Reflective ability and moral reasoning in final year medical students: A semi-qualitative cohort study

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Reflective ability and moral reasoning in final year medical students: A semi-qualitative cohort study

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Abstract

Background: Moral reasoning and reflective ability are important concepts in medical education. To date, the association between reflective ability and moral reasoning in medical students has not been measured.

Aim: This study tested the hypotheses that, amongst final year medical students, (1) moral reasoning and reflective ability improve over time and (2) positive change in reflective ability favourably influences moral reasoning.

Methods: With Institutional Ethical approval, 56 medical students (of a class of 110) participated fully both at the beginning and end of the final academic year. Reflective ability and moral reasoning were assessed at each time using Sobral's reflection-in-learning scale (RLS), Boenink's overall reflection score and by employing Kohlberg's schema for moral reasoning.

Results: The most important findings were that (1) Students' level of reflective ability scores related to medicine decreased significantly over the course of the year, (2) students demonstrated a predominantly conventional level of moral reasoning at both the beginning and end of the year, (3) moral reasoning scores tended to decrease over the course of the year and (4) RLS is a strong predictor of change in moral reasoning over time.

Conclusion: This study confirms the usefulness of Sobral's RLS and BOR score for evaluating moral development in the context of medical education. This study further documents regression and levelling in the moral reasoning of final year medical students and a decrease in reflective ability applied in the medical context. Further studies are required to determine factors that would favourably influence reflective ability and moral reasoning among final year medical students.

Introduction

In 'Tomorrow's Doctors' (GMC 2003) the British General Medical Council expressed the need to promote reflective practice at the undergraduate level. A survey of 23 UK medical schools showed that 19 undertake an assessment of student attitudinal behaviour (Stephenson et al. 2006).

Reflective ability and moral reasoning are two qualities central to the principles of professionalism. The UK revalidation process requires doctors to be proficient in reflective learning (Grant et al. 2006; GMC 2008). Consistently balanced and predictable behaviour particularly in stressful and conflictual clinical situations demands a finely tuned discriminative capacity for self-reflection.

Reflective ability is the capacity to question and critically analyse experience (Gipe et al. 2001). King and Kitchener (2001) outline three stages in reflective ability: prereflective (limited to concrete black and white concepts), quasi reflective (in which uncertainty is recognised as a problem) and reflective thinking (in which uncertainty and complexity are integrated into a justifiable opinion for a judgement to be formed). The value of reflective practice in the medical curriculum is well established. It promotes self-regulated learning and diagnostic ability and offers opportunities for development in critical thinking and behaviour

Practice points

- Students' level of reflective ability scores related to medicine decreased significantly over the course of the year.
- The greater or lesser an individual student's scores in RLS and BOR at the beginning, the greater or lesser the corresponding score will be at the end of the year.
- Students demonstrate a predominantly conventional level of moral reasoning at both the beginning and end of the year.
- Moral reasoning scores tended to decrease over the course of the year.
- RLS is a strong predictor of change in moral reasoning over time.

(Sobral 2000; Gordon 2003; Mamede et al. 2008). Schön (2006) suggests that practice of reflection progresses from reflection-on-action to reflection-in-action. In medical education, this would consolidate the gap between theory and practice (Lachman & Pawlina 2006), consistent with the aims of 'situated learning'.

The concept of 'situated learning' (Lave 1998) maintains that learning is a function of the context and culture in which

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it occurs. The learner engages in a community of practice that enables one to move from the periphery to core participation through the acquisition of contextualised knowledge and relevant skills. Immersion of students in long-term medical placements has shown that this is applicable to medical education (Young et al. 2008). It is also recognised that simulation techniques for teaching of clinical skills only reach their full potential in partnership with clinical practice (Kneebone et al. 2004). One disadvantage is that power differentials within the community may limit the extent of student learning and participation in core community activities. Reflective practice is recommended for novices and experts to raise awareness and modulate the impact of attitudes affected by varying levels of skills and experiences within the community (Hogan 2002).

Broadly, moral reasoning can be considered individual or collective practical reasoning about what, morally, one ought to do. For example, when an individual is faced with moral questions in daily life, sometimes that person may act impulsively or instinctively or pause to reason about what ought to be done. In addition, that individual may often encounter novel perplexities and moral conflicts in which his or her moral perception is an inadequate guide.

