK

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Correspondence
Dr Cathal T. Gallagher, School of Pharmacy, University of Hertfordshire, Hatfield, Herts AL10 9AB, UK.
E-mail: c.t.gallagher@herts.ac.uk

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Abstract

Objectives The principal aim of this study was to demonstrate the maturation of moral reasoning among pharmacy students as they progress through a 4-year degree programme at a school of pharmacy in the UK.
Methods The moral reasoning of 332 students from across all 4 years of the Master of Pharmacy (M Pharm) degree, together with 13 faculty members, was assessed using Rest's Defining Issues Test over a 1-week period.
Key findings The results demonstrate clear increase moral reasoning scores through all years of study and on into membership of the faculty. This trend was highly significant ($t = 7.09$; df = 1; $P < 0.001$). The coefficient of variability (R^2) was calculated as 0.92 using linear least squares regression. There was a wide range of moral reasoning scores at each educational level: the top 18% of the Level 1 cohort achieved higher scores than the bottom 11% of faculty.
Conclusions The students at a school of pharmacy at a UK university experienced significant moral growth throughout the course of their studies. A further, longitudinal study of the cohort, which attempts to correlate the moral development with age, sex, level of education and mode of delivery of moral education is warranted.

Introduction

Background

As early as 1975, it was demonstrated that Kohlberg's theory of moral development can be applied to the practice of moral education. Blatt and Kohlberg[1] hypothesised that if children were engaged in the discussion of morally complex ethical dilemmas and systematically exposed to moral reasoning one (Kohlbergian) stage above their own, they would be attracted to that reasoning and attempt to adopt it as their own. They found that, after a 12-week programme of systematically exposing students to moral dilemmas at a 'plus one' stage, 64% of the students studied developed one full stage in their moral reasoning. In the 'moral dilemma discussion' approach that developed out of their research, the teacher's role was to serve as a facilitator of student reasoning, that is, to assist the student in resolving issues of moral conflict and to ensure that the environment in which the discussion took place was one that contained the conditions essential to stage growth in moral reasoning.

Purpose of moral education

The goal of moral education is to encourage individuals to develop to the next stage of moral reasoning. Development is not merely the result of gaining more knowledge, but rather consists of a sequence of qualitative changes in the way an individual thinks. Within any stage of development, thought is organised according to the constraints of that stage. An individual then interacts with the environment according to their basic understandings of the environment. However, a student will at some point encounter information which does not fit into their world view, forcing them to adjust that view to accommodate this new information. This process is called equilibration, and it is through equilibration that development occurs.

Ethical dilemmas

The most common tool for bringing about equilibration is the 'ethical dilemma'. Through discussion, students are forced to

face the contradictions present in any course of action not based on principles of justice or fairness. While Kohlberg appreciated the importance and value of such moral dilemma discussions, he held from very early on that ethical education required more than individual reflection, but needed also to include experiences for students to operate as moral agents (i.e. to be the protagonists in the ethical dilemmas).[2]

Students are exposed to ethical dilemmas, which are designed to engage students at the 'plus one' level of moral reasoning described above, across all levels of the 4-year M Pharm degree at the university where our study took place. The dilemmas seek to engage students in ethical discourse using scenarios that are derived from the everyday work of practising pharmacists.

During discussions of these ethical dilemmas, students are encouraged to systematically: identify the problem and gather all the facts; consider how law, rules and professional guidance (including past experience and the advice of others); apply some form of ethical reasoning; and justify their decision as to how best to act. This leads students in the direction of recognising, prioritising and ascribing values, which will affect their choice of action. This in turn leads naturally to the generating and choosing of options. Additional layers of complexity are added at the students' progress through the programme.

