



Published in final edited form as:

*Med Care*. 2008 August ; 46(8): 806–812. doi:10.1097/MLR.0b013e31817924e4.

## Patient Centered Communication During Primary Care Visits for Depressive Symptoms:

### What is the Role of Physician Personality?

**Benjamin P. Chapman, PhD<sup>1</sup>, Paul R. Duberstein, PhD<sup>1</sup>, Ron Epstein, MD<sup>2</sup>, Kevin Fiscella, MD MPH<sup>2</sup>, and Richard L. Kravitz, MD, MSPH<sup>3</sup>**

<sup>1</sup>University of Rochester Medical Center Department of Psychiatry

<sup>2</sup>University of Rochester Medical Center Department of Family Medicine Research

<sup>3</sup>University of California, Davis, Department of Internal Medicine, Center for Health Services Research in Primary Care

### Abstract

**Background**—Patient Centered Communication (PCC) is associated with more appropriate treatment of depression in primary care. In part a function of patient presentation, little is known about other influences on PCC. We investigated whether PCC was also influenced by personality dispositions of primary care providers (PCPs), independent of patient presentation.

---

(Corresponding Author) Benjamin P. Chapman PhD, University of Rochester Medical Center, Department of Psychiatry, 300 Crittenden, Rochester, NY 14642, ben\_chapman@urmc.rochester.edu, phone: 585-275-9431, fax: 585-276-0307.

#### Author Information

Paul R. Duberstein, PhD

University of Rochester Medical Center

Department of Psychiatry

300 Crittenden

Rochester, NY 14642

ben\_chapman@urmc.rochester.edu

phone: 585-275-9431

fax: 585-276-3477

Ron Epstein, MD

University of Rochester Medical Center

Department of Family Medicine Research Programs

1381 South Avenue

Rochester, NY 14620

ron\_epstein@urmc.rochester.edu

phone: 585-506-9484

fax: 585-473-2245

Kevin Fiscella, MD MPH

University of Rochester Medical Center

Department of Family Medicine Research Programs

1381 South Avenue

Rochester, NY 14620

Kevin\_fiscella@urmc.rochester.edu

phone: 585-506-9484

fax: 585-473-2245

Richard Kravitz, MD, MSPH

Department of Internal Medicine

Center for Health Services Research in Primary Care

University of California, Davis Medical Center

2103 Stockton Blvd. 2226 Grange Bldg.

Sacramento, CA 95817

rlkravitz@ucdavis.edu

phone: 916-734-1248

fax: 916-734-2349

**Methods**—46 PCPs completed personality scales from the NEO-Personality Inventory, Revised and provided care to 88 Standardized Patients (SPs) presenting with either major depression or adjustment disorder with comorbid musculoskeletal symptoms, either making or not making a medication request. Coders scored each visit using the Measure of Patient Centered Communication, assessing physicians' ability to explore the patient's illness experience (component 1), understand the patient's psychosocial context (component 2), and involve the patient in collaborative discussions of treatment (component 3).

**Results**—Adjusting for physician demographics, training, and patient presentation, physicians who were more open to feelings explored the patient's experience of illness more ( $p = .05$ ). More dutiful, or rule-bound physicians engaged in greater exploration of the patient's psychosocial and life circumstances ( $p = .04$ ), but involved the patient less in treatment discussions ( $p = .03$ ), as did physicians reporting more anxious vulnerability ( $p = .03$ ). Physician demographics, training, and patient presentation explained 4-7% of variance in MPCC components, with personality explaining an additional 4-7% of the variance.

**Conclusion**—Understanding of personality dispositions which promote or detract from PCC may help medical educators better identify trainees of varying aptitude, addressing individual training needs in a tailored fashion.

### Keywords

Patient centered communication; physician personality; primary care; depression; standardized patients

---

### Introduction

In contrast to a doctor or disease-centered approach to clinical practice, the patient-centered model of practice strives to not only acquire necessary diagnostic information, but also to understand the patient's subjective experience of presenting problems and the patient's psychosocial context, and to achieve shared understanding between patient and doctor about the patient's problems and their treatment (1-3). Patient Centered Communication (PCC) represents the process of realizing these goals, and has been associated with positive health outcomes such as improved chronic disease control, increased treatment adherence and better physical functioning (3-5) and lower costs (6,7).

PCC may be particularly important in primary care visits involving depressive symptoms, which require an understanding of the patient's subjective emotional experience and psychosocial context. Findings suggest optimal communication may lead to improved outcomes (8) and that patients prefer collaborative communication with physicians about depression treatment (9). A recent report indicated that physicians who explored and validated patient concerns during standardized patient office visits were more likely to prescribe appropriately for major depression and avoid prescribing when the indications for medication were questionable (10). Despite the potential importance of PCC in encounters with depressed patients, physician psychological factors affecting the expression of PCC in actual clinical situations remain poorly understood.

