

The effect of a psychiatric attachment on students' attitudes to and intention to pursue psychiatry as a career

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Objectives This study examined determinants of students' attitudes to psychiatry and intentions to pursue psychiatry as a career, considering: (1) experiences during the clinical attachment; (2) type of curriculum (traditional or problem-based), and (3) student characteristics (age and gender). The relationships between attitudes, career intentions and academic performance were examined.

Method Fourth year medical students ($n = 379$) completed questionnaires at the beginning and end of an 8-week psychiatry attachment to assess their attitudes to psychiatry, career intentions and experiences during the attachment. Students completed two assessments consisting of a multiple choice paper and a clinical viva. Consecutive cohorts of students receiving a traditional curriculum ($n = 188$) and a problem-based curriculum ($n = 191$) were compared.

Results Students' attitudes to psychiatry improved and intentions to pursue psychiatry as a career increased during the attachment. These changes were predicted by specific experiences during the attachment, such as receiving encouragement from consultants, seeing

patients respond well to treatment and having direct involvement in patient care. There was no difference in change in attitudes or career intentions between the two cohorts. Students with more favourable attitudes or career intentions at the outset did not report more favourable experiences during the attachment. Attitudes and career intentions were unrelated to performance in psychiatry assessments. Improvement in attitudes was related to an increased intention to pursue psychiatry as a career.

Conclusions Change in attitudes and career intentions was dependent on the actions of the clinical teachers. Undergraduate teachers may have an important influence on the numbers of doctors who choose this specialty as a career.

Keywords Education, medical, undergraduate/* methods; psychiatry/*education; attitude; career choice; curriculum; cohort study; prospective study; England.

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Introduction

The General Medical Council (GMC)¹ has highlighted the importance of 'encouraging students to develop attitudes necessary for the achievement of high standards of medical practice'. A positive attitude to psychiatry may make future doctors more responsive to the psychological needs and comorbidity of patients in all branches of medicine.²

The teaching of psychiatry has been found to have a significant positive effect on students' attitudes to psychiatry,³⁻⁶ with some studies suggesting that students' clinical experiences have the most influence on their eventual attitudes to psychiatry.^{7,8} Specific factors that have been thought to be influential are the experience of direct involvement in patient care,^{7,9,10} seeing patients who respond well to treatment^{8,11} and student satisfaction with psychiatric staff and patients.¹² There is, however, no direct evidence linking specific components of psychiatry attachments to improved attitudes.

The GMC¹ has also emphasised that students should be able to solve 'clinical and other problems in medical practice'. To achieve this, medical schools have increasingly adopted problem-based learning (PBL) methods, which have been found to be more effective in helping students learn than the traditional, predominantly

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Key learning points

Students' attitudes to psychiatry and career intentions can be improved by their experiences of teaching.

Students developed more positive attitudes when they were encouraged by senior psychiatrists, had direct involvement in patient care, or saw patients respond well to treatment.

Improvement in attitudes during the attachment was related to an increased intention to pursue psychiatry as a career.

The problem-based curriculum did not result in greater improvements in students' attitudes or change in career intentions regarding psychiatry than the traditional curriculum.

It is important that teachers of psychiatry realise that their actions have a significant impact on students' attitudes to psychiatry and intention to pursue psychiatry as a career.

didactic approach.^{13–15} There is little evidence, however, about the effects of this change on students' attitudes to psychiatry. One study from the USA found that graduates of a PBL course as opposed to those of a traditional course were much more likely to work in a medically underserved area and to have lifelong, self-directed learning skills.¹⁶ Another study that compared students who were taught psychiatry either by PBL or a traditional didactic approach found no differences in the effect on students' attitudes.⁵ These changes are relatively recent in British medical schools and this finding has not yet been replicated.

The evidence to date examining the relationship between attitudes and outcomes of teaching is equivocal. There is conflicting evidence about whether students' attitudes to psychiatry are related to their performance in psychiatry examinations.^{17,18} A positive attitude to psychiatry does seem to be related to both the intention to pursue psychiatry as a career^{6,17,19} and later choice of psychiatry as a career.^{20,21}

Teaching methods and experiences during an attachment may not be the sole determinants of attitudes and career intentions. Subgroups of students may have more favourable attitudes towards a specialty even before they attend the clinical attachment. These students may be more receptive to the teaching they receive, encourage teachers by their interest, and consequently show greater improvements in outcome

measures.⁷ Two previous studies found that female students had significantly more favourable attitudes to psychiatry at the beginning of their attachment,^{17,22} although one further study did not.²³ It is important, therefore, to consider whether any relationship between students' attitudes and outcomes of an attachment is mediated by the teaching students receive, or whether it simply reflects pre-existing attitudes.

