Predictors of Psychosocial Teaching Styles in a Family Practice Residency Program

Johanna Shapiro, PhD; Michael Prislin, MD; Chris Hanks, PhD; Patricia Lenahan, LCSW

Background and Objectives: *Although physician clinical precepting has been extensively studied, little information exists about the teaching styles of behavioral science faculty. This study investigated group characteristics associated with two styles of teaching—authoritative and collaborative—used by behavioral science faculty in a family practice residency training program.* Methods: *A 6-year retrospective study was conducted with 89 family practice residents and 1,228 patients. Unstructured written comments about direct observation of resident-patient encounters in a family practice clinic were coded using a combination of qualitative and quantitative approaches, then analyzed in relationship to variables such as gender, perceived resident ability and level of training, ethnicity of patient, and severity of patient diagnosis.* Results: *Overall, behavioral scientists used twice as many collaborative as authoritative teaching comments. Male behavioral scientists used more authoritative comments than did female behavioral scientists. First-year residents and female residents received more teaching generally than did their more-experienced and male counterparts. Perceived global performance of resident and severity of patient diagnosis were also related to teaching style.* Conclusions: *Behavioral science faculty should consider that group characteristics of teachers, residents, and patients may influence teaching style.*

(Fam Med 2001;33(8):607-13.)

Teaching style refers to the manner, method, or means by which instructors attempt to convey information and influence the understanding and behavior of their learners.[1] Teaching style is the process or the "how" of teaching, in contrast to the content or the "what" of teaching.[2] Although clinical precepting teaching styles of primary care physicians have been studied,[3] no information exists about clinical teaching styles of behavioral science faculty, even though behavioral science instruction is a mandatory part of family practice residency education.

Several different types of teaching styles have been identified in the literature, some using dimensions of experience, reflection, abstraction, and experimentation[4] and others identifying suggestive, assertive, collaborative, and facilitative dimensions.[5,6] All models emphasize the importance of situational teaching[3] that tailors teaching style to the needs and abilities of the learner. Ideally, regardless of instructor preference, such teaching flexibility would be the norm based on the ways in which individual learners best acquire information.

However, it is possible that individual teaching style might also be influenced by factors extrinsic to the learner or properties of the learner that are group characteristics rather than individual characteristics (eg, gender or level of training). For example, we know that most research on gender in the doctor-patient relationship suggests that gender of both physician and patient influences communication patterns.[7,8] Similarly, an older study of 135 medical students found that female students reported receiving less feedback and less positive reinforcement from their physician instructors than male students did.[9]

Further, one study suggests that faculty function quite differently when precepting medical students than when precepting residents.[10] There is also some evidence that the race and ethnicity of both doctor and patient influence the quality of interpersonal interactions.[11] In general, however, an extensive literature search revealed

From the Department of Family Medicine (Drs Shapiro and Prislin and Ms Lenahan) and the Center for Statistical Consulting (Dr Hanks), University of California, Irvine.

little data about the relationship of extrinsic or group characteristics to teaching style.

This dearth of information led us to wonder to what extent the group characteristics of behavioral scientists, residents, and patients would be associated with teaching style. Specifically, this study asked the question: What is the relationship among the group variables of behavioral scientist gender, resident gender, resident level of training, resident perceived level of performance, patient ethnicity, gender, and severity of diagnosis to teaching style? We were especially interested in examining factors that distinguished a generally authoritative teaching style from a generally collaborative one (see definitions in Table 4) because the literature suggests that these styles ideally should be associated with individual, rather than group, learner characteristics,[3] ie, teachers should use a mixture of these styles that is responsive to the particular needs of the individual learner, rather than on the basis of a learner's membership in a particular group. In fact, however, due to increasing time constraints, teaching faculty tend to be more directive (authoritative) and less interactive (collaborative) with learners regardless of individual learner needs.[12] Because we were exploring variables that, while related theoretically to previous research, were constructed empirically for the purposes of this study and had not been studied in this form previously, we did not formulate specific directional hypotheses.

Methods

We conducted a 6-year retrospective study that examined the teaching styles of behavioral scientists during instruction of family practice residents. All such teaching took place in an outpatient clinic environment and consisted of one-on-one observation and individualized feedback about psychosocial aspects of patient diagnosis and management immediately following the patient encounter. For the purposes of this study, we operationalized teaching style as that reflected in behavioral scientists' written comments to residents about their interactions with clinic patients. Written comments were based on both direct observation of the resident and subsequent discussions with the resident. This form of teaching did not involve formal, didactic lectures or presentations.

