Targeted Faculty Development and Program Administration Based on Subjective Structural Analysis of Academic Physician Needs

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Abstract: *Fiscal changes in the healthcare environment have placed increasing pressures on 21st century academic physicians. This situation has made it increasingly difficult for academic chairs and administrators to assess the multiple needs of academic clinician-educators. This study reports the use of Q methodology to assess emergency medicine physicians' faculty development needs. Among the physicians, three distinct viewpoints concerning clinician-educator needs emerged: physicians in search of workload balance, those happy with the status quo, and those in search of cohesive community. Needs common to multiple viewpoints were also identified. These findings helped the investigators create specific targeted strategies that took into account both individual and group needs. The structured approach to subjectivity, a key feature of Q method, can assist academic decision-makers to identify and fulfill the needs of their faculty physicians in a more democratic and efficacious manner.*

Introduction

Fiscal changes in the academic healthcare environment have heavily impacted the roles, responsibilities, and personal time of the 21st century academic physician. Over the past 30 years, academic medical centers have experienced a decline in revenues from their research and education activities. Between 1960 and 1990, research activity revenues declined 23%, and federal support of medical school research declined 17% (Cadman 1994). With regard to education, training residents is now considered only a "breakeven" operation (Levinson, Branch, and Kroenke 1998).

To compensate for these decreases in traditional revenue bases, a focus on increasing revenues from clinical practice in outpatient settings has emerged (Cadman 1994; Kevorkian, Rintala, and Hart 2001; Levinson, Branch, and Kroenke 1998; Levinson and Rubenstein 2000). In the last 40 years alone, the proportion of academic medical center revenue from clinical care rose from 3% to 40%-50% (Levinson and Rubenstein 2000). This shift of focus has resulted in the new role of clinician-educator for many academic physicians.

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As the name implies, clinician-educators are engaged in a variety of roles and tasks that include: seeing patients to generate clinical revenue; coordinating outpatient care plans; supervising students and residents; teaching classes; engaging in administrative duties such as serving on intern selection committees; developing new teaching programs and curricula; organizing conferences; planning, designing, and conducting research; and generating scholarly publications. These roles, now a part of the workload of many academic physicians, have created a strain on the physicians personally and on academic medical centers (Levinson, Branch, and Kroenke 1998; Clark 1999; Levinson and Rubenstein 1999; Levinson and Rubenstein 2000).

Many academic physicians, especially women with children, report problems meeting all the requirements of their multi-faceted jobs. Family responsibilities and the increased emphasis on working long clinical hours have resulted in a problematic decrease in time available to conduct research and participate in scholarly activity (Carr *et al.* 1998). One study at the University of Washington (Sheffield, Wipf, and Buchwald 1998) found that clinician-educators spent significantly less time on scholarly activity than the University considered ideal, even though the stated ideal was only 20%! That is troublesome, because academic publications are still weighted heavily in the promotion and career advancement of academic physicians (Levinson, Branch, and Kroenke 1998; Levinson and Rubenstein 1999; Levinson and Rubenstein 2000). Additionally, many academic physicians lack formal training in administration, research, and teaching, yet find that these activities have become critical to their career success (Baldwin, Levin, and McCormick 1995; Levinson and Rubenstein 2000; Levinson and Rubenstein 1999; Cadman 1994).

On the institutional side, academic medical centers are trying to determine how the clinician-educator fits into traditional academic medicine. Some institutions have promotion and tenure tracks that are ill-defined with regard to the clinician-educator role (Kevorkian, Rintala, and Hart 2001; Levinson and Rubenstein 2000; Levinson and Rubenstein 1999; Levinson, Branch, and Kroenke 1998). These institutions are also trying to discover the best way to develop more fully the academic productivity of the clinician-educator (Baldwin, Levin, and McCormick 1995). Finally, academic institutions are faced with the challenge of meeting the needs of a more diverse staff than in the past (Levinson, Branch, and Kroenke 1998.