As part of a curriculum review at a London medical school, the undergraduate psychiatry attachment was revised in 1998–99 to replace traditional didactic teaching with PBL. This revision was implemented the following year. This was the first clinical subject to do so, hence this was the students' first experience of problem-based teaching. This change provided an opportunity to examine the impact of teaching in psychiatry and to investigate the relationships between teaching methods, attitudes to psychiatry, career intentions and performance in psychiatry assessments.

Hypotheses

Primary hypothesis

Students' attitudes to psychiatry and intention to pursue psychiatry as a career at the end of the attachment will be related to their experiences during the attachment. Students will show more favourable attitudes and will show a greater intention to pursue psychiatry if:

- 1 they have felt particularly encouraged by supervisors or fellow students;
- 2 they have had direct responsibility for patient care;
- 3 they have seen patients who have responded well to psychiatric treatment;
- 4 they have been positively influenced or encouraged by someone during the attachment, and
- 5 they have been particularly influenced by some aspect of the attachment (such as being exposed to interesting or stimulating ideas, feeling that someone believed in their ability, liking someone's approach, or having formed a close working relationship).

Secondary hypotheses

- 1 Students who have received problem-based teaching will show more favourable attitudes to psychiatry and a greater intention to pursue psychiatry as a career at the end of the attachment than those who have received traditional teaching.
- 2 Students with more favourable attitudes to psychiatry and a greater intention to pursue psychiatry as a

career at the end of the attachment will show superior academic performance in psychiatry assessments.

- 3 Subgroups of students (e.g. female students) will show more favourable attitudes to psychiatry and a greater intention to pursue psychiatry before beginning the psychiatry attachment.
- 4 Students with more favourable attitudes to psychiatry and a greater intention to pursue psychiatry before beginning the attachment will: (a) report more favourable experiences during the attachment, and (b) show superior academic performance in psychiatry assessments.
- 5 Students' career intentions will be related to their attitudes to psychiatry. Students whose attitudes become more favourable will show an increased intention to pursue psychiatry as a career.

Method

Sample

All second year clinical medical students (Year 4 of a 5-year curriculum) in two cohorts were invited to participate. Those who agreed were asked to give signed, informed consent. Cohort 1 (September 1998–August 1999) received the traditional, lecture-based psychiatry curriculum. Cohort 2 (September 1999–August 2000) received the same curriculum taught by PBL methods. The only difference in the teaching was the change from the traditional to PBL methods. The aims, learning objectives, topics, assessments and pool of teaching staff were the same for both cohorts. Students attended the 8-week psychiatry attachment in five rotating blocks of 20–45 students throughout each year.

Design

This was a naturalistic, prospective study. Measures were taken at the beginning of the psychiatry attachment (baseline) and at the end of the attachment (outcome). The two cohorts of medical students (problem-based and traditional curricula) were compared.

Procedure

Students were invited to participate at the beginning of their psychiatry attachment. They completed one questionnaire prior to the start of teaching on the first day and a second questionnaire after the written assessment on the last day.

Measures

Baseline

- 1 Student characteristics: gender and age.
- 2 Attitudes to psychiatry: measured using the 30-item Attitudes to Psychiatry Scale³ (ATP-30). This scale measures attitudes to psychiatric patients, illness and treatment, psychiatrists, psychiatric institutions, teaching, knowledge and career choice. This measure has been used internationally in many studies and has demonstrated validity and reliability.³
- 3 Career preference: attitudes to a range of 18 medical specialties as a choice of career were measured. Students responded to each on a 5-point scale (5 = definite intention to go into this; 1 = definite intention not to go into this).²⁴
- 4 Social desirability: measured using the 13-item version of the Marlowe-Crowne scale,²⁵ which is valid and reliable when used with undergraduate students. This scale measures the tendency to give answers that are perceived as acceptable to the investigator rather than representative of the respondent's true opinion.