Subjects

Demographic information about subjects is shown in Table 1. Subjects for this study were all residents and behavioral science faculty in the residency training program of a large academic medical center in Southern California during the study period, as well as the patients treated by those residents during an observation session. Residents and patients were selected for observation based solely on availability. Only urgent-care patients and patients coming solely to receive brief psychotherapy were routinely excluded.

Table 1

Descriptive Statistics: Subjects

	#	Gender
Behavioral scientists	5	30% female
Residents	89	29% female
Patients	1,228	76.8% female

*Patient Ethnicity (n=228)**
Hispanic: 139
Non-Hispanic white: 39
Asian: 24
African-American: 17
Other: 9

* Due to problems with the data collection procedure, we were only able to collect reliable ethnicity data on a small subset of the total patient sample.

Instructional Methods

As part of the standard educational program in a university-affiliated family practice residency training program, over the period 1987–1992, department behavioral science faculty directly observed residents treating patients in an outpatient clinic setting and wrote unstructured comments regarding various psychosocial aspects of the doctor-patient interaction. As part of resident training, both faculty and residents verbally consented to participate in this process. Patients were also made aware of the presence of a faculty observer and consented to this process. At the time, residents received copies of the written comments and subsequently discussed them with faculty if desired. The intent of this procedure was to improve residents' clinical psychosocial performance.

Data Analysis

Independent variables in this study included gender of the behavioral scientist, gender of the resident, year of training of the resident, a global performance rating of the resident, gender of the patient, ethnicity of the patient, and severity of the patient's diagnosis. The global performance rating was made annually by a behavioral scientist as part of an overall resident evaluation and categorized the resident into four categories (poor, adequate, very good, and outstanding). For the severity of patient diagnosis, we identified a total of 46 patient diagnoses or problems. These were scored by a family physician on a severity scale from mild to severe (Table 2).

The two dependent variables, authoritative and collaborative teaching styles, were constructed using a combination of qualitative and quantitative approaches. First, all written comments were read and reviewed by one investigator and a team of undergraduate research assistants. Fourteen coding categories initially emerged from the data (Table 3), based on a grounded-theory

approach that attempted to discern the function of each written statement. The comments for each written encounter were then scored quantitatively according to these 14 categories. Rater reliability was calculated, with a range of 78.0%–88.3% agreement and a mean of 82.4% agreement. Further discussions to generate broader analytic and categorical groupings ensued, with a final dichotomous division of comments as reflecting either authoritative or collaborative teaching (Table 2).

Table 2

Descriptive Statistics: Measures

	Range	*Mean*	*SD*
Resident global performance	1 (poor)–4 (outstanding)	2.46	1.08
Severity of diagnosis	1 (mild)–4 (severe)	2.25	1.22
Authoritative teaching style	0–16 (# of comments/encounter)	2.40	2.48
Collaborative teaching style	0–26 (# of comments/encounter)	5.05	3.81

SD—standard deviation

Authoritative teaching represented more directive, assertive, interventionist, critical, and solution-oriented comments, including direct criticisms of resident performance, specific suggestions, and advice. This teaching style was most similar to a combination of Brostrom's Type 1 suggestive and Type 2 assertive teaching styles.[4]

Collaborative teaching, by contrast, was more exploratory, used more conditional and questioning language, tended to relate personal experiences and feelings, and often incorporated resident ideas and approaches to the patient. This category encouraged reflection on the interview, rather than coming to any specific conclusions.[13] This category appeared to represent an amalgam of Brostrom's Type 3 collaborative and Type 4 facilitative teaching[4] (Table 4).

We used Proc GLM (General Linear Modeling) in SAS® to determine bivariate relationships between all independent variables and the study's two dependent variables. All significant relationships were then entered into a full general linear model. Finally, to place authoritative and collaborative teaching styles in relationship to each other, we ran bivariate and full analyses of the independent variables using as a dependent variable a ratio score of authoritative to collaborative teaching.

Results

Overall, behavioral science faculty used twice as many collaborative statements as authoritative statements (Table 2). Authoritative and collaborative teaching styles were not correlated and functioned independently of each other.

