UNIVERSITY OF CALIFORNIA
RIVERSIDE

Physician-Patient Communication and Physician Satisfaction: Analysis of Physician and Patient Behavioral Characteristics in the Medical Visit

A Dissertation submitted in partial satisfaction
of the requirements for the degree of

Doctor of Philosophy

in

Psychology

by

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June 2015

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Acknowledgements

I would like to thank and acknowledge the support of several wonderful individuals who contributed not only to the development of this dissertation but also to the success of my graduate research career in general.

I would like to express my sincere gratitude to my advisor, Dr. M. Robin DiMatteo. Thank you for providing me with endless opportunities to grow and flourish not only as a researcher but also as a person. I am so grateful for all the writing, teaching, and project management skills that I have learned from you. You have been a true source of inspiration to me these past 10 years. You have *always* believed in me and my abilities (even when it seemed no one else did, including myself); there are no words to convey how much that has truly meant to me. Your insight and lessons on achieving work-life balance have been invaluable to this journey. I think of you now, not only as an advisor, but also as a friend. It has been a true pleasure to know you, and I will never be able to properly thank you for all that you have done for me.

I would also like to thank the members of my dissertation committee: Drs. Robert Rosenthal and Misaki Natsuaki. Dr. Rosenthal, thank you for generously giving your time and sharing your wisdom of research design, methodology, and statistics (including meta-analytic techniques) with me these past 5 years. I feel especially fortunate to have had the opportunity to learn from you. Dr. Natsuaki, thank you for your endless encouragement and for serving on both my qualifying exam and dissertation committees; your ideas and feedback have been absolutely invaluable and I hope to continue working with you in the years ahead.

To Brittany Bannon, thank you for your friendship and support. We have seen and helped each other through so much in graduate school both personally and professionally, and for that I am so grateful. You have become one of my very best friends and I foresee many successful collaborations in our future! Also to Faye Harmer, from the day I started graduate school you have continued to be a beacon of support, encouragement, and especially advice. Thank you for always keeping your office door open and being available for all the times when I needed it.

My sincerest thanks and appreciation to my family for their continued love and support no matter what path I choose.

Finally, to my remarkable husband Bailey, thank you for your unfailing love and encouragement throughout my years of study. In many ways this has been a joint venture as well as a joint achievement. I am so grateful to you for giving all your support without any complaint or regret; none of this would have been possible without you. I dedicate this dissertation to you. Above all, I love you with all of my being and I am so grateful for the life that we share together.

Dedication

This dissertation is dedicated to my husband Bailey. This work and the success it represents to me is the result of your unwavering support, encouragement, and love.

ABSTRACT OF THE DISSERTATION

Physician-Patient Communication and Physician Satisfaction: Analysis of Physician and Patient Behavioral Characteristics in the Medical Visit

by

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Doctor of Philosophy, Graduate Program in Psychology
University of California, Riverside, June 2015
Dr. M. Robin DiMatteo, Chairperson

The objective of this dissertation study was to develop a reliable and valid scale, called the Physician Patient Behavioral Characteristics Scale (PPBCS), to assess physician and patient behavioral characteristics that are expressed during the primary care medical visit. Relationships were assessed between PPBCS composite ratings, physician characteristics, visit satisfaction as expressed by both patients and physicians, and rated global affect in audio recordings of the medical visit. The degree to which physician gender and ethnicity was related to physician satisfaction was also examined across levels of patient income/socioeconomic status (SES). Four judges used the PPBCS to objectively rate 298 physician-patient audio recordings from a study originally fielded by the Bayer Institute for Health Care Communication. The PPBCS was shown to have good interrater reliability. Principal components analyses yielded two physician factors, *enthusiasm* and *frustration*, and three patient factors, *demanding*, *enjoyable*, and

nonadherent. Scale composites formed from these factors had good internal consistency. The PPBCS demonstrated empirical validity in correlations of physician and patient factors with patient satisfaction. As expected, physicians who were rated highly on *enthusiasm* had patients' who perceived better opportunities for decision-making, better choice in their care, and had more positive perceptions of their physicians' ability to provide information. Further evidence of validity was revealed from correlations: *Enjoyable* patients and *enthusiastic* physicians (as rated on the PPBCS) perceived there to be more effective communication, more patient involvement, and more healthy collaboration in the medical interaction. The PPBCS was also shown to have good convergent validity due to correlations with the *z*BGRS, another observer-rated measure of patient and physician behavioral characteristics in the medical visit. In general, there were few significant relationships between physician characteristics and PPBCS composites, PSQ, and *z*BGRS measures. Physicians' reported level of stress, however, was negatively correlated with assessments of their satisfaction with: the medical visits, the use of time, and with the patient. Analysis of the relationships between physician gender and patient and physician behavioral characteristics revealed female physicians to be more *enthusiastic* compared to male physicians. Female physicians were also found to be more effective communicators and more engaged in healthy collaboration compared to male physicians. There were no relationships between physicians' gender-ethnicity group membership and physicians' satisfaction with patients of different SES, however. Strengths, limitations, and clinical implications of this study were also discussed.

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Chapter One

Physician-Patient Communication and Physician Satisfaction: Analysis of Physician and Patient Behavioral Characteristics in the Medical Visit

Overview

Research in the social and behavioral sciences has identified effective physician-patient communication as a central component to achieving high-quality health outcomes (Hall, Rotar & Katz, 1988; Roter & Hall, 1992; Zolnierek & DiMatteo, 2009). The relationship between physician-patient communication and patient satisfaction has received a significant amount of research attention. Numerous methodological instruments have been developed in efforts to assess patient satisfaction and various dimensions of patients' perceptions of the quality of their care (DiMatteo, Taranta, Friedman & Prince, 1980; Ware, Synder, Wright, & Davies, 1983; Brédart, Bouleuc & Dolbeault, 2005). Research suggests that physicians who are empathic, who foster collaborative partnerships, and who engage in patient-centered interviewing have patients who are more satisfied with their care (Larson & Yao, 2005; Deladisma et al., 2007; Cant & Aroni, 2008). Few empirical studies, however, have been published examining the potential factors that are related to physicians' overall satisfaction. In particular, little is known about patient-related factors or aspects of the medical visit that may be associated with physician satisfaction with the visit and the patient. Research by Suchman, Roter, Green, and Lipkin (1993) indicates that physicians' satisfaction and perceptions about

their experiences with their patients can reflect and potentially shape what takes place within the medical visit and beyond. A systematic understanding of physician satisfaction may offer explanatory and evaluative insights into the physician-patient relationship and the process and delivery of care (Suchman et al., 1993). Thus, the primary goal of this dissertation study involves the assessment and examination of physician and patient behavioral characteristics that take place within the medical interaction and how such behavioral characteristics may be related to physicians' satisfaction with their patients and the medical visit.

Physician-Patient Communication and Patient Satisfaction

The relationship between effective physician-patient communication and patient satisfaction has been widely recognized. Early research in the field suggested that physician-patient communication could enhance patient satisfaction through various mechanisms including a physician's communication style (Buller & Buller, 1987; Bertakis, Roter & Punam, 1991; Cousin, Mast, Roter, & Hall, 2012). Physicians who utilize a patient-centered communication style have patients with higher levels of satisfaction (Cousin, et al., 2012). Patient-centeredness can be described as a communication style that encompasses high levels of both caring and sharing (Cousin et al., 2012).

A caring communication style allows physicians to establish and maintain positive relationships with their patients, where physician behaviors are characterized by warmth, friendliness, interest, empathy, and the willingness and desire to help (Buller & Buller, 1987; Cousin et al., 2012). Research indicates that the level of caring in physician

communication is associated with patient satisfaction, treatment adherence, and an increase in patient adjustment to living with illness (Roberts, Cox, Reintgen, Baile, & Gilbertini, 1994; DiMatteo & Lepper, 1998; Beck, Daughtridge, & Sloane, 2002; Cousin et al., 2012). Additionally, physicians' verbal behaviors that reflect aspects of caring, such as expressions of empathy, statements of reassurance, positive reinforcement, laughing and joking, courtesy, and psychosocial talk have been associated with positive patient outcomes (Beck et al., 2002).

Sharing (sometimes called low dominance) is most notably conveyed through a nondirective communication style, known as shared decision-making. In shared decision-making, physicians ask open-ended questions and avoid using medical jargon or interrupting their patients (Hall et al., 1988; Cousin et al., 2012). Research by Cecil and Killeen (1997) found that low sharing (or high dominance) was associated with lower levels of patient satisfaction. Similarly, Mast, Hall and Roter (2008), found that low-sharing physicians had patients who spoke less and disclosed less medical information than patients who interacted with high sharing physicians. Low sharing behaviors in physicians have also been associated with less patient encouragement to ask questions, disregard for patient perspectives, lack of discussion of the effects of treatment (e.g., treatment side effects), lack of responsiveness to patient questions, increases in interruptions, and increases in speech directivity (Beck et al., 2002). Some empirical evidence suggests that a communication style characterized by aspects of both caring and sharing does not have the same impact on all patients; rather, individual characteristics moderate a patient's reactions to their physician's communication style (Cousin et al.,

2012). For instance, caring has a stronger influence on patient satisfaction when a patient's illness is less severe (Cousin et al., 2012). Additionally, patients who are more anxious about their health prefer physicians who they perceive to sound less positive but who appear more serious and concerned (Hall, Roter, & Rand, 1981). Some patients prefer to be more passive in the decision-making process. Older, less educated male patients, for example, generally prefer to play a more passive role in their care (Hall et al., 1981; Levinson, Kao, Kuby, & Thisted, 2005).

Nonverbal Communication and Patient Satisfaction. Information within the medical encounter can be transmitted by means of both verbal (e.g., spoken words) and non-verbal communication (DiMatteo et al., 1980). Nonverbal communication involves the utilization of emotion cues to convey messages through channels of facial expressions (e.g., smiles and grimaces), body posture and movements (e.g., finger tapping), touch, eye contact, physical distance and orientation, as well as vocal cues (e.g., tone and inflection of voice) (DiMatteo et al., 1980; Martin & Friedman, 2005; Mast & Cousin, 2013). Several outcome variables are associated with nonverbal communication – the most common is patient satisfaction with care (Hall, Harrigan & Rosenthal, 1995). Greater patient satisfaction is associated with greater physician nonverbal interest, less time reading patient charts, less touch by the physician, and closer interpersonal distance between the physician and patient (Beck et al., 2002; Griffith, Wilson, Langer, & Haist, 2003; Henry, Fuhrel-Forbis, Rogers, & Eggly, 2012). In addition, a physician's nonverbal skills, particularly a physician's sensitivity to a patient's body posture and movements, are associated with greater patient satisfaction (DiMatteo et al., 1980). Furthermore,

research by Griffith et al. (2003) suggests that nonverbal communication cues may be less susceptible to censorship than verbal cues and are often more reliable indicators of what is actually being communicated during the medical interaction.

Physician Behaviors Associated with Patient Satisfaction

In addition to a physician's communication style, physician behaviors such as information provision (or information-giving) have been positively associated with patient satisfaction (Williams, Weinman, & Dale, 1998). In particular, researchers have sought to determine whether the amount of information provided by physicians, and discussion of psychosocial information, are associated with differences in patient satisfaction (Williams et al., 1998). In an early meta-analysis by Hall et al. (1988), greater patient satisfaction (as measured by post-visit questionnaires or interviews) was significantly associated with more information given by physicians. Researchers found that information provision by physicians, specifically during the medical examination, resulted in significant increases in patient satisfaction (Hall et al., 1988). In a review by Williams et al. (1998), researchers examined studies that looked at how the Bales Process Analysis System, Roter's Interaction Analysis System, and Stiles Verbal Response Modes were used to examine physician-patient verbal behaviors in the medical visit and patient satisfaction. Results from these studies indicated that physician statements in which information is repeated, clarified and confirmed were significantly associated with greater patient satisfaction (Bales, 1968; Roter, 1977; Stiles, 1978). Additionally, analyses using the Stiles Verbal Response Modes revealed that physicians who gave their patients feedback about their illness at the end of the medical encounter had patients who

were more satisfied with their care (Stiles, 1978). Thus, it is possible that information given by physicians fulfills an emotionally supportive function for patients (Roter, Hall, & Katz, 1987).