To deal with these new challenges, many academic medical centers have conducted needs assessments among their staff, often as part of the first step of a faculty development program (Baldwin, Levin, and McCormick 1995; Stone *et al.* 1999). However, many of these needs assessments have consisted of interviews, focus groups, and questionnaire surveys. This paper describes the use of Q methodology to assess the multiple needs of academic clinician-educators. Q methodology can reveal the presence of different understandings

of the same reality, thus providing better information for more efficacious organizational decision making.

Methods

Study Population

Attending physicians with full time staff appointments in the West Virginia University Hospital Department of Emergency Medicine (DEM) formed the study population. At the time of the study, all performed the tasks and activities that are associated with the multiple roles of clinician-educator. Part time physicians were not included in this study, because many of them do not engage in all the roles of clinician-educator (i.e. many do not teach).

Developing the Q Sample

The left side of Appendix Table 1 shows the 87 statements that formed the Q sample for this study. The statements incorporated feedback received by the physician designers during previous discussions about academic physician needs. The statements were specifically designed by two administrative faculty physicians, who are clinician-educators, to address issues concerning the academic clinician-educator at West Virginia University. The Q sample contains statements about promotion and tenure, mentoring, teamwork, workload distribution, teaching, administration, job environment — in this case the emergency department (ED), interpersonal and professional relationships, research, leisure/free time, and family life. Developing Q samples in this manner serves to minimize preconceived notions on the part of the investigator about the topic under study (Dennis 1986; Brown 1980). The statements were consecutively numbered and printed onto labels, then each label was placed on a separate 3 × 5 note card.

Developing the Q Sort

A quasi-normal, symmetrical Q sort diagram (Figure 1) was developed using a word processing program. The quasi-normal shape is suggested in Q studies, though not rigidly required. It is based on the Law of Error, which postulates that there are fewer issues of great importance to individuals than there are issues of lesser significance. This shape also has the theoretical advantage of forcing participants to decide which statements they feel most strongly about in relation to all the other statements in the Q sample (McKeown and Thomas 1988).

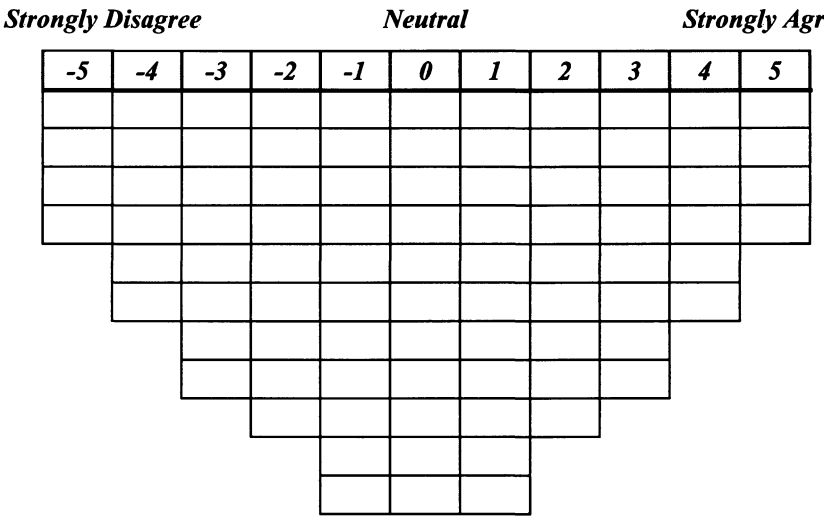
A giant version of the Q sort diagram was created as described by Chinnis *et al* (2001). Use of this board previously has been shown to facilitate the sorting process described below (Chinnis, Paulson, and Davis 2001; Chinnis *et al.* 2001.