Defining issues test

The Defining Issues Test (DIT) is a device for activating an individual's internal moral schemas and for assessing them in terms of importance judgements. The DIT has dilemmas and standard items; the subject's task is to rate and rank the items in terms of their moral importance. The test measures the beginnings of moral understanding, which are largely non-verbal and intuitive, in contrast to the moral judgement interview (MJI),[3] for example, which measures the highest level of verbal understanding. Although the MJI, and interview techniques generally, are worthwhile for measuring predictive moral behaviours in professional fields, the DIT is better able to measure understanding at the level that drives most decisions for most people. The DIT taps into this implicit, foundational understanding and is thereby able to uncover higher levels of understanding in the lay person than can an MJI approach. It may be considered advantageous that, unlike with other measures, the DIT does not require the participant to explain verbally and argue explicitly for a line of reasoning. When an individual reads moral dilemmas, moral schemas are activated. The actual schemas activated are, of course, limited to the extent that the person has developed them. As the subject encounters an item that both makes sense and taps into the subject's preferred schema, that item is rated and ranked as highly important. Alternatively, when the subject encounters an item that either does not make sense or seems simplistic and unconvincing, the item receives a low rating and is passed over for the next item. The items of the DIT balance 'bottom up' processing (stating just enough of a line of argument to activate a schema) with 'top down' processing (not a full line of argument so that the subject has to 'fill in' the meaning from schema already in the subject's head). In the DIT we are interested in knowing which schemas the subject brings to the task (are already in the subject's head). Presumably, those are the schemas that structure and guide the subject's thinking in decision making beyond the test situation.

Rationale for use of the defining issues test in higher education

As Rest[4] and others[5–7] attest, the domain of morality is much broader than the moral judgement component that the DIT is designed to measure. However, within the general student populace, efforts have been made to assess morality in the context of moral development. King and Mayhew[8] discovered that many of the articles that used both the DIT and a college student sample were not designed intentionally to investigate the moral judgement of college students. Rather, many studies appeared to use students as convenience samples or as proxies for reasonably bright young adults, but with no particular emphasis on university as an educational context. However, they also noted that many studies were intentionally designed to investigate the moral development of undergraduate students. In the latter context, the student population is an important sample frame for several reasons. Firstly, it is common for both school-leavers and mature students to enrol in university at times in their lives when they are making important life transitions, many of which have moral implications. Secondly, graduates, especially those from so-called 'professional' degrees, often take positions in which they make decisions affecting the lives of others.

Longitudinal studies have been used to investigate the relationship between moral development and formal education by examining the effects of age and education on the development of moral reasoning. These studies suggest that university experiences do promote moral development; more specifically, during university students tend to decrease their preference for conventional level reasoning and increase their preference for post-conventional moral reasoning.[9] It is common for these longitudinal studies to track the development of moral reasoning by testing students twice during their collegiate experience, at the beginning of their first year and again at the end of their final year, or by testing students at multiple times during their degree course. Pascarella and Terenzini[10] provide strong evidence that student participation in higher education is associated with gains in moral development, which 'cannot be

attributed solely to initial differences in moral reasoning, intelligence, or social status between those who attend and those who do not attend college' (p. 350). We can conclude from this that formal education makes a unique contribution to moral reasoning.

Educational interventions

McNeel[11] suggests that the development of moral reasoning is affected by the 'educational context'. This is a very broad indicator, as 'context' is a very general factor that might include a wide variety of more specific factors that are more directly related to change in moral reasoning. It is reasonable to assume that some educational contexts are more effective than others in promoting moral development. For example, those in which moral dimensions are explicit, where students are encouraged to struggle with moral dilemmas, and where they are encouraged to employ post-conventional moral reasoning, would be expected to be more effective in promoting post-conventional moral reasoning than those that do not afford such opportunities.

The DIT was used extensively in the 1990s in studies that investigated the effects of various educational interventions specifically designed intentionally to promote the development of moral reasoning. Many forms of intervention, which could be applied in the context of pharmacy education, including general education courses,[12,13] ethics courses (or courses with a significant ethics component)[14–16] and social diversity courses[17] have been studied. Of note is that virtually all of these approaches were effective in promoting moral judgement. The only exception was reported by Ponemon,[16] whose study involved accounting students only. It is also noteworthy that these studies involved students of liberal arts, nursing and accountancy, but not of pharmacy or other allied healthcare professions. It would be of interest to see whether pharmacy students have a general tendency to increase their moral judgement as they progress through their studies, or whether, like accountants, they buck this trend. To date, very few studies that explicitly address the moral development of pharmacy students or pharmacists have been published, and all have been based on data collected from students in the USA.[18–20]

Clinical effectiveness in healthcare professions

The link between moral judgement and moral behaviour is critical because, as Thoma[21] pointed out, understanding moral action may be seen as the 'acid test' of the usefulness of research on morality.