Outcomes

- 1 Attitudes to psychiatry: measured again using the ATP-30.
- 2 Perceptions of the clinical attachment. Ratings were obtained for four aspects of the clinical attachment, assessing the extent to which students felt they had: (a) received encouragement from consultants; (b) received encouragement from fellow students; (c) had direct involvement in patient care, and (d) seen patients who had responded well to treatment. A 5-point scale was used (0 = none, 5 = a great deal). To ascertain perceptions of sources of influence during the attachment,²⁴ students were asked to report: (a) whether they felt that they had been particularly influenced or encouraged by someone during the attachment (yes/no); (b) if so, who they felt had influenced them (choice of eight categories, e.g. consultant, specialist registrar, senior house officer), and (c) the type of influence (choice of five categories, e.g. interesting or stimulating ideas, formed a close working relationship).
- 3 Career preference: measured again using the scale from the baseline questionnaire.
- 4 Social desirability: measured again using the 13-item version of the Marlowe-Crowne scale.
- 5 Academic performance: students' scores (%) in the two routine formative end-of-attachment assessments were obtained via: (a) a multiple choice

questionnaire (MCQ), and (b) a clinical viva, based on a case presentation of a prepared patient clerking, conducted by two psychiatry examiners.

Power calculation

Based on data from Burra *et al.*,³ two groups, each consisting of 156 students, would have a probability of 0.05 at a 90% level of power of showing a difference of 4.0 points on the ATP-30 questionnaire in either direction.

Results

Participants

In total, 379/450 (84%) students agreed to participate in the study. Of these, 188 (50%) received the traditional curriculum and 191 (50%) received the problem-based curriculum. There were 204 male students (54%) in the sample. The mean age was 23.3 years (SD 1.8 years, range 21–34 years). There were no differences between the two cohorts in age, gender or rates of participation in the study. Non-participation was mainly due to non-attendance on the first day of the attachment.

Change in students' attitudes to psychiatry and intention to pursue psychiatry as a career

Overall, students' attitudes (mean ATP-30 score) improved during the attachment, from 102.6 (SD 10.1) at baseline to 107.7 (SD 11.9) at the end of the attachment ($t(375) = 9.51, P < 0.001$).

At the beginning of the attachment, 58 (19%) of students described psychiatry as very attractive or reported a definite intention to pursue psychiatry; 93 (30%) described psychiatry as moderately attractive, and 158 (51%) described psychiatry as not very attractive or said that they definitely had no intention of pursuing psychiatry ($n = 309$). By the end of the attachment, 101 (27%) students described psychiatry as very attractive/definite intention, 137 (37%) as moderately attractive, and 135 (37%) as not very attractive/definitely no intention ($n = 373$). Overall, there was an increase in students' intention to pursue psychiatry as a career (mean intention score) during the attachment, from 1.5 (SD 1.0) at baseline to 1.8 (SD 1.1) at the end of the attachment ($t(304) = 4.01, P < 0.001$).

Change in attitudes during the attachment was positively correlated with change in intention to pursue psychiatry as a career ($r = 0.44, n = 303, P < 0.001$).

Relationship between change in attitudes and intentions and experiences on the attachment

Change in students' attitudes was positively correlated with encouragement from consultants ($r = 0.26, n = 374, P < 0.001$), having direct involvement in patient care ($r = 0.26, n = 374, P < 0.001$), seeing patients who responded well to treatment ($r = 0.20, n = 374, P < 0.001$), and encouragement from fellow students ($r = 0.11, n = 374, P < 0.001$).

Change in intention to pursue psychiatry was positively correlated with encouragement from consultants ($r = 0.18, n = 303, P < 0.01$), having direct involvement in patient care ($r = 0.15, n = 303, P < 0.01$), and seeing patients who responded well to treatment ($r = 0.11, n = 303, P < 0.05$).

A total of 282 (74%) students reported that they had been particularly influenced or encouraged by someone during the attachment. Students who reported such an influence showed greater improvements in attitudes ($t(369) = 3.11, P < 0.05$) and intention to pursue psychiatry as a career ($t(299) = 2.26, P < 0.01$).