Contextual factors likely affect physicians' use of PCC. For example, critically ill patients may evoke a more directive rather than patient-centered approach, and patients who are belligerent, distressed, passively non-compliant, medically complex, or particularly knowledgeable, congenial, and appreciative, may also influence PCC. Physician training programs have been designed to enhance the provision of PCC (11), suggesting that communication may also be partly a function of training, in addition to other demographic factors such as gender (12) or

specialty (13). Nonetheless, individual physicians may adopt a relatively consistent pattern of communication (14).

One factor contributing to this consistency in communication may be individual behavioral dispositions, or personality tendencies. For instance, in medical students, higher levels of the attributes of warmth, emotional stability, and perfectionism were associated with better ratings of communication during a Standardized Patient (SP) clinical skills assessment (15). Attention to feelings, empathic concern, and perspective taking were associated with better communication during interviews with SPs in another study of medical student skills (16).

While much remains to be learned about PCC (1), understanding associations with individual personality disposition represents a potentially important increment in knowledge about PCC in four ways. First, certain traits might be modifiable risk factors for poor PCC during medical training. Evidence on the partial genetic basis (17) and moderate stability (18) of personality have led to the misperception that personality is totally immutable, challenged by recent meta-analyses indicating that change is possible over the adult life course and particularly so prior to age 30, when early medical training is completed (19,20). Indeed, medical training itself may influence dispositional outlook and behavior--empathy may decline (21) and cynicism increase (22), suggesting potential unintended consequences on communication style. Understanding dispositional characteristics associated with PCC may also assist in the identification of physicians at any stages who might benefit from enhanced PCC training.

Second, physicians of differing disposition may also benefit from different teaching or training strategies, informing efforts to individually tailor PCC training. Third, dispositional factors associated with *better* PCC patterns may increase theoretical understanding of what makes a good communicator. Fourth, understanding personality contributions to PCC may help inform the extent to which medical students should be selected based on personality, versus revamping medical school curricula to promote desired communication characteristics. Some have suggested that dysfunctional personality tendencies be screened upon medical school admission (23) in order to curtail systemic costs associated with maladaptive trainee disposition (24).

This report examines whether physician personality traits explain variability in the PCC behavior of practicing primary care physicians (PCPs), when PCPs interact with patients presenting depressive symptoms. Specifically, we were interested in whether aspects of physician personality would differentially influence three specific components of PCC, conceptualized using Stewart's model of PCC (25): *exploring both the disease and illness experience*, or going beyond strict diagnostic information gathering to elicit patient feelings, ideas, and expectations related to illness; *understanding the whole person*, or talking with the patient about relationships, hobbies, and work; and *finding common ground* regarding treatment or management of the patient's problem, or communication which promotes a shared agreement on treatment goals, elicits patient's input, and negotiates consensus on the roles of the doctor and patient in addressing patient problems.

Prior findings (15,16) and personality theory (26) suggest that several specific dispositional tendencies reflecting compassion, emotional acuity, worry and self-doubt, and duty-boundness may influence PCC with depressed patients. We selected specific dimensions representing these tendencies from the comprehensive, empirically based Five Factor Model of Personality (FFM) (27) and hypothesized that first, physicians scoring higher on personality dimensions *openness to feelings* (i.e., acuity to emotions) and *tender mindedness* (reflecting a nurturing, compassionate outlook) would engage in greater exploration of the illness experience (PCC component 1) and the whole person (PCC component 2; i.e., psychosocial circumstances). Second, we expected physicians higher on the trait *dutifulness* (reflecting conscientious diligent

adherence to perceived standards and responsibilities) would see the exploration of broad psychosocial circumstances (component 2) as an essential obligation necessary for depression diagnosis and treatment, consistent with a larger felt obligation as a physician to gather pertinent data and help. Third, we hypothesized that physicians higher on the personality trait *anxious vulnerability* (reflecting tendencies toward worry, insecurity, and self-doubt) would engage in less exploration of the illness experience and the whole person, and dialogue less collaboratively about diagnosis and treatment (components 1, 2, and 3) due to discomfort and insecurity dealing with depression. Although we had no a priori hypotheses about other possible personality-PCC relationships, analyses permitted additional relationships to emerge. We expected the effects of personality on PCC to be independent of physician gender, years of practice and internal vs. family medicine specialty (training factors), and patient presentation (major depression vs. adjustment disorder, request or no request for medication, detectability of visit as an SP).

## Methods

### Design Overview

The present analyses used data from the one site (Rochester, NY) which collected physician personality data in a multi-site randomized trial on depression diagnosis and treatment in primary care using SPs (28). SPs were unannounced, a methodology combining the rigorous control and standardization of experimental studies with the external validity of naturalistic studies. Previous research has shown that trained SPs evoke very low levels of unambiguous detection (5%) among physicians (29), are reliable judges of physician skills and behavior (30), and provide ratings of physician communication with better psychometric properties than non-standardized patients (31), and have been used in many studies on physician communication and behavior (7,30-36).

Six SPs in Rochester received training in the portrayal of either 1) a 45 year old divorced Caucasian woman (“Susan Fairly”) presenting with mild depressive symptoms consistent with adjustment disorder (AD) with depressed mood and comorbid low back pain; or 2) a 48 year old divorced Caucasian woman (“Louise Parker”) with symptoms of major depression disorder (MDD), with accompanying carpal tunnel syndrome. The comorbid musculoskeletal symptoms were included to represent the comorbidity typically encountered in primary care. The mood symptoms in the two presentations were carefully calibrated for consistency with AD and MDD, respectively.