Duckett and Ryden[22] examined the performance of students of nursing, noting that nursing practice includes an important moral dimension. They evaluated the relationship between DIT score and clinical performance. They did not, however, describe the moral component within their curriculum, nor did they explain the clinical performance measure used. The group reported a significant correlation between DIT score and a measure of clinical performance among a group of 48 nursing students in their first and final years of a nursing diploma programme; DIT scores accounted for 34% of the variance in the clinical performance of these students.

Aims and objectives

The principal aim of this study was to demonstrate the maturation of moral reasoning among pharmacy students as they progress through a 4-year degree programme at a school of pharmacy in a UK university, with a view to justifying further, longitudinal studies which could demonstrate a causal link between any such development and ethics teaching at the school.

Method

Data collection

Pharmacy students' moral reasoning was assessed during induction week. The target population for this research was students studying pharmacy at the University of Hertfordshire, UK, during the 2008–2009 academic year. The students numbered: 114 'new' students, who had not received any formal teaching as part of the pharmacy degree; 97 who had completed their first year of study; 89 who had completed their second year of study; and 32 who had completed 3 of the 4 years making up the programme. Additionally, all members of the School of Pharmacy's faculty at the university, who were registered with a professional regulator monitored by the Council for Healthcare Regulatory Excellence, were included. This subgroup comprised 13 pharmacists and one medical practitioner.

As this cross-sectional sample constitutes only a pilot study, which will be used to inform an ongoing longitudinal study of students in the school, and was only intended to ascertain whether moral development was measurable in this population, the only independent variable considered was years of pharmacy education at the university, expressed on an annual scale, while the dependent variable was moral reasoning. This research used a non-probability sampling design; a population survey of the entire student body that was in attendance on the day the test was administered was carried out.

Participants were given an instruction booklet and printed sheets that contained the items and answer grids, and were asked to complete the paper-and-pencil DIT in a classroom setting within 1 h.

Table 1 Descriptive statistics for the assessment of levels of moral reasoning in pharmacy students and faculty members at a UK university

	n	Mean (standard deviation)	Range	95% confidence interval
Level 1	114	27.90 (10.76)	2.36 to 53.46	26.40 to 32.36
Level 2	97	31.71 (11.05)	10.03 to 59.82	29.37 to 34.05
Level 3	89	33.21 (10.94)	11.71 to 60.04	30.82 to 35.60
Level 4	32	39.96 (12.44)	24.95 to 67.59	35.23 to 44.69
Faculty	14	48.98 (9.09)	26.17 to 60.18	43.26 to 54.70

Data analysis

After each administration, the completed protocols were sent for scoring to the Center for Ethical Development, University of Alabama, Tuscaloosa, Alabama, USA.

The level of moral reasoning of students was determined using N2-indices. To calculate the N2-score, the P-score is calculated on the basis of ranking data.[23] The P-score is the total number of points across the six dilemmas converted from a base of 60 points to a percentage. The N2-score has two parts: the degree to which P items are prioritised; and the degree to which the lower stages are rated lower than the ratings of the higher stages. The second part of N2 is based on rating data, not ranking data. The main idea is that 'discrimination' is measured in terms of the average rating given to items at stages 2 and 3 subtracted from the average rating given to items at stages 5 and 6.[23] Hence, the distance of stages 2 and 3 from stages 5 and 6 is the measure of discrimination. The two parts of N2 are combined into one score per participant by combining the P-score and the rating data. N2-scores are adjusted to have the same mean and standard deviation as the P-score on a standardisation sample collected of 1115 participants, so that comparisons between P and N2 can be made easily.[24]

Scored answer sheets were compiled and tabulated, and the N2-indices were analysed using SPSS (version 17.0). The arithmetic means of N2-scores were plotted against level of study (1–4) with 95% confidence intervals. To test whether there was a significant trend in the N2-score between the different years of undergraduate study (and on to professional level) a linear regression model was used with N2-scores as the dependent variable and level of study as the independent variable.

Ethical approval

Ethical approval for this project was granted by the University of Hertforshire's Research Ethics Committee (Protocol Approval Number: PHAEC/10–39).

