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## The On-line Clinical Teaching Perception Inventory:<sup>®</sup> A "Snapshot" of Medical Teachers

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**Background and Objectives:** *Medical educators need practical and accurate instruments for evaluating clinical teaching. Our purpose was to develop norms for the Clinical Teaching Perception Inventory<sup>®</sup> (CTPI) on a multidisciplinary group of North American faculty and resident teachers. **Methods:** A no-cost, on-line inventory ([www.residentteachers.com](http://www.residentteachers.com)) measured participants' comfort with teaching. Respondents recruited through surveys and professional organizations completed two identical Q-sorts, ranking 28 descriptors first for "my ideal teacher" and then for "myself as a teacher." **Results:** An international sample of 255 residents and 256 faculty members—including 143 respondents from family medicine—completed the on-line CTPI from April 2001 to March 2003. Resident and faculty teachers agreed on top descriptors for ideal clinical teachers: stimulating, encouraging, competent, communicates, and well-read. Resident teachers revealed larger discrepancies between "self" and "ideal" scores than faculty participants did. Many respondents wished to be more stimulating and well-read, highlighting perceived needs for teaching skills development. Between the subsamples of 143 family medicine teachers and 368 non-family medicine teachers, scores were virtually indistinguishable. **Conclusions:** A multidisciplinary sample of 511 faculty and resident teachers agreed on key characteristics of ideal clinical teachers. Generalist educators and others can use the on-line CTPI at no cost to assess their self-perceptions as clinical teachers.*

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Improving clinical teaching remains a central concern for family medicine education. Informed by research that documents the attributes of exemplary clinical teachers,<sup>1-5</sup> medical educators have developed and validated a wide variety of approaches to improving teaching skills among faculty and resident teachers. Although outstanding faculty development programs have been described in the clinical teaching literature,<sup>6-9</sup> few published reports describe evaluation techniques that surpass the method of assessing trainees' satisfaction with the faculty development teaching programs.<sup>10</sup> Family medicine educators need useful data about practical methods for evaluating clinical teachers, including self-assessment methods.

One instrument available for this purpose is the Clinical Teaching Perception Inventory<sup>®</sup> (CTPI),<sup>11</sup> which

has been used for more than 15 years for faculty development in family medicine<sup>12</sup> and other disciplines. The CTPI is a 28-item Q-sort instrument that reliably assesses comfort with clinical teaching. Like other Q-sorts,<sup>13,14</sup> it presents respondents with forced choices to rank a series of descriptors, then quantitates the subjective responses to help characterize respondents' perceptions. Because the CTPI's original three-factor model for describing ideal clinical teachers dates back to a norm group of family medicine faculty teachers from the 1980s, we lacked current data to maximize the instrument's capacity for studying educators from multiple disciplines. The present study's purpose was to extend the CTPI's utility as a faculty development tool by calibrating it for multidisciplinary resident and faculty teachers.

### Methods

#### Participants

We conducted this study from April 2001 to March 2003. When the Residents' Teaching Skills Web Site<sup>15</sup> ([www.residentteachers.com](http://www.residentteachers.com)), a collaborative project

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between the University of California, Irvine and the Residents' Teaching Skills Project Group of the Association of American Medical Colleges (AAMC), began offering free access to an on-line version of the CTPI, we invited a sample of North American medical school faculty members and residents to complete the instrument.

To ensure the broadest possible sampling, we recruited participants with three approaches: (1) In a published survey<sup>16</sup> of all US residency program directors in six specialties whose residents commonly teach third-year clerkship students (family medicine, internal medicine, pediatrics, surgery, psychiatry, and obstetrics-gynecology) and deans/directors of graduate medical education offices (n=2,057), we asked respondents, "If there was a no-cost, Web-based program available to enhance residents' teaching skills, would your faculty consider using it for your residents?" We then sent two electronic mailings to those respondents who answered affirmatively, inviting them to complete the CTPI and to encourage their local faculty and residents to do the same. (2) We sent two similar electronic mail invitations to the membership list of the AAMC's Section for Graduate Medical Education, and (3) we hosted exhibits at multiple annual meetings of the AAMC and the Society of Teachers of Family Medicine.

Instructions on the Web site explained that participants' data would be recorded anonymously for research. When the 2-year data collection period ended in March 2003, we checked each data record to verify whether it appeared to represent an actual faculty member or resident physician at an American or Canadian training program. The human subjects committee at the University of California, Irvine approved the research protocol.