The most commonly reported sources of influence were consultants (43%), senior house officers (SHOs) (22%) and specialist registrars (SpRs) (13%). Students who reported being influenced by an SpR showed greater improvements in attitudes ($t(374) = 2.58, P = 0.01$) and intention to pursue psychiatry as a career ($t(303) = 2.49, P < 0.05$) than students who did not report being influenced by an SpR.

The most frequent types of influence reported were exposure to interesting or stimulating ideas (29% of students, $n = 110$), liking someone's approach (27% of students, $n = 103$), feeling that someone believed in their ability (11% of students, $n = 41$) and having formed a close working relationship (9% of students, $n = 33$). Students who reported exposure to interesting or stimulating ideas showed greater improvements in attitudes ($t(374) = 2.28, P < 0.05$) and career intentions ($t(303) = 2.41, P < 0.05$) than those who did not report such exposure. In addition, students who reported having formed a close working relationship showed greater improvements in attitudes ($t(374) = 2.56, P < 0.05$) than those who did not report such a relationship.

Change in attitudes and career intentions with type of curriculum

The two cohorts did not differ from each other in their attitudes or career intentions at the beginning of the attachment. Both cohorts showed an improvement in

attitudes (Cohort 1: $t(184) = 7.90$, $P < 0.001$; Cohort 2: $t(190) = 5.68$, $P < 0.001$) and intention to pursue psychiatry as a career (Cohort 1: $t(157) = 3.11$, $P < 0.01$; Cohort 2: $t(146) = 2.58$, $P < 0.05$). There was no interaction between cohort and improvement for either attitudes or change in career intentions.

Students in the two cohorts reported no differences in their experiences on the attachment, i.e. in terms of encouragement received, having direct involvement in patient care, seeing patients who responded to treatment, or any of the other sources or types of influence measured.

Relationship between attitudes and career intentions and academic performance

Students' performance in the MCQ and the clinical viva were unrelated to their attitudes or career intentions at the end of the attachment, or to change in attitudes or career intentions during the attachment.

Relationship between attitudes and career intentions and student characteristics

Female students showed more favourable attitudes to psychiatry than male students both at the beginning and at the end of the attachment. At baseline, the mean score for female students was 104.5 (SD 9.7) and for male students was 101.1 (SD 10.2) ($t(374) = 3.32$, $P < 0.01$). At the end of the attachment, female students scored 109.3 (SD 11.7) and male students scored 106.3 (SD 11.9) ($t(374) = 2.41$, $P < 0.05$). There was no interaction between gender and change in attitudes.

There was no difference between male and female students in their intention to pursue psychiatry as a career.

Student age correlated negatively with attitudes at the end of the attachment ($\rho = -0.14$, $n = 376$, $P < 0.01$), improvement in attitudes ($\rho = -0.12$, $n = 376$, $P < 0.05$), and intention to pursue psychiatry as a career at the end of the attachment ($\rho = -0.17$, $n = 373$, $P < 0.01$).

Relationship between initial attitudes and career intentions and outcomes of the attachment

Students with more favourable attitudes at the start of the attachment were more likely to report being encouraged by fellow students during the attachment ($r = 0.16$, $n = 374$, $P < 0.01$) and to report being influenced or encouraged by someone during the attachment ($t(369) = 2.27$, $P < 0.05$).

Students who reported a greater intention to pursue psychiatry as a career at the start of the attachment were more likely to report being encouraged or influenced by someone during the attachment ($t(303) = 2.37$, $P < 0.05$) and that they were influenced during the attachment by the approach taken by psychiatrists ($t(307) = 2.56$, $P < 0.05$).

There were no further relationships between students' initial attitudes and career intentions and their reports of other teaching experiences on the attachment.

There were no relationships between students' initial attitudes or career intentions and their subsequent performance in either the MCQ or the clinical viva.

Attitudes to psychiatry, career intentions and social desirability

No relationships were found between social desirability and either attitudes or career intentions at any point.

Predictors of attitudes to psychiatry and intention to pursue psychiatry as a career

Multiple linear regression analysis was conducted to identify the relationships between students' initial and end-of-attachment attitudes and intentions, experiences during the attachment, type of curriculum, and student characteristics. This analysis (a form of structural equation modelling) enables a diagram to be constructed, indicating the presence and strength of relationships, and can be used to examine possible causal links. The results are shown in Fig. 1.