Kohlberg (1984) recognised the complexities that can exist within this concept of moral development. From this, he classified moral development into three major schema according to the reasoning behind an action: (1) Preconventional, where reasoning is dictated by avoidance of punishment and self interest; (2) Conventional, where reasoning is governed by conformity and approval, respect for authority and the upholding of social law and order; and (3) Postconventional, where reasoning is governed by internalised values and a principled conscience that override socially held norms. Research shows that moral development progresses rapidly during early adulthood from a conventional stage, in which individuals base behaviour on the norms and values of those around them, to a more principled stage, in which they identify and attempt to live by personal moral values (Branch 2000).

Many authors have discussed the concept of a 'hidden curriculum' and Patenaude et al. (2003) and Lind (2000) attributed a tendency to moral regression among medical students to the 'hidden curriculum' among other environmental influential factors (Hinman 1985; Lind 1985, 2000; Patenaude et al. 2003; Hilton & Slotnick 2005). The 'hidden curriculum' impacts positively and negatively through modelling (Goldie et al. 2007) and through the transmission of cultural norms attached to a particular profession, which may impact on decision making, particularly under conditions of uncertainty or stress.

Both moral reasoning and reflective ability are important concepts in medical education. However, to date, the association between reflective ability and moral reasoning in medical students has not been measured. This study aims to test the hypotheses that amongst final year medical students, (1) moral reasoning and reflective ability improve over time, and (2) positive change in reflective ability favourably influences moral reasoning.

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Methods

With Institutional Ethical Approval, all final year medical students (2006–2007) were invited to participate. Participation was voluntary and participating students signed a consent form.

Materials comprised: (1) a reflection-in-learning scale (RLS) (Sobral 2000, Appendix 1); and (2) a series of four case scenarios to measure reflection and moral reasoning in the clinical context (Appendix 2). Data was collected at the beginning and end of the academic year. Anonymity was ensured by self-formulated coding of serial questionnaires.

The RLS devised by Sobral (2000) appraises the level and direction of change of reflection in relation to a learning experience. Boenink et al.'s (2004) overall reflection (BOR) score is a measure of a person's reflection applied in a medical context derived from responses to a semi-structured questionnaire based on clinical vignettes. In this study, based on the study population scores, BOR score was categorised as: score <5, $=5$ and >5.

Case scenarios are commonly used to elicit reflective responses in terms of professional judgement, ethical values and presumed moral behaviour in conflictual clinical situations (Boenink et al. 2004; Norcini 2004). In this study, the themes depicted were patient confidentiality, trust and record keeping (Case Scenario 1), inappropriate consultant behaviour (Case Scenario 2), response to an emergency (Case Scenario 3) and clinical mismanagement by a senior colleague (Case Scenario 4). The students were asked (1) to note their thoughts, feelings and considerations (used for estimation of BOR score), and (2) to indicate preferred behavioural responses with an explanation (used to determine Kohlberg's schema). These three measures were employed in this study because, as can be seen from the literature cited above, the concepts underlying them are inter-related. As such, they provide depth of meaning to results arising from the hypotheses posed.

Criteria for Kohlberg's schema were defined for each case scenario (Appendix 3) and reached by consensus. Where incongruence prevailed a third party made the final decision. Two independent raters graded each response. Incomplete or unclear responses were eliminated. If a response demonstrated two coexisting schema levels, that which was judged to be more evident was assigned. If the two levels were expressed with equal emphasis, the more developed level was assigned. An overall level of moral reasoning was then assigned to each student for each time point, derived from the schema level most frequently assigned in the series of case scenarios at that time, or an intermediate level if two frequencies were equal.

It should be noted that the process by which these criteria were developed can be considered good practice within the context of established qualitative research methodology (Denzin & Lincoln 1998; Spencer et al. 2003; Gough 2007). The inherent flexibility/reflexivity of this process can appear subjective when compared with the more restrictive and closely defined methodologies posited as appropriate for questionnaire design. However, the apparently more subjective nature of qualitative design can yield a more holistic framework within which meaning would otherwise be lost if a

more overtly quantitative approach was employed (Denzin & Lincoln 1998; Spencer et al. 2003; Gough 2007). It should be noted that the potential confounding and more negative effects of subjectivity have been accounted for by stringently assessing and refining each criterion as it pertains to the study population, their responses to each scenario and theory/research from the extant literature (i.e. the scenarios themselves and attendant classification criteria were designed to ground Kohlberg's levels of moral reasoning within a meaningful context for medical students).