Investigations of the affective domain of physician behaviors have also shown associations with patient satisfaction (Roter et al., 1987; Hall, Horgan, Stein, & Roter, 2002). For example, research examining a physician's "liking" of a patient has found positive and significant associations between how much physicians like their patients and both physician and patient satisfaction (Hall et al., 2002). In a study by Hall et al. (2002), results indicated that patients in better health liked their physicians more and were generally more satisfied with the medical visit. There may be a reciprocal relationship between liking and satisfaction, such that more liking leads to greater satisfaction and greater satisfaction leads to more liking (Hall et al., 2002). Perhaps, when physicians and patients like each other, their behaviors reflect this. For example, both physician and patient may show greater responsiveness to each other. A patient might then pay more attention to what the physician says and subsequently be more likely to adhere to treatment recommendations (Hall, et al., 2002). Similarly, the physician might listen more to what the patient says and be more willing to explain in detail aspects of treatments and encourage the patient to participate in decision-making.

Interestingly, results from the Hall et al. (2002) study suggest important implications for physicians' overall satisfaction with their patients. Researchers found that physicians had greater liking for healthier male patients. In addition, gender effects

were also found, such that female physicians liked their patients more than did male physicians (Hall, Epstein, DeCiantis, & McNeil, 1993).

Factors Associated with Physician Satisfaction and Dissatisfaction

Few empirical studies have been published examining factors associated with physician satisfaction. Early research in the field has identified some potential determinants of physicians' overall satisfaction with the medical visit. Specifically, researchers have looked at the nature of patients' problems (e.g., organic versus psychosocial), physicians' external constraints (e.g., on-call responsibilities and heavy patient loads), and patient-related factors (e.g., cooperative versus demanding patients) as determinants of physicians' satisfaction (Dungal, 1978; Crutcher & Bass, 1980; Weinberger, Greene, & Mamlin, 1981; Shore & Franks, 1986). In a study by Suchman et al. (1993), researchers developed a multidimensional measure of physician satisfaction. Results from this study revealed that physicians were less satisfied with visits in which they used a large number of facilitative remarks (requiring physicians to be more active) while on call or when they were pressed for time (Suchman et al., 1993). Conversely, the most positively regarded medical encounters were those in which physicians used nonverbal encouragement, as well as those in which patients demonstrated compliance, and both humor and friendliness were demonstrated during the medical examination (Suchman et al., 1993).

Literature on the "difficult patient" suggests important patient-related factors associated with physician frustration and dissatisfaction (Hahn et al., 1996). A "difficult patient" can be characterized by two factors: 1) "medical uncertainty" which describes

patients with vague, complex or ambiguous medical problems, and 2) “interpersonal difficulty” or a patient’s abrasive behavioral style (Hahn, Thompson, Wills, Stern & Budner, 1994). Research by Hahn et al. (1996) found that one out of every six patients (within their sample) was described as “difficult.” Researchers found that physicians were unenthusiastic about providing care to difficult patients, found them frustrating and time-consuming, and did not look forward to their patients' follow-up visits (Hahn et al., 1996). Physicians felt that difficult patients were considered self-destructive or difficult to communicate with (Hahn et al., 1996). Additionally, patients who were described as “difficult” were as dissatisfied with the care they received as were the physicians who provided that care (Hahn et al., 1996). Additionally, a study by Lin et al. (1991) compared patients viewed as "frustrating" by their primary care physicians with patients considered typical and satisfying. This research found that physicians and their frustrating patients had contrasting views. For example, physicians believed that their frustrating patients were no more physically ill than the typical or satisfying patient (Lin et al., 1991). Physicians also felt that frustrating patients presented physical symptoms as an expression of underlying psychosocial difficulties, and had more psychosocial problems (Lin et al., 1991). Frustrating patients felt that their health status was worse than that of non-frustrating patients (and often disabling). Frustrating patients made more visits to primary care, used more emergency services, telephoned more frequently, underwent more diagnostic testing, and requested more specialty evaluations than did typical patients (Lin et al., 1991). Physicians viewed their frustrating patients as using services in excess of medical need.

Research on physician stress and burnout suggests important implications for job dissatisfaction. In a study by Quinn, Wilcox, Orav, Bates and Simon (2009), researchers found that dissatisfied physicians were more likely to leave their practices, cut down on their clinical hours, and retire early. Patients are also significantly affected by physician dissatisfaction. For example, research indicated that dissatisfied physicians have less satisfied and less adherent patients (Melville, 1980; DiMatteo et al., 1993; Haas et al., 2000). Thus, professional isolation and work-life stress inhibit the wellbeing of some physicians (Linn, Yager, Cope, & Leake, 1985; Lavanchy et al., 2004).

In sum, the empirical literature on physician satisfaction provides important insights into the physician-patient relationship. Research to date suggests that there are few current empirical studies examining how physicians communicate with patients who exhibit various behavioral patterns, and how satisfied both physicians and patients are with the medical interaction.

Research Questions

The primary goal of this dissertation study is the assessment and examination of physician and patient behavioral characteristics in the medical visit, and how such behavioral characteristics are related to physicians' satisfaction with their patients and the medical visit. Three main research questions will be addressed in this dissertation study.

Research Question 1. Can a reliable and valid scale, called the Physician and Patient Behavioral Characteristics Scale (PPBCS) be developed to assess physician and patient behavioral characteristics in the medical visit?

Research Question 2. Are physician characteristics: age, work stress, quality of life, and satisfaction with medical practice related to PPBCS composites, patient and physician reports of satisfaction, and independent ratings of global affect in the medical interaction? Are there differences across male and female physicians on PPBCS composite scores and measures of PSQ, DSQ, and *z*BGRS?

Research Question 3. Do ratings of physicians' satisfaction differ across levels of patients' socioeconomic status (SES), and are these differences related to physician's gender-ethnicity group membership?

Hypotheses

Based upon previous literature and the research questions discussed above, the following general hypotheses are offered. For research question 1a, it is hypothesized that a reliable scale (PPBCS) of physician and patient behavioral characteristics can be developed. It is also hypothesized that the PPBCS will have acceptable inter-rater reliability (according to Cronbach's alpha), and that the principal components analyses (PCA) will reveal multiple factors, allowing for the computation of meaningful and reliable subscales.

For research question 1b, it is hypothesized that the PPBCS will have acceptable convergent validity based on correlations of the scale scores with: patient reports of their satisfaction on post visit questionnaires (as measured by the Patient Satisfaction Questionnaire, or PSQ), physician reports of their satisfaction on post visit questionnaires (as measured by the Doctor Satisfaction Questionnaire, or DSQ), and prior ratings of global affect from the Bayer Global Rating Scale, or the *z*BGRS. Specifically, aspects of

the PPBCS will be correlated with selected patient and physician ratings of satisfaction in the medical visit. The PPBCS is also hypothesized to correlate with prior ratings of global affect of these interactions from the Bayer Global Rating Scale (*z*BGRS). In particular, aspects of the PPBCS will correlate with measures of global affect, including effective physician communication, patient involvement, and healthy physician-patient collaboration. Such correlations will be informative regarding the degree to which judgments of objective raters using the new PPBCS correlate with physician and patient perceptions of satisfaction post visit, as well as with independent ratings made of the global affect in these selected interactions.

For research question 2, it is hypothesized that physician characteristics (gender, age, work stress, quality of life, and satisfaction with medical practice) will be significantly associated with PPBCS composites, PSQ, DSQ, and *z*BGRS measures. In addition, there will be mean differences between male and female physicians on PPBCS composite scores and on measures of PSQ, DSQ, and *z*BGRS.

Lastly, for research question 3 it is expected that physicians will be more satisfied with patients of high SES compared to patients of medium or low SES. There is no specific hypothesis regarding whether or not there will be an interaction between physicians' gender-ethnicity group membership and patient SES on physician satisfaction.

The following method section describes how the research questions were examined and hypotheses assessed in this dissertation.

Chapter Two

Method

Overview

A subset of existing audiotaped recordings and questionnaire data from the Institute for Health Care Communication (formerly the Bayer Institute for Health Care Communication) was used for this dissertation study. The original study involved over 2,000 audiotaped physician-patient interactions in a randomized clinical trial. The purpose of the original study was to assess the effects of physician and patient communication training on a variety of outcomes, including physician and patient satisfaction with the medical visit, physicians' self-reported quality of life and their attitudes toward their practice, and the assessment of global affect in the physician-patient interaction. Findings from this research regarding outcomes of communication skills training were published in Haskard et al., (2008). Using a subset of these interactions, the present study develops and employs a new rating methodology for assessing physician and patient behavioral characteristics in the medical visit. In the following subsections, the original study will be described first including the study design and description of the original training intervention. A description of the methodology undertaken for the current dissertation study follows.

Original Study Description

Participants. The original dataset consisted of audiotaped visits for 156 physicians at three primary care settings in the US: a university medical center (94

physicians), a Veteran's Health Administration hospital (5 physicians), and a primary care staff model Health Maintenance Organization (57 physicians). On average, each physician saw 14 patients throughout the study (range: 5-19 patients); up to 8 patients were seen at each of the three assessment periods. The study included 2,191 patients in interaction with the 156 recruited physicians: 62.6% of patients at the university medical center, 3.3% of patients at the Veteran's Health Administration hospital, and 34% of patients in the primary care staff model Health Maintenance Organization. Patients did not participate in more than one assessment period. Informed consent was obtained from all physicians who volunteered to participate in the study. Physicians did not receive monetary compensation for participating in the study. The Human Subjects Review Committee of all the institutions involved approved the study.

Participant Recruitment. Patients were recruited in waiting or examination rooms. Patients were eligible for the study if they were 18 years of age or older and had seen a participating physician at least once in the past year. Patients received $5.00 compensation for their participation in the experimental group (patient training). More than 95% of patients agreed to participate. Reasons patients gave for refusing participation in the study included: concerns about confidentiality, concerns about being audiotaped, and lack of interest. Each patient completed an informed consent form and was told that they could withdraw from the study at any time.

Original Study Design. A 2 x 2 between subjects analysis of variance (ANOVA) design was used for this study. Physicians were randomly assigned to one of four experimental treatment groups: physician trained and patient untrained (41 physicians),

patient trained and physician untrained (38 physicians), physician and patient trained (38 physicians), and neither physician nor patient trained (39 physicians).

Original Study Method and Procedures. In the original dataset, physician-patient interactions were audiotaped and assessments were taken at three different time points: a) baseline, b) 1 month after physician communication training, and c) 6 months after communication training. In the training intervention conditions, physicians were trained to improve their communication with patients, and patients were trained to be more involved in the medical visit. Assessments consisted of post-visit questionnaires for physicians and patients, as well as questionnaires regarding attitudes toward medical practice for physicians.

Current Dissertation Study

The current dissertation study employed a subset of the original dataset. The data used in the current study came from the baseline assessments for all four experimental conditions (before any communication training had occurred). Therefore, the physician-patient interactions in the current study were not affected by communication training. The following subsections describe the developmental details of the PPBCS, the selection of interactions, and the rating procedures that were utilized in this study.

Selection of Interactions. Three hundred interactions were chosen for rating in this study. Physicians were chosen based on their gender-ethnicity group membership; 47 physicians were minority (that is, female and/or minority ethnicity), and 53 physicians were majority (that is, male and either Caucasian or Asian). These gender-ethnicity group

memberships are based on research and demographics "in medicine" as described in DiMatteo, Murray, and Williams (2009). For each physician, one patient from each socioeconomic status category (high, medium, and low) was chosen in order to examine differences in physician satisfaction across patients of different socioeconomic status. Health disparities due to socioeconomic status are a matter of major concern in current public health research. Explanations for these inequalities remain largely unsolved. The reasons for health inequalities are multiple and complex and can include individual patient factors (e.g., income or SES and living conditions), education level, and access to health care (Lundberg, 1993; Sturm & Gresenz, 2002; Wyke, Hunt, Walker, & Wilson, 2003). To date, there is no research on the effects of patient SES on physician satisfaction with the patient and medical visit.