### Role Development

A national advisory committee helped the study team develop SP biographies, scripts, and role guidelines for symptom presentation appropriate for a 15-20 minute, “new patient” visit to a primary care physician. While portraying both the AD and MDD roles, SPs either asked for no medication, made a general request for an antidepressant, or specifically requested Paxil® within the first 10 minutes of the appointment. In the analyses reported here, these three categories were collapsed into request/no request within both the AD and MDD conditions because, as in prior work (1), treating them separately did not substantially affect results. SPs were issued fake insurance cards and identification and other paperwork corresponding to their false identities, including cell-phone numbers which automatically connected to a recorded “voice mail” message on the study coordinator’s phone. SPs carried concealed tape recorders throughout the visit, capturing each encounter on audiotape. Throughout the first six visits and for randomly selected visits thereafter, SP recordings were evaluated for role fidelity and to prevent role drift. SPs received booster training if more than two months elapsed between completed visits. These methods maintained a high degree of role fidelity throughout the study. Further details on the procedure are available elsewhere (28).

## Sampling of Physicians

The physician sample consisted of internal and family medicine physicians recruited from the Rochester, NY area. These physicians consented to participate in a study on “social influences in practice”. Practice managers at clinics were enlisted as confederates to make “symptom-driven (urgent) new patient” appointments for the SPs. The randomization scheme was designed to provide each physician with one AD and on MDD visit. Medication requests were distributed evenly across AD and MDD conditions. SP visits to the same doctor were separated by at least two months. Within two weeks of an SP visit, physicians were sent a fax asking them if they suspected that a patient in the last two weeks had been an SP. Using the “liberal” criterion of previous work on detection (29), 32 of the 88 visits (36%) aroused at least vague suspicion (i.e., physicians responded “yes, definitely,” “yes, probably,” or “uncertain” rather than “probably not” or “definitely not” when asked if an SP had visited them in the last two weeks). After completing both SP visits, physicians were sent questionnaires that included questions on demographic characteristics, prior experience treating depression, personal/family history of depression, perceived competence, and personality data. Physicians were paid \$375; \$100 for each SP visit, \$100 for the office staff, and \$75 for completion of the survey.

## Measures

The Measure of Patient Centered Communication (MPCC) (25) was completed based on transcripts of the covert audio recordings made during each SP visit. Two independent coders with social work backgrounds were trained by the developers of the MPCC, and scored each component according to the prescriptions of Brown et al. (25). Component 1 of the MPCC (“exploring the disease and the illness experience”) involves six areas: reason for the visit, feelings, ideas, effects of symptoms on functioning, expectations, and prompts. In each of these areas broached by the patient, the rater assesses the extent of exploration by the physician. Physician verbal response can vary from completely ignoring a patient statement (“cutoff”) to exploring it through probing questions (one question = “preliminary exploration”, two or more questions = “further exploration”), to expressing understanding or empathy (“validation”). For instance, if the patient says “I have a stomach ache,” the physician could ignore the statement completely (cutoff), ask one question (“preliminary exploration”), ask two or more questions to gather additional information (“further exploration”), or say, “That sounds painful” or “Now I understand why you came to see me” (“validation”). “Cutoffs” receive the least amount of points, while “validations” (i.e., expressions of empathy, understanding, or support after exploration) receive the most points. The total component 1 score is the mean of scores across the six areas of component 1. Component 2 (“understanding the whole person”) involves a similar scoring scheme for the areas of family, social network, interests, and job. Component 3 (“finding common ground”) involves the same procedures for assessing the extent to which the physician involves the patient in discussions about diagnosis and treatment of the problem. Higher scores represent greater degrees of patient centered communication for each particular component. In the present study, the coders were blind to study hypotheses and physician personality data and each coded about 60% of the recordings (10% of the total visits coded by both coders for reliability). Coders met weekly to resolve coding ambiguities, and coding reliability totaled across all components was .82 (intraclass correlation), on par with the .80 to .83 inter-rater reliabilities reported by the MPCC developers (25).

The MPCC also standardizes scores across encounters by taking into account the number of different topic areas and statements made by patients, and in this way does not simply reward higher quantities of communication that may occur with patients who present more problems. Scores therefore reflect depth and quality of discussion rather than mere quantity, and in standardized form range from 0-100. Communication throughout the encounter may count toward any of the three components, so the the MPCC is not a sequential “checklist” for the

interview. The MPCC has been validated (25) and used extensively in research on patient-centered communication (7).