Design and statistical analyses

We used a longitudinal, repeated measures, four (case scenarios) × two (times), cohort design to examine change over time in moral reasoning and reflective ability. Inter-rater reliability was calculated using Cohen's kappa. Preliminary analyses were performed to ensure non-violation of the assumptions of normality, linearity and homoscedasticity (Tabachnick & Fidell 2007).

Statistical analyses were conducted as follows:

(1) A series of paired sample t-tests was conducted to examine changes over time for BOR and RLS.
(2) If differences were identified, separate one-way analyses of variance (ANOVA) were used to determine where these differences lay in relation to the measures and in terms of any potential interaction effects that may exist between student responses and relevant demographic factors.
(3) A series of paired sample t-tests was conducted to examine differences in scores obtained in student responses, controlling for scenario type, at the beginning and at the end of the medical year. If differences were found, separate one-way ANOVA were used to determine where these differences lay at the beginning and at the end of the year in terms of any potential interaction effects that may exist between student responses and relevant demographic factors.
(4) We developed a linear regression model to identify variables that predict improvement over time on Kohlberg's schema of moral reasoning. The predictor variables (RLS and BOR) were split at an 'above the mean' cut-off point (high) versus 'below the mean' (low), since these measures use different scales. Categorising variables in this manner controls for collinearity (Tabachnik & Fidell 2007). In addition, this action can be considered appropriate when the sample is relatively small, as in this study. Reduced sample sizes can bias results as the confounding influence of 'noise' in the sample can be overstated (Tabachnik & Fidell 2007). The influence of gender, age and language competency were also examined.

Before including predictor variables in the maximal model, we examined them for multicollinearity (a tolerance value < 0.3 and a VIF > 0.3) and used stepwise deletions to arrive at an initial minimal adequate model. We then tested for interaction effects and compared the resulting models with the initial model to determine whether certain variables led to

a significant increase in the explanatory power of the model. Based on the number of comparisons and using Bonferroni correction, all variables significant at $p < 0.021$ were retained. Adjusted odds ratios and 95% confidence intervals were obtained using SPSS 15.0 diagnostics. Non-significant predictors were included in final models as covariates.

Results

Of a class of 110 students, 103 and 72 participated at the beginning and the end of the year, respectively. Of these, 56 students completed measures at both times. As change over time was the primary concern of the analyses, only these 56 paired responses were included. Within this group of 56 students, 23(43%) males and 30(57%) females, 94%(53) of the sample population was aged between 20 and 29 years, 31(57%) students underwent second-level education in Ireland and 23 (43%) students received second-level education abroad. Of the 23 students who received second-level education in a country other than Ireland, four spoke English as a first language (e.g. two from the United States and one each from Canada and South Africa). The 19 students who did not speak English as a first language, and completed the measures at both times, were from Malaysia and Kuwait. This closely reflects the year-to-year demographics of the medical student population in the educational institution from which the sample was drawn.

Inter-rater reliability kappa coefficient for the four case scenarios ranged from 0.47 to 0.87 ($p < 0.05$). Where incongruence occurred, scoring was determined by consensus. Scores to two pairs of case scenarios were eliminated because responses were incomplete. Data were normally distributed (Kolmogorov–Smirnov, $p > 0.05$; tolerance > 0.1).

(1) *Mean level of reflective ability at the beginning and end of the year for the student body.*

t-test analyses showed evidence of a statistically significant decrease in BOR scores ($p < 0.05$) of a large magnitude (partial eta$^2 = 0.15$) from beginning to the end of the year with mean scores dropping from 5.0 (SD = 1.4) to 4.4 (SD = 1.3). Conversely, over the course of the year, RLS scores did not show any significant change ($p > 0.05$) with mean scores increasing slightly from 60.2 (SD = 13.6) to 62.9 (SD = 12.2).