In addition, interactions were also selected if PSQ, DSQ, and *z*BGRS (see measure descriptions below) data were complete (or nearly complete).

The final dataset consists of 298 dyadic interactions between 100 physicians and 3 of their patients. Two interactions were excluded from further analyses due to poor audio quality, as indicated by at least two raters.

Rating Procedure. Four undergraduate research assistants served as raters for the current study. Each rater listened to 100 audiotape interactions (i.e., digital audio files burned onto compact discs) and used the PPBCS to rate their perceptions of physician and patient behavioral characteristics during the medical interaction. The sequence of recordings was randomized for each rater in order to counterbalance potential fatigue or practice effects (Haskard et al., 2008). The final PPBCS, developed and pilot tested, is

presented in Appendix A and explanation of the pilot testing process is described in detail below.

All raters received two training sessions prior to beginning ratings for the current dissertation study. In the first training session, each item on the scale was explained in detail to ensure consensus of the meaning of each item across all raters. Specifically, the training for each rater included thorough reading and discussion of the scale and review of the list of terms and their definitions included in the scale. All raters were instructed to listen to one audio recording for practice (not included in the selected subset of audio recordings for the current dissertation study) and provide their initial ratings. Raters were then asked to discuss (with the author) each item at length with regard to the target audio recording. The goal of this practice exercise was to address, rephrase, or clarify any problematic or unclear scale items.

In the second training session, raters listened to and provided ratings for two additional practice audio recordings. Inter-rater reliability was satisfactory (intraclass correlation coefficient = .71; Shrout & Fleiss, 1979). Each rater then proceeded to rate 100 interactions in a unique random ordering, again for the purpose of counterbalancing any potentially biasing practice and/or fatigue effects.

Measures

Descriptions of all measures (PSQ, DSQ, DAQ, and *z*BGRS) used in the current dissertation study are detailed below.

Patient Satisfaction Questionnaire (PSQ). The PSQ measures patients' perceptions of the medical interaction, and includes three patient satisfaction scales:

physician information-giving, patient perceived decision-making, and patient choice (Kaplan, Greenfield, Gandek, Rogers, & Ware, 1996; Heisler, Bouknight, Hayward, Smith, & Kerr, 2002). Table 1 summarizes in detail the items and subscales included in the PSQ.

Physician information-giving is a 5-item scale in which the patient rated how well the physician gave information. The five items include: "Physician told you everything," "Physician let you know test results," "Physician explained side effects of medication," "Physician explained treatment alternatives," and "Physician told you what to expect." All responses are made on a 5-point scale where ratings ranged from 1 (poor) to 5 (excellent), and a high score on this scale reflects more positive perceptions of physician information-giving. In this sample, Cronbach's alpha for this scale was .91.

Patient perceived decision-making is a 3-item scale with the following items: "Physician asked you to take responsibility for your treatment" (1= very often; 5= never), "Physician asked you to help make decisions" (1= yes, definitely; 5= no, definitely not), and "Physician gives you some control over treatment decisions" (1= very often; 5= never). All items were reverse scored, such that higher scores referred to greater patient perceptions of involvement in decision-making. In this sample, Cronbach's alpha for this scale was .77.

Patient choice is a 4-item scale that includes: "Physician offers you choices in your medical care," "Physician discusses the pros and cons of each choice with you," "Physician asks your opinion or preferences," and "Physician takes your preferences into account when making decisions." Responses are made on a 1 (all of the time) to 5 (none

of the time) scale. All items were reverse scored, such that higher scores referred to more positive patient perceptions of the manner in which the physician offered choices. In this sample, Cronbach's alpha for this scale was .96.

Doctor Satisfaction Questionnaire (DSQ). The DSQ measures physician satisfaction with the medical visit and was originally published by Suchman and colleagues (1993). The DSQ includes 5 scales (see descriptions below and in Table 2) that assess satisfaction with the physician-patient relationship, satisfaction with data collection during the medical visit, satisfaction with use of time during the visit, and satisfaction with the patient. The total (or overall) satisfaction score is also calculated, and assesses physicians' overall satisfaction with the visit and the patient (described in detail below).

Satisfaction with physician-patient relationship is a 4-item scale in which the physician rated his or her agreement to four statements: "The patient was personable" (reverse-coded), "I established effective rapport with this patient" (reverse-coded), "This patient trusts me a great deal" (reverse-coded) and "I was *not* effective in influencing this patient's behavior." All responses are made on a 1 (strongly agree) to 5 (strongly disagree) scale. Responses were coded such that higher scores referred to greater satisfaction with the physician-patient relationship. Cronbach's alpha for this scale in this study was .61.

Satisfaction with data collection process is a 3-item scale that includes the following items: "I got all the details I needed regarding this patient's history" (reverse-coded), "I didn't get the detail I wanted on the patient's problems and symptom," and "I

didn’t get enough detail from this patient regarding his/her psychological condition." All responses were made on a 1 (strongly agree) to 5 (strongly disagree) scale, where higher scores reflect greater satisfaction with the data collection process. Cronbach’s alpha for this scale was .50.

Satisfaction with the use of time is a 3-item scale that includes: “My time was not well spent on this visit,” “I don't think this visit was necessary,” and “This was boring and unchallenging.” Responses are made on a 1 (strongly agree) to 5 (strongly disagree) scale; higher scores indicate greater satisfaction with the use of time in the visit. Cronbach’s alpha was .63 in this sample.

Satisfaction with the patient is a 3-item scale that includes the following items: “This patient constantly complains,” “I would have liked to spend more time with the patient” (reverse-scored), and “This patient demands a lot of personal attention.” Responses range from 1 (strongly agree) to 5 (strongly disagree); higher scores refer to greater satisfaction with the patient. Cronbach’s alpha was .76 in this sample.

Overall Satisfaction is a total average composite of all 20 DSQ items that measures physicians’ overall satisfaction with the patient and the medical visit. Cronbach’s alpha was .77 in this study sample. Some items were reverse-coded, and higher scores on this scale indicate greater overall satisfaction with the patient and the medical visit.

Doctor Attitudes Questionnaire (DAQ). The DAQ assessed physicians’ quality of life, job stress, demographics, aspects of medical training, and also included questions about the physician’s practice. The DAQ consists of three scales: satisfaction with

practice, quality of life, and work stress. Descriptions of each DAQ scale are given below and in Table 3.

Satisfaction with practice is an 8-item scale that asked physicians to rate their satisfaction with various aspects of their practice, including overall work situation, adequacy of support staff, personal control over patient scheduling, availability of clinical guidelines, ability to see acutely ill patients personally, ability to retain control over patients' primary management, amount of time spent with patients, and degree of personal autonomy. All responses are made on a 1 (very satisfied) to 5 (very dissatisfied) scale. All items were reverse-coded, such that higher scores on this scale reflect greater physician satisfaction with their medical practice. Cronbach's alpha was .84 in this sample.

Quality of life is a 5-item scale that asks physicians to rate their quality of life in: work, family, daily routine, leisure or social time, and general life enjoyment. All items are rated on a 1 (excellent) to 5 (poor) scale. All items were reverse-coded, such that higher scores referred to better quality of life. Cronbach's alpha was .88 in this sample.

The stress scale is used to assess physicians' agreement with the following items: "I feel stressed out in my current job," "I feel more stressed out in my job than other providers doing the same kind of work," and "I feel that my stress level interferes with my ability to deliver quality care." All ratings are made on a 1 (strongly agree) to 5 (strongly disagree) scale. All items were reverse-coded, such that higher scores referred to more physician stress. Cronbach's alpha was .76 in this sample.

The DAQ also contained questions regarding physicians' demographics and training, such as: age, gender, ethnicity, and whether the physician received training in primary care and medical interviewing/interpersonal skills.

Bayer Global Rating Scale (zBGRS). The *z*BGRS is an observer-rated measure of physician-patient communication. The *z*BGRS contains three composites assessing physicians' effective communication, patient involvement, and healthy collaboration (Haskard et al., 2008; See Appendix B). Descriptions of each *z*BGRS scale are described below and in Table 4. The Bayer Global Rating Scale (*z*BGRS) score was created based on ratings from two groups: one group from the Bayer Institute for Healthcare Communication (*N*=10 raters, each rating a subset of the entire corpus of interactions) and one group from the University of California, Riverside (*N*=28 raters; each rating a subset of the entire corpus of interactions). All ratings were then *z*-scored "within rater" to control for individual rater variability in the use of the scale. For each interaction, the average of the two *z*-scores (from the two groups mentioned above) formed the "zBGRS" score of global affect.

Physician effective communication consists of 8-items each rated on a 1 (poor) to 7 (excellent) Likert scale which includes: the physician connected with the patient, was empathic, was informative; invited the patient to share their understanding, perspective, and feelings; was sensitive to potential communication problems, acknowledged problems, and facilitated repair; invited patients to participate; shared control and power; and an overall rating of the physician's communication. A higher score indicates more effective communication. Cronbach's alpha in this sample was .96.

Patient involvement consists of 4-items each rated on a 1 (poor) to 7 (excellent) Likert scale, the items include: the patient was able to take initiative, ask questions, was an active participant in the discussion, and understood what s/he was supposed to do. A higher score indicates more patient involvement. Cronbach's alpha in this sample was .87.

Healthy collaboration consists of 2-items that assess whether the interaction was a collaborative relationship and whether the interaction included discussion of disease or illness prevention and health promotion. Cronbach's alpha in this sample was .62. Ratings were made on a 1 (poor) to 7 (excellent) Likert scale, where higher scores on this scale indicate more healthy collaboration between physicians and patients.

Analysis Plan

Research Question 1. A literature review on physician and patient behaviors related to physician satisfaction was conducted for the development of the PPBCS. Currently numerous available rating and coding methods exist that examine the relationship between physician-patient behaviors and patient satisfaction with care (Suchman et al., 1993). To date, however, no assessment tool exists that examines physician and patient behavioral characteristics in the medical visit. Thus, the PPBCS items were modeled after previous literature examining the effects of physician and patient behaviors and various outcomes, which include both physician and patient satisfaction, a physician's "liking" for their patient and the medical visit, and a physician's communication style (Suchman et al., 1993; Hall et al., 2002; Cousin et al., 2012). In addition, Hahn and colleagues (1994) description of the "difficult doctor-

patient relationship" also served as the conceptual framework for the development of physician and patient behavior items within the scale. All ratings were based on a 1 (not at all) to 7 (a great deal) Likert scale. Based on the literature search conducted, a scale consisting of 24 rated items (15 patient behavioral characteristics; 9 physician behavioral characteristics) will be developed.

Reliability (research question 1a) of the PPBCS will be assessed by examining the psychometric properties of all scale items. Effective reliabilities of each of the individual PPBCS items will be assessed by calculating the intercorrelations of the raw scores of the four raters, and applying the Spearman-Brown "up" prophecy formula, with the number of raters as the factor (Rosenthal & Rosnow, 2008, p. 93). The mean *z*-score for each item on the PPBCS will also be obtained by first calculating the *z*-score for each rater across each item on the PPBCS, then taking the mean of the *z*-scores across the four raters for each PPBCS item.

Composite subscales of the PPBCS will be identified using principal components analysis (PCA) with varimax orthogonal rotation (separately for both physician and patient behavioral characteristics) in order to extract meaningful composite variables for further analysis. Composite variables will be explored and evaluated in terms of both conceptual meaning and practical value based on analysis at the physician level; that is, for each physician, data will be averaged across the three patients of that physician). A smaller number of composites can be easier to work with than a large number of variables, and more accurate estimates of the relationship between composites and other variables can be obtained than when using individual items (Rosenthal & Rosnow, 2008).