Data Collection

Each staff attending physician wishing to participate was given a set of note cards and instructed to sort the cards onto the enlarged Q sort diagram

according to their level of agreement or disagreement with them. Upon completion of this task, the physicians were asked to transfer the statement number found on each card from the board onto a piece of paper containing the Q sort diagram.

Figure 1. Q sort diagram



Data Analysis

Abbreviated Q sample statements and data from the completed Q sorts were entered into PQ Method software Version 2.09 (Schmolck 2000), and subjected to by-person factor analysis to identify groups of similarly completed Q sorts (factors) according to the methods described in Brown (1980) and McKeown and Thomas (1988).

We used principle components factor analysis to extract initial factors and calculate factor loadings, which are correlation coefficients that express the amount of similarity (in terms of how the statements were sorted) between an individual Q sort and an extracted factor (Brown 1980; McKeown and Thomas 1988). Because the PQ Method program initially extracts eight factors (when using the principle components method), extracted factors were retained for further analysis based on the eigenvalue criterion (>1).

Varimax rotation was performed on the remaining factors to produce a clearer picture of the factor structure and the loadings of each individual Q sort significantly identified with the factor. In effect, rotation was performed to more clearly identify which Q sorts were representative of each identified factor (Brown 1980). We considered the rotated factor loadings to be statistically significant ($p < 0.01$) if they exceeded the number obtained from

the following formula described in Brown (1980, 283-4):

$$2.58\,(1/\sqrt{N})$$

where N=Number of statements in Q sample

Q sorts that loaded *solely* and significantly on one factor were flagged as factor definers. The PQ Method program used weighted averaging to merge the factor-defining Q sorts and create a synthetic Q sort representative of each factor viewpoint. Q sorts with significant loadings on more than one factor were not used as definers of either factor, since they did not purely represent the viewpoint of any single factor (Brown 1980; McKeown and Thomas 1988).

Interpretation of the resulting factors involved two processes. First, distinguishing statements were examined for each factor to gain a sense of the unique viewpoint represented by a single factor. Significance at the 99% level was chosen over the 95% level to facilitate interpretation of the differences among factors, given the large number of statements. However, statements that were significantly different at the $p < 0.05$ level and were ranked at either end of the Q sort diagram (-4, -5, +4, +5) were also examined. Then the investigators examined consensus statements to identify shared views among the physicians.

Results

All 11 of our full time staff physicians completed usable Q sorts. Principal components factor analysis initially extracted three factors with eigenvalues >1. However, two additional factors were close to this criterion. Therefore, 3, 4, and 5 factor solutions were developed using Varimax rotation. The original three factors provided the clearest picture of the distinct viewpoints among the faculty. Cumulatively, the three factors accounted for 55% of the variance. Factor loadings were considered statistically significant if they exceeded +/- 0.28, and Q sorts that loaded both significantly and solely on one of the three factors were flagged as factor definers in Appendix Table 2. Based on this information, the PQ Method program generated the synthetic Q sorts (right side of Appendix Table 1), which were interpreted as described above.

Factor 1: In Search of Workload Balance

These physicians expressed a need for better staff physician coverage in the ED, as well as a more equitable distribution of the workload, so that they can work fewer clinical hours, have more time for their administrative duties, and spend more time with their families. See Factor 1 scores for statements 4, 25, 42, 46, 68, 70. Additionally, there is a need for them to have more clearly defined unit goals (45).

Factor 2: Happy with the Status Quo

These physicians did not report difficulties with many aspects of their environment, but wished that fellow faculty would take their precepting and

lectures more seriously (20, 27, 42, 49, 56, 87). Most importantly, they expressed a strong understanding of their role as clinician-educators, and did not appear to have difficulty juggling their multiple duties (2, 3, 7, 8).

Factor 3: In Search of Cohesive Community

These physicians desire more cohesiveness and professionalism among their colleagues, and have a need for more clarity and encouragement regarding the promotion process (9, 12, 14, 72, 81). Finally, they expressed a strong desire for better response time from the lab while working in the ED (22).