Bivariate Results–Authoritative Teaching

Gender of behavioral scientist, gender of resident, the interaction term *gender of behavioral scientist by gender of resident,* resident performance, resident level of training, and severity of patient diagnosis were all related to authoritative teaching (Table 5).

Gender of Behavioral Scientist and Resident. Bivariate analysis found a significant relationship between these variables and number of authoritative teaching comments. Male behavioral scientists made more authoritative comments than did female behavioral scientists. Female residents received more authoritative teaching comments than did male residents.

Analysis also indicated a relationship between the interaction term *gender of behavioral scientist by gender of resident* and authoritative teaching. Male behavioral scientists gave equal authoritative teaching to male and female residents. Female behavioral scientists were more likely to give more authoritative teaching to female residents than to male residents.

Resident Training and Performance. First-year residents received more authoritative teaching comments than did

Table 3

Original Coding Categories

Questions making suggestions—What about finding out more about her family situation?
Questions about the patient—What do you know about her past medical history?
Clarifying questions—Are you trying to set limits on this patient's demandingness?
Positive descriptor of resident behavior—You handled the patients' tearfulness very well.
Negative descriptor of resident behavior—You didn't pay attention to the kid's nonverbal behavior.
Neutral descriptor of resident behavior—You told a couple of jokes.
Suggestion—Consider evaluating this patient for depression at next visit.
Suggestion/criticism—Explain the treatment plan more clearly.
Suggestion/explanation—Emphasize the mind-body connection in depression so your diagnosis will make sense to this patient.
Invitation (or further discussion)—Come talk to me more about this patient.
Warning—Watch your habit of looking at the chart instead of the patient.
Empathy—That looked like it was a pretty hard interview.
Content comment about patient (diagnosis)—This patient has a personality disorder.
Compliment—Good job.

Table 4

Operational Definitions and Examples of Authoritative and Collaborative Teaching Styles

AUTHORITATIVE
Definition: directive, assertive, interventionist; giving information, suggestions, advice; telling; teacher as expert

Examples: "You need to spend more time looking at your patient." "This patient is probably depressed: ask about changes in sleep, eating habits, mood, etc." "You should refer this patient for counseling."

COLLABORATIVE
Definition: self-directed discovery; exploring learner's ideas; relating own personal experience; offering own feelings; use of more conditional, questioning language

Examples: "I wonder whether you could have probed more deeply about the abuse." "What was your goal in this interview?" "Is it a possibility that this patient is depressed?" "This patient made me feel pretty frustrated—how did you feel?" "I'm curious about how you decided to ask her about her estranged daughter."

second- and third-year residents. As residents' performance ratings improved, they received fewer authoritative teaching comments (data not shown; F=27.64, *P*=.0001). Authoritative comments were also likely to be used when residents were caring for patients who had more severe diagnoses (data not shown; F=3.93, *P*=.05).

Regression Analysis—Authoritative Teaching. GLM modeling using authoritative teaching as the dependent variable resulted in an equation explaining 12.2% of the variance (Table 6). The following variables each made significant contributions to the explained variance: resident gender, resident year of training, resident global performance rating, and severity of patient illness.

Bivariate Results—Collaborative Teaching

Gender of behavioral scientist, gender of resident, the interaction term *gender of behavioral scientist by gender of resident*, the interaction term *gender of behavioral scientist by gender of patient*, resident year of

Table 5

Bivariate Relationships of Independent Variables to Authoritative and Collaborative Teaching

		AUTHORITATIVE	*COLLABORATIVE*
	# of patients	*Least-squares Means*	*Least-squares Means*
Behavioral scientist (BS) gender	1,228	Male 2.87 Female 2.29***	Male 4.05 Female 5.63****
Resident (res) gender	1,228	Male 2.35 Female 2.74**	Male 4.86 Female 5.86****
Resident year	918	1—3.34 2—2.65 3—2.18****	1—5.58 2—4.90 3—5.03*
BS gender X resident gender		male (bs)-male (res)—2.82 male (bs)-female (res)—2.98 female (bs)-male (res)—2.63 female (bs)-female (res)—2.15****	male (bs)-male (res)—4.16 male (bs)-female (res)—3.78 female (bs)-male (res)—5.16 female (bs)-female (res)—6.78****
Patient (pt) ethnicity	228	ns	non-Hispanic white—3.85 Hispanic—4.77 Asian—6.73 Afrian American—3.59 Middle Eastern—6.44 Other—6.00**
BS gender X pt gender		ns	male (bs)-male (pt)—4.05 male (bs)-female (pt)—4.12 female (bs)-male (pt)—6.20 female (bs)-female (pt)—5.67****