In an exploratory fashion, using PCA, single and multi-factor solutions will be examined for both their conceptual meaning and the amount of variance explained. Items within each identified subscale will be averaged (i.e., weighting by component loading will not be used) in order to construct subscale scores. The inter/intra-matrix of mean intercorrelations of the PPBCS items will also be computed and examined to justify forming clear and defensible composites (Rosenthal & Rosnow, 2008, p. 155).

Convergent validity (research question 1b) of the PPBCS will be assessed at the physician level by correlating the scale (and subscales) with questionnaire measures of patient and physician satisfaction and experiences of the medical visit (PSQ and DSQ) in addition to independent raters' assessments of global affect in the physician-patient interaction (*z*BGRS). Physician level analysis is a random effects approach (with an *N* of 100 physicians) that allows for greater stability and for generalization to the population of physicians of which these data represent a sample.

These correlations of the PPBCS with the PSQ, DSQ, and *z*BGRS will be calculated separately for both physician and patient behavioral characteristics.

Convergent validity is the degree to which theoretically related *measures* of the same or similar constructs are observed to be related to each other. Discriminant validity refers to the degree to which theoretically related constructs or items are observed to be related to each other and when theoretically unrelated constructs are observed to be unrelated to each other (Westen & Rosenthal, 2003).

Research Question 2. To examine the relationship between physician characteristics and PPBCS scores, measures of patient and physician satisfaction and

experiences of the medical visit (PSQ and DSQ), and independent raters' assessments of global affect in the physician-patient interaction (zBGRS), correlational analyses will be conducted. Correlations between physician characteristics as measured by the DAQ and PSQ, DSQ, and *z*BGRS will also be examined. Physician characteristics will include: age, gender, work stress, quality of life, and satisfaction with medical practice. A series of independent samples *t*-tests will also be conducted to compare female and physicians on the PPBCS composites, PSQ, DSQ, and *z*BGRS.

Research Question 3. A 2x3 mixed factorial design ANOVA will be employed for the analysis of physicians' satisfaction across the "between physician" factor of gender-ethnicity group (minority versus majority) and across three levels of patient income/SES "within physician." Thus, the mixed factorial design will encompass one "between" (physician factor: physician gender-ethnicity group membership) and one "within" factor (one patient from each SES category: low, medium, and high). The interaction of these two factors will be examined with the dependent variables of physician satisfaction with the patient and the medical visit (total satisfaction, and four subscales). In addition, for the within factor (patient SES), an orthogonal a-priori contrast will be used. A linear contrast with low (-1) medium (0), and high (+1), lambda weights will be assigned to patient SES. This linear contrast suggests the possible prediction that physicians will be more satisfied with patients of high SES and will be less satisfied with patients of low SES.

Chapter Three

Results

Purpose of Dissertation Study

The purpose of this study was to first develop a reliable and valid scale to examine physician and patient behavioral characteristics in the medical visit. The psychometric properties of the scale are presented here, in addition to the results of principal components analyses (or PCA) to reduce the scale items into meaningful composites of physician and patient behavioral characteristics. Correlations between the composites and patient satisfaction, physician satisfaction, and ratings of global affect were used to assess the validity of the PPBC scale. In addition, correlations between physician characteristics (from the DAQ), PPBC composites, patient and physician reports of satisfaction, and ratings of global affect were also computed. Lastly, the differences in physicians' satisfaction (as measured by the DSQ) were examined as a function of: physician gender (male vs. female), ethnicity (minority vs. majority), and patient SES.

Physician and Patient Characteristics and Demographics

Table 5 summarizes the demographic characteristics of the 298 patients included in this study sample. There were 130 male patients and 164 female patients (4 patients did not report their gender), with a mean age of 48.62 (*SD*= 16.79, Range= 18-87). Approximately 58.7% of patients were Caucasian, 20.9% were Hispanic, 7.5% were African American, 6.1% were Asian, 4.1% were reported as "other" ethnicity, and 2.7%

were Native American. A total of 33.4% of patients reported an annual household income of less than $10,000 in the year 1996. In addition, 37.1% of patients in this sample completed some college education and 35.3% reported full time employement.

Table 6 summarizes the demographic characteristics of the physicians in this study. There were 40 female physicians and 60 male physicians. The mean age of the 100 physicians was 37.2 years (*SD*= 9.95). Approximately 47.5% of the physicians were Caucasian, 2.0% were African American, 43.4% were Asian, and 7.1% of the physicians were Hispanic. Most of the physicians (86.7%) in the sample had been trained in primary care, however, 2 physicians did not report whether or not they were trained in primary care. A total of 61 physicians were from the university medical center, 2 were from the Veteran's Administration, and 37 were from the HMO site. As noted in the method section, 47 physicians were female and/or minority ethnicity (for medicine) and 53 physicians were male and either Caucasian or Asian (majority ethnicities for medicine).

Research Question 1a: PPBCS Reliability and Forming Composites

Research question 1a focused on the development of a reliable scale, called the PPBCS. The PPBCS was used to rate physician and patient behaviorial characteristics in the medical visit in a total of 298 medical interactions. Each interaction was rated by 4 undergraduate research assistants and interrater reliability was assessed. The ratings for each rater were then *z*-scored, and the means of the *z*-scores were calculated for each PPBCS item across the four raters. The PPBCS included a total of 24 items; 15 patient behavioral characteristics and 9 physician behavioral characteristics (see Appendix A). Table 7 summarizes the *z*-scored descriptive statistics for each item included in the

PPBCS. All items were originally rated on a 7-point scale (1= not at all, 7= a great deal), then *z*-scored to control for inter-rater differences in the use of the scale.

Interrater reliability. The Spearman-Brown "up" reliability (based on 4 raters) ranged from .223 to .711 for the PPBC items (see Table 8), with a mean inter-rater reliability of .50, and a median interrater reliability of .49. The mean interrater reliability was calculated based on the raw rating scores of each of the four raters.

After calculating the item inter-rater reliability for each item, the mean *z*-score for each item on the PPBCS was obtained by first calculating the *z*-score for each rater across each item on the PPBCS, then taking the mean of the *z*-scores across the four raters for each PPBCS item.

Principal Components Analysis: PPBCS Reliability and Psychometric Properties. The mean *z*-scores on each item (averaged across raters) were subjected to PCA with varimax rotation separately for both the patient and the physician behavioral characteristics to identify composites. See Tables 9a and 9b for PPBCS composite factor loadings. The internal consistency reliability of the composites were also examined. PCA yielded 5 subgroups of composites, three patient behavioral characteristics factors *demanding, enjoyable,* and *nonadherent,* and 2 physician behavioral characteristics factors *enthusiastic* and *frustrated*[1]. The items included in each component were later averaged to form composite variables for further analysis.

[1] The PPBCS composites are italicized in-text throughout the entirety of this dissertation. This convention was chosen so as to differentiate the composites from the PSQ, DSQ, and *z*BGRS measures in descriptions of analyses presented.

The three-factor solution for patient behavioral characteristics accounted for 66.9% of the total variance. Details of each composite are described below. Table 10 summarizes the psychometric properties and Cronbach's alphas for each composite.

Demanding patient is a 7-item composite with the following items: demanding, difficult personality, draining, frustrating, manipulative, time-consuming, and overreacts to symptoms and problems. Internal consistency reliability was high, Cronbach's alpha= .89.

Enjoyable patient is a 4-item composite with the following items: easy to communicate with, enjoyable, reasonable, and understands doctor's explanations. Cronbach's alpha= .86.

Nonadherent patient is a 4-item composite with the following items: nonadherent (The patient adherent item was reversed and named "nonadherent"), self-destructive, abuses drugs or alcohol, and neglects their health. Cronbach's alpha= .83.

The two-factor physician behavioral characteristics solution accounted for 71.8% of the total variance. Descriptions of each composite are detailed below and in Table 10, which includes psychometric properties and Cronbach's alphas for each composite.

Enthusiastic physician is a 5-item composite that includes the following items: at ease with the patient, enthusiastic about caring for the patient, looks forward to the patient's next visit, communicates well with the patient, and is *not* tense when dealing with the patient (the physician is tense when dealing with the patient item was reversed and named "the physician is *not* tense when dealing with the patient"). Cronbach's alpha= .89.

Frustrated physician is a 4-item composite with the following items: angry with the patient, hopeless about the patient, frustrated with the patient, and negative about the visit. The composite had high internal consistency, Cronbach's alpha= .82.

Inter-intra correlation matrix. An inter-intra correlation matrix was computed to determine the degree to which composites used in this study were reasonable. Tables 11a and 11b show the intra-inter matrices for each of the patient and the physician composites respectively. The correlations on the diagonal are the average inter-correlations of the items that make up the composites (intra). The correlations off the diagonal are the average inter-correlations of the items of each composite with those of each other composite (inter).

Research Question 1b: Assessment of the PPBCS Validity

To address research question 1b, correlations between the PPBCS factors and patient (PSQ) and physician questionnaire responses (DSQ), and *z*BGRS global assessments of affect in the physician-patient interaction were analyzed to determine scale validity.

Physician Level Analysis. All correlations of the PPBCS composites with the three PSQ composites, five DSQ composites, four DAQ composites, and three *z*BGRS composites were computed at the physician level (separately for both the patient and physician behavioral characteristics). That is, for each physician, data were averaged across the three patients of that physician. It was determined that analysis at the physician level (*N*=100 physicians) would provide greater stability in these data.

Correlations of PPBCS Patient Factors with PSQ Scales. Table 12 shows that patients who were rated as *enjoyable*, as measured by the PPBCS, had more positive perceptions of physician information-giving (r= .247, p= .013). Patient perceived decision-making and patient choice were not significantly correlated with patients' ratings as more *enjoyable*, however (p-values greater than .05). Patients' perceptions of opportunities for decision-making, choice in care, and physician information-giving were not significantly associated with assessments of patients on the PPBCS as *demanding* and *nonadherent* (all p-values were greater than .05).

Correlations of PPBCS Physician Factors with PSQ Scales. As shown in Table 13, physicians who were rated higher on *enthusiasm* had patients who had more positive perceptions of their physicians' ability to provide information (r= .368, p< .0001), perceived better opportunities for decision-making (r= .255, p= .025), and greater choice in their care (r= .316, p= .001). The physician *frustrated* composite however, was not associated with patients' perceptions of physician information-giving (r= -.094, p= .355), opportunities for decision-making (r= -.069, p= .494), and choice in care (r= -.172, p= .087).

Correlations of PPBCS Patient Factors with DSQ Scales. Observer ratings assessing patients as *demanding* were not significantly associated with any of the scales on the DSQ (all p-values were greater than .05, Table 14). Patients who were rated as *enjoyable* had physicians who expressed greater satisfaction with the physician-patient relationship (r= .290, p= .003) and with the data collection process (r= .210, p= .036). Physicians' satisfaction with the use of time, with their patients, and overall satisfaction,

however, were not significantly correlated with higher ratings of patients as *enjoyable* (*p*-values were greater than .05). With patients rated as more *nonadherent*, physicians reported less satisfaction with the data collection process (r= -.200, p= .046) and less satisfaction with the overall medical visit (r= -.206, p= .040). Satisfaction with the physician-patient relationship, satisfaction with the use of time, and satisfaction with the patient were not significantly associated with ratings of patients as *nonadherent* on the PPBCS (*p*-values greater than .05).

Correlations of PPBC Physician Factors with DSQ Scales. Observers' ratings of physicians as more *enthusiastic*, as measured by the PPBCS, were not significantly related to satisfaction with: the physician-patient relationship, data collection, use of time, with the patient, or the medical visit (all *p*-values were greater than .05; Table 15). There were also no significant relationships between all five DSQ measures and physicians' level of being *frustrated* as rated on the PPBCS (all *p*-values were greater than .05; see Table 15).