Physicians completed at their leisure the anxiety, vulnerability, tender mindedness, dutifulness, and a short form of the openness to feelings personality scales from the NEO-Personality Inventory, Revised (37), one of the most researched and widely used personality assessment instruments. Each scale involves 8 items (4 for the short form of openness to feelings), inquiring about typical attitudes, behaviors, emotions, and thought patterns related to each of the traits, and validation studies indicate excellent test-retest reliability (37). Sample items are: “I am easily frightened” (anxiety), “I often feel helpless and want someone else to solve my problems” (vulnerability), “We can never do too much for the poor and elderly,” (tender mindedness), “I find it easy to empathize—to feel what others are feeling” (openness to feelings), and “I try to perform all tasks assigned to me conscientiously” (dutifulness). Responses are provided to questions on a five point Likert scale ranging from “Strongly Disagree” to “Strongly Agree”. Traits are non-mutually exclusive continua, with higher scores represent greater amounts of each trait. As planned in hypotheses, anxiety and vulnerability were combined to form a single scale, a decision supported by their high correlation ( $r = .55$ ).

### Statistical Analyses

Outcomes were the score on each of the three MPCC components, standardized to a mean of 0 and standard deviation (SD) of 1 to facilitate interpretation. The effects of physician personality traits (also standardized to mean of 0, SD 1) on MPCC components were examined using Generalized Estimating Equations (GEE) (38) to account for the nesting of visits within physician (i.e. nearly all physicians received two SP visits, an MDD and AD presentation). Covariates included physician gender, specialty (internal or family medicine), years in practice, whether the SP portrayed AD or MDD, and whether the SP made a medication request or not. All physician personality traits were included in all models. We also controlled for whether the physician suspected the patient was an SP or not. We assessed for collinearity using Variance Inflation Factors (VIFs). Outcome distributions were Gaussian and correlation structures exchangeable. Secondary analyses examined whether physician personality traits affected MPCC scores different across the MDD vs. AD and medication request vs. no request conditions, and also covaried visit length. Finally, as GEE models do not provide  $R^2$  values, we generated predicted values from GEE models and regressed observed outcomes upon them, for models with and without personality factors. This allowed us to gain a sense of variance explained by physician demographics, training, and patient presentation variables, then the additional variance explained by personality variables for each outcome. Analyses were performed in Intercooled Stata 9.

### Results

Of 49 participating physicians in Rochester, 46 returned usable personality data, of whom 42 saw both an AD and MDD SP, while one saw only an AD SP and three saw only an MDD SP (88 total SP visits). Table 1 displays descriptive statistics for the 46 physicians, and Figure 1 distributions of personality traits according to national norms (37). As a group, physicians were +/- .5 SD of the national norms on all personality dimensions, with the exception of dutifulness, which was .76 SD above levels reported by the general population.

The adjusted effects of physician personality traits on the three components of MPCC are presented in Table 2. After controlling for demographic, training, and patient presentation covariates, physicians who were more open to feelings engaged in greater communication about the patient’s illness experience (MPCC component 1;  $p = .05$ ). A 1 SD increase in trait openness to feelings translated into a .17 SD increase in MPCC component 1. Higher dutifulness was associated with higher scores on component 2 (whole person;  $p = .03$ ) but

lower scores on component 3 (finding common ground;  $p = .02$ ), such that a 1 SD increase in this trait translated into .15 SD higher component 2 (whole person) and .22 SD lower component 3 (common ground) scores. Finally, greater anxious vulnerability was associated with lower component 3 (common ground) scores ( $p = .03$ ), with a one SD increase in this trait corresponding to a .23 SD decrease in scores.

Few covariates were independently associated with MPCC scores. Each year of practice experience resulted in  $-.02$  SD and  $+.02$  SD change in components 1 and 2, respectively, while family medicine specialty was associated with lower component 1 scores than internal medicine ( $-.56$  SD). No other covariates were significant. Physician personality did not interact with severity of depression presentation or medication request, controlling for visit time did not substantially alter findings, and diagnostics indicated no collinearity (i.e., highest VIF = 1.38).

Demographic, training, and SP presentation factors accounted for 7% of the variance in component 1 scores, while personality explained an additional 4.3% (total  $R^2 = .113$ ). For component 2, non-personality factors explained 7% of the variance, and personality explained an additional 7% (total  $R^2 = .14$ ). For component 3, non-personality factors explained 4.8% of the variance, while personality explained an additional 7.4% of the variance (total  $R^2 = .122$ ). The significant traits in Table 2 accounted for most of the personality variation in each case.

## Discussion

These results suggest that when primary care physicians see patients presenting with depression, personality traits are modestly but significantly associated with PCC patterns independent of patient presentation (symptom profile, request for medication) and physician demographics and training. Physicians more open to feelings tended to engage in correspondingly more communication exploring experiential aspects of patients' "illness experiences". Discussion of depression demands dialogue about the patient's phenomenology, feelings, and emotions. Doctors disposed toward emotional acuity engender greater disclosure of patients' ideas, feelings, expectations, and effects on function related to the depressive experience—yielding potentially clinically important information that allows the physician to discern the impact, pervasiveness and severity of the patient's symptoms, as well as personalizing and humanizing the process of discussing depression during the office visit.

