

judgment that some students had actually been quite superior to others.

During this part of the workshop, the groups listed the strengths and weaknesses of the terminal evaluation procedures currently used. They then discussed possible modifications of these procedures. They agreed that such an evaluation should include rating scales of specific student competencies and that the scales should provide ex-

PLICIT criteria of performance so that greater objectivity could be achieved in evaluating students.

#### References

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## Teaching and Learning Style Preferences of Family Medicine Preceptors and Residents

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Clinical teaching in the health professions involves a great deal of one-to-one instruction which is highly influenced by the match of instructor and learner. Learning style preferences offer one means of analyzing variations in these teaching interactions. Learning styles are relatively constant attributes or preferences of an individual which interact with instructional circumstances in such a way as to produce differential learning as a function of those circumstances.<sup>1</sup> Numerous instruments are available to measure and quantify these learning preferences.<sup>2-5</sup>

This pilot study addresses the following questions:

1. What are the teaching and learning style preferences of preceptors and residents in a family medicine residency program?
2. Do the teaching and learning style inventories identify the compatibility of preceptor/resident pairs?
3. Do these instruments increase insight into the teaching and learning process in family medicine?

#### Method

Subjects of this study were 22 preceptors and 18 residents in a university-affiliated family medicine residency program located in a city remote from the university. The residency program has been in operation since 1972.

As part of a faculty development program, a workshop on teaching and learning styles was conducted for preceptors and residents in January 1978. Prior to the workshop, preceptors were mailed an Instructional Styles Inventory<sup>3</sup> and a Self-Assessment Inventory for Clinical and Classroom Teaching in Medicine<sup>6</sup> while residents were sent a Learning Styles Inventory.<sup>2</sup> Sixteen out of 22 preceptors and 15 of 18 residents responded.

The Learning Styles Inventory<sup>2</sup> and the Teaching Styles Inventory<sup>3</sup> developed by Canfield were selected because they provide complementary forms to compare preceptor and resident preferences for 17 instructional variables. Preferences are assessed for conditions of learning (eg, well-defined and organized instruction), interest in subject matter areas (numbers, words, people, things), and preferences for modes of learning (listening, reading, viewing, direct experience).

Separate workshops were held for preceptors and residents. During the workshop, participants completed another form. Preceptors identified three residents they liked to teach most and three they preferred to teach least, along with reasons for

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**Table 1. Family Medicine Preceptor Teaching Style Preferences and Resident Learning Style Preferences**

	<b>Preceptor Teaching Style Preferences (N=16)</b>	<b>Resident Learning Style Preferences (N=15)</b>
<b>Highest Rated</b>	<ol style="list-style-type: none"> <li>1. Working with People</li> <li>2. Organized Instruction</li> <li>3. Positive Preceptor/Resident Relations</li> <li>4. Providing Direct Learning Experiences</li> <li>5. Presenting Information Verbally</li> </ol>	<ol style="list-style-type: none"> <li>1. Learning through Direct Experience</li> <li>2. Working with Inanimate Things</li> <li>3. Organized Instruction</li> <li>4. Working with People</li> <li>5. Positive Preceptor/Resident Relations</li> </ol>
<b>Lowest Rated</b>	<ol style="list-style-type: none"> <li>1. Acting as an Authority</li> <li>2. Facilitating Resident Peer Relations</li> <li>3. Working with Written Material</li> <li>4. Teaching through Reading</li> <li>5. Evaluating and Comparing Residents</li> </ol>	<ol style="list-style-type: none"> <li>1. Being Evaluated and Compared with Other Residents</li> <li>2. Working with Written Material</li> <li>3. Preceptor Authority and Control of Learning</li> <li>4. Learning through Reading</li> <li>5. Working with Numbers</li> </ol>

their choices. Residents similarly selected the preceptors they most and least preferred to learn from, along with the reasons for their selections. Thirteen preceptors and 11 residents completed these preference forms.

Three months after the workshop, a follow-up evaluation questionnaire was mailed to all participants. Nine residents and 12 preceptors responded.

## Results

### *Teaching and Learning Styles*

The highest and lowest preferences of preceptors and residents are summarized in Table 1.

Greatest similarities in preference between residents and preceptors were for warm and friendly relationships among residents, working with inanimate objects (such as instruments), well-organized instruction, positive personal relationships between preceptors and residents, and use of direct learning experiences. Major differences were in the areas of competition and comparison of residents, working with numbers (data) and words (records), learning through reading, and clarity and detail in communicating expectations. Residents had higher or stronger preferences for

each of these areas than preceptors. For example, residents desired more precise explanations of their responsibilities than preceptors preferred to offer.

### *Preceptor and Resident Matching*

The compatibility of residents and preceptors was determined by examining the matches of most and least preferred counterparts. There were five positive matches where both listed the other as most preferred, one negative match where both listed the other as least preferred, and three mismatches where one listed the other as most preferred while the other listed him/her as least preferred. These results indicate that a preceptor's preference for teaching a specific resident did not significantly match with the resident's desire to learn from that particular preceptor as measured by the Fisher Exact Probability Test ( $P = .444$ ). This is an interesting finding in light of the 6-month to 2<sup>1</sup>/<sub>2</sub>-year association of most residents and preceptors.

While this matching process yielded low results, the teaching and learning style inventories of the five positive matches were examined in order to identify consistent similarities between preceptors and residents (ie, scores within one standard deviation on the 17 scales). Scales that met this



**Table 2. Family Medicine Preceptor and Resident Reasons for Selecting Most and Least Preferred Counterparts**

	Reasons for Selection	
	Most Preferred	Least Preferred
<b>Preceptors (N=13)</b>	1. Intellectual Ability 2. Open to Using Preceptor 3. Personable	1. Unable to Solve Problems 2. Closed to Using Preceptor 3. Argumentative, Distrustful, Curt
<b>Residents (N=11)</b>	1. Knowledgeable and Insightful 2. Personable 3. Able to Communicate 4. Practical and Experienced	1. Lacks Knowledge 2. Verbose 3. Dogmatic 4. Personality Conflict

criteria reflected similar preferences for warm and friendly relations among residents and between preceptors and residents as well as a similar orientation toward written records.

The reasons preceptors and residents expressed for selecting their most and least preferred counterparts are shown in Table 2.

### Evaluation

The utility of these inventories is in part dependent upon whether they increase preceptor and resident insight into their own teaching and whether the information can be applied in the clinical setting. These questions and others were answered through a follow-up questionnaire. Preceptor and resident responses differed markedly. The majority of preceptors felt that information on teaching and learning styles increased insight into their own teaching (66 percent) and into resident and preceptor interaction (75 percent). This resulted in preceptors feeling more comfortable with their own style of teaching and more willing to adapt their style to meet individual resident needs. A minority of the residents (22 percent) felt that the learning styles inventories increased insight into their own learning preferences, although 56 percent reported learning more about the teaching interaction.

Forty-two percent of the preceptors reported being able to apply the information on teaching and learning styles while none of the residents responded affirmatively.

### Discussion

While the teaching and learning style inventories used in this study did offer new ways of viewing clinical teaching, they could not capture the intricacies of this interactive process. Perhaps the reasons given by preceptors and residents for selecting their counterparts give some clues to this situation. They identified three general variables: (1) cognitive ability of those involved, (2) interpersonal/instructional skills, and (3) personal characteristics. The inventories measure only limited aspects of the first two variables. Perhaps personal characteristics of those involved account for substantial amounts of the variation in preceptor/resident interactions.

Further research is needed to determine which variables most significantly influence one-to-one clinical instruction and whether positive matches of preceptors and residents enhance learning.

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