Shared Views

The physicians generally enjoyed their jobs, but reported several needs in their job environment in the areas of charting, secretarial support, research infrastructure, radiology services, role clarity (with regard to mission) and compensation packages. (See all factor scores for statements 5, 17, 18, 19, 23, 43, 61, 62, 63, 65). The need to foster better feelings of teamwork is apparent, but there appears to be some ambivalence among the physicians regarding the best way to achieve this (16, 73, 74). However, the faculty did feel that they are capable of functioning well as a team (15). More training is strongly desired in X-ray follow-up systems (21). Finally, the need for more feedback concerning lectures and bedside teaching (as well as more time to actually teach at bedside) was expressed (34, 52, 53).

Discussion

Because Q sorts preserve individual viewpoints, the ability to identify unique and commonly shared needs among our group of academic physicians made it possible for the investigators to tailor more democratic and inclusive faculty development strategies. An understanding of the factors makes possible the design of interventions to address highly targeted and also general faculty needs. This benefit has been previously reported by other authors as a great strength of Q methodology in comparison to traditional survey techniques of assessment (Valenta and Wigger 1997; Barbosa *et al.* 1998, Chinnis, Paulson, and Davis 2001; Chinnis *et al.* 2001). Several of these strategies are briefly discussed below.

Interventions Targeting the Individual Faculty

Mission Based Management (MBM), a relatively new method of financial management, is used by some schools of medicine in response to the problem of shrinking revenues for medical schools. MBM aligns revenue allocations and expenses by mission area (i.e., research, service, clinical activities). For example, revenue generated from seeing patients would be allocated to the clinical mission instead of the education mission. Accordingly, new financial reports reflecting this allocation are created to provide a more accurate picture of the cost of each mission in the school of medicine. The same process can also identify inefficiencies that may need correction (Chinnis and Prescott

2000). The MBM process has driven the clinician-educator phenomenon. To address the ambiguity toward this process expressed by some participants in the Q sort (1, 2), the CEO of the faculty practice plan who oversaw the MBM process was invited to discuss this with the faculty physicians.

A faculty development program series was devised including sessions on promotion and tenure, mentorship, professionalism, conflict resolution, and disaster preparedness to address ambiguities concerning these issues (8, 9, 12, 27, 73, 77, 81). The session on disaster preparedness was created in direct response to a disturbingly low level of faculty agreement with statement 77 in Factors 2 and 3. In all of these interventions, physicians who needed to obtain clarity concerning these issues could choose to attend, thus making each intervention specific to the individual level.

Additionally, the faculty development session on professionalism is a clear example of the preservation of a viewpoint that may have been averaged out in a traditional Likert scale survey. (See statement scores for 12, 81.) For example, statement 12 was considered to be a significant indicator of the viewpoint represented by Factor 3 because it was sorted significantly differently ($p < 0.01$) by the most heavily weighted definer of Factor 3, Q sort 6 (Table 2). In a traditional Likert survey, where all of the responses for each statement are totaled and averaged, the following result would have occurred for statement 12:

all responses to statement 12	0, 0, 1, 4, 0, -5, 0, 1, 0, 1, 2
sum of all responses to statement 12	4
average response to statement 12	4/11 = 0 (rounded)

Thus, the need for more professionalism manifested in Q sort 6 (statement 12 in the -5 column) would have "averaged out" in a Likert survey. Instead, the partitioning of variance in the correlation matrix via factor analysis placed this Q sort on its own axis, and preserved this particular viewpoint! Finally, more clinical faculty members (both full and part time) have recently been hired to address the feeling of strong workload imbalance that emerged as a concern in the Factor 1 array (4, 25, 42, 46, 68, 70).