Physicians who were more dutiful engaged in communication patterns that were more liable to elicit psychosocial information about the patient's family and social life, job, and hobbies. They were also less likely to find common ground and elicit patient preferences in the context of treatment planning (the latter result not hypothesized). These opposite effects on PCC likely reflect the tendencies comprising dutifulness: reliability, efficiency, and an adherence to internal and external standards for behavior (37)—features similar to the perfectionism trait positively associated with communication skills in medical students (15). When faced with a depressed patient, primary care physicians who are particularly dutiful may view exploration of patient's psychosocial circumstances as a necessity to gain vital diagnostic, treatment, or referral information. At the same time, these physicians' sense of obligation and responsibility may result in more directive approach to established treatment guidelines (39), although this does not mean that are less collaborative in general. However, failure to fully solicit patient input, while well-intended, may undermine adherence (6,14,40).

Physicians scoring higher on anxious vulnerability were also less likely to engage in communication patterns that elicited patient participation in treatment decisions. This trait indexes proneness to worry, insecurity, and doubts about one's ability to handle life challenges (37). Physicians with these tendencies may feel anxious, and/or less capable or comfortable

with patient presentations of depression. As a result, they may be more likely to fall into an “expert” role that utilizes more directive and controlled communication about treatment. Future research might examine whether this tendency generalizes to other disease states.

In order to gain a sense of the magnitude of personality effects, they can be interpreted in the context of a more familiar factor also associated with PCC—years of practice experience. For instance, a 1 standard deviation increase in Openness to Feelings translated into a roughly .17 SD increase in component 1, whereas 10 years of practice experience decreased component 1 scores by .23 SD (indicating that physicians in this sample who more recently entered practice engaged in more PCC, possibly reflecting greater emphasis in medical training over recent years on PCC and/or a tendency to use less PCC with accumulating years of experience). So the personality effect is equivalent to  $(.17 / .23 =)$  a difference of .85 of a decade of practice, or roughly 8.5 years. Similarly, the effect of 1 standard deviation increase in Dutifulness on component 2 scores was equivalent to the difference of .73 of a decade of practice, or 7.3 years. For component 3, practice experience was not a significant predictor, but personality effects were roughly comparable to those for components 1 and 2.

These findings indicate that trainees with personality tendencies associated with poorer communication may require additional or alternative training approaches. For instance, physicians prone to anxiety may require training to manage their worry when involving depressed patients (and perhaps other patients who behave passively or display negative emotions) in treatment planning. Physicians less emotionally attuned might benefit from training emphasizing perspective-taking or empathy skills (e.g., (11) ) when attempting to understand the personal impact of depression. Highly conscientious physicians, though likely to “cover their bases” with psychosocial history taking, might benefit from skill building around patient involvement in treatment planning. Of course, these same individuals may not self-identify as having poor PCC, reinforcing the importance of instructor, preceptor, and peer evaluations. Although personality can be expediently assessed by a variety of validated instruments (41), traits can also be judged with reasonable accuracy by those familiar with the individual (42,43). Interventions might best focus on honing PCC skills rather than altering personality itself however, given limited knowledge about how and to what extent personality changes during medical training (8,21,44), and whether such changes can be shaped.

Tender mindedness did not influence exploration of the subjective “illness experience”. Tender mindedness reflects compassionate attitudes and behaviors (37), and its lack of association with PCC was surprising and is difficult to explain substantively. Communication processes revolving around the patient’s psychosocial context may involve a great deal of mundane information that is not necessarily emotionally laden (i.e., non-affective small-talk about family and job), diluting any potential links between this component of PCC and physician openness to feelings. In addition, tender minded attitudes may not necessarily translate into patient-centered verbal behavior during office visits, or may do so only under certain circumstances (i.e., a patient in pain). Dutifulness also was not associated with component 1, perhaps because in the face of competing demands and time compression, more dutiful physicians strive to cover a wider range of biomedical information rather than explore patient phenomenology.

Conclusions must be tempered by the finding that while personality tended to explain as much variance in PCC as physician demographics, training, and patient presentation factors, both sets of influences accounted for modest amounts of variability in PCC. That is, physicians’ dispositional psychological and behavioral characteristics influence PCC to a small extent, as do other measured factors in the current study, but a large portion of variability in PCC remains unexplained. This probably reflects the complexity of PCC itself (1), but allows for the possibility that PCC is largely a learned behavior rather than reflective of physician personality. Variance accounted for in behavioral research tends to be less in general than biomedical



research due to such complexity (45), and while our findings suggest that much remains to be understood about this important clinical skill, the present results provide a new increment in such understanding.

Study limitations include a sample of PCPs that—while reasonably sized for an SP study on practicing physicians' personalities and PCC skills (e.g., (30,31,33) )—is smaller than other areas of provider research for which large national databases can be used. Potentially, more modest associations were missed due to limited power. We were also underpowered to examine interactions between physician personality and patient presentation factors. It is also possible that personality characteristics of participating physicians differed from those who did not participate. We could not assess this. In some cases, ceiling effects may have precluded finding an association. It is also not clear to what extent these associations between personality and PCC within the context of office visits involving depressed patients generalize to other encounters, and research on other diseases and medical contexts is warranted. Clinical versus personal contexts may reveal different aspects of physician personality, another area for future investigation.

