



See one, do one, teach one--exploring the core teaching beliefs of medical school faculty

Professor Reed G. Williams & Debra L. Klamen

To cite this article: Professor Reed G. Williams & Debra L. Klamen (2006) See one, do one, teach one—exploring the core teaching beliefs of medical school faculty, *Medical Teacher*, 28:5, 418-424, DOI: [10.1080/01421590600627672](https://doi.org/10.1080/01421590600627672)

To link to this article: <http://dx.doi.org/10.1080/01421590600627672>



Published online: 03 Jul 2009.



Submit your article to this journal [↗](#)



Article views: 241



View related articles [↗](#)



Citing articles: 5 View citing articles [↗](#)

See one, do one, teach one—exploring the core teaching beliefs of medical school faculty

REED G. WILLIAMS¹ & DEBRA L. KLAMEN²

¹Department of Surgery, Southern Illinois University School of Medicine, Springfield, IL, USA;

²Department of Medical Education, Southern Illinois University School of Medicine, Springfield, IL, USA

ABSTRACT *This paper explores the core teaching beliefs of medical school faculty and establishes whether these beliefs differ among basic science, clinical, and instruction specialist faculty. One hundred and twenty-five medical school teachers who were members of professional organizations dedicated to the improvement of medical school teaching completed a Q-sort of 56 statements reflecting their core teaching beliefs. The statements described beliefs about motivation, knowledge and skill acquisition, retention, feedback, transfer, teacher characteristics, and teaching strategies. Q-sorts were completed by 37 basic scientists (30% of respondents), 59 clinicians (47%) and 29 instruction specialists (23%) working in medical schools. Fifty-two participants were classroom teachers (42%), 66 were classroom and clinical teachers (53%), and seven reported that they do not teach (6%). The Q-sort results indicate how medical school faculty members differ in their core beliefs about teaching and learning. Thirty-two respondents (26%) focused on the student as a person first. Eight (6%) were content oriented. Thirty-four (27%) were performance oriented; their focus was on having students learn and apply knowledge and skills to accomplish clinical tasks. Fifty-one respondents (41%) were found to have a blend of these viewpoints. Respondents' type of training or type of teaching did not provide a reliable indication of core teaching beliefs classification.*

Throughout the medical education literature, articles abound with descriptions of new curricula, or new teaching techniques that are thought to promote student learning (Broudo & Walsh, 2002; Losh *et al.*, 2005). Also in abundance are articles with respect to the need for effective teaching techniques, what those techniques are, and faculty development to successfully implement them (Wilkerson & Irby, 1998; Leamon *et al.*, 2002; Lee *et al.*, 2002; McLeod *et al.*, 2004). However, less is known about the factors that motivate and guide the teaching behavior of faculty. There is some literature discussing the external motivators (both positive and negative) which may affect teaching behavior. These include: time (or lack thereof), money, rewards for teaching, mentoring by senior faculty with junior teachers, and the like (Johnston & Gifford, 1996; Shea *et al.*, 1996; D'Alessandri *et al.*, 2000; Zanting *et al.*, 2001; Kumar *et al.*, 2002). There is almost no literature addressing the internal factors guiding the teaching behavior of teachers, (Ennis & Chen, 1993; Pratt *et al.*, 2001) and only one directly addressing this issue by asking faculty in a medical school (Thomaidis *et al.*, 1983).

Practice points

- Core teaching beliefs are likely to be a primary determinant of the teaching behavior of medical school faculty members and faculty members are often unaware of their core teaching beliefs.
- Few efforts have been made to help faculty members discover their core teaching beliefs and to increase the consonance between teaching beliefs and practices.
- Likewise, little attention has been directed toward considering the advantages, if any, of considering core teaching beliefs in making teaching assignments.
- Since there has been no attempt to measure core teaching beliefs systematically, it is not known whether these beliefs change or remain stable throughout the teaching careers of medical school faculty members.
- The core teaching beliefs inventory provides one method for exploring core teaching beliefs for research, practice and self-development purposes.

These internal factors include internal motivators such as a passion for teaching itself, and the core teaching beliefs that may guide the choices faculty make about what, and how, they teach. Core teaching beliefs of individual faculty are the focus of this study.