(2) *Changes in reflective ability (BOR, RLS) in individual students from beginning to end of the academic year.*

At the beginning of the year, significant main effects were found for both BOR [$F(1, 52) = 8.356$, $p < 0.05$, eta$^2 = 0.138$] and RLS [$F(1, 52) = 7.364$, $p < 0.05$, eta$^2 = 0.128$] indicating that the level of score at baseline can influence the score obtained at the end of the year. No interaction effect was obtained for BOR and RLS [$F(1, 52) = 3.740$, $p > 0.05$, eta$^2 = 0.067$]. When demographic factors were assessed, no significant main or interaction effects were obtained for either sex or age [$F(1, 49) = 0.234$, $p > 0.05$]. However, nationality (i.e. in terms of language competency) did show a main effect [$F(1, 49) = 6.717$, $p < 0.05$] with Irish students who have English as a first language obtaining higher BOR scores ($M = 1.83$, SD = 0.36) than foreign students who speak English

Table 1. Kohlberg Schema, RLS score and BOR score for the participant group at start and finish.

| | Kohlberg | | RLS[a] | | BOR[b] | |
| | Start | Finish | Start | Finish | Start | Finish |
Level*	N (%)	N (%)	M (SD)	M (SD)	M (SD)	M (SD)
1	1 (1.8%)	4 (7.1%)	60.0 (0.0)	63.8 (10.3)	2.0 (0.0)	3.8 (1.0)
1.5	6 (10.7%)	2 (3.6%)	46.5 (9.2)	52.5 (16.3)	3.5 (1.8)	5.6 (0.9)
2	44 (78.6%)	48 (85.7%)	61.9 (13.5)	62.6 (12.5)	5.4 (1.1)	4.5 (1.3)
2.5	2 (3.6%)	1 (1.8%)	54.5 (20.5)	70.0 (0.0)	4.6 (0.5)	2.8 (0.0)
3	3 (5.4%)	1 (1.8%)	66.3 (7.2)	81.0 (0.0)	4.3 (1.9)	3.0 (0.0)

Start: beginning of academic year. Finish: end of academic year.
*denotes Kohlberg 'Schema Levels of Moral Reasoning' where 1/1.5 equates preconventional levels, 2 equates the conventional level and 2.5/3 equates the postconventional levels of moral reasoning.
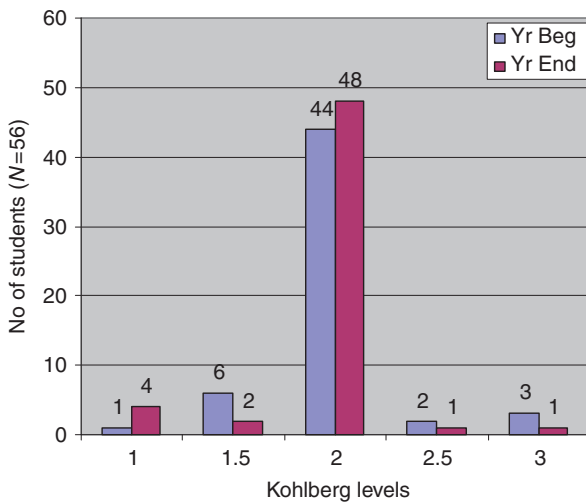[a]Score 0 < RLS > 98.
[b]Score 0 < BOR > 10.

Figure 1. Kohlberg schema levels among students at beginning and end of the year.

Table 2. Paired-samples t-tests for Case Scenarios 1–4 (BOR).

| | Start | | End | | | | | |
	M	SD	M	SD	Df	T	p	Eta^2
CS 1	5.357	2.039	4.536	1.684	55	2.376	<0.05	0.10
CS 2	5.125	1.641	4.113	1.218	55	3.241	<0.05	0.14
CS 3	5.304	1.672	4.821	1.889	55	1.660	>0.05	0.01
CS 4	4.250	1.708	3.912	1.957	55	1.274	>0.05	0.07

Table 3. Regression modelling for Kohlberg's schema at both beginning and end of the year.

Factor	Beta	Part	p
Model 1: Beginning			
RLS	0.396	0.384	<0.01
BOR	0.312	0.299	<0.05
Nationality	0.235	0.219	<0.05
Model 2: End			
RLS	0.269	0.265	<0.05
BOR	0.212	0.209	>0.05

as a second language ($M = 2.06$, SD $= 0.21$). At the end of the year, a main effect was found for RLS [$F(1, 52) = 3.126$, $p < 0.05$, eta$^2 = 0.057$] but not BOR [$F(1, 52) = 1.001$, $p > 0.05$]. In addition, no interaction effect was found [$F(1, 52) = 1.645$, $p > 0.05$]. No demographic factors were found to be significant ($p > 0.05$).