The use of SPs was both a limitation and a strength of the study. SP visits allow for rigorous and standardized presentation of cases closely approximating patients seen in real practice, for experimental control, and careful scrutiny of physician behavior through audio recordings (30,31). But SPs are still actors, and may introduce unmeasured variance even though they maintained excellent fidelity and detection did not alter the associations observed here (cf. also (29)). Future research may benefit from replicating these results in larger, more diverse PCP samples, using actual patients as well as SPs. .

These limitations notwithstanding, we are unaware of prior work on personality traits and PCC among practicing physicians. Although the Institute of Medicine has identified patient-centered practice as an essential component of high-quality care and a process associated with important outcomes (46), enhancing PCC in routine clinical interactions remains challenging. Understanding how personality traits affect doctors' PCC can potentially inform efforts to identify medical trainees or practitioners who are apt to have difficulty with—or, alternatively, excel—at this skill, as well as guide tailored training efforts. Given the preliminary state of physician personality research, conclusions about broader policy would be premature. We also refrain from speculating about the implications of our findings for other aspects of physician decision making and clinical skills. However, the availability of brief assessment tools (41) render formal personality measurement feasible and inexpensive, while other evidence suggests that personality judgments can be made reasonably accurately by those familiar with the individual (42,43). Given interest in dispositional changes in cynicism and empathy during medical school (21,22) proposals to counteract these (47-49), efforts to assess the dispositional characteristics of medical school applicants (23,50) in hopes of reducing direct and indirect costs stemming from dysfunctional trainee personality characteristics (24), and the potential role of personality characteristics in subspecialty choice (51), further research on the determinants and implications of physician personality is warranted.

## Acknowledgements

We would like to thank the Social Influence on Practice research team for making this study possible. We also thank Cleve Shields, Judi Lardner for MPCC coding., Preferred Care, and Excellus BlueCross BlueShield of Rochester for providing access to physician lists, intellectual, pragmatic and facilitating the logistics of the SP visits material support.

Support: This study was supported by grant 5 R01 MH 064683-03 to RL Kravitz, Principal Investigator, and T32 MH073452, to Jeffrey Lyness and Paul Duberstein, K24 MH 72756 MH072712 to Paul Duberstein, and K24MH072756 to RL Kravitz

## References

1. Epstein RM, Franks P, Fiscella K, et al. Measuring patient-centered communication in patient-physician consultations: Theoretical and practical issues. *Soc Sci Med* 2005;61(7):1516–28. [PubMed: 16005784]
2. Levenstein JH, Mccracken EC, Mcwhinney IR, et al. The patient-centered clinical method. 1. a model for the doctor-patient interaction in family medicine. *Fam Pract* 1986;3(1):24–30. [PubMed: 3956899]
3. Stewart M. Communications-research - response. *Can Med Assoc J* 1995;153(8):1065.
4. Greenfield S, Kaplan S, Ware JE. Expanding patient involvement in care - effects on patient outcomes. *Ann Intern Med* 1985;102(4):520–8. [PubMed: 3977198]
5. Roter DL. Patient participation in patient-provider interaction - effects of patient question asking on quality of interaction, satisfaction and compliance. *Health Educ Monogr* 1977;5(4):281–315. [PubMed: 346537]
6. Stewart M, Brown JB, Donner A, et al. The impact of patient-centered care on outcomes. *J Fam Pract* 2000;49(9):796–804. [PubMed: 11032203]
7. Epstein RM, Franks P, Shields CG, et al. Patient-centered communication and diagnostic testing. *Annals of Family Medicine* 2005;3(5):415–21. [PubMed: 16189057]
8. Clever SL, Ford D, Rubenstein LV, Rost KM, Meredith LS, Sherbourne CD, et al. Primary care patients' involvement in decision making is associated with improvement in depression. *Med Care* 2006;44(5):398–405. [PubMed: 16641657]
9. Schwenk TL, Evans DL, Laden SK, et al. Treatment outcome and physician-patient communication in primary care patients with chronic, recurrent depression. *Am J Psychiatry* 2004;161(10):1892–901. [PubMed: 15465988]
10. Epstein RM, Shields CG, Franks P, et al. Exploring and validating patient concerns: Relation to prescribing for depression. *Annals of Family Medicine* 2007;5(1):21–8. [PubMed: 17261861]
11. Brunett PH, Campbell TL, Cole-Kelly K, et al. Essential elements of communication in medical encounters: The kalamazoo consensus statement. *Academic Medicine* 2001;76(4):390–3. [PubMed: 11299158]
12. Bertakis KD, Helms LJ, Callahan EJ, et al. The influence of gender on physician practice style. *Med Care* 1995;33(4):407–16. [PubMed: 7731281]
13. Bertakis KD, Callahan EJ, Helms LJ, et al. Physician practice styles and patient outcomes: Differences between family practice and general internal medicine. *Med Care* 1998;36(6):879–91. [PubMed: 9630129]
14. Roter DL, Stewart M, Putnam SM, et al. Communication patterns of primary care physicians. *Jama-Journal of the American Medical Association* 1997;277(4):350–6.
15. Manuel RS, Borges NJ, Gerzina HA. Personality and clinical skills: Any correlation? *Academic Medicine* 2005;80(10):S30–3. [PubMed: 16199453]
16. Stratton TD, Elam CL, Murphy-Spencer AE, et al. Emotional intelligence and clinical skills: Preliminary results from a comprehensive clinical performance examination. *Academic Medicine* 2005;80(10):S34–7. [PubMed: 16199454]
17. Riemann R, Angleitner A, Borkenau P, et al. Genetic and environmental sources of consistency and variability in positive and negative mood. *European Journal of Personality* 1998;12(5):345–64.
18. McCrae, RR.; Costa, PT. *Personality in adulthood*. Vol. 2nd ed.. Guilford; New York: 2003.
19. Roberts BW, DelVecchio WF. The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies. *Psychol Bull* 2000;126(1):3–25. [PubMed: 10668348]
20. Roberts BW, Walton KE, Viechtbauer W. Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychol Bull* 2006;132(1):1–25. [PubMed: 16435954]
21. Hojat M, Mangione S, Nasca TJ, et al. An empirical study of decline in empathy in medical school. *Med Educ* 2004;38(9):934–41. [PubMed: 15327674]
22. Hojat, M. *Empathy in patient care: Antecedents, development, measurement, and outcomes*. Springer Science + Business Media; New York, NY, US: 2007. p. 2952007