Results

Distributive statistics

The descriptive statistics for moral schema scores (N2-indices) are displayed in Table 1.

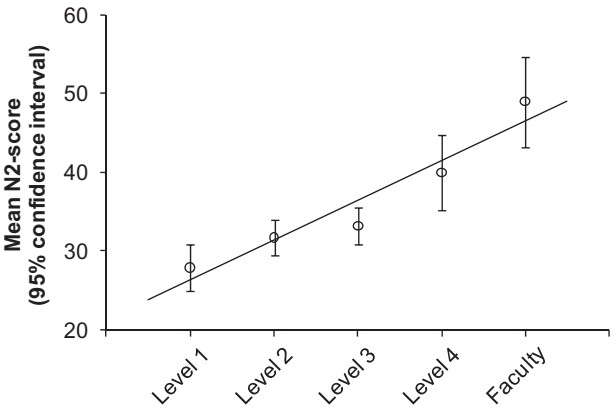

Figure 1 Mean moral schema N2-scores of faculty members, and of pharmacy students at each level of study, at a UK university.

Progression

Figure 1 shows the means and 95% confidence intervals for the N2-score by level of study. There is a clear increase in N2-scores across all years of study and on into membership of the faculty. This trend was highly significant ($t = 7.09$; $df = 1$; $P < 0.001$).

The coefficient of variability (R^2) was calculated using linear least squares regression. For the N2-scores, the R^2 value was 0.92. As such, over 90% of the variation can be interpreted as progression. The remaining 10% can be explained by unknown variables, confounding factors or inherent variability.

Distribution

The distributions of the data were assessed using normal-probability Q-Q plots. These were found to be sufficiently normal in all cases. Overlaid plots of probability density functions (PDFs) N2-scores (Figure 2) are shown below.

Discussion

Group progression

The obtained results indicate that the students at the university's School of Pharmacy experienced significant moral

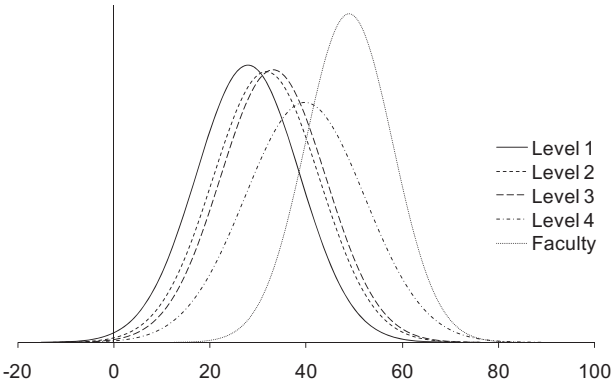

Figure 2 Probability density functions for moral schema N2-scores of faculty members, and of pharmacy students at each level of study, at a UK university.

growth during the first 3 years of the M Pharm pharmacy degree. It must be stressed that these results are suggestive, in that it cannot be concluded that progression through the pharmacy curriculum caused increased development. The main limitation of this study is that the design did not allow for a cause-and-effect conclusion. However, it is interesting to note that the greatest increase in N2-score occurred between level 3 and level 4, during which the majority of teaching in ethics was delivered.

Individual performance

There was a wide range N2-scores at each educational level, as demonstrated in Table 1 and Figure 2. Within each cohort, the results are normally distributed, and there is significant overlap of the areas under the PDFs for each level. For example, the PDFs of the N2-scores for level 1 students and school faculty intersect at x = 37.6175. The top 18% of the level 1 cohort achieved higher N2-scores than the bottom 11% of faculty.

Kohlberg represents development in terms of stages, that is, assessing participants' development is done in terms of their being at one stage or another (e.g. a stage 2 participant or a stage 4 participant). In contrast, the DIT N2-score assigns a number (e.g. 33, 48) to a participant. Development is a matter of shifting distributions of stages rather than the move from one stage completely into the next. Movement is gradual and assessment needs to consider quantitative dimensions of stage use. Kohlberg's stages are qualitatively different ways of moral thinking, and make qualitative distinctions in designating stage differences to different items; however, the DIT measures quantitative differences (i.e. the degree to which a type of thinking is manifest) in depicting the developmental scores of participants. There is a significant progression evident between the consecutive year groups that participated in this study. This cross-sectional nature of this study precludes tracking individual students as they progress through the M Pharm programme, and assessing whether those students who scored poorly in their first year continue to under perform, or whether they undergo a more marked development as their studies progress.