Interventions Targeting the Group

To address the reported general concern about role clarity with regard to mission (43), an evaluation system has been implemented in which each faculty member meets with the Department Chair twice a year to define goals and responsibilities and to examine how they are related to the overall mission of DEM. Additionally, the department has acquired more secretarial support, and the research infrastructure has been expanded (63, 65). The radiology system within the Emergency Department has also been revamped to provide more timely results; however, this continues to be a work in progress (23).

Finally, the charting system is still being examined to identify strategies for correcting the problems identified in the factor arrays (17-19). Changes to this system will most likely take some time however, given that the entire system is in the process of being converted to an electronic format.

As the results of this study indicate, targeted interventions are only the beginning. Especially important in the near future will be the implementation of interventions to help mitigate the reported confusion on the part of many faculty concerning how MBM relates to the Promotion and Tenure (P + T) system (7). This intervention will most likely occur in the general arena of faculty development.

Future Questions

The primary future question of interest will be the extent to which the strategies and interventions based on the results of this study influence the perceived needs of our clinician-educators. This question could be answered by having our physicians sort the same Q sample after all of the interventions have occurred. Although the Q sample was large, after much discussion we felt that it was representative of all the issues contained within the very complex reality that our clinician-educators experience on a daily basis. Consequently, we chose not to sample from this initial representative set because we feared eliminating a particular issue of importance to a future sorter. Additionally, no complaints were reported among our physicians during the sorting process. However, several of our physicians did state that they would have had much greater difficulty completing the Q sort without access to the large Q sort board.

We also plan to use Q methodology to attain a clearer picture of the different subjective understandings of MBM on the part of our faculty to help drive a strategy aimed at breaking down misunderstandings about MBM. Indeed, the type of results that the Q sorts generate can provide a dialogue to administrators that greatly facilitates the communication process. If administrators can first understand the varying perceptions of work issues (and what their structure is), they are better positioned to "start where the individual is" in their communications with employees.

The viewpoint expressed by Factor 1 is most akin to the current literature on the clinician-educator phenomenon discussed in the Introduction. However, Q factor analysis revealed that in our setting not all of our physicians find themselves plagued with a workload balance problem. On the contrary, those physicians associated with Factor 2 are, for the most part, happy with current realities. Given the emergence of this viewpoint, it will be important in future investigations to develop clear understanding of the underlying characteristics of this group's experiences that help them to adjust to the demands of the clinician-educator role. Of most importance will be the extent to which comfort with the clinician-educator role is related to internal (i.e. personality) and/or external (i.e. not as many classes to teach) influences. Such information

could be both interesting and valuable to the academic community as a whole. This use of Q methodology in small targeted studies can generate questions for future large-scale R methodology (hypothetico-deductive) studies (Barbosa *et al.* 1998). Indeed, the emergence of Factor 2 was somewhat of a surprise, and is a useful example of the benefits stemming from Q's "new way of looking" at subjective realities. We intentionally made the survey anonymous, because of our belief that some of the faculty may not have truly modeled their point of view via the Q sort if they knew they could be identified. Unfortunately, this situation limits our ability to describe in more detail the characteristics of the physicians defining Factor 2 directly from the Q sort data. However, future discussions between individual faculty and the departmental Chair will include the results of this study, and an attempt will be made to identify the characteristics of individual physicians who voluntarily report (during these meetings) sharing the viewpoint demonstrated by the Factor 2 array. Additionally, we also plan to incorporate more identifiers into the follow-up Q study using the same Q sample to see if a similar Factor 2 emerges from which we can obtain more details concerning the characteristics of this "well-adjusted" population.

Summary

Problems associated with the prevailing clinician-educator phenomenon in academic medicine are not likely to abate soon. Especially problematic at the present time is the fact that clinician-educators are working even more clinical hours because of both reduced reimbursement from managed care organizations, which necessitates seeing more patients per hour, and the need to offer more specialized services to attract more patients (Barachi and Lowery 2000). Given this situation, the results of this study have shown how academic facilities can use Q methodology to attain a specific and comprehensive view of the needs of their clinician-educators. Attainment of such a view can ultimately lead to more effective needs fulfillment strategies.