An orderly examination of beliefs and values, as this one, needs to capture the strength of a person's beliefs around a series of statements in relationship to one another. Faculty are asked to express preferences by making relative choices among statements—for example statement one is 'more like me' than statement two, and statement two is 'less like me' than statement four. This opportunity is afforded by using Q-sort methodology, invented and advanced primarily by William Stephenson (1953) and later extended by Brown (1980). Specifically, the Q-sort enables the respondent to provide a model of her/his point of view. The factors which emerge are operational definitions of the attitudes or value preferences which produced them. The numerical results reflect that the person prefers statement one to statement two, statement two to statement three, etc. Q-sort data also

Correspondence: Professor Reed G. Williams, Professor and Vice-Chair for Education Department of Surgery, Southern Illinois University School of Medicine, 800 North Rutledge Street, P.O. Box 19638, Springfield, IL 62794-9638, USA. Tel: 217-545-0529; fax: 217-545-1793; email: rwilliams@siu.edu

can be analysed for commonalities among individuals. Factors representing groups of individuals holding similar belief systems can be identified and used to understand the point of view that they share.

This study aims to determine the core beliefs of faculty and to establish whether these beliefs differ among basic scientists, clinicians, and instruction specialists working in medical schools. Q-sort methodology is used in this analysis for the reasons elucidated above.

Methods

Participants and setting

Core Teaching Beliefs Questionnaires were sent to both Southern Illinois University Surgical Education and Performance Group and Educational Policy Committee Members, and to participants who use the following Internet list servers: Association of American Medical Colleges Central Group on Educational Affairs, Dr-Ed, International Association of Medical Science Educators, Association for Surgical Education, and Association of Academic Psychiatry. One hundred and twenty-five participants completed the questionnaire anonymously and voluntarily. Terms of participation were explained to participants and participants were free to terminate participation at any time by simply closing their Internet browser. This study was approved by the Southern Illinois University School of Medicine Institutional Review Board.

Instrument

A group of physicians and medical educators was assembled and asked to brainstorm core teaching beliefs that may fundamentally and consistently affect the teaching behavior of medical teachers. Based on this discussion the authors created and refined a list of statements thought to represent core teaching beliefs. The authors then brought the list back for further discussion by the group of physicians and medical educators. Through iterative cycles of discussions, pilot tests and revisions, the list of statements was refined to eliminate redundant items, add new items, and clarify meaning.

This process resulted in a series of 56 statements regarding the core teaching beliefs of medical teachers. Items covered beliefs about motivation, acquisition, retention, feedback, transfer, teacher characteristics and teaching strategies.

Q-Sort Method

Participants sorted the statements using standard Q-sort methods administered via the internet using Web Q software (Schmolck, 1999). Participants were required to sort the

56 statements into a quasi-normal distribution based on the degree to which the statement represented their beliefs (+5 = most like my beliefs to -5 = least like my beliefs). The forced quasi-normal distribution used is depicted in Table 1. Respondents were asked to identify themselves by their training (basic scientist, clinician, instruction specialist) and by the type of teaching they engage in (classroom, clinical, clinical and classroom, not a teacher). Later the decision was made to combine those who listed themselves as clinical teachers into the clinical and classroom teaching group, since it was felt that most clinicians taught in both settings.

By-person factor analysis method

Analyses were conducted using PQ Method version 2.11 software (Schmolck, 2002). Factor extractions were made using the method of principal components analysis. The factor structure was simplified using varimax rotation methods.

Composite factor scores for each statement were determined from the defining Q-sorts for each factor. Defining or pure Q-sorts were those where the factor explained more than half of the common variance and the loading was statistically significant ($p < 0.05$).

Each factor had its own set of item factor scores. The item factor scores were used to develop an understanding of the profile for each factor, create narrative descriptions of the generalized factor perspective, and to make comparisons among the factors. Factor labels were created to function as simple, short reminders of the composite viewpoint of the whole factor. Neither labels nor statements were chosen to reflect established theories about core teaching beliefs.

The entire factor solution was also inspected to identify ‘consensus statements’, that is, those items scored in nearly the same way by all respondents. An item was considered to be a consensus statement if the Q-sort rank assigned by respondents for that item did not distinguish between any pair of factors ($p > 0.05$).