Correlations of PPBCS Patient Factors with zBGRS Scales. Table 16 shows that observers' ratings on the PPBCS of patients' degree of being *demanding* were not significantly associated with observer ratings of physician effective communication on the zBGRS (r= -.048, p= .636), patient involvement on the zBGRS (r= .107, p= .290), and healthy collaboration on the zBGRS (r= -.037, p= .715). As expected, patients' rated levels of being *enjoyable* on the PPBCS were highly correlated with observers' ratings of physician effective communication on the zBGRS (r= .435, p< .0001), patient involvement on the zBGRS (r= .215, p= .032), and healthy collaboration on the zBGRS

(*r*= .364, *p*< .0001). Patients' assessments as *nonadherent* on the PPBCS were not related to zBGRS measures of physician effective communication (*r*= -.046, *p*= .652), patient involvement (*r*= .000, *p*= .998), and healthy collaboration (*r*= .048, *p*= .632).

Correlations of PPBCS Physician Factors with zBGRS Scales. As shown in Table 17, physicians' *enthusiastic* ratings on the PPBCS were highly correlated with observer ratings of physician effective communication (*r*= .605, *p*< .0001), patient involvement (*r*= .233, *p*= .020), and healthy collaboration (*r*= .420, *p*< .0001) according to the zBGRS. As expected, levels of observers' ratings of physicians as *frustrated* were negatively correlated with zBGRS measures of physician effective communication (*r*= -.299, *p*= .002), patient involvement (*r*= -.248, *p*= .013), and healthy collaboration (*r*= -.197, *p*= .049).

Research Question 2: Relationship Between Physician Characteristics and PPBCS Composites, PSQ, DSQ, and *z*BGRS

Research question 2 addressed the degree to which physician characteristics (from the DAQ) are related to PPBCS composites, patient-physician reports of satisfaction (PSQ and DSQ), and ratings of global affect (zBGRS). Physician characteristics included: age, work stress, quality of life, and satisfaction with medical practice. Table 18 shows the intercorrelations of the physician characteristics mentioned above. Tables 19-22 present the correlations between physicians' characteristics and PPBCS composites, the correlations between physicians' characteristics and the PSQ and DSQ, and finally the correlations between physician characteristics and the zBGRS.

Independent samples *t*-tests were also conducted to examine differences in physician gender (male versus female) on PPBCS composites and the PSQ, DSQ, and zBGRS.

Correlations of Physician Characteristics with PPBCS Composites. Patient PPBCS composite *nonadherent* was significantly correlated with physician age. Older physicians had patients who were rated on the PPBCS as less *nonadherent* (*r*= -.204, *p*=. 044). Physician age did not correlate significantly with patient PPBCS ratings as *demanding* and *enjoyable.* Physicians' work stress, quality of life, and work satisfaction were not significantly correlated with PPBCS ratings of patients as *demanding*, *enjoyable,* or *nonadherent* (*p*-values were greater than .05). Physicians' satisfaction with the quality of life and with the medical practice were not correlated with PPBCS composites *demanding*, *enjoyable,* or *nonadherent* (*p*-values were greater than .05)

Physician composites *enthusiastic* and *frustrated* were not correlated with any of the four physician characteristics of age, work stress, quality of life, and satisfaction with medical practice; all *p*-values were greater than .05 (see Table 19).

Correlations of Physician Characteristics with PSQ Scales. As shown in Table 20, ratings of patients' perceptions of their physician's ability to provide information, opportunities for decision-making, and better choices in care were not correlated with physician characteristics of age, quality of life, and satisfaction with the medical practice (all *p*-values were greater than .05). Work stress, as measured by the DAQ, was negatively correlated with patient ratings of physician information giving (*r*= -.217, *p*= .032). Patient perceived decision-making and patient choice were not related to work

stress, however; all *p*-values were greater than .05.

Correlations of Physician Characteristics with DSQ Scales. Physician age was correlated with physician's ratings of satisfaction with the data collection process (r= .235, p= .019), but was not correlated with satisfaction with the physician-patient relationship, the use of time, the patient, and overall satisfaction as measured by the DSQ (all *p*-values were greater than .05, see Table 21).

As expected, physicians' level of stress was negatively correlated with assessments of physicians' satisfaction with the use of time (r= -.251, p= .013), satisfaction with patient (r= -.287, p= .004), and overall satisfaction (r= -.204, p= .044) on the DSQ. Satisfaction with the physician-patient relationship and satisfaction with the data collection process were not related to physicians' level of stress (*p*-values were greater than .05).

Physicians' reports of their quality of life were not correlated with physicians' ratings of satisfaction with: the physician-patient relationship, the data collection process, the patient, and overall satisfaction (*p*-values were greater than .05). Satisfaction with the use of time, however, was positively correlated with physicians' assessments of their quality of life (r= .200, p= .049).

Physician satisfaction with medical practice was not associated with DSQ measures of satisfaction with the physician-patient relationship, satisfaction with the data collection process, satisfaction with the use of time, satisfaction with the patient, and overall satisfaction; all *p*-values were greater than .05.

Correlations of Physician Characteristics with zBGRS Scales. Physician characteristics of age, work stress, quality of life, and satisfaction with the medical practice were not correlated with physician effective communication, patient involvement, and healthy collaboration on the *z*BGRS scale (all *p*-values were less than .05, see Table 22).

Relationship Between Physicians' Gender and PPBCS Composites, PSQ, DSQ, and zBGRS Scales. Female physicians were rated as more *enthusiastic* on the PPBCS compared to male physicians ($t(98)= 3.07$, $p=.003$). There were no mean differences in ratings of *frustration* across female versus male physicians (*p*-value was greater than .05). There were also no significant mean differences between physicians' gender across all three patient factors *demanding*, *enjoyable* and *nonadherent* (all *p*-values were greater than .05). Table 23 shows the *z*-scored means, standard deviations, and *t*-test results between physician gender and the PPBCS composites. All PPBCS ratings were *z*-scored within-rater to control for inter-rater differences in the use of the scale.

There were no mean differences in both patient and physician assessments of satisfaction (i.e., PSQ and DSQ) across physician gender; all *p*-values were greater than .05. Tables 24 and 25 present the means, standard deviations, and *t*-test results between physician gender and each of the PSQ and DSQ scale composites.

Female physicians were more effective communicators ($t(98)= 3.21$, $p= .002$) and engaged in more healthy collaboration ($t(98)= 2.17$, $p=. 032$) compared to male physicians as rated on the *z*BGRS. There were no mean differences, however, in patient involvement between female and male physicians (*p*-value was greater than .05). Table

26 shows the *z*-scored means, standard deviations, and *t*-test results between physician gender and the *z*BGRS scale composites. All *z*BGRS ratings were *z*-scored within-rater to control for inter-rater differences in the use of the scale.

Research Question 3: Relationship Between Physician Satisfaction Across Physician Gender-Ethnicity Group Membership and Patient SES

For research question 3, the differences in physicians' satisfaction (as measured by the DSQ) and physician gender-ethnicity group membership (majority versus minority) across patients SES were examined using a 2x3 mixed factorial ANOVA.

Relationship Between Physician Satisfaction Across Physician Gender-Ethnicity Group Membership and Patient SES. There were no significant main effects or interactions between DSQ measures of physicians' satisfaction with the physician-patient relationship, the data collection process, the use of time, the patient, and overall satisfaction and physician gender-ethnicity group membership across patients of low, medium, and high SES; all p-values were greater than .05. All means for the main effects and interactions for each dependent variable are presented in Table 27.

Chapter Four

Discussion

Study Objectives

The purposes of this dissertation study were several:

(1) This research sought to assess physician and patient behavioral characteristics in the medical visit through the development of a new valid and reliable scale, called the PPBCS. The psychometric properties of the PPBCS were examined by measuring the interrater-reliability of the scale items and the internal consistency reliability of the scale composites. Convergent validity of the scale was assessed through physician-level correlational analyses of PPBCS composites with data on patient and physician visit satisfaction and separately completed observers' ratings of global affect in 298-recorded interactions.

(2) This research assessed the relationship between physician characteristics (i.e., age, gender, work stress, quality of life, and work satisfaction), and the following: PPBCS composites, patient and physician reports of visit satisfaction, and ratings of global affect.

(3) This work also assessed the variability in physicians' satisfaction with the patient and the medical visit as a function of physician characteristics (gender-ethnicity group membership) and patient income (as measured by SES) using 2 x 3 mixed factorial ANOVAs.

Summary and Discussion of Findings

This dissertation explored three specific multi-part research questions and general hypotheses relating to them. The discussion of findings here is organized by these research questions.

Research Question 1a

It was hypothesized that a reliable scale could be developed to assess physician and patient behavioral characteristics in the medical visit. The 24-item scale was created after reviewing past research and theoretical work examining the relationship between physician and patient behaviors and various outcomes, which included: both physician and patient satisfaction, a physician's "liking" for their patient and the medical visit, and physicians' communication style (Suchman et al., 1993; Hall et al. 2002; Cousin et al., 2012). The final composites that were selected and used in analyses were as follows: 3 patient composites (demanding, enjoyable, nonadherent) and 2 physician composites (enthusiastic and frustrated). The range of individual inter-rater reliabilities included some of lower and moderate size, which is generally the case with global ratings (Rosenthal, 2005). The mean Spearman Brown "up" interrater reliability was .50. The mean *z*-scored reliabilities of the PPBCS composites were formed by averaging the individual items in the composite as guided by PCA.

According to Rosenthal and Rosnow (1991) a minimum reliability level is not required for adequate validity, and substantial validity coefficients in prediction of criterion variables can be achieved in the absence of high reliability coefficients. Further, when raters have low inter-correlations with each other, they may be observing different,

but relevant, aspects of physician and patient behavior (Haskard, DiMatteo, & Heritage, 2009). In addition, the intra/inter matrix of mean intercorrelations showed that the composites appeared to be assessing different constructs.

Research Question 1b

It was hypothesized that elements of the PPBCS would have acceptable convergent validity as evidenced by correlations of its subscale scores with: patients' perceptions of physician information-giving, patient choice, and perceived decision-making (PSQ) and physician's ratings of satisfaction with the physician-patient relationship, with data collection, with use of time, and with the patient (DSQ). It was also hypothesized that elements of the PPBCS would have both acceptable convergent validity as evidenced by correlations of its subscale scores with independent ratings of physician effective communication, patient involvement, and physician-patient healthy collaboration (zBGRS).

Correlations of PPBCS Patient Factors with PSQ Scales. Ratings of *enjoyable* patients, as measured by the PPBCS, were correlated with physician information-giving. That is, patients who were rated as *enjoyable* (i.e., easy to communicate with, enjoyable, reasonable, and understands doctor's explanations) had more positive perceptions of their physician's ability to provide information, including explanation of test results and treatment expectations, and discussion of side effects and treatment alternatives. All three PSQ measures, however, were not significantly associated with assessments of patients on the PPBCS as *demanding* and *nonadherent*. While we might have expected that patient satisfaction would, in some cases, be evident in patients' behavior, it might

generally be the case that patients do not betray their feelings in their behavior, particularly verbal communication, because of the power differential between patients and their physicians (Mast, Hall, & Roter, 2008).

Correlations of PPBCS Physician Factors with PSQ Scales. As predicted, the *ethusiastic* physician composite was significantly associated with the three subscales of the PSQ. Specifically, physicians who were rated highly on *enthusiasm* (i.e., physician is at ease with the patient, is enthusiastic about caring for the patient, looks forward to the patient's next visit, communicates well with the patient, and is not tense when dealing with the patient) had patients who perceived better opportunities for decision-making, better choice in their care, and had more positive perceptions of their physicians' ability to provide information. The *frustrated* physician composite, however, was not significantly associated with patients' perceptions of greater opportunities for decision-making in the medical interaction, greater choice in their care, and greater information-giving by their physicians.