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Appendix

Table 1: Q Sample[1]

	Statement	*Factor*		
		1	*2*	*3*
1	I understand why the Med School is doing MBM.[2]	-2	2	0
2	I understand what MBM means to me as a faculty.	-2	3	-5
3	I have time in my life for leisure activities.	-4	3	-3
4	My family life does not suffer because of my work.	-5	1	-1
5	I enjoy my job.	3	5	4
6	I understand how my work contributes to the mission of DEM.	0	2	5
7	P + T[3] guidelines are not consistent with MBM.	3	-5	4
8	It is clear to me what I need to do to be promoted.	0	4	-1
9	It is clear that I will never be promoted because I cannot accomplish all of the promotion requirements.	-2	-2	2
10	I act as a mentor in our education programs.	0	2	4
11	The faculty are treated with respect by other services.	-3	0	-4
12	The faculty in the ED act in a way to ensure professional interactions among services.	0	1	-4
13	The faculty treat the ED staff with respect.	2	3	0
14	The faculty do not value nurses as colleagues.	-5	-5	-1
15	The faculty have difficulty functioning as part of a team.	-3	-4	-2
16	Our ED is a good example of teamwork.	1	-1	0
17	The charting system in the ED is user friendly.	0	-5	-5
18	Charting takes me too long.	4	5	4
19	The chart yields usable information for follow up.	-4	-1	-1
20	Equipment in the ED is State of the Art.	-3	1	-4
21	I feel comfortable about X-ray follow up systems.	-4	-4	-3
22	The lab provides timely service to the ED.	-1	1	-5
23	Radiology provides timely service to the ED.	-2	0	-4
24	I feel that safe, competent care is provided in the ED.	5	4	3
25	I feel that the workload is evenly distributed between staff.	-5	3	0
26	I feel that our staff physicians move patients effectively.	1	0	2

[1] The Q sample statements were constructed to represent the wide-ranging issues and needs of the clinician-educator. Note that many are specific to the study site. The numbers under each factor comprise synthetic Q sorts generated by taking a weighted average of the defining Q sort responses. It is the synthetic Q sort that is interpreted to reveal the viewpoint represented by each factor.

[2] MBM = Mission Based Management. For more information, see Chinnis and Prescott (2000).

[3] P + T = Promotion and Tenure.

Table 1: continued

	Statement	Factor 1	2	3
27	There is adequate mentoring to develop professional skills.	-2	1	-4
28	There is good communication between ED/DEM management.	1	0	1
29	I would be happy for any DEM faculty to care for my family.	5	2	5
30	DEM faculty know the medical school values.	0	1	2
31	DEM faculty are good communicators.	2	1	1
32	DEM faculty show real passion for their jobs.	-3	-2	1
33	Our residents are given progressive responsibility by us.	-1	0	3
34	Bedside teaching frequently falls by the wayside due to inadequate staff coverage.	3	3	3
35	I have opportunities to do extramural presentations.	4	5	3
36	I feel that we are attentive to the educational needs of PA students.	1	-3	-5
37	I feel that we are attentive to the educational needs of medical students.	0	2	-3
38	I feel that the Chair communicates school-wide activities/ information.	1	1	2
39	I feel that the Chair helps advance my career.	1	0	3
40	I feel that the Chair effectively coordinates strategically for the department.	0	2	3
41	I think the Chair represents our department effectively.	2	3	4
42	I feel that my time reduction is fair for my administrative job.	-4	3	-1
43	I understand how my units contribute to the overall mission of DEM.	0	-1	-3
44	I feel that the Chair provides guidance and feedback to me in my administrative job.	2	-1	-1
45	I have clearly defined goals for my unit.	-3	1	1
46	I am expected to work too much.	5	-3	-2
47	Opportunities to improve my administrative skills are made available to me.	-1	-1	-3
48	DEM administrative meetings are worthless.	-3	-2	-1
49	Teaching assignments are equitably distributed.	-4	1	-3
50	The Saturday AM format for the PA's is effective.[4]	-3	-3	3
51	I am offered opportunities to improve my teaching skills.	-2	0	4
52	I receive valuable feedback about my lectures.	-2	-4	-2
53	I receive valuable feedback about my bedside teaching.	-2	-1	-1
54	I feel DEM uses innovative teaching techniques.	2	-3	-1
55	DEM faculty respect each other.	-1	0	-1