Results

Q-sorts were completed by 37 basic scientists (30% of respondents), 59 clinicians (47%) and 29 instruction specialists (23%) working in medical schools. Fifty-two of the respondents reported that they were classroom teachers (42%), 66 were classroom and clinical teachers (53%), and seven reported that they do not teach (6%).

By-person factor analysis yielded interpretable solutions with three factors. Seventy-four of 125 Q-sorts loaded significantly on a factor. This finding indicates that 59% of

Table 1. Q-sorting response constraints.

Q-sorting category	Most like my beliefs (+5)	+4	+3	+2	+1	Neutral (0)	-1	-2	-3	-4	Least like my beliefs (-5)
Number of statements to be included in this category	2	3	5	6	8	8	8	6	5	3	2

the respondents are definable as having a predominant core teaching profile as defined by the final factor solution.

High salience scores (+5, +4, -5, -4) for a factor and large differences in salience between factors were most influential in shaping our understanding of the viewpoint represented by a factor. Table 2 depicts the core teaching belief statements and their salience scores for each teaching belief profile (factor). The numbers in the tables reflect the salience scores. Positive numbers indicate that the statement reflected the belief of the respondent. Negative numbers indicate that the respondent had strong negative beliefs about the statement, i.e. the statement did not represent that person's core belief about teaching. The number 0 indicated that the respondent neither agreed nor disagreed with that statement. Bold numbers indicate that the statement has high salience for that factor (contributes to defining that factor). Items with bold numbers in every column are items that contributed to defining each teaching belief profile (factor). Items where no number is bold are consensus items. Consensus items are items where respondents responded to the item in exactly or in nearly the same way regardless of their factor profile.

The results presented in Table 2 suggest that respondents who can be classified fit into three groups based on their orientation toward their tasks as teachers. Those who fit Profile 1 focus on the student as a person first. Profile 2 teachers are content oriented. Profile 3 teachers are performance oriented; their focus is on having students apply knowledge and skills as they learn them. The following sections describe the points of Views of individuals in each of these groups as reflected by their ranking of the statements through the Q-sort process.

Profile 1—student oriented teachers (prevalence: 26%)

The student oriented teachers expressed the belief that learning should be fun (item 29) and that teachers should make learning interesting (item 54) and should be enthusiastic (7). They also expressed the beliefs that teacher and learner interaction (39) and collaboration among learners (40) facilitate learning. They opposed the use of fear as a teaching strategy (2).

These individuals were also distinctive in being less focused on content than those who fit the other two profiles (items 55, 35, 34). However, they were similar to the content oriented teachers in favoring the teacher playing an active role in the learner's education (16).

Profile 2—content oriented teachers (prevalence: 6%)

The content oriented teachers believe that teachers should focus on fostering student understanding of the content (item 55). They also expressed a stronger belief that teachers should treat learners as they themselves would like to be treated (44). They were most distinctive in their strongly held belief that teachers should be content experts (46). They shared the belief with the student oriented teachers that teachers should play an active role in the learner's learning (16). They held a strong belief opposing the adage of see one, do one, teach one (15); the student oriented teachers were neutral while the performance oriented faculty only mildly disagreed with this statement.

The content oriented teachers' profiles were also distinctive in putting less emphasis on teacher and learner interaction (39), making learning fun (29), having students teach as a part of the learning process (24), and on collaboration among students as a teaching tool (40). Interestingly, they also distinguish themselves by being neutral on the belief that good learners are born not made while their counterparts in the other two groups expressed strong negative opinions about that statement (1).

Profile 3—performance oriented teachers (prevalence: 27%)

The performance oriented teachers shared the belief with the content oriented teachers that teachers should focus on fostering student understanding of content (55). However, they were distinctive in believing that learning by solving problems works best (20) and that little transfer occurs from one experience to another (34). Further they distinguished themselves from the other two groups by holding a stronger disbelief in the statement that learners who do well on tests can necessarily use that knowledge effectively (36). They had more faith in learners learning content without teachers covering the material (21). They were somewhat less likely to believe that information should be learned first and then students should learn how to use that information (31) and that learners need experts to set learning goals for them (30). However, the differences are not as large as might be expected. They were more favorable toward teachers supporting learners in their quest to learn rather than playing a more directive role in the learning process (16, 56). This group shared the belief with the student oriented teachers that teacher and learner interaction (39) and that collaboration among learners facilitates learning (40). Performance oriented teachers also disagreed most strongly with the statement that learners who acquire information will know how to use it (32).