### *Instrument*

In a typical Q-sort format (Figure 1), the CTPI asks users to rank 28 one-word descriptors about clinical teachers (eg, amiable, communicates, directive) along a 7-point continuum from "least like" (1) to "most like" (7). Users complete two separate inventories by ranking the 28 descriptors twice: first for "my ideal teacher" and afterward for "myself as a teacher." A discrepancy score ("self" minus "ideal"), ranging from 0 to 6 points, can then be calculated for each descriptor. The larger the discrepancies, the more users perceive themselves to vary from their ideal teachers, indicating greater perceived needs for teaching skills development. In the on-line version of the CTPI, users can complete both inventories within about 15 minutes, after which they immediately receive their personalized results with explanations of the discrepancy scores. (See "Sample Explanation" in Figure 1.)

### *Data Analysis*

Basic descriptive statistics obtained from standard statistical software comprised most of our analysis. Collapsing all data across resident and faculty respondents, we calculated three different measures: (1) mean scores for "my ideal teacher," (2) mean scores for "myself as a teacher," and (3) the discrepancies between mean "self" and "ideal" scores. As the CTPI was originally designed, the sum of the absolute discrepancy scores across all 28 items serves as a proxy for the respondent's overall comfort with clinical teaching.<sup>11,12</sup> For each measure, we also used two-tailed *t* tests to compare family medicine faculty/resident teachers with all other teachers. We then used the Bonferroni correction to control for the Type I error rate in multiple *t* tests, with  $P < .05$  as the nominal value for statistical significance. Finally, to evaluate the CTPI's original three-factor model, we calculated Pearson product-moment correlations between all possible pairings of descriptors.

## **Results**

### *Characteristics of Participants*

Of the 660 complete CTPI records entered during the 2-year period between April 1, 2001 and March 30, 2003, we verified that 511 appeared to have been completed by actual faculty and resident physicians at US or Canadian training programs. The remaining 149 records were eliminated from analysis because 67 were from non-teaching administrators, 61 were from medical students, 12 were from outside North America, and nine yielded insufficient information for verification. Table 1 describes the study participants. A total of 280 respondents were male (54.8%) and 231 were female (45.2%). The participants represented diverse geographic areas across the United States and Canada.

### *Descriptions of "My Ideal Teacher" and "Myself as a Teacher"*

Because the participating faculty and resident teachers ranked the descriptors very similarly—both when characterizing their ideal clinical teachers and when describing themselves as teachers—we collapsed all data across the faculty and resident samples (Table 2). The respondents agreed on five top attributes of ideal teachers: stimulating, encouraging, competent, communicates, and well-read. Residents and faculty participants also agreed on five descriptors that least characterized their ideal teachers: correcting, directive, conventional, cautious, and controlling. The participants chose different descriptors to characterize themselves as clinical teachers: encouraging, practical, open-minded, communicates, and competent. The five descriptors that they least perceived to characterize themselves as teachers—cautious, conventional, directive, correcting, and controlling—were the same five

Figure 1

The Clinical Teaching Perception Inventory® (www.residentteachers.com)

**Instructions:** Please match the words with the boxes indicating varying degrees of "least like my ideal teacher" through "most like my ideal teacher." Use the pull-down menus to select one word for each box. There are 28 descriptive words and 28 boxes, so you must fill all the boxes. This process forces you to make choices that may be difficult sometimes. If in doubt, don't agonize - just go with your instinct.

### IDEAL TEACHER ANSWER SCREEN

Pull-down menus for each box allow rapid and flexible selection of descriptors. Users follow a master checklist to check off each item after it has been selected.


1 point    2 points    3 points    4 points    5 points    6 points    7 points

**Least Like My Ideal Teacher**

**Most Like My Ideal Teacher**

### CTPI® DESCRIPTORS

- Accepting
- Amiable
- Assertive
- Assured
- Cautious
- Communicates
- Compassionate
- Competent
- Controlling
- Conventional
- Correcting
- Directive
- Empathetic
- Extraverted
- Encouraging
- Feeling
- Gentle
- Initiates
- Innovative
- Observant
- Open-minded
- Organized
- Patient
- Practical
- Probing
- Secure
- Stimulating
- Well-read

### SAMPLE EXPLANATION – WELL READ

"You consider yourself to be significantly less well read than your ideal clinical teacher. Many residents and junior faculty share this self-perception. If you are still early in your own clinical career or if you have not devoted sufficient time to developing your own clinical knowledge base, it will decrease your comfort with teaching. Some clinical faculty suggest that residents try to spend an hour a day reading. You might ask your faculty for specific reading suggestions. Meanwhile, remain intellectually honest with your learners and don't hesitate to admit to them when you don't know something. You can provide helpful role modeling by showing them how to look up something together as you approach a clinical challenge...."

[The teacher can then link to a Web site for on-line learning.]