[4] This statement refers to the Saturday morning Emergency Medicine Physician Assistant classes that are taught by faculty at an offsite campus.

Table 1: continued

	Statement	Factor 1	2	3
56	DEM faculty need to play together more (bond).	2	-4	2
57	The faculty evaluation process is helpful to me.	1	-3	0
58	Clinical productivity data modifies my behavior in the ED.	-3	2	2
59	Being a DEM faculty member involves giving back to the school, university, community, and state.	1	4	3
60	My Chair and I discuss how my service supports the mission of the medical school.	2	0	1
61	I feel that I am competitively compensated for my work.	-4	-2	-4
62	I am happy with my benefits package.	-1	-2	-3
63	I feel that I have adequate secretarial support.	-1	-3	-2
64	I feel that I have adequate computer equipment to do my job.	3	0	-1
65	Infrastructure for research is improving.	0	-2	-2
66	I feel I have the skills for research.	-1	-1	2
67	Scheduling is equitable.	1	2	-2
68	Staff physician coverage in the ED is inadequate.	4	-4	-2
69	The number of hours worked in an average shift is just right.	3	4	1
70	The clinical hours worked per month are too much.	5	-1	0
71	Nursing staff coverage in the ED is adequate.	-5	-3	2
72	The relationships in DEM are collegial.	0	0	-3
73	Team meetings would be helpful if everyone participated.	3	4	2
74	Conflict resolution training for staff would help improve teamwork.	1	-1	1
75	Positive feedback is lacking in the emergency department.	1	-3	1
76	New information is always communicated in a timely manner.	2	-3	-4
77	I am prepared to deal with a disaster situation.	3	1	1
78	ED staff physicians communicate a patient's outcome with the nurses and other emergency department staff.	4	-1	-1
79	Night staff is left out of the communication loop.	-1	-3	0
80	The charge physicians effectively manage workflow in the ED.	-1	2	1
81	The ED staff physicians take time to explain diagnoses and treatments to patients.	4	3	-2
82	The ED staff physicians are respectful to patients.	4	4	4
83	ED staff physicians do not appreciate the ED nursing staff.	-1	-5	0
84	ED physicians are consistent in representing hospital policy and procedures to consultants.	-2	-2	0
85	I feel I am an effective teacher.	3	3	5
86	Rotators in the ED receive an effective educational experience.	2	-1	1
87	Faculty take their precepting and lectures seriously.	-1	-4	-1

Table 2: Q sorts and factor loadings[1] after varimax rotation

Q Sorts	Factors		
	1	2	3
1	0.43	-0.07	0.61
2	0.74X[2]	0.03	0.21
3	-0.02	0.79X	0.14
4	0.40	0.56	-0.43
5	0.79X	0.14	0.19
6	0.11	0.24	0.76X
7	0.27	0.45	0.50
8	0.64X	0.26	0.15
9	0.13	0.10	0.50X
10	0.35	0.50	0.11
11	0.09	0.68X	0.18

[1] Factor loadings represent correlation coefficients ranging from -1.0 (indicating dissimilarity with a factor) to 1.0 (indicating similarity with a factor). They are rounded to two decimal places.

[2] X denotes a factor defining Q sort that loaded significantly on only one factor. The way the Q sample statements were ranked in these Q sorts was subjected to weighted averaging to generate the synthetic Q sorts for each factor shown in Table 1.