Areas of consensus

While our analysis allowed us to differentiate medical teachers into groups it is also true that there are many similarities among these teachers. The correlation among all participants based on their responses to the individual core teaching belief statements was $r = 0.50$. This section identifies core teaching belief statements where responses of all three groups were similar (areas of consensus). All three groups were similar in their beliefs that reinforcement of desirable behavior (item 5, moderately positive belief in this) and setting high achievement standards motivates learners (item 6, low positive belief). They also agreed that praise works better than criticism as a teaching strategy (item 4, low positive belief). As regards learning, the members of the three groups believe similarly that learners learn by example (item 17, moderate positive belief), that the teacher's actions speak louder than words (item 27, moderate positive belief), that practice makes perfect (item 18, moderate to low positive belief) and that steps in learning should be rewarded along the way (item 53, low positive belief). They are also similar in sharing a low to neutral opinion about the statement that experience is the best teacher (41). They are unified in expressing strong disbelief in the view that students should have to do all the things the teachers did in school (item 48),

Table 2. Factor scores for core teaching belief statements.

Statement number	Statement	Teaching belief profile (factor)		
		Student oriented teachers	Content oriented teachers	Performance oriented teachers
1.	Good learners are born not made	-4*	0*	-3*
2.	Use of fear is an effective teaching strategy	-5	-3	-2
3.	Avoiding criticism is a powerful motivator for students	-1*	1	0
4.	Praise works better than criticism as a teaching strategy	2	1	2
5.	Reinforcement of desirable behavior motivates learners	3	4	4
6.	Setting high achievement standards will motivate learners	2	3	0
7.	Enthusiastic teaching produces better learning	4*	3	2
8.	Disrupting a learner's preconceptions motivates learning	-1	-1	1*
9.	Learning requires effort which may be uncomfortable	1	2	3
10.	I know a good learner when I see one	-1	-1	-1
11.	The best learners are those like me	-2	-2	-3
12.	Success is the best motivator	0*	2	0
13.	If a learner has faith in you he/she will learn	0*	-2*	-1*
14.	You can't make a learner want to learn	-2*	3*	-1*
15.	See one, do one, teach one	0	-4*	-1
16.	Teachers should teach less so learners can learn more	-2*	-3*	1*
17.	Learners learn by example	2	2	2
18.	Practice makes perfect	1	2	1
19.	Learning should occur in the context (environment and circumstances) where the competence will be used.	0	1	3*
20.	Learning by solving problems works best	1	1	5*
21.	Learners won't learn content unless teachers cover it	-2	-2	-4*
22.	Being TOLD how to do something is sufficient instruction to produce learner skill	-3	-4	-4
23.	Being SHOWN how to do something is sufficient instruction to produce learner skill	-3	-4	-3
24.	Teaching is the best way to learn	3*	0*	1*
25.	A picture is worth a thousand words	2*	0	0
26.	It is difficult to teach adults. Their ways are set	-3*	-2	-2
27.	The teacher's actions speak louder than words	2	2	2
28.	Failure often leads to new learning	1	-1	1*
29.	Learning should be fun	5*	1	2
30.	Learners need experts to set learning goals for them	0	0	-1*
31.	FIRST learn information and THEN learn how to use it	0	0	-1*
32.	Learners who acquire information will know how to use it	-2	-2	-3*
33.	Good learners are generally good at everything they do	-1	-1*	-1
34.	If you want learners to become skilled in doing something, they must practice that skill. Little transfer occurs from one experience to another.	-1*	0*	3*
35.	The need to know drives learning (will it be on the test?)	0*	4	3
36.	Learners who do well on a test can use that knowledge	-2	-1	-3*
37.	Information need not be learned in context to be recalled	0	-1	-2*
38.	Forgetting is a major factor in the loss of performance ability	-1*	0	0
39.	Teacher and learner interaction facilitates learning	4	1*	4
40.	Collaboration among learners facilitates learning	4	-1*	3
41.	Experience is the best teacher	1	1	0
42.	Good communicators are the best teachers	3*	1	1
43.	Real experience is better than simulation	1*	-1	-1
44.	Treat learners as you would like to be treated	3	5*	2
45.	Give neither praise nor criticism unless asked for it	-4	-3	-2
46.	The best teacher is a content expert	-1*	4*	-2*
47.	The best teacher is a teaching process expert	-2*	-5*	0*
48.	I had to do this so you have to too	-5	-5	-5

(continued)

Table 2. Continued.