(3) *Level of reflective ability and moral reasoning and changes in student scores on RLS, BOR and Kohlberg schema from the beginning to end of the academic year.*

78.6% and 85.6% of the sample obtained a Kohlberg conventional schema at the beginning of the year, respectively (Table 1, Figure 1). This slight increase can be attributed to a general move to the centre of the spectrum from lower and higher levels indicating a potential regression to the mean. Of those students who did show change, a greater proportion displayed a decrease ($N = 12$; 21.4%) than an increase ($N = 7$; 12.5%). There was an overall decrease in BOR score from beginning to end in scores obtained in each

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scenario (Table 2; significant ($p < 0.05$) for Case Scenarios 1 and 2).

(4) *Factors that predict change over time on Kohlberg's schema of moral reasoning.*

The first predictive model comprised RLS and BOR at the beginning of the year with nationality (i.e. in terms of language competency between English as first and second language speakers). Sex and age were covariates. The model generated accounted for 39% of variance on Kohlberg's Schema [$F(3, 50) = 6.803$, $p < 0.05$, $r^2 = 0.39$]. RLS made the greatest shared and unique contribution to the model [Beta $= 0.396$, Part $= 0.384$, $p < 0.01$] (Table 3). The second predictive model comprised BOR and RLS at the end of the year. The model explained 10% of the variance on Kohlberg's Schema

$[F(3, 53) = 2.884]$, $p < 0.05$, $r^2 = 0.098$]. RLS again makes the greatest shared and unique contribution to the model [Beta $= 0.269$, Part $= 0.265$, $p < 0.05$] (Table 3). Thus, although RLS is the strongest predictor of change over time for Kohlberg's Schema of moral reasoning, the strength of this numeric as a predictor does decrease both in terms of the shared (Beta decreases from 0.396 to 0.269) and unique (Part decreases from 0.384 to 0.265) variance explained.

Discussion

Briefly, the most important findings of our study are that students' level of reflective ability scores related to medicine decreased significantly over the course of the year. Also, the greater or lesser an individual student's scores in RLS and BOR at the beginning, the greater or lesser the corresponding score will be at the end of the year. In addition, students demonstrate a predominantly conventional level of moral reasoning at both the beginning and end of the year. It was also noted, that moral reasoning scores tended to decrease over the course of the year and that RLS is a strong predictor of change in moral reasoning over time. Finally, all measures used in this study were found to be both useful and appropriate to assess the concepts of reflection and moral reasoning in the context of medical education.

Limitations and strengths relating to the quality of the data

There is a mixed random and systematic bias in the study due to the decrease in numbers of students who participated over the year under investigation. A total of 103 and 72 students took part at the beginning and end of the year, respectively. The use of the written word (i.e. not possible to seek clarification), and potential differences between English as 'first language speakers' and English as 'second language speakers' within the multi-ethnic group may have impacted on the perception and interpretation of the measures used. The inclusion of this student cohort provided relevant findings as contemporary medical education, in Ireland and many countries, is characterised by multi-ethnic student populations. Although it could be argued that this may prove a confounder within this study, it can also be stated that this variability reflects the medical workplace, in that cultural and language variability in staff can impact interpretation of and response to dilemma's present in that workplace.

The sequential use of the same forms is both a strength (students act as their own control) and a limitation in terms of the 'learning effect'. The 'learning effect' signifies that performance improves, not as a result of improved competency, but because of the familiarisation consequent to previous performance of the task. As this might represent 'regression to the mean' (Tabachnick & Fidell 2007), we used multiple psychometric measures, and analytic methods, to control for the influence of possible confounding variables (i.e. demographic factors such as sex, age and language competency).

Further, it should be noted that our findings relate to a curriculum in which reflective practice was introduced only in year 4 of the 5 medical degree programme.

Reflective ability

In the cohort studied, reflection-in-learning did not change and reflective ability in medical practice decreased significantly over the year. Contrary to our findings, Sobral (2000) demonstrated an improvement in RLS scores in 83 (81%) out of 103 students. In Sobral's study, students were followed over 3 years and had been exposed to an elective 30-h course on learning skills. Those who had not taken this course demonstrated no change in RLS score. These apparently contradictory findings may be attributable to important differences in the two studies' design. For example, Sobral (2000) employed a comparative study of two randomised groups rather than our prospective observational study of one group. In addition, the durations of Sobral's and our studies were 3 years and 1 year, respectively. Consistent with our findings, Boenink et al. (2004) has observed a trend towards a lesser reflective ability. However, students in this study were more proficient in reflecting on their learning methods at baseline. This might reflect greater experience in learning than in 'high stakes' decision-making such as occurs in medical practice.