Correlations of PPBCS Patient Factors with DSQ Scales. Observers' PPBCS ratings assessing patients as *demanding* were not significantly associated with any of the scales on the Doctor Satisfaction Questionnaire (DSQ). These finding were unexpected because previous research has shown that physicians are less satisfied with demanding patients (i.e., non-cooperative patients) (Schwenk, Marquez, Lefever, & Cohen, 1989). When patients were rated as more *enjoyable* (i.e., easy to communicate with, enjoyable, reasonable, and understands doctor's explanations), physicians expressed greater satisfaction with the physician-patient relationship and the data collection process.

Perhaps when patients behave in ways that are more enjoyable, physicians feel they are better able to establish good rapport with their patients and can more effectively obtain detailed patient information (i.e., medical history, information about patient problems, symptoms, and psychological conditions) that is needed to make effective decisions.

Physicians' satisfaction with their patients and the use of time, however, were not significantly correlated with ratings of patients as *enjoyable*. As expected, patients rated as *nonadherent* had physicians that reported less satisfaction with the data collection process and less overall satisfaction. This finding is related to previous work by DiMatteo et al. (1993), showing that physicians' global job satisfaction positively affects patient dietary adherence behaviors. Perhaps when physicians are happier in their work, they behave in ways that make it easier for their patients to adhere to treatment directives (e.g., provide more follow-up appointments or spend more time answering patients' questions).

Correlations of PPBCS Physician Factors with DSQ Scales. Observers' ratings of physicians as more *enthusiastic* were not significantly related to satisfaction with: the physician-patient relationship, data collection, use of time, the patient, and overall satisfaction with the medical visit. There was also no relationship between the five DSQ satisfaction measures and physicians' level of being *frustrated* as rated on the PPBCS. These nonsignificant findings were unexpected because early work by Levinson, Stiles, Inui and Engle (1993) suggests that physicians who are frustrated by demanding or controlling patients or by the lack of agreement with the patient about medical problems are less satisfied with the physician-patient relationship. It seems that from these findings physicians' perceptions of satisfaction are not related to their actual behavior in the

medical interaction. Although an explanation of this observation is not readily available, it can be suggested that physicians are good at controlling their behaviors, regardless of how positive or negative (e.g., difficult or easy to work with) they may perceive their patients to be.

Correlations of PPBCS Patient Factors with zBGRS Scales. As detailed in the methods section, the *z*BGRS is an observer-rated measure of physician communication, patient involvement, and healthy physician-patient communication. Scores on the PPBCS and *z*BGRS measures are expected to have good convergent, because both measures utilize objective judges to examine aspects of physician-patient behavioral characteristics in the medical visit. Additionally, the *z*BGRS subscales were expected to correlate (or not correlate) with certain physician and patient behavioral characteristics.

Observers' ratings on the PPBCS of patients as *demanding* were not significantly correlated with any of the composites on the *z*BGRS. As expected, patients' rated levels, of being *enjoyable,* were highly correlated with all the composites of the *z*BGRS. That is, when patients were rated as more *enjoyable* on the PPBCS, their physicians communicated more effectively, the patients were more involved, and there was more collaborative two-way conversation and discussions of prevention/health promotion. Patients' assessments as *nonadherent* on the PPBCS were not significantly related to *z*BGRS measures of physician effective communication, patient involvement, and healthy collaboration. An explanation for this might be that the raters in this study had difficulty distinguishing between aspects of *nonadherent* patient behavioral characteristics. For example, assessing whether or not a patient is "self-destructive" or "abuses drugs or

alcohol" from audio recordings may be challenging for raters to pick up on unless this type of information is clearly disclosed by the patient during the medical visit. Alternatively, patients in this study might not have accurately reported their nonadherence behaviors out of fear of embarrassment or judgment from their physician.

Correlations of PPBCS Physician Factors with zBGRS Scales. As expected, physicians' *enthusiastic* ratings on the PPBCS were highly correlated with observers' ratings of physician effective communication, patient involvement, and health collaboration according to the *z*BGRS. This suggests that when physicians are more *enthusiastic* (i.e., at ease with the patient, enthusiastic about caring for the patient, looks forward to the patient's next visit, communicates well with the patient, and is not tense when dealing with the patient according to the PPBCS) they are more effective communicators, their patients are more involved in care, and there is more healthy collaboration during the medical visit. Observers' ratings of physicians as *frustrated* were negatively correlated with *z*BGRS measures of physician effective communication, patient involvement, and healthy collaboration. Thus, when physicians were rated as more *frustrated* there was less effective communication, less patient involvement, and less health collaboration in the medical interaction. These correlations above with the *z*BGRS support the validity of the PPBCS. Evidence of validity is also shown in the agreement between observers' perceptions of the medical visit using the PPBCS and the independent observers' perceptions as measured by the *z*BGRS in this study sample.

Research Question 2

It was hypothesized that there would be a significant relationship between certain physician characteristics (measured using the DAQ) and the PPBCS composites, patient and physician reports of satisfaction, and ratings of global affect. The physician characteristics included: age, work stress, quality of life, and work satisfaction, as well as gender which is examined separately in the last part of this section.

Correlations of Physician Characteristics with PPBCS Composites None of the correlations between physician composites *enthusiastic* and *frustrated* and the physician characteristics of age, work stress, quality of life, and work satisfaction were statistically significant. Patient PPBCS composites of *enjoyable* and *nonadherent* were significantly correlated with physician age, however. That is, older physicians had patients who were rated on the PPBCS as more *enjoyable* and less *nonadherent*. One possible explanation for this finding is that patients view older physicians as more knowledgeable and trustworthy and therefore act in ways that make them appear to be more enjoyable and adherent to their medical directives.

Physician age did not correlate significantly with patient PPBCS ratings as *demanding.* Physicians' work stress, quality of life, and work satisfaction were not significantly correlated with PPBCS ratings of patients as *demanding*, *enjoyable*, or *nonadherent.*

Correlations of Physician Characteristics with PSQ Scales. Ratings of patients' perceptions of their physician's ability to provide information, opportunities for decision-making, and better choices in care were not correlated with physician characteristics of

age, quality of life, and satisfaction with medical practice. Work stress, as measured by the DAQ, was negatively correlated with patient ratings of physician information giving. That is, physicians who were more stressed at work provided less medical information to their patients. This finding suggests that the amount of stress that physicians experience in practice may compromise various cognitive and psychological processes and lower the quality of physicians' interaction with their patients (Passalacqua & Segrin, 2012). Patient perceived decision-making and patient choice were not significantly related to physician work stress, however.

Correlations of Physician Characteristics with DSQ Scales. Physician age was correlated with physician ratings of satisfaction with the data collection process, but was not correlated with satisfaction with the physician-patient relationship, the use of time, the patient, and overall satisfaction as measured by the DSQ. As expected, physicians' level of stress was negatively correlated with assessments of physicians' satisfaction with the use of time, satisfaction with patient, and overall satisfaction on the DSQ. Previous research has shown that physician work stress is related to physicians' job satisfaction (Richardsen & Burke, 1991; Williams, Manwell, Konrad, & Linzer, 2007). Satisfaction with the physician-patient relationship and satisfaction with the data collection process were not significantly related to physicians' level of stress.

Physicians' reports of their quality of life were not significantly correlated with physicians' ratings of satisfaction with: the physician-patient relationship, the data collection process, the patient, and overall satisfaction. Satisfaction with the use of time, however, was positively correlated with physicians' assessments of their quality of life.

That is, physicians who were more satisfied with the time spent in the medical visit had more positive perceptions of their quality of life regarding work, family, daily routines, leisure time, and general life enjoyment. Perhaps, physicians who perceive the medical visit to be necessary, challenging and not boring, and believe that the time in the visit was well spent are better at balancing their work and personal lives and thus have more positive perceptions of their quality of life.

Physician overall satisfaction with medical practice was not significantly associated with DSQ measures of specific satisfaction with the patient and the medical visit: the physician-patient relationship, the data collection process, the use of time, the patient, and overall satisfaction. A possible explanation for these nonsignificant findings is that these two satisfaction assessments measure two very different constructs and thus are not related to one another. Physician satisfaction with the medical practice focuses on the physician's overall work environment (i.e., satisfaction with support staff, scheduling, availability of clinical guidelines, provision of urgent care, primary management of patients after referral to other physicians), whereas the physician satisfaction questionnaire (or DSQ) was specifically focused on the interaction with the patient at the medical visit.

Correlations of Physician Characteristics with zBGRS Scales. Physician characteristics of age, work stress, quality of life, and satisfaction with the medical practice were not significantly correlated with physician effective communication, patient involvement, and healthy collaboration on the zBGRS scale. Perhaps, physicians' ability to communicate effectively, opportunities for patient involvement, and healthy physician-

patient collaboration in the medical visit are better captured by physicians' nonverbal behaviors (i.e., socioemotional behaviors and empathy) rather than by specific physician characteristics (other than gender, see below).

Relationship Between Physicians' Gender and PPBCS Composites, PSQ, DSQ, and zBGRS Scales. Female physicians were rated as more *enthusiastic* on the PPBCS compared to male physicians. This finding coincides with past research demonstrating that female physicians use more partnership language, more positive statements, and smile more than do male physicians (Hall et al., 1994; Koss & Rosenthal, 1997). There were no significant differences in mean ratings of *frustration* across female versus male physicians. There were also no significant mean differences between physician gender across all three patient factors *demanding*, *enjoyable* and *nonadherent*. A possible explanation for this finding might be related to variability in the types of patients. Because the practice sites for the physicians in this study were HMOs, Veteran's Administration hospitals, and university medical centers, it is possible that both physicians (and patients) did not have control over the patients (and physicians) they interacted with during the medical visit. Thus, female physicians did not see more or less of any one type of patient compared with male physicians. In addition, patients might behave the same way towards their physicians regardless of whether their physician is male or female and behaves differently.

There were no significant mean differences in patient assessments of satisfaction (i.e., PSQ) across physician gender. Previous work has shown that patients are more satisfied with the medical visit when their physician is female and that female physicians

spend more time on preventive services and discussing family and social functioning than male physicians; females also tend to be more supportive (Hall et al., 1994; Bertakis et al., 1995). There were also no significant mean differences in physician assessments of satisfaction, as measured on the DSQ, across physician gender. It is difficult to compare this particular finding to previous literature, as there are no studies that examine differences in physician satisfaction with the patient and the medical visit across male and female physicians.

In addition, female physicians were more effective communicators and engaged in more healthy collaboration compared to male physicians as rated on the *z*BGRS. This finding is supported by a literature review by Roter and Hall (2004) indicating that female physicians are more likely to engage in patient-centered communication, including: active partnership behaviors, positive talk, psychosocial question-asking and counseling, and emotionally-focused talk. There were no significant mean differences, however, in patient involvement between female and male physicians.

Research Question 3

It was hypothesized that there would be mean differences in physicians' satisfaction (as measured by the DSQ) and physician gender-ethnicity group membership (majority versus minority in medicine) across patients of low, medium, and high SES. A series of 2x3 mixed factorial design ANOVA was used to explore this hypothesis.

Relationship Between Physicians' Gender-Ethnicity Group Membership and Satisfaction Across Patient SES. There were no significant main effects or interactions on the five DSQ measures (4 subscales of physician satisfaction and an overall satisfaction

score) in a 2x3 ANOVA of physician gender-ethnicity group membership (a between-physicians variable) by patient income (low, medium, high; a within-physicians variable). Note that the physician categorization was based on demographics in medicine and research on health care disparities (National Center for Health Statistics, 2007). These findings were unexpected because previous research has shown differences in behavior towards patients between majority male physicians (i.e., Caucasian or Asian) and minority and/or female physicians (DiMatteo et al., 2009).

As described in the methods section above, one patient from each SES category was selected for each physician (i.e., one low SES patient, one medium SES patient, and one high SES patient). A possible explanation for these nonsignificant findings is that the absolute level of income of patients' likely varied across physicians, such that a high-income patient for one physician was not very high income for another physician. Alternatively, physicians in this sample might have grown accustomed to only caring for patients of low SES, and provided the same type of care to all their patients, thus there was no difference in their levels of satisfaction.