The need for moral pharmacists

During the past several decades, the pharmacy profession has sought to become more patient-focused. The goal of this is sharing the responsibility for optimal drug-therapy outcomes between pharmacists and patients. This shared responsibility between pharmacists and patients implicitly implies an ethical covenant between the two. The sole terminal degree of graduates of professional pharmacy programmes in the UK is now the M Pharm, which superseded the BSc (Pharmacy) and B Pharm degrees when the length of the undergraduate pharmacy course was increased from 3 years to 4 in 1997. This was affected in part in an effort to graduate patient-focused pharmacists, who could meet the challenges of the changing profession.

Historically, community pharmacy has battled an image as being a marginal profession. This has been largely due to its location on the high street and in supermarkets (that also sell products including tobacco and alcohol), and also a public perception that pharmacists do little more than dispense the medicines that doctors prescribe.[20,25]

As pharmacists expand their roles to include pharmaceutical care, there are significantly more opportunities for ethical problems to arise. Those pharmacists who have better conceptual tools for handling the ethical ambiguity that is a large component of pharmaceutical care may be better equipped to handle moral dilemmas as they appear, and may provide a higher level of care than those with inadequate tools.

There are many areas of the University of Hertfordshire's School of Pharmacy curriculum that provide students with opportunities for peer discussion of moral dilemmas at a 'plus-one' stage. In addition, students are required to develop an ethics portfolio in which they must assess relevant healthcare ethical dilemmas according to an ethical decision-making process. Many classes throughout the curriculum analyse cases that have ethical components (e.g. Medicines and Professional Practice (all levels), Law Ethics and Professionalism (level 3) and Therapeutic Interventions in Practice (level 3)).

Professor Donnie Self and co-workers have carried out several longitudinal studies of ethical development in medical education.[26–28] According to Kolhberg's theory, moral reasoning should become more developed as the level of education increases. The above medical education studies assessed medical students' moral reasoning in the first year of medical school and again at the end of the fourth (and final) year. Interestingly, the expected increases in moral reasoning did not

occur, causing the authors to speculate that perhaps medical education, because of the rigidity of the curriculum, inhibits growth in moral reasoning. Similar results were noted (by the same researchers) in veterinary medical education.[29,30]

In pharmacy education, Latif[18] utilised case studies involving ethical dilemmas in second-year pharmacy students in a compulsory communications course at a large pharmacy school in the USA. Students' moral reasoning was assessed before and immediately following the course. The post-test revealed that students scored significantly higher than on the pre-test. It was concluded that moral reasoning skills are teachable and that small-group dilemma discussion may enhance those skills. Latif[19] also used a cross-sectional survey design to assess the moral reasoning of 755 first-year and 809 third-year pharmacy students from 24 schools and colleges of pharmacy in the USA. It was shown that, as a group, pharmacy students lagged behind medical and nursing students in their moral development.

Conclusions

The results of this cross-sectional pilot study will be used as a starting point for a 4-year, longitudinal study of a single cohort of pharmacy students, which will be the subject of a funded PhD beginning in September 2011. This study will use the newer DIT-2, and will seek to demonstrate a causal link between ethics teaching and the increase in moral development. The DIT-2 has the advantage of being available in an electronic format, which can be administered using a web-based survey tool such as SurveyMonkey. This presents the possibility of extending the scope of a follow-on cross-sectional study to include students from other UK-based pharmacy schools. If the results of those studies replicate the present findings, curricula should be re-evaluated with the goal of maximising moral reasoning skills through strategies such as the increased use of small-group discussion of pertinent ethical dilemmas.

Additional studies must be carried out at other schools and colleges of pharmacy in the UK and at pharmacy schools throughout the world to assess the relationship between the curriculum and moral development. If, as previous investigations have indicated, those pharmacists scoring at a high level of moral reasoning perform at a high level of clinical performance, it would seem prudent to fine-tune pharmacy curricula to maximise moral development.

Declarations

Conflict of interest

The Author(s) declare(s) that they have no conflicts of interest to disclose.

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