In summary, the analysis indicates that:

- 1 Students' attitudes to psychiatry at the end of the attachment were predicted by their initial attitudes and by their experiences during the attachment.
- 2 Students' intentions to pursue psychiatry as a career at the end of the attachment were predicted by their initial intentions, their initial attitudes to psychiatry, their experiences during the attachment, and gender.
- 3 Students' experiences during the attachment were largely unrelated to their initial attitudes to psychiatry or career intentions.
- 4 The type of curriculum (traditional or problem-based) did not predict students' attitudes or career intentions.
- 5 Student characteristics (age and gender) showed some relationships to students' initial attitudes and career intentions. Specifically, female students had more favourable attitudes to psychiatry at the outset and older students had a lower intention to pursue

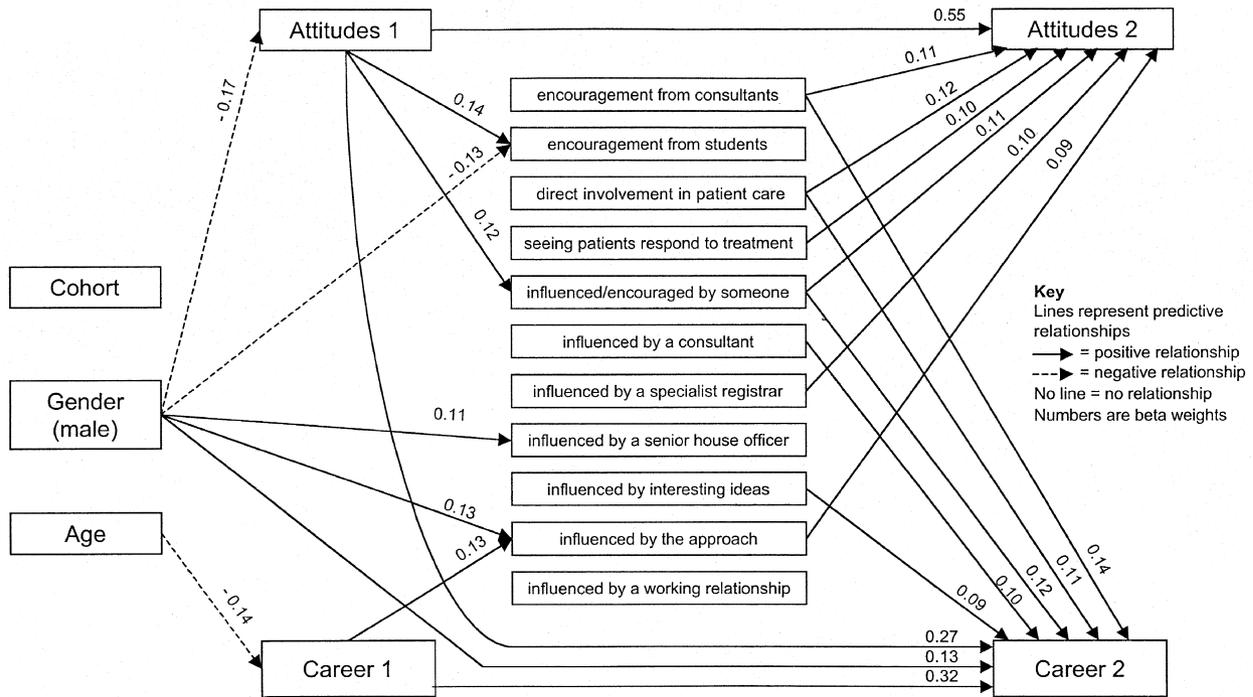


Figure 1 Relationships between students' initial and end-of-attachment attitudes and intentions, experiences during the attachment, type of curriculum, and student characteristics.

psychiatry as a career. In addition, there were some relationships between students' gender and their subsequent experiences during the attachment.

Discussion

Change in students' attitudes to psychiatry and intention to pursue psychiatry as a career was predicted by their experiences during the attachment. Students developed more positive attitudes and intentions when they felt they had been encouraged by senior psychiatrists, had had direct involvement in patient care, had seen patients respond well to treatment, and had felt particularly influenced or encouraged by someone during the attachment. The findings indicate that students' attitudes and intentions can be improved by their experiences of teaching, regardless of their attitudes and intentions prior to the attachment.