23. Knights JA, Kennedy BJ. Medical school selection: Screening for dysfunctional tendencies. *Medical Education* 2006;40:1058–1064. [PubMed: 17054614]
24. Knights JA, Kennedy BJ. Medical school selection: Impact of dysfunctional tendencies on academic performance. *Medical Education* 2007;41:362–8. [PubMed: 17430281]
25. Brown, JB.; Stewart, MA.; Ryan, BL. Assessing communication between patients and physicians: The measure of patient-centered communication (MPCC). Thames Valley Family Practice Research Unit and Centre for Studies in Family Medicine; London, Ontario, Canada: 2001.
26. McCrae, RR.; Costa, PTJ. A five-factor theory of personality. In: Pervin, LA.; John, OP., editors. *Handbook of Personality: Theory and Research*. Guilford; New York: 1999. p. 139-153.
27. McCrae RR, Costa PT Jr. Personality trait structure as a human universal. *American Psychologist* 1997;52:509–16. [PubMed: 9145021]
28. Kravitz RL. Influence of patients' requests for direct-to-consumer advertised antidepressants: A randomized controlled trial. *JAMA* 2005;294(19):2436.
29. Franz CE, Epstein R, Miller KN, et al. Caught in the act? prevalence, predictors, and consequences of physician detection of unannounced standardized patients. *Health Serv Res* 2006;41(6):2290–302. [PubMed: 17116121]
30. Srinivasan M, Franks P, Meredith LS, et al. Connoisseurs of care? unannounced standardized patients' ratings of physicians. *Med Care* 2006;44(12):1092–8. [PubMed: 17122713]
31. Fiscella K, Franks P, Srinivasan M, et al. Ratings of physician communication by real and standardized patients. *Annals of Family Medicine* 2007;5(2):151–8. [PubMed: 17389540]
32. Fiscella K, Meldrum S, Franks P, Shields CG, Duberstein P, McDaniel S, et al. Patient trust: Is it related to patient-centered behavior of primary care physicians? *Medical Care* 2004;42(11):1049–55. [PubMed: 15586831]
33. Epstein RM, Shields CG, Meldrum SC, et al. Physicians' responses to patients' medically unexplained symptoms. *Psychosom Med* 2006;68(2):269–76. [PubMed: 16554393]
34. Beach MC, Rosner M, Cooper LA, Duggan PS, Shatner J. Can patient-centered attitudes reduce racial and ethnic disparities in care? *Academic Medicine* 2007;82(2):193–8.
35. McDaniel SH, Beckman HB, Morse DS, et al. Physician self-disclosure in primary care visits - enough about you, what about me? *Arch Intern Med* 2007;167(12):1321–6. [PubMed: 17592107]
36. Seaburn DB, Morse D, McDaniel SH, et al. Physician responses to ambiguous patient symptoms. *Journal of General Internal Medicine* 2005;20(6):525–30. [PubMed: 15987328]
37. Costa, PT.; McCrae, RR. Revised NEO personality inventory and NEO five factor inventory: Professional manual. Psychological Assessment; Odessa, FL: 1992.
38. Hanley JA, Negassa A, Edwardes MDD, et al. Statistical analysis of correlated data using generalized estimating equations: An orientation. *Am J Epidemiol* 2003;157(4):364–75. [PubMed: 12578807]
39. Rush, AJ.; Hall, GW., et al. Depression in primary care: Clinical practice guidelines. Agency for Health Care Policy and Research; 1993. AHCPR Publication Np. 93-0550
40. Williams GC, McGregor HA, Sharp D, et al. Testing a self-determination theory intervention for motivating tobacco cessation: Supporting autonomy and competence in a clinical trial. *Health Psychology* 2006;25(1):91, 101. [PubMed: 16448302]
41. De Raad, B.; Perugini, M., editors. Big five assessment. Hogrefe & Huber Publishers; Toronto, Canada: 2002.
42. Funder DC. On the accuracy of personality judgment: A realistic approach. *Psychol Rev* 1995;102(4):652–70. [PubMed: 7480467]
43. Funder DC, Kolar DC, Blackman MC. Agreement among judges of personality: Interpersonal relations, similarity, and acquaintanceship. *J Pers Soc Psychol* 1995;69(4):656–72. [PubMed: 7473024]
44. Hojat M, Zuckerman M, Magee M, et al. Empathy in medical students as related to specialty interest, personality, and perceptions of mother and father. *Personality and Individual Differences* 2005;39(7):1205–15.
45. Cohen, J.; Cohen, P.; West, SG., et al. Applied multiple Regression/Correlation analysis for the behavioral sciences. Vol. 2nd ed.. Lawrence Erlbaum Associates; Mahwah, NJ: 2003.