Table 1

Academic Departments of the Study Participants

	Residents		Faculty and Fellows	
	#	%	#	%
Family medicine	89	34.9	54	21.1
Internal medicine	61	23.9	55	21.5
Pediatrics	33	12.9	32	12.5
Surgery	15	5.9	7	2.7
Psychiatry	15	5.9	12	4.7
Obstetrics-gynecology	14	5.5	19	7.4
Anesthesiology	0	0	11	4.3
Other subspecialties	28	11.0	66	25.8
Total	255	100	256	100

descriptors they perceived to be least characteristic of their ideal teachers.

When we compared the responses of the study’s 143 family medicine educators to their 368 counterparts from other specialties, these two subgroups identically

ranked every descriptor. With the Bonferroni-corrected *P* value of <.001, 56 independent groups’ *t* tests found that family medicine teachers differed from other teachers on only two descriptors, probing for “ideal” ( $X=3.12$  versus 3.83,  $P<.001$ ) and compassionate for “self” ( $X=5.11$  versus 4.66,  $P<.001$ ).

Discrepancies Between “Ideal” and “Self”

On the CTPI’s continuum of 1–7 points, the average respondent showed a total absolute discrepancy of 12.9 points between “ideal” and “self” ratings, which we obtained by summing each individual respondent’s absolute discrepancies across all 28 items and then calculating a mean group discrepancy. On no descriptor did the discrepancy scores of family medicine faculty members or residents differ significantly from those of their non-family medicine counterparts.

For faculty members, the total absolute discrepancy was somewhat smaller (11.5) than it was for residents (14.4). For single descriptors, respondents manifested the largest individual discrepancies for empathetic

Table 2

Rank Orders of the 28 Descriptors

“IDEAL CLINICAL TEACHER”			“MYSELF AS A TEACHER”			DISCREPANCIES (SELF-IDEAL)		
Descriptor	Mean Rank	SD	Descriptor	Mean Rank	SD	Descriptor	Mean Rank	SD
1. Stimulating	5.82	1.22	1. Encouraging	5.38	1.23	1. Empathetic	1.46	1.82
2. Encouraging	5.60	1.12	2. Practical	4.98	1.25	2. Cautious	0.83	1.44
3. Competent	5.51	1.20	3. Open minded	4.98	1.20	3. Conventional	0.70	1.28
4. Communicates	5.48	1.14	4. Communicates	4.98	1.18	4. Controlling	0.66	1.23
5. Well-read	5.11	1.17	5. Competent	4.86	1.20	5. Amiable	0.53	1.39
6. Organized	4.93	1.03	6. Compassionate	4.78	1.29	6. Gentle	0.50	1.44
7. Open minded	4.86	1.12	7. Organized	4.77	1.57	7. Practical	0.46	1.28
8. Patient	4.76	1.09	8. Empathetic	4.70	1.37	8. Directive	0.35	1.44
9. Innovative	4.62	1.23	9. Observant	4.70	1.22	9. Feeling	0.30	1.19
10. Practical	4.52	1.14	10. Amiable	4.56	1.39	10. Compassionate	0.28	1.31
11. Observant	4.51	0.98	11. Patient	4.56	1.46	11. Accepting	0.25	1.36
12. Compassionate	4.50	1.12	12. Stimulating	4.37	1.42	12. Observant	0.19	1.32
13. Empathetic	4.28	1.10	13. Accepting	4.29	1.30	13. Correcting	0.19	1.35
14. Amiable	4.06	1.12	14. Well-read	4.02	1.51	14. Assertive	0.17	1.46
15. Accepting	4.04	1.21	15. Initiates	3.91	1.10	15. Open minded	0.12	1.27
16. Initiates	4.01	0.97	16. Gentle	3.83	1.50	16. Extraverted	-0.05	1.49
17. Assured	3.97	1.11	17. Innovative	3.74	1.42	17. Initiates	-0.10	1.40
18. Secure	3.92	1.00	18. Assured	3.72	1.20	18. Probing	-0.12	1.50
19. Probing	3.63	1.55	19. Secure	3.66	1.21	19. Organized	-0.16	1.47
20. Gentle	3.33	1.11	20. Feeling	3.58	1.28	20. Patient	-0.21	1.64
21. Feeling	3.27	0.93	21. Probing	3.50	1.59	21. Encouraging	-0.22	1.51
22. Extraverted	3.23	1.08	22. Assertive	3.21	1.51	22. Assured	-0.25	1.41
23. Assertive	3.04	1.23	23. Extraverted	3.19	1.56	23. Secure	-0.26	1.40
24. Correcting	2.67	1.25	24. Cautious	3.03	1.46	24. Communicates	-0.51	1.25
25. Directive	2.59	1.23	25. Conventional	3.03	1.27	25. Competent	-0.65	1.49
26. Conventional	2.33	0.90	26. Directive	2.95	1.35	26. Innovative	-0.89	1.43
27. Cautious	2.20	0.93	27. Correcting	2.86	1.20	27. Well-read	-1.09	1.60
28. Controlling	1.19	0.62	28. Controlling	1.85	1.23	28. Stimulating	-1.44	1.65

SD—standard deviation

(1.46), stimulating (1.44), well-read (1.09), innovative (0.89), and cautious (0.83), perceiving themselves to manifest each of these qualities either more (empathetic, cautious) or less (stimulating, well-read, innovative) than their ideal teachers would.