Statement number	Statement	Teaching belief profile (factor)		
		Student oriented teachers	Content oriented teachers	Performance oriented teachers
49.	Learners store information in the form teachers provide	-1	-2	-2
50.	Lecture meaning is essentially the same for everyone	-4	-3	-5
51.	What learners know has little impact on new learning	-3	-3	-4
52.	Teachers should break learning tasks into smaller steps	2	2	0
53.	Steps in learning should be rewarded along the way	1	0	1
54.	Teachers should make learning interesting	5*	3	2
55.	Recall is better if the content is understood	2*	5*	5*
56.	Teachers should provide a framework for organizing information	3	3	1*
Number of respondents with this profile		32	8	34
Composite Reliability		0.99	0.98	0.99
% Explained variance		20	15	22

Bold numbers signify statements that distinguish respondents with that profile ($p < 0.05$). *signifies statements that are significant at $p < 0.01$. Rows with no bold numbers signify consensus items (items where respondents have a similar point of view regardless of their profile).

Table 3. Breakdown of respondents fitting each core belief profile by type of training and by type of teacher.

Orientation (Factor)	Training			Type of teacher			Total
	Basic scientist	Clinician	Instruction specialist	Classroom	Classroom and clinical	Not a teacher	
Student	12 (38%)	14 (44%)	6 (19%)	11 (34%)	18 (56%)	3 (9%)	32 (26%)
Content	3 (38%)	4 (50%)	1 (13%)	4 (50%)	4 (50%)	0 (0%)	8 (6%)
Performance	6 (18%)	17 (50%)	11 (32%)	10 (29%)	20 (59%)	4 (12%)	34 (27%)
Blended	16 (31%)	24 (47%)	11 (22%)	27 (53%)	24 (47%)	0 (0%)	51 (41%)
Total	37 (30%)	59 (47%)	29 (23%)	52 (42%)	66 (53%)	7 (6%)	125 (100%)

that lecture meaning is essentially the same for everyone (50), and that what learners already know has little impact on new learning (51).

Table 3 provides a breakdown of those respondents who fit each core teaching belief profile. Basic scientists tend to be somewhat under-represented in the performance oriented group. Clinicians are pretty evenly distributed among the groups based on orientation with a slight under-representation in the student oriented group. Instruction specialists are over-represented in the performance oriented group and under-represented in the content oriented group. Classroom teachers are under-represented in the student oriented and the performance oriented groups while clinical teachers are slightly over-represented in the performance oriented group. Perhaps, what is most significant for this study, is that there are relatively large numbers of basic scientists, clinicians and instruction specialists in each group as is also true for classroom and clinical teachers. Knowing type of training or type of teaching does not provide a reliable means of knowing core teaching beliefs classification. Also significant are: (1) that there are only eight pure content oriented teachers and; (2) that there are more respondents with a blend of

profile characteristics than there are pure or prototypical teachers who match single profiles.

Conclusions

This study adds to the existing literature by delineating the core teaching beliefs of 125 medical school faculty (basic science, clinical, and instruction specialists) and discovering that they may be classified into one of four groups (student oriented, content oriented, performance oriented or a blend). Our results further indicate that 59% of the teachers can be characterized as pure examples of one profile while 41% represent various blends of the beliefs.

Faculty in previous studies have been characterized by their teaching values (Ennis & Chen, 1993; Pratt *et al.*, 2001) but after an exhaustive search we have found no studies involved in characterizing the core beliefs of teachers in a medical school setting. One study did use the results from a wider study of educators in adult and higher education to generalize to medical school educators (Pratt *et al.*, 2001). We found no studies examining the difference (or lack thereof) in core teaching beliefs among the various teachers

that may come into contact with students (basic scientists, clinicians, or instruction specialists). We believe this study to be the first to do both.