46. Institute of Medicine. Improving medical education: Enhancing the behavioral and social science content of medical school curricula. National Academies Press; Washington, DC: 2004.
47. Charon R. Narrative medicine - A model for empathy, reflection, profession, and trust. *JAMA* 2001;286(15):1897–902. [PubMed: 11597295]
48. Epstein RM. Virtual physicians, health systems, and the healing relationship. *Journal of General Internal Medicine* 2003;18(5):404–6. [PubMed: 12795741]
49. Williams GC, Deci EL. The importance of supporting autonomy in medical education. *Ann Intern Med* 1998;129(4):303–8. [PubMed: 9729184]
50. Eva KW, Reiter HI, Rosenfeld J, et al. The ability of the multiple mini-interview to predict preclerkship performance in medical school. *Academic Medicine* 2004;79(10):S40–2. [PubMed: 15383385]
51. Vaidya NA, Sierles FS, Raida MD, et al. Relationship between specialty choice and medical student temperament and character assessed with cloning inventory. *Teach Learn Med* 2004;16(2):150–6. [PubMed: 15294460]

**Table 1**  
Physician Descriptives and Depressive History Taking During SP Visits

PCP Physicians (N = 46)	
Physician Characteristics	N (%) or M (SD)
Age	45.4 (7.83)
Gender	
Female	13 (28%)
Male	33 (72%)
Race	
White	40 (87%)
Minority	6 (13%)
Years in Practice	16.4 (7.54)
Specialty	
Internal Medicine	33 (72%)
Family Medicine	13 (28%)
Personality Traits *	
Anxiety	13.5 (6.4)
Vulnerability	8.4 ( 3.6)
Tender mindedness **	21.5 (3.5)
Dutifulness	26.1 (3.3)
Openness to Feelings ***	9.0 (1.71)

\* raw scores, all except tendermindedness within +/- one third standard deviation of population personality norms

\*\* about .6 SD higher than population norms

\*\*\* short form

Table 2

Predictors of History Taking and Depression Diagnosis

	Component 1: Understanding the Illness Experience		Component 2: Understanding the Whole Person		Component 3: Collaborative Treatment Planning	
	B (SE)	P	B (SE)	P	B (SE)	P
SP Portrayal of Major Depression <sup>a</sup>	-.113 (.232)	.627	.377 (.232)	.104	-.241 (.224)	.281
SP Request for Medication <sup>b</sup>	-.198 (.198)	.316	-.046 (.231)	.843	.143 (.236)	.543
Physician Suspicious Visit Was SP <sup>c</sup>	-.071 (.18)	.695	.348 (.192)	.069	.230 (.213)	.280
Family Medicine Speciality <sup>d</sup>	<b>-.556 (.199)</b>	<b>.005</b>	.343 (.214)	.109	.192 (.235)	.415
Male Physician <sup>e</sup>	-.023 (.185)	.903	-.216 (.151)	.151	.057 (.191)	.767
Years in Practice <sup>f</sup>	<b>-.023 (.009)</b>	<b>.009</b>	<b>.020 (.010)</b>	<b>.039</b>	-.003 (.104)	.819
Anxious Vulnerability	-.135 (.107)	.207	-.118 (.095)	.213	<b>-.229 (.104)</b>	<b>.028</b>
Tender mindedness	-.01 (.095)	.945	-.169 (.131)	.196	-.031 (.078)	.691
Dutifulness	-.126 (.078)	.109	<b>.146 (.068)</b>	<b>.032</b>	<b>-.219 (.093)</b>	<b>.018</b>
Openness to Feelings	<b>.172 (.088)</b>	<b>.052</b>	.046 (.129)	.724	-.019 (.087)	.822

Note. Results from GEE models of 88 SP visits to 46 physicians. Coefficients represent the standard deviation change in each MPCC component associated with covariates or one standard deviation increase in each personality trait. SP = Standardized patient.

<sup>a</sup> vs. Adjustment Disorder reference category

<sup>b</sup> vs. no prescription request reference category

<sup>c</sup> vs. no suspicion reference category

<sup>d</sup> vs. internal medicine, reference category

<sup>e</sup> vs. female reference category

<sup>f</sup> coefficient reflects the SD change in MPCC scores associated with each year in practice.