Moral reasoning

In this study, students' moral reasoning was predominantly conventional at the beginning and end of the year. There was a trend towards regression in moral reasoning, especially in those students with more developed levels of moral reasoning. The lack of progression observed in moral development in most students is consistent with previous studies (Hinman 1985; Lind 1985, 2000; Patenaude et al. 2003; Hilton & Slot 2005). Our finding of a trend towards moral regression may be due to a relatively small sample size. If our findings do reflect true moral regression, they would be consistent with the findings of Patenaude et al. (2003) and Lind (2000). Patenaude et al. (2003) has questioned whether a 'hidden curriculum' exists that inhibits rather than facilitates moral development. He applied Kohlberg's Moral Judgement Interview to assess a cohort of 54 medical students at the start of the first year and the end of the third year of their education. The sample population was of similar size and age but had a greater proportion of females (43(79%)). He observed a significant decline in moral development ($p = 0.028$) despite an insignificant mean overall change ($M = 3.46$ in year 1 to 3.48 in year 3, $p = 0.86$). Further, Lind (2000) demonstrated an association between regression of moral judgement competencies among medical students and deficiencies in the learning environment in medical education that does not occur in other professional modalities. The present findings similarly may imply that the learning environment, in the third-level institution from which the study sample, was drawn contains elements which may adversely influence moral development (i.e. fear of negative impact on career progression).

The concept of 'situated learning' (Lave 1998) maintains that learning is a function of the context and culture in which it occurs (Young et al. 2008). In the fourth year, students participate in a community practice placement, this does not occur in the final year. Although the burden of assessment and examination is similar in weight between the 2 years, assessment load and structure changes from continuous

assessment every 3/4 weeks in fourth year to final assessment carrying the majority of 'marks'. Thus, although the burden of assessment and examinations is approximately similar in weight, the added stress of final examinations may partly explain both the level of attrition and regression in scores.

Patenaude et al. (2003) and Lind (2000) have also identified a tendency to moral regression among medical students and have indicated the 'hidden curriculum' as key among other environmental influential factors (Hinman 1985; Lind 1985, 2000; Patenaude et al. 2003; Hilton & Slotnick 2005). The 'hidden curriculum' impacts positively and negatively through modelling (Goldie et al. 2007) and through the transmission of cultural norms. 'Real world' situations, which become more prevalent as students move from largely academic classes to the hospital wards, may have a strong impact. Negative influences are expected to adversely affect student learning, professional performance (Phillips 2009) and moral reasoning (Patenaude et al. 2003). The participants in this study captured the essence of these implicit rules in their responses to the Scenarios. For example, in response to Scenario 1: 'the chain of command is important...I would pass the buck'; 'medico-legal....I must protect myself'; 'because if anyone wants to sue me, then I have the information I need when going to court'; and in response to Scenario 2; 'I would do nothing, as a medical student we see this regularly and it seems to be the norm...I think I would be afraid to report it...the consultant could find out and it might jeopardise my final exams', and finally, 'the nail that sticks up is always hammered down'. Reflective practice exposes these implicit influences (Goldie et al. 2007; Phillips 2009) which can then be addressed in the formal curriculum.

The predictive model

We demonstrated that the greater the initial BOR and RLS scores, the greater the Kohlberg Schema at the beginning and end of the year. Although RLS score did not change significantly over the course of the year, it was found to be the strongest predictor of individual differences in the level of moral reasoning at the beginning and at the end of the year, indicating a divergence between reflection in learning and reflection in the medical context. This result is independent of demographic factors such as sex and age. The significant contribution of nationality (in terms of English as a first or second language) identified using the linear regression model may reflect differences in cultural interpretation, language proficiency, and/or a perceived need by visiting students to conform.