### *The Three-factor Model and Family Medicine Teachers*

In the correlation matrix for the entire sample of 511 respondents, correlations for none of the 784 pairings of descriptors (28 x 28) exceeded 0.3. For this reason, we did not conduct a confirmatory factor analysis or structural equation modeling to examine the CTPI's original three-factor model. There were too few family medicine respondents to calculate separate correlations for this subsample.

### **Discussion**

A multidisciplinary sample of more than 500 faculty and resident teachers across the United States and Canada agreed on the most important characteristics of ideal clinical teachers, which they described as stimulating, encouraging, competent, communicat[ive], and well-read. The respondents most commonly described themselves as encouraging, practical, open-minded, communicat[ive], and competent teachers. Both faculty members and residents perceived relatively large discrepancies between themselves and their ideal teachers for certain descriptors that they considered very important in their ideal teachers (stimulating and well-read), reflecting important learning needs for teaching skills development. Yet, for other descriptors that they also considered important for ideal teachers (encouraging, competent, communicates), most respondents appeared relatively satisfied with themselves as teachers. As one might expect, residents showed larger self-versus-ideal discrepancies than faculty teachers did, presumably reflecting a lower comfort level with clinical teaching. Teachers of family medicine scored very similarly to other teachers on all measures.

Our multidisciplinary data clearly support the existing literature on what constitutes exemplary clinical teaching. The faculty and resident participants in our study—both within and outside the specialty of family medicine—ranked descriptors of their ideal teachers in much the same way that family medicine educators did in the original 1980s CTPI research. In the earlier studies, participants also ranked highest the descriptors competent, communicates, stimulating, organized, and encouraging,<sup>11</sup> despite global changes since then in medical education and in health care. Other researchers have documented that medical learners tend to value these same ideals in their family medicine teachers.<sup>4</sup> We believe that our study confirms and further clarifies these ideals by asking teachers themselves to quantify a unique set of literature-based descriptors.

We hope that medical educators can apply our study's findings toward defining a broader educational agenda for improving clinical teaching, viewed through the lens of discrepancies between "ideal teacher" and "self as teacher." Among the residents and faculty teachers whom we studied, the largest discrepancies clustered around some of the highest-ranked descriptors for ideal clinical teachers, including stimulating and well-read. For teachers who perceive themselves as less stimulating, the on-line CTPI program offers recommendations to explore learners' needs further (which often generates teaching topics), to consider adding more bedside teaching, and to follow electronic links to other teaching resources. Those scoring themselves low on well-read receive tips for bolstering reading as well as reassurance that teachers can admit their knowledge gaps while partnering with learners to fill the gaps (see Figure 1). Faculty development programs may benefit from exploring new ways to help teachers refine these critically important qualities.

More practically, educators providing faculty development programs may wish to use the on-line CTPI instrument to help their participants approach self-assessment, using this study's new norms for typical overall discrepancy scores (11.5 points for faculty teachers and 14.4 points for residents) as proxies for comfort with teaching skills. Faculty or resident teachers with larger discrepancy scores than these could then be guided toward individualized plans for developing skills and comfort with clinical teaching.

### *Limitations*

Our study had certain limitations. First, the CTPI's self-report format does not offer an independent assessment of respondents' actual teaching skills or knowledge. Second, despite the anonymity of the on-line data collection, some respondents might nonetheless have given less-than-truthful answers that managed to evade our data verification process. Third, a broader international sample of medical teachers might provide different perspectives. Finally, although we lacked a large enough subsample of family medicine teachers to validate the CTPI's three-factor model<sup>12</sup> on this group, such an analysis would probably not have changed the study's results because our family medicine respondents' scores were nearly identical to those of their non-family medicine counterparts.

### **Conclusions**

This study demonstrated that 511 resident and faculty teachers from numerous specialties and geographic areas across the United States and Canada clearly agreed about what constitutes excellent clinical teaching. Our resident physician participants perceived greater discrepancies than faculty participants did between their ideal teachers and themselves as teachers, indicating

perceived needs for teaching skills development. We believe that the CTPI, now available on-line at no charge, offers a simple and useful format for clinical teachers to evaluate their own comfort with teaching while highlighting their individual learning needs. Future research can profitably explore new applications of this and other instruments for improving teaching in medical education.

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