* P<.05
** *P*<.01
*** *P*<.001
**** *P*<.0001

ns—nonsignificant

Table 6

Relationship of Resident Training, Gender, Performance, and Severity of Diagnosis to Authoritative Teaching Style

Source	df	*Mean Square*	*F Value*	P *Value>F*
Resident year	1	183.76	36.50	.0001
Resident performance	1	151.63	30.12	.0001
Resident gender	1	77.10	15.31	.0001
Severity of diagnosis	1	18.23	3.62	.06

n=628
R-Square=.12
df=5
F=17.32
P=.0001

df—degrees of freedom

Table 7

Relationship of Behavioral Scientist Gender, Resident Gender, Interaction of Behavioral Scientist and Resident Gender, Resident Training, and Global Performance to Collaborative Teaching Style

Variable	df	*Mean Square*	*F Value*	P *Value>F*
Behavioral scientist gender	1	496.48	40.77	.0001
Resident gender	1	187.91	15.43	.0001
Behavioral scientist gender X resident gender	1	54.14	4.45	.04
Resident performance	1	49.35	4.05	.04

n=628
R-Square=.09
df=5
F=11.00
P=.0001

df—degrees of freedom

training, resident performance, and patient ethnicity all had significant relationships to collaborative teaching (Table 5).

Gender of Behavioral Scientist and Resident. Gender of behavioral scientist was significantly related to collaborative teaching style. Female behavioral scientists made a greater number of collaborative teaching comments than did male behavioral scientists. Female residents received more collaborative teaching than did male residents. The interaction of the behavioral scientists' and residents' gender was also related to collaborative teaching in data analysis. Male behavioral scientists gave male residents more collaborative teaching than they gave female residents. Female behavioral scientists gave female residents more collaborative teaching than they gave male residents.

Resident Training and Performance. Residents received more collaborative teaching in the first year of training than in the second or third year of training. When resident overall performance was judged more favorably, collaborative teaching tended to increase (data not shown; F=5.42; *P*<.05).

Interaction of Behavioral Scientist Gender and Patient Gender. This interaction achieved significance in preliminary analysis. There was virtually no difference in the number of collaborative comments made by male behavioral scientists to residents in situations involving male or female patients. However, female behavioral scientists made more collaborative comments in encounters involving males than in encounters involving female patients.

Patient Ethnicity. Patient ethnicity showed a small but significant relationship to collaborative teaching style. Encounters involving non-Hispanic white, Latino, or African-American patients received fewer collaborative comments than did encounters with Asian, Middle Eastern, or "other" patients.

Regression Analysis—Collaborative Teaching. Full GLM modeling using collaborative teaching as a dependent variable explained 9.6% of the variance. Four variables contributed significantly to this model: behavioral scientist gender, resident gender, the interaction of behavioral scientist and resident gender, and resident global performance rating (Table 7).

Authoritative/Collaborative Teaching Ratio

In bivariate analyses, only behavioral scientist gender and severity of diagnosis were associated with the ratio of authoritative to collaborative teaching. Male behavioral scientists had a higher ratio of authoritative to collaborative comments than did female behavioral scientists (mean=1.12 versus mean=.85, *P*<.0002). The more severe a patient's diagnosis was judged to be, the higher the ratio of authoritative to collaborative comments (F=3.86, *P*<.05).

In a regression equation that explained only 3.8% of the total variance, the following variables made significant contributions: behavioral scientist gender, resident year of training, and severity of patient illness (Table 8).

Discussion

The findings of this study indicate that, overall, behavioral science faculty tended to favor a non-directive, negotiated teaching style, realized through questions and tentative speculation. However, data analysis suggested that group variables did influence behavioral scientist teaching style.

Training Issues

First-year residents received more teaching than second- and third-year residents. While this may be regarded as a positive finding, since teaching is of importance in facilitating the transition from student to resident, in some respects it is also cause for concern. One might argue that as resident experience increases, collaborative teaching should also increase, but this did not occur.