Conclusion

The explicit deployment of Sobral's RLS and BOR score in the context of medical education in this study confirms their usefulness for evaluating moral development in students. It appears that reflection-in-learning may be distinct from and not easily transferable to reflection in medical contexts, and that reflection-in-learning is a strong predictor of change in moral reasoning over time. This study further documents regression and levelling in the moral reasoning of final year

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medical students and a decrease in reflective ability applied in the medical context. Further studies are required to determine factors that would favourably influence reflective ability and moral reasoning among final year medical students.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

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Appendix 1

The scale of reflection-in-learning

Please answer the items below in relation to your learning experience in the medical programme. Draw a circle around the scale number closer to your usual behaviour.

To what extent have I: [1 = never 7 = always]

1.	Carefully planned my learning tasks in the courses and training activities of the medical programme	1	2	3	4	5	6	7
2.	Talked with my colleagues about learning and methods of study	1	2	3	4	5	6	7
3.	Reviewed previously studied subjects during each term	1	2	3	4	5	6	7
4.	Integrated all topics in a course among themselves and with those of other courses and training activities	1	2	3	4	5	6	7
5.	Mentally processed what I already knew and what I needed to know about the topics or procedures	1	2	3	4	5	6	7
6.	Been aware of what I was learning and for what purposes	1	2	3	4	5	6	7
7.	Sought out interrelations between topics in order to construct more comprehensive notions about some theme	1	2	3	4	5	6	7
8.	Pondered over the meaning of the things I was studying and learning in relation to my personal experience	1	2	3	4	5	6	7
9.	Conscientiously sought to adapt myself to the varied demands of the different courses and training activities	1	2	3	4	5	6	7
10.	Systematically reflected about how I was studying and learning in different contexts and circumstances	1	2	3	4	5	6	7
11.	Mindfully summarised what I was learning day in, day out in my studies	1	2	3	4	5	6	7
12.	Exerted my capacity to *reflect* during a learning experience	1	2	3	4	5	6	7
13.	Diligently removed negative feelings in relation to aims, objects, behaviours, topics or problems pertaining to my studies	1	2	3	4	5	6	7
14.	Constructively self-assessed myself as a learner	1	2	3	4	5	6	7

Appendix 2

Case Scenario 1

You are a clerk on a medical ward and the intern has asked you to take a history and examination of a 20-year-old female diabetic on insulin admitted with diabetic ketoacidosis. You learn that she takes amphetamines on a recreational basis and she asks you to keep it out of the notes and not tell anyone about it. She is afraid of her parents finding out and getting angry with her. You know that amphetamines have an anorexic effect and can influence the insulin regime in management. You explain this to her. She becomes agitated and insists that she does not want anyone else to know.

Case Scenario 2

You are a clerk attending a ward round with the consultant. The intern and registrars are occupied elsewhere and you are the only team member available to accompany the consultant. One of the patients, who has recently been diagnosed with systemic lupus erythematosis, wishes to talk to the consultant about her condition. She is concerned about the prognosis and the implications it will have on her life and is seeking some reassurance about her condition. The consultant who is usually courteous and respectful towards patients and staff, on this occasion is very rude to the patient and dismisses her abruptly. She is visibly shaken and disturbed by his response. Without a word the consultant moves on to the next patient.

Case Scenario 3

You are an intern on a surgical ward and have had a very long and busy day. You are tired and decide to stay on a few minutes after time to complete certain routine tasks that were pending. You are eager to leave because you are tired and have also arranged to meet up with some friends. Twenty minutes past your time on duty you are finally ready to go home. You are walking out of the ward when the nurse runs up to you saying that one of the patients who had been to

theatre earlier that day for a laparotomy had collapsed and was loosing a lot of blood into the abdominal drain. The intern on call had not yet answered his bleep. She asks you to review the patient.

Case Scenario 4

You are an intern on an orthopaedic ward and you come across an issue regarding transfusion of blood products. You know that the protocol for patients in a stable clinical condition is to administer packed red cells only when the haemoglobin is below 8 gm/dl. A reason for this is to minimise the risks associated with the transfusion of blood products. Such patients are treated with oral iron tablets. You notice that the specialist registrar liberally prescribes transfusions of packed red cells to any patient with haemoglobin of 10 g/dl even when they are haemodynamically stable and are not actively bleeding. You are concerned about this because of the risks associated with the transfusion of blood products.

Appendix 3

Criteria for Kohlberg's schema

Note that this is a developmental process and criteria for the different levels are not always clear cut.