Strengths of the Study

The present study is the first of its kind to assess physician and patient behavioral characteristics in the medical visit, and how such behavioral characteristics are related to physicians' and patients' ratings of the medical visit, and independent assessments of global affect in the visit. The development and validation of the PPBCS is an initial step towards judging and quantifying the types of behavioral characteristics that are being expressed between physicians and patients during the medical visit. Many rating and

coding schemes exist examining the relationship between general physician-patient behaviors and patient satisfaction with care (e.g., Suchman et al., 1993), and few recent studies have examined patient behavioral characteristics that are associated with physicians satisfaction with the medical visit. The PPBCS, however, is the only instrument to date developed for objective raters to assess physician and patient behavioral characteristics in the medical visit.

This study offers three perspectives: the patient and physician perspectives (as measured by the PSQ and DSQ respectively) and the perspective of unbiased observers (*z*BGRS). Having these three different perspectives enabled detection of similar nuances in the way behavioral characteristics are communicated in the medical visit. Thus, a more reliable assessment of the actual behavioral characteristics that occur during the medical visit can be identified and further explained. Also, aspects of the medical encounter that might otherwise be missed by one perspective might be unveiled with multiple perspectives.

Analyses in this dissertation study are done at the physician-level, which not only allows for the generalization of findings to similar physicians, but also allows for more reliable and meaningful interpretations for how physicians behave on average across a sample of their patients.

Limitations of the Study

The forgoing results must be interpreted in light of several limitations of the present study. First, the PPBCS was designed based on a literature review of studies that focused on the effects of physician and patient behaviors and various outcomes, which

include: both physician and patient satisfaction, a physician's "liking" for their patient and the medical visit, and physicians' communication style. Elements of the "difficult doctor-patient relationship" also served as the conceptual framework for the development of physician and patient behavioral characteristics items within the scale. It is possible that some behavioral characteristics were not captured completely by the PPBCS.

Additionally, although the PPBCS appears to be reliable, it may be difficult for research assistant raters (who are not psychologists or physicians, and who are only briefly trained) to discern through audiotaped interactions some of the more subtle behavioral characteristic included in this scale. For example, items "the patient is self-destructive" or "the patient abuses drugs or alcohol" may be difficult to determine depending on the amount of information divulged during the medical interaction. Furthermore, the process of rating audio interactions does not permit examination of visual nonverbal behaviors such as facial expressions and body orientation; the analysis of visual nonverbal communication remains inaccessible from the data used in this study.

A further limitation of the present study is that the physicians and patients included in this study were in primary care practices in a major metropolitan area of the Southwest region of the U.S. The findings might, thus, be less generalizable than ideal to physicians and patients in other regions of the U.S. (i.e., rural locations or less diverse regions). The similarity of some of these findings to those of other investigators does suggest that generalizability is possible, however.

Study Implications and Future Research

This research examined physician and patient behavioral characteristics in the medical visit and focused on the following important issues that are in need of further study: 1) the relationship between physician and patient behavioral characteristics and physician-patient perceptions of satisfaction with the medical visit and observers' ratings of global affect; 2) the relationship between physicians' age, quality of life, job satisfaction, and level of stress on PPBCS composites, PSQ, DSQ, and *z*BGRS measures; 3) the relationship between physician gender and scores on PPBCS composites, PSQ, DSQ, and *z*BGRS measures; and 4) the differences in physician satisfaction levels according to physician gender ethnicity-grouping and across patients of different SES.

This research has significant implications for clinical practice including a systematic understanding of what drives physician satisfaction, as well as explanatory and evaluative insights into the physician-patient relationship. Specifically, physician or patient behaviors that predict physician satisfaction can shape the way future patients choose to interact with their physicians during the medical encounter. Additionally, the PPBCS might also be used in clinical practice to assess the physician and patient behavioral characteristics that are related to physician satisfaction. Ultimately, these insights may guide the preparation of future physicians with the skills, knowledge and attitudes they will need to practice medicine in a manner that is satisfying both to their patients and to themselves.

This research might also help to influence change in the delivery of care. Research by Iglehart (2011), suggests that with the establishment of accountable care

organization (ACO) programs through the Affordable Care Act, medical care providers are now held financially accountable for providing optimal care to their patients. Thus, understanding what drives both physician and patient satisfaction, as well as the importance of effective communication, can significantly improve the quality of care patients receive.

The PPBCS can be used in future research studies to examine or predict the patient or physician characteristics that are associated with patient outcomes, including patient adherence to medical treatment. The findings could then be used to design interventions to train physicians in identifying patients (based on their behavioral characteristics) who may be at greater risk for treatment nonadherence. Physicians might then be able to empower these patients to engage in more effective disease management strategies.

Future research should continue to examine differences in physician behaviors and satisfaction among patients of low SES since research on health care disparities suggests that patient ethnicity and socio-economic status are correlated with physician behaviors during the medical interaction (Willems, De Maesschalck, Deveugele, Derese, & De Maeseneer, 2005). Although this study did not find significant differences in physician satisfaction as a function of physician gender-ethnicity group membership and across patient income levels, this research speaks to the need for a deeper understanding of the social differences in physician-patient communication. Further research is needed to promote physician awareness about their communicative style, to develop effective teaching methods for physicians on inequalities in communication, and to encourage

patient activation.

Finally, future studies should compare the findings from the current study to examine the possible differences in physician behavioral characteristics in primary care providers or medical providers in other countries. For instance, using the PPBCS researchers could compare the differences in behavioral characteristics of Western versus Eastern physicians and determine which types of behavioral characteristics are most satisfying to physicians.

Concluding Remarks

Physician-patient communication has been recognized as important to the practice of clinical medicine. Communication between physicians and their patients involves not only the exchange of medical information but also the expressed behavioral characteristics and socioemotional context in which the information is exchanged. The physician-patient behavioral characteristics that are expressed during the medical visit can influence and shape what takes place in the medical visit, including and most notably, patient satisfaction. The current study adds to the limited but growing body of research on physicians' satisfaction with their experience in patient care. The recognition of physician satisfaction is particularly important as our current health care system is undergoing major reform. Programs under the Affordable Care Act highlight the need for collaborative, satisfying partnerships for both physicians and their patients. Thus, understanding what drives physician satisfaction is likely to become an increasingly important topic for study and recognition.

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Table 1. *Patient Satisfaction Questionnaire (PSQ) Items and Subscales*

Name of Measure	Items[a]	Cronbach's Alpha[b]
Patient Satisfaction Questionnaire (PSQ) Composites		
Physician Information-Giving (5-item composite) (Heisler et al., 2002)	Physician told you everything, let you know test results, explained treatment alternatives and included you in treatment decisions, explained side effects of medications; told you what to expect	.91
Patient Perceived Decision-Making (3-item composite) (Kaplan et al., 1996)	Physician asked you to: take responsibility for your treatment, help make decisions; physician gives some control over treatment decisions	.77
Patient Choice (4-item composite) (Heisler et al., 2002)	Physician offered choices in your medical care, discussed the pros and cons, asked preferred choice, took preferences into account	.96

Note.
[a]All items were rated on a 1-5 scale (i.e., 1= Poor, 5= Excellent; 1= Definitely not, 5= Definitely yes; or, 1= None of the time, 5= All of the time). Some of the items in each scale were worded in a negative direction in order to avoid acquiescence response sets and, for those items, scoring was reversed. Higher scores refer to greater patient satisfaction. [b] Cronbach's alpha reliabilities are reported for each PSQ subscale in this study sample.

Table 2. *Physician Satisfaction Questionnaire (DSQ) Items and Subscales*

Name of Measure	Items[a]	Cronbach's Alpha[b]
Physician Satisfaction Questionnaire (DSQ) Composites (Suchman et al., 1993)		
Satisfaction with Physician-Patient Relationship (4-item composite)	Patient: personable, trusted the physician, influenced by the physician; physician and patient established rapport	.61
Satisfaction with Data Collection Process (3-item composite)	Physician felt he/she obtained enough detail regarding: the patient's problems and symptoms, history, and psychological condition	.50
Satisfaction with Use of Time in the Visit (3-item composite)	Physician was satisfied that: the visit was necessary, challenging and not boring, and time was well spent	.63
Satisfaction with Patient (3-item composite)	Physician was satisfied that: the patient did not demand attention, did not complain; wanted to spend more time with the patient	.76

Note.
[a]All items were rated on a 1-5 scale (i.e., 1= Strongly agree, 5= strongly disagree). Some of the items in each scale were worded in a negative direction in order to avoid acquiescence response set and, for those items, scoring was reversed. Higher scores refer to greater physician satisfaction. [b]Cronbach's alpha reliabilities are reported for each scale in this study sample.

Table 3. *Physician Attitudes Questionnaire (DAQ) Items and Subscales*

Name of Measure	Items[a]	Cronbach's Alpha[b]
Physician Attitudes Questionnaire (DAQ) Composites		
Satisfaction with the Management and Functioning of Their Office Practice (8-item composite)	Work situation; support staff; scheduling, clinical guidelines; provision of urgent care; primary care management after referral; time to spend with each patient; degree of personal autonomy	.84
Rating of Overall Quality of Life (5- item composite)	Work, family, daily routine, leisure time, general life enjoyment	.88
Stress (3-item composite)	I feel: stressed out in current job, more stressed than others; stress level interferes with ability to deliver quality care	.76

Note.
[a]All items were rated on a 1-5 scale (i.e., 1= Very satisfied, 5= Very dissatisfied; 1= Excellent, 5= Poor; or, 1= Strongly agree, 5= Strongly disagree). Some of the items in each scale were worded in a negative direction in order to avoid acquiescence response sets and, for those items, scoring was reversed. Higher scores refer to greater satisfaction with practice, better quality of life, and more stress. [b]Cronbach's alpha reliabilities are reported for each DAQ subscale in this study sample.

Table 4. *Bayer Global Rating Scale Subscales (zBGRS) Items and Subscales*

Name of Measure	Items[b]	Cronbach's Alpha
Physician-Patient Global Rating Scale Composites (14-items) (Haskard et al., 2008)[a]		
Physician Effective Communication (8-item composite)	Physician: connected with the patient as a person; sensitive to potential communication problems, acknowledges them and facilitates repair; overall rating of communication; Physician was informative, shared control and power with patient, invited patient to share their understanding, and to participate in decision making, and was empathic with the patient.	.96
Patient Involvement (4-item composite)	The patient took initiative and introduced the agenda, asked the doctor questions, was an active participant in discussion, understood what to do or was able to get clarification.	.87
Healthy Collaboration (2-item composite)	This was a collaborative relationship with a two-way conversation, and involved discussions of prevention and health promotion.	.62

Note.
.[a]Two groups of raters completed ratings of approximately 2000 audio-taped interactions, from all three time points. An initial group of 10 raters assessed the entire corpus of interactions (each rater rating a subset of about 200 interactions). A second set of 28 raters rated the entire corpus of audiotapes (each rater assessing a subset). All ratings were *z*-scored "within rater" to equate individual rater variability in use of the scale. [b] All items were rated on a 1-7 scale (e.g., 1= Poor, 7 = Excellent). Approximately half of the items in each scale were worded in a negative direction in order to avoid acquiescence response set and, for those items, scoring was reversed. Cronbach's alpha reliabilities are reported for each *z*BGRS subscale in this study sample.