These findings may surprise some clinical teachers, who may feel that students' attitudes or perceptions of a specialty as a career are largely beyond their control. Indeed, the study provided evidence to reject the possibility that students who are most positive at the start of the attachment are those who elicit more

favourable teaching experiences during the attachment. This lends weight to the argument that it is genuinely students' experiences on the attachment that determine whether and how their attitudes and intentions change. Many clinical teachers may still act as if their input is not important to the students. For example, Maheux *et al.*²⁶ found that students reported that over 50% of teachers were not interested in them.

The PBL curriculum did not result in greater improvements in students' attitudes or change in career intention regarding psychiatry compared to the traditional curriculum. This may indicate that it is the content rather than the form of teaching which is important in changing attitudes and intentions. Alternatively, it may have been that the opportunities for particular clinical experiences in the clinical parts of the attachment (such as being encouraged by a consultant or an SpR, or seeing patients respond well to treatment) were the same in both curricula. The findings indicate that a curriculum which was designed specifically to encourage students to develop their problem-solving skills and take more responsibility for their own learning did not show any advantage over a traditional curriculum in fostering positive attitudes or career intentions in this specialty.

Similarly, in a previous study¹⁶ students' attitudes and career intentions were found to be unrelated to their academic performance. This was true for both a factual knowledge-based assessment (a multiple choice paper) and a more clinically oriented assessment (a viva conducted by two psychiatrists). The lack of a relationship may seem counter-intuitive, as it might be expected that students who are more interested in a subject would learn more, and that this would be reflected in their performance in assessments. This corresponds to previous research considering medical students' approaches to learning, particularly the finding that medical students respond to a learning situation in a strategic way, by tailoring their learning to the type of assessment they expect.^{14,27} If assessment rather than interest drives learning, students who are not intrinsically interested in the subject will still be motivated to do well.

We found, however, that students' intentions to pursue psychiatry as a career were related to their attitudes. Improvement in attitudes during the attachment was related to an increased intention to pursue psychiatry as a career. Although the strength of the relationship between intentions and subsequent behaviour varies,²⁸ there is evidence that increased intention at this stage of medical training leads to increased recruitment in this specialty.^{19,20}

As noted in a previous study,²² female students were found to have more favourable attitudes to psychiatry than male students prior to the attachment and this warrants further investigation. This may be because female students were less likely to participate in the study (female students represented nearly 60% of the student population), and we could speculate that those who were not there on the first day were less likely to have a positive attitude. There was no difference, however, in the extent to which their attitudes improved, indicating that male students were as receptive to their experiences on the attachment as female students. Older students were less likely to consider psychiatry as a career prior to the attachment, which may reflect pre-existing decisions made by mature students about their career intentions following graduation.

In conclusion, it is important that teachers of psychiatry realise that their actions have a significant impact on students' attitudes to psychiatry and intention to pursue psychiatry as a career. Thus, teaching psychiatry at an undergraduate level may well have important implications, not only in terms of future recruitment into the specialty, but also in terms of the way future doctors who are not psychiatrists respond to patients with psychological difficulties. Further studies

are needed to determine how to ensure that all students have the opportunity to improve their attitudes to psychiatry, and what influences the ultimate choice of psychiatry as a career.

Contributors

GL, MM and LN designed the study and submitted the protocol for ethical approval. CM advised on the use of measures and study design. MM collected and inputted the data, under the supervision of GL and LN. All authors were involved in data analysis and in writing up the manuscript.