A. Preconventional

 – Obedience and punishment orientation
 – Self-interest orientation

B. Conventional

 – Interpersonal accord and conformity
 – Authority and social-order maintaining orientation

C. Postconventional

 – Int-Internalised values direct reasoning and behaviour.
 – Social contract orientation with universal ethical principles that override social norms where considered necessary.

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Criteria applied to specific scenarios.

NOTE: Responses may demonstrate one or more of the specific criteria.

A. Scenario 1: A patient with diabetic acidosis admits to drug abuse and insists that this is not entered in her notes.

Preconventional:

(1) Responses acquiesce to patient request with lack of insight/analysis.
(2) Responses are characterized by a focus on the self and consequences for the self.
(3) There is no reference to wider societal values or patient care/needs.

Conventional:

(1) Responses are characterized by a desire to conform to perceived group norms or maintain interpersonal accord.
(2) Primary at this level is a recognition of moral/ethical obligations of the doctor to the patient in that social order must be maintained.
(3) Focus is on patient care within the bounds of moral duty according to expected professional norms.

Postconventional:

Responses demonstrate greater flexibility in the decision making process with attempts to take all perspectives into account and show the greatest amount of insight in terms of patient confidentiality, issues of trust and honesty, necessary record keeping and optimum patient care.

B. Scenario 2: A consultant is rude to a patient on a ward round.

Preconventional:

Characteristic responses at this level demonstrate

(1) The decision to take no action due to fear of reprisal or self-interest;
(2) An unquestioning respect of authority with lack of insight and of analysis of patient's predicament;
(3) A complacency about the issue that minimises importance of situation.

Conventional:

Responses at this level are characterised by

(1) Intention to fulfil duty appropriate within the context of societal values.
(2) Attends to patient care directly or indirectly by approaching registrar.
(3) Awareness of possible reasons for consultant's behaviour without justifying his actions.

Postconventional: Responses at this level are characterised by

(1) 1. A greater degree of insight into behaviour with no justification or complacency for the consultant's behaviour;
(2) 2. Definite action in line with recognised moral and ethical obligations including the decision to discuss the issue directly with the consultant with no regard to possible consequences for self.

C. Scenario 3: An intern going off duty and with plans for the evening is asked to attend to an emergency on the ward because the on call doctor is not answering the bleep.

Preconventional:

Responses at this level are characterised by one or more of the following

(1) A sense of guilt,
(2) A fear of reprisal from higher authority.
(3) Anger and irritation with on call doctor,
(4) Decision to review patient begrudgingly,
(5) Refusal to see patient,

(6) No insight into behaviour.

Conventional:

Responses at this level are characterised by

(1) A degree of insight into the emergency nature of the case
(2) Demonstrates a sense of duty and accountability.
(3) Negotiation of personal conflict to maintain professional and social expectations of moral duty.
(4) Evidence of insights into consequences for the patient.

Postconventional:

Responses at this level are characterised by one or more of the following

(1) Definite action to review patient motivated by universal principles.
(2) Principles override conflict.
(3) A capacity for altruism.
(4) An acknowledgement of the inconvenience caused without any sense of regret.
(5) A simple and total dismissal of the inconvenience caused.

D. Scenario 4: A specialist registrar does not follow the protocol regarding transfusion of patients.

Preconventional:

Responses at this level are characterised by

(1) The decision to take no action due to fear of reprisal;
(2) No action taken due to unquestioning obedience to power/authority figure;

(3) Justifies action of registrar with no insight or analysis.
(4) Centre of reasoning is the self and consequences for the self with no empathy for patient or insight into societal values or patient care.

Conventional:

Responses at this level are characterised by

(1) Intention to fulfil duties as appropriate within the context of societal values;
(2) A consideration of the patient's rights motivated by a desire to uphold the status quo and conform to societal norms;
(3) Seeks a correction of management without taking direct action (e.g. discusses matter with peers or more senior staff)
(4) Seeks to understand the motives of the doctor concerned.
(5) A decision to discuss the matter with the specialist registrar concerned.

Postconventional:

Responses at this level are characterised by

(1) A greater degree of insight into behaviour with personal principles overriding social norms.
(2) Patients rights are now primary for the first time.
(3) Decision to ensure that the protocol is adhered to for the patient's sake.
(4) Will not let the matter rest until resolved while also respecting the rights of the registrar.