As is true for all studies, this study has limitations that should be considered when interpreting the results. We suspect the respondents may be more homogeneous in their beliefs than the population of all medical teachers, for two reasons. First, we enlisted participants through educator-populated organizations and list servers. People who join these organizations are most likely similar in many regards. Second, because of the length of time it took to fill out the survey (estimated at 30 to 60 minutes per person) the questionnaire may have deterred all but those educators who were most interested in the topic. A small number of potential respondents (approximately 5%) sent an e-mail saying they had started and had given up. We do not know how faculty NOT so passionate about teaching (but who nonetheless ARE teaching) would have responded to this questionnaire, and what their core teaching beliefs are. Likewise, we do not know whether the core teaching beliefs of this latter, less engaged group would be more or less homogenous than those of our respondents. Finally while the viewpoints that we found clearly exist in the population of medical school teaching faculty members, there may well be others that we did not find, but that nonetheless exist in the teaching population (medical school or otherwise) as a whole. For example, Pratt *et al.* (2001) in their study with educators taking the *Teaching Perspectives Inventory*, found five teaching perspectives, which they labeled: (a) Transmission Perspective (strikingly similar to our content orientation); (b) Apprenticeship Perspective (similar to our performance orientation); (c) Nurturing perspective (similar to our student orientation); (d) Developmental perspective; and (e) Social reform perspective. These last two perspectives have no parallel within our study, providing perhaps a clue that there may be core teaching belief patterns that we did not find in our 125 medical educators, but that may exist in the larger teaching population as a whole.

Many questions remain unanswered, and can serve as the focus for further investigation. For example, do people with different core teaching beliefs actually teach differently, i.e. do they 'practice what they preach'? There certainly is support for the fact that beliefs drive behavior, as has been extensively studied in the psychiatric literature and elsewhere (Regehr & Norman, 1996; Plaud, 2001). Whether or not those who hold different core teaching belief profiles actually teach in qualitatively distinct manners remains to be seen. Will teaching behavior change if teachers are made aware of their core teaching beliefs profile? Do faculty with different core beliefs respond differently to a given faculty development program? Should faculty development programs be designed specifically for faculty of one core teaching belief style or another? Should teaching assignments take into consideration the core teaching beliefs profile of faculty members? One of the first questions that may need to be addressed is, 'Are faculty members' core belief styles fixed, or do they change as a result of teaching experience and education'? One study suggests that teaching style may well change as the result of faculty development efforts. If faculty members' core beliefs can be changed, is one set of core beliefs preferable? Do faculty members teaching in a certain curricular format already (lecturers, facilitators of problem

based learning tutorial groups, which would tend to be content oriented in the first instance and performance oriented in the second) change their core teaching beliefs to be consonant with their behavior in those roles? This behaviorist orientation also has much literature to support it, mostly from the psychiatry and psychology orientations (O'Donohue & Krasner, 1999).

In conclusion, we found three distinct core teaching beliefs profiles among our respondents. The remaining 41% of the viewpoints represented a blend of two or three of the orientations. Q-sort factor analysis was a useful method with which to study core teaching beliefs, as it allowed for participants to represent their teaching beliefs as 'shades of grey'. It also allowed the investigators to retain the qualitative richness of the data collected. The factors identified divide medical teachers nicely into three categories: those teachers who focus on the experience of the learner, those interested in transmitting discipline content to students and those that believe the best way for students to learn is to actively apply knowledge and skills to solve problems in the context of the practice environment. The fourth category, blended, consisted of combinations of the three factors. There were also a number of items with which all faculty members agreed, regardless of factor affiliation.

Those involved in the teaching of medical students and/or residents and the development of curricula might well be better prepared by knowing about the existence of these core teaching belief categories. Recognizing that faculty may think about teaching from: (a) student oriented; (b) content oriented, or (c) performance oriented points of view may help when discussing the development of new curricula, and at least give everyone a language with which to understand the strongly held ideas about curriculum that invariably emerge when change is contemplated. It may also help to give a common ground to teachers as a start for curricular discussions, as consensus statements identified in this study have a high likelihood of being agreed upon by all.

Notes on contributors

REED WILLIAMS is Professor and Vice-Chair for Educational Affairs in the Department of Surgery, Southern Illinois University School of Medicine.