Performance Issues

Faculty also appeared to be influenced by the perception that a resident was generally either a good or a poor resident. Good residents received more collaborative teaching, while poorer residents were the recipients of a more-directive approach. Such an approach might make sense, depending on the accuracy of these global perceptions but is not ideal because it does not take individual resident learning preferences into consideration.

Gender

This study paralleled the findings of other studies[7,14] by concluding that female behavioral scientists adopted a more collaborative style of interaction than did their male counterparts. As in studies examining the influence of patient gender on doctor-patient interaction, we also found that residents received different kinds of teaching based apparently on their gender alone. Female residents were the recipients of both more authoritative and more collaborative comments than were male residents. One might speculate that for some unknown reason, behavioral scientists perceived female residents as more in need of teaching than male residents. Alternatively, considering qualities of the learner, it might be the case that female residents are more receptive to teaching than are their male counterparts.[15] Thus, behavioral science faculty put more effort into their instruction.

In addition, the interaction of gender variables appeared related to teaching style. While male behavioral science teachers made similar numbers of authoritative comments to male and female residents, female teachers made more such comments to female residents. On the other hand, when considering collaborative teaching, male behavioral scientists made more collaborative comments to male residents, and female behavioral scientists made more collaborative comments to female residents. These findings suggest that behavioral science faculty may find it easier (or more necessary) to make collaborative comments to members of their same gender, while female teachers may be most comfortable simply doing more teaching overall in same-gender situations.

Table 8

Relationship of Behavioral Scientist Gender, Resident Training, and Severity of Diagnosis to Authoritative/Collaborative Ratio

Variable	df	*Mean Square*	*F Value*	P *Value>F*
Behavioral scientist gender	1	10.77	9.18	.003
Resident year	1	6.11	5.21	.02
Severity of diagnosis	1	4.89	4.06	.04

n=477
R-Square=.04
df=3
F=6.18
P=.0004

df—degrees of freedom

Finally, the interaction of behavioral scientist gender and patient gender played a small but interesting role in teaching style. From female behavioral scientists only, residents interacting with male patients tended to receive more collaborative comments. Perhaps female teachers are more likely to use a facilitative style in a situation possibly complicated by nontraditional gender roles (ie, authority figure is female, subordinate figure is male).

Severity of Diagnosis Issues

Study findings indicated that as severity of diagnosis increased, authoritative teaching increased. One might have hoped that as the medical and social complexity intensified, instructors would engage in a teaching style that encouraged exploration of multiple possibilities and options. Rather, as patients' medical conditions became more complex, teaching became more specific and directive, perhaps in an effort to exert greater control over a situation that may have been an anxiety-producing situation for the faculty member. It is also possible that, confronted with a more-serious diagnosis, the resident might feel compelled to use more time addressing medical issues, making the teacher more directive in dealing with the psychosocial agendas of the visit.

Patient Ethnicity Issues

In the limited analysis we were able to perform on this variable, patient ethnicity did not appear to be an important factor influencing teaching style. Encoun-

ters with patients who clearly were from a distinctly different culture, ie, recent Southeast Asian immigrants, Middle Easterners, and "others" (who tended to be recent immigrants from Africa, India, etc) were characterized by a greater reliance on collaborative teaching styles. However, residents involved in encounters with Hispanic and African-American patients, as well as with non-Hispanic white patients, received less collaborative teaching. Perhaps in a southern California community with large numbers of both African-Americans and Latinos, these patients were regarded as less culturally different and therefore stimulated fewer tentative and conditional teaching approaches.

Authoratative/Collaborative Teaching Ratio

When authoritative and collaborative teaching styles were put in relation to one another through the construction of a ratio score, we lost significant numbers of codable encounters due to exclusion of encounters with zero in either the numerator or the denominator of the ratio. This analysis showed relationships only among behavioral scientist gender, resident year, and severity of diagnosis and teaching style. However, these variables performed similarly to the findings reported above in that male teachers had a higher ratio of authoritative to collaborative comments, as did first-year residents, and encounters characterized by more-severe patient diagnoses.

Limitations

There were several possible sources of error and confounding in our study. First, resident-patient observations were not chosen randomly, and, therefore, some unknown systematic error may have crept into the observation system. Further, since patients did have the right to refuse observation (although this rarely happened), this may have constituted a further selection bias.