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References

- 1 General Medical Council. *Tomorrow's Doctors. Recommendations on Undergraduate Medical Education*. London: General Medical Council 1993.
- 2 Nielsen AC, Eaton J. Medical students' attitude about psychiatry. *Arch Gen Psychiatry* 1981;**38**:1144–54.
- 3 Burra P, Kalin R, Leichner S, Waldron J, Handforth JR, Jarrett FJ, Amara IB. The ATP-30: a scale for measuring medical students' attitudes to psychiatry. *Med Educ* 1982;**16**:31–8.
- 4 Creed F, Goldberg D. Students' attitudes to psychiatry. *Med Educ* 1987;**21**:227–34.
- 5 Singh SP, Baxter H, Standen P, Duggan C. Changing the attitudes of 'tomorrow's doctors' towards mental illness and psychiatry: a comparison of two teaching methods. *Med Educ* 1998;**32**:115–20.
- 6 Wilkinson DG, Toone BK, Greer S. Medical students' attitudes to psychiatry at the end of the clinical curriculum. *Psychol Med* 1983;**13**:655–8.
- 7 Lau AYH, Offord MD. A study of student attitudes toward a psychiatric clerkship. *J Med Educ* 1976;**51**:919–28.
- 8 Eagle PF, Marcos MD. Factors in medical students' choice of psychiatry. *Am J Psychiatry* 1980;**137**:423–7.
- 9 Werkman SL, Landau S, Wakefield H. Medical students' view of clinical psychiatry. *Am J Psychiatry* 1973;**130**:562–5.
- 10 Maxmen JS. Student attitude changes during psychiatric medicine clerkships. *Gen Hosp Psychiatry* 1979;**1**:98–103.
- 11 Yager J, Lamotte K, Nielson A, Eaton JS. Medical students' evaluation of psychiatry: a cross-country comparison. *Am J Psychiatry* 1982;**139**:1003–9.

- 12 Orleans CS, Houpt JL, Larson DB. Interpersonal factors in the psychiatry clerkship: new findings. *Am J Psychiatry* 1980;**137**:1101–3.
 - 13 Coles CR. Differences between conventional and problem-based curricula in their students' approaches to studying. *Med Educ* 1985;**19**:308–9.
 - 14 Newble DI, Clarke RM. The approaches to learning of students in a traditional and in an innovative problem-based medical school. *Med Educ* 1986;**20**:267–73.
 - 15 Martenson DF. Students' approaches to studying in four medical schools. *Med Educ* 1986;**20**:532–4.
 - 16 Mennin SP, Kalishman S, Friedman M, Pathak D, Snyder J. A survey of graduates from the University of New Mexico's conventional and community-orientated problem-based track. *Acad Med* 1996;**71**:1079–89.
 - 17 Wilkinson DG, Greer S, Toone BK. Medical students' attitudes to psychiatry. *Psychol Med* 1983;**13**:185–92.
 - 18 Alexander DA, Eagles JM. Changes in attitudes towards psychiatry among medical students: correlation of attitude shift with academic performance. *Med Educ* 1990;**24**:452–60.
 - 19 Ghadirian AM, Engelsman F. Medical students' attitude towards psychiatry: 10-year comparison. *Med Educ* 1982;**16**:39–43.
 - 20 Nielsen A. Choosing psychiatry: the importance of psychiatric education in medical school. *Am J Psychiatry* 1980;**137**:428–31.
 - 21 Clardy JA, Thrush CR, Guttenberger VT, Goodrich ML, Burton RPD. The junior year psychiatric clerkship and medical students' interest in psychiatry. *Acad Psychiatry* 2000;**24**:35–40.
 - 22 Alexander DA, Eagles JM. Attitudes of men and women medical students to psychiatry. *Med Educ* 1986;**20**:449–55.
 - 23 Galletly CA, Schraeder GD, Chesterman HM, Tsourtos G. Medical students' attitudes to psychiatry: lack of effect of psychiatric hospital experience. *Med Educ* 1995;**29**:449–51.
 - 24 McManus IC. Medical Student Questionnaire. [Unpublished manuscript.] London: Department of Psychology, University College London.
 - 25 Reynolds WM. Development of reliable and valid short forms of the Marlowe-Crowne social desirability scale. *J Clin Psychol* 1982;**138**:119–25.
 - 26 Maheux B, Beaudoin C, Berkson L, Cote L, Des-Marchais J, Jean P. Medical faculty as humanistic physicians and teachers: the perceptions of students at innovative and traditional medical schools. *Med Educ* 2000;**34**:630–4.
 - 27 Newble DI, Entwistle NJ. Learning styles and approaches: implications for medical education. *Med Educ* 1986;**20**:162–75.
 - 28 Conner M, Sparks P. The theory of planned behaviour and health behaviours. In: Conner M, Norman P, eds. *Predicting Health Behaviour: Research and Practice with Social Cognition Models*. Buckingham, UK: Open University Press 1995.
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