DEBRA KLAMEN is Professor and Chair of the Medical Education Department and Associate Dean for Education and Curriculum at Southern Illinois University School of Medicine.

References

- BROUDO, M. & WALSH, C. (2002) Medical: online learning in medicine and dentistry, *Academic Medicine*, 77, pp. 926–927.
- BROWN, S.R. (1980) *Political Subjectivity: Applications of Q Methodology in Political Science* (New Haven, CT, Yale University Press).
- D'ALESSANDRI, R.M., ALBERTSEN, P., ATKINSON, B.F., *et al.* (2000) Measuring contributions to the clinical mission of medical schools and teaching hospitals, *Academic Medicine*, 75, pp. 1231–1237.
- ENNIS, C.D. & CHEN, A. (1993) Domain specifications and content representativeness of the revised value orientation inventory, *Research Quarterly for Exercise and Sport*, 64, pp. 436–446.
- JOHNSTON, M.A. & GIFFORD, R.H. (1996) A model for distributing teaching funds to faculty, *Academic Medicine*, 71, pp. 138–140.

- KUMAR, A., KALLEN, D.J. & MATHEW, T. (2002) Volunteer faculty: what rewards or incentives do they prefer?, *Teaching and Learning in Medicine*, 14, pp. 119–123.
- LEAMON, M.H., COX, P.D. & SERVIS, M.E. (2002) Educational perspectives: a discussion of teaching among colleagues, *Academic Psychiatry*, 26, pp. 61–69.
- LEE, W.S., CHOLOWSKI, K. & WILLIAMS, A.K. (2002) Nursing students' and clinical educators' perceptions of characteristics of effective clinical educators in an Australian university school of nursing, *Journal of Advances in Nursing*, 39, pp. 412–420.
- LOSH, D.P., MAUKSCH, L.B., ARNOLD, R.W., *et al.* (2005) Teaching inpatient communication skills to medical students: an innovative strategy, *Academic Medicine*, 80, pp. 118–124.
- MCLEOD, P.J., MEAGHER, T., STEINERT, Y., *et al.* (2004) Clinical teachers' tacit knowledge of basic pedagogic principles, *Medical Teacher*, 26, pp. 23–27.
- O'DONOHUE, W., & KRASNER, L. (1999) *Theories of Behavior Therapy: Exploring Behavior Change* (Washington, DC, American Psychological Association).
- PLAUD, J.J. (2001) Clinical science and human behavior, *Journal of Clinical Psychology*, 57, pp. 1089–1102.
- PRATT, D.D., ARSENEAU, R. & COLLINS, J.B. (2001) Reconsidering “good teaching” across the continuum of medical education, *Journal of Continuing Education in the Health Professions*, 21, pp. 70–81.
- REGEHR, G. & NORMAN, G.R. (1996) Issues in cognitive psychology: implications for professional education, *Academic Medicine*, 71, pp. 988–1001.
- Schmolck, P. (1999, Sept 21, 1999) Webq. Retrieved Mar 22, 2005, from <http://www.rz.unibw-muenchen.de/~p41bsmk/qmethod/webq/>.
- Schmolck, P. (2002, Nov 2002) Pq method. Version; 2.11. Retrieved Mar 22, 2005, from <http://www.rz.unibw-muenchen.de/~p41bsmk/qmethod/webq/>.
- SHEA, S., NICKERSON, K.G., TENENBAUM, J., *et al.* (1996) Compensation to a department of medicine and its faculty members for the teaching of medical students and house staff, *New England Journal of Medicine*, 334, pp. 162–167.
- STEPHENSON, W. (1953) *The Study of Behavior: Q-Technique and its Methodology* (Chicago, IL, University of Chicago Press).
- THOMAIDIS, T., BIBOU, A. & MATSANIOTIS, N. (1983) Medical education: views and opinions of teachers and students at the university of Athens, *Medical Education*, 17, pp. 216–221.
- WILKERSON, L. & IRBY, D.M. (1998) Strategies for improving teaching practices: a comprehensive approach to faculty development, *Academic Medicine*, 73, pp. 387–396.
- ZANTING, A., VERLOOP, N. & VERMUNT, J.D. (2001) Student teachers' beliefs about mentoring and learning to teach during teaching practice, *British Journal of Educational Psychology*, 71(Pt 1), pp. 57–80.