The study design may also be criticized because it examined only faculty members, not the relational dyad between faculty and resident. Thus, the study does not consider resident preferences for teaching styles or whether preferences might be influenced by the context of the interaction (eg, whether the resident is post-call or whether the observation occurred toward the end of the day). Further, while written comments might be considered more objective than other methods of education, the study did not address the question of whether faculty actually demonstrate the same types of teaching styles in person as in writing. Because of lack of systematic recording of the independent variables, in many of the data analyses, there were large numbers of missing data, which may have compromised the integrity of the results.

Conclusions

Despite these limitations, the findings of this study have important implications for behavioral science faculty that should be investigated in future research. For now, behavioral science faculty should consider that, in one-on-one clinical teaching situations, their own gender, the gender of the resident, and assumptions of the residents' year of training, the perceived global ability of resident, patient ethnicity, and perceived severity of a particular patient diagnosis may influence teaching style. They should be particularly watchful about possible tendencies to (1) engage in less teaching with second- and third-year residents, (2) use global perceptions rather than specific knowledge of individual residents to determine a particular teaching approach, (3) rely on a diagnostic category rather than the specifics of a given patient encounter as the basis for employing a particular teaching style, (4) "over teach" female residents and "under teach" male residents. Most importantly, in approaching the teaching encounter, behavioral science faculty should exert themselves to pay attention to the individual learning characteristics of the resident rather than categorical group variables.

Corresponding Author: Address correspondence to Dr Shapiro, University of California, Irvine, Department of Family Medicine, 101 City Drive South, Route 81, Building 200, Orange, CA 92868-3298. 949-824-3748. Fax: 714-456-7984. jfshapir@uci.edu.

References

1. Irby DM. Teaching and learning in ambulatory care settings: a thematic review of the literature. Acad Med 1995;70:898-931.
2. Neher JO, Gordon DC, Meyer B, Steven N. A five-step "microskills" model of clinical teaching. J Am Board Fam Pract 1992;5:419-24.
3. Whitman N. Learning and teaching styles: implications for teachers of family medicine. Fam Med 1996;28(5):321-5.
4. Brostrom R. Training style inventory. In: Jones JE, Pfeiffer JW, eds. 1979 annual handbook for group facilitators. San Diego: Pfeiffer and Co, 1979.
5. Bibace R, Catlin RJ, Quirk ME, Beattie KA, Slabaugh RC. Teaching styles in the faculty-resident relationship. J Fam Pract 1981;13:895-900.
6. Quirk ME, DeWitt T, Lasser D, Huppert M, Hunniwell E. Evaluation of primary care futures: a faculty development program for community health center preceptors. Acad Med 1998;73:705-7.
7. Roter DL, Hall JA. Why physician gender matters in shaping the physician-patient relationship. J Womens Health 1998;7:1093-7.
8. Van den Brink-Muinen A, Bensing JM, Kerssens JJ. Gender and communication style in general practice: differences between women's health care and regular health care. Med Care 1998;36:100-6.
9. Sclabassi SE. Sex differences in medical students' perceptions of clinical teaching activities. J Am Med Womens Assoc 1984;39:163-4.
10. Paukert JL, Richards BF. How medical students and residents describe roles and characteristics of their influential clinical teachers. Acad Med 2000;75:843-5.
11. Cooper-Patrick L, Gallo JJ, Gonzales JJ, et al. Race, gender, and partnership in the patient-physician relationship. JAMA 1999;282:583-9.
12. White CB, Bassali RW, Heery LB. Teaching residents to teach: an instructional program for training pediatric residents to precept third-year medical students in the ambulatory clinic. Arch Pediatr Adolesc Med 1997;151:730-5.
13. Parsell G, Bligh J. Contract learning, clinical learning, and clinicians. Postgrad Med J 1996;72:284-9.
14. Hall JA, Irish JT, Roter DL, Ehrlich CM, Miller LH. Gender in medical encounters: an analysis of physician and patient communication in a primary care setting. Health Psychology 1994;13:384-92.
15. Hall JA, Roter DL. Patient gender and communication with physicians: results of a community-based study. Women's Health: Research on Gender, Behavior, and Policy 1995;1:77-95.