Table 5. *Demographic Characteristics of Patients in the Sample (N=298 patients)*

Demographic characteristics	*N*	*Percentage*
Gender		
Male	130	44.2
Female	164	55.8
Missing	4	-
Income[a]		
Less than $10,000	98	33.4
$10,000- $19,999	50	17.0
$20,000- $29,000	32	10.9
$30,000- $39,000	32	10.9
$40,000- $49,999	19	6.5
$50,000- $59,999	16	5.5
$60,000- $69,999	11	3.8
$70,000- $79,999	7	2.4
$80,000- $89,999	11	3.8
$90,000- $99,999	4	1.4
Over $100,000	13	4.4
Missing	5	-
Education		
No formal education	2	0.7
Some grade school	8	2.7
Completed grade school	11	3.7
Some high school	30	10.2
Completed high school	62	21.1
Some college	109	37.1
Completed college	40	13.6
Some graduate work	10	3.4
A graduate degree	22	7.5
Missing	4	-
Employment		
Full-time employment	104	35.3
Part-time employment	39	13.2
Unemployed	56	19.0
Retired	56	19.0
Homemaker	13	4.4
Student	13	4.4
Other	14	4.7
Missing	3	-
Ethnicity		
Caucasian	172	58.7
Hispanic	61	20.9
African American	22	7.5
Asian	18	6.1
Other	12	4.1
Native American	8	2.7
Missing	5	-

Note. [a]Patient income was self-reported in the year 1996 and is based on U.S dollars.

Table 6. *Demographic Characteristics of Physicians in the Sample (N=100 physicians)*

Demographic characteristics	*N*	*Percentage*
Gender		
Male	60	60.0
Female	40	40.0
Training in Primary Care		
Yes	85	86.7
No	13	13.3
Missing	2	-
Physicians' Practice Site		
University Medical Center	61	61.0
Veteran's Administration	2	2.0
HMO	37	37.0
Ethnicity		
Caucasian	47	47.5
African American	2	2.0
Asian	43	43.4
Hispanic	7	7.1
Missing	1	-

Table 7. *Descriptive Statistics of PPBCS Items (Z-scored)*[a]

Item	*N*	Min.	Max.	Mean	Standard Deviation (*SD*)
Patient Behavioral Characteristics					
The patient is adherent (compliant)	100	-.618	1.366	.001	.363
The patient is demanding	100	-.500	1.850	.002	.418
The patient has a difficult personality	100	-.545	1.359	.004	.439
The patient is draining	100	-.570	1.500	.001	.465
The patient is easy to communicate with	100	-1.180	.740	-.005	.415
The patient is enjoyable	100	-.890	1.050	-.005	.449
The patient is frustrating	100	-.480	1.470	.001	.365
The patient is manipulative	100	-.440	1.130	-.001	.306
The patient is reasonable	100	-1.170	.709	-.004	.391
The patient is self-destructive	100	-.420	1.960	.001	.435
The patient is time-consuming	100	-.605	1.428	-.001	.464
The patient abuses drugs or alcohol	100	-.400	1.970	.002	.402
The patient neglects his or her own health	100	-.630	1.430	.002	.463
The patient overreacts to symptoms and problems	100	-.510	1.730	-.002	.376
The patient understands the doctor's explanations	100	-1.028	.728	-.003	.413
Physician Behavioral Characteristics					
The physician is angry with the patient	100	-.300	2.090	.002	.399
The physician is at ease with the patient	100	-1.130	.910	-.004	.419
The physician is enthusiastic about caring for the patient	100	-1.320	1.340	-.003	.561
The physician is hopeless about the patient	100	-.400	1.520	.000	.368
The physician is frustrated with the patient	100	-.470	1.540	.003	.415
The physician looks forward to the patient's next visit	100	-1.060	.960	-.001	.466
The physician is negative about the visit	100	-.460	1.160	.001	.317
The physician is tense when dealing with the patient	100	-1.220	.480	-.002	.372
The physician communicates well with the patient	100	-1.260	.860	-.003	.434

Note.
All items on the PPBCS were originally rated on a 7-point scale (1= not at all, 7= a great deal), then *z*-scored to control for inter-rater differences in the use of the scale.

Table 8. *Interrater reliability of individual PPBCS ratings (Based on 4 Raters)*

Item		*N* of valid cases[a]	Inter-rater reliability[b]
Patient Behavioral Characteristics			
1	The patient is adherent (*compliant*)	298	.453
2	The patient is demanding	298	.621
3	The patient has a difficult personality	298	.615
4	The patient is draining	298	.564
5	The patient is easy to communicate with	298	.498
6	The patient is enjoyable	298	.523
7	The patient is frustrating	298	.461
8	The patient is manipulative	298	.268
9	The patient is reasonable	298	.339
10	The patient is self-destructive	298	.695
11	The patient is time consuming	298	.656
12	The patient abuses drugs or alcohol	298	.698
13	The patient neglects his or her own health	298	.711
14	The patient overreacts to symptoms and problems	298	.432
15	The patient understands the doctor's explanation	298	.408
Physician Behavioral Characteristics			
16	The physician is angry with the patient	298	.652
17	The physician is at ease with the patient	298	.408
18	The physician is enthusiastic about caring for the patient	298	.547
19	The physician is hopeless about the patient	298	.223
20	The physician is frustrated with the patient	298	.634
21	The physician looks forward to the patient's next visit	298	.491
22	The physician is negative about the visit	298	.293
23	The physician is tense when dealing with the patient	298	.386
24	The physician communicates well with the patient	298	.474

Note.

[a]There were a total of 298 physician-patient interactions included in this study. [b]Interrater reliability was calculated based on four raters. Average intercorrelation of 4 raters on a given item with Spearman Brown Formula applied with factor of 4. Spearman Brown formula is $R = (N^* r_{ave})/ [1+ (N\text{-}1)^* r_{ave}]$ where R = Spearman-Brown "up" reliability, r_{ave} = the average of inter-item correlations, and N = total number of raters. The mean interrater reliability was calculated based on four raters' raw scores for each item.

Table 9a. *PCA Factor Loadings for PPBCS Patient Behavioral Characteristic Items (Based on Varimax Rotation)*

Item	Demanding Patient	Enjoyable Patient	Nonadherent Patient
The patient is adherent[a]	.123	-.273	**.696**
The patient is demanding	**.833**	-.130	.032
The patient has a difficult personality	**.710**	-.446	.280
The patient is draining	**.631**	-.528	.081
The patient is easy to communicate with	-.314	**.827**	-.145
The patient is enjoyable	-.181	**.798**	-.076
The patient is frustrating	**.720**	-.393	.260
The patient is manipulative	**.768**	.016	.117
The patient is reasonable	-.404	**.617**	-.426
The patient is self-destructive	.194	-.146	**.858**
The patient is time consuming	**.624**	-.260	.117
The patient abuses drugs or alcohol	-.064	-.023	**.719**
The patient neglects his or her own health	.157	-.151	**.879**
The patient overreacts to symptoms and problems	**.656**	-.186	-.046
The patient understands the doctor's explanation	-.130	**.785**	-.210

Note.
Three factors had eigenvalues greater than 1. Boldface indicates the assigned factor for each item. [a]The patient is *adherent* item was reverse scored to the patient is *nonadherent*.

Table 9b. *PCA Factor Loadings for PPBCS Physician Behavioral Characteristic Items (Based on Varimax Rotation)*

Items	Enthusiastic Physician	Frustrated Physician
The physician is angry with the patient	-.039	**.795**
The physician is at ease with the patient	**.768**	-.382
The physician is enthusiastic about caring for the patient	**.812**	-.053
The physician is hopeless about the patient	-.142	**.693**
The physician is frustrated with the patient	-.254	**.861**
The physician looks forward to the patient's next visit	**.782**	-.066
The physician is negative about the visit	-.355	**.736**
The physician is tense when dealing with the patient[a]	**.781**	-.266
The physician communicates well with the patient	**.619**	-.446

Note.
Two factors had eigenvalues greater than 1. Boldface indicates the assigned factor for each item. [a]The physician is *tense* when dealing with the patient item was reversed scored to the physician is *NOT* tense when dealing with the patient.

Table 10. *Psychometric Properties of PPBCS Composites (Z-Scored)*[a]

Name of Composite	Number of Items in Composite	Composite Mean[b]	Composite *SD*	Cronbach's Alpha
Patient Behavioral Characteristics				
Demanding	7	.001	.311	.89
Enjoyable	4	-.004	.356	.86
Nonadherent	4	.001	.46	.83
Physician Behavioral Characteristics				
Enthusiastic	5	-.003	.384	.89
Frustrated	4	.002	.304	.82

Note.
All items on the PPBCS were originally rated on a 7-point scale (1= not at all, 7= a great deal), then *z*-scored to control for inter-rater differences in the use of the scale. [a]The composite mean *z*-score for each item on the PPBCS was obtained by first calculating the *z*-score for each rater across each item on the PPBCS, then taking the mean of the *z*-scores across the four raters for each PPBC scale item.

Table 11a. *Inter-Intra Correlation Matrix for PPBCS: Patient Behavioral Characteristics*

	Demanding	Enjoyable	Nonadherent
Demanding	.52		
Enjoyable	-.42	.64	
Nonadherent	.14	.26	.60

Table 11b. *Inter-Intra Correlation Matrix for PPBCS: Physician Behavioral Characteristics*

	Enthusiastic	Frustrated
Enthusiastic	.66	
Frustrated	-.26	.54

Note.
For tables 11a-b the correlations on the diagonal are the average inter-correlations of the items that make up the composites (intra). The correlations off the diagonal are the average inter-correlations of the items of each composite with those of each other composite (inter).

Table 12. *Correlations of PPBCS Patient Composites with PSQ scale (Patients' Perceptions)*

		PPBCS Patient Composites		
Patients' Perceptions- PSQ Scale[a]		Demanding	Enjoyable	Nonadherent
Physician Information-Giving	*r*	-.151	.247*	.060
	p	.133	.013	.555
Patient Perceived Decision-Making	*r*	-.063	.140	.116
	p	.534	.165	.252
Patient Choice	*r*	-.140	.155	.034
	p	.164	.123	.739

Note.
**p<.05*
All *N's*= 100. [a]The PSQ scale measures patients' perceptions of their satisfaction with: the physician information-giving, perceived decision-making, and choice in care. Some items were worded in the negative direction and were reverse-scored, such that higher scores refer to greater patient satisfaction.

Table 13. *Correlations of PPBCS Physician Composites with PSQ Scale (Patients' Perceptions)*

Patients' Perceptions-PSQ Scale[a]		PPBCS Physician Composites	
		Enthusiastic	Frustrated
Physician Information-Giving	*r*	.368*	-.094
	p	.001	.355
Patient Perceived Decision-Making	*r*	.255*	-.069
	p	.025	.494
Patient Choice	*r*	.316*	-.172
	p	.0001	.087

Note.
**p<.05*
All *N*'s = 100. [a]The PSQ scale measures patients' perceptions of their satisfaction with: the physician information-giving, perceived decision-making, and choice in care. Some items were worded in the negative direction and were reverse-scored, such that higher scores refer to greater patient satisfaction.

Table 14. *Correlations of PPBCS Patient Composites with DSQ Scale (Physicians' Perceptions)*

		PPBCS Patient Composites		
Physicians' Perceptions- DSQ Scale[a]		Demanding	Enjoyable	Nonadherent
Satisfaction with Physician-Patient Relationship	*r*	-.110	.290**	-.158
	p	.227	.003	.116
Satisfaction With Data Collection Process	*r*	-.110	.210*	-.200*
	p	.227	.036	.046
Satisfaction with the Use of Time in Visit	*r*	-.037	.061	.016
	p	.716	.548	.877
Satisfaction with Patient	*r*	-.065	.057	-.058
	p	.518	.576	.569
Overall Satisfaction	*r*	-.091	.177	-.206*
	p	.369	.078	.040

Note.
*$p<.05$
All *N*'s = 100. [a]The DSQ scale measures physicians' perceptions of their satisfaction with: the physician-patient relationship, the data collection process, the use of time, the patient, and overall satisfaction. Some items were worded in the negative direction and were reverse-scored, such that higher scores refer to greater physician satisfaction.

Table 15. *Correlations of PPBCS Physician Composites with DSQ Scale (Physicians' Perceptions)*

		PPBCS Physician Composites	
Physicians' Perceptions- DSQ Scale[a]		Enthusiastic	Frustrated
Satisfaction with Physician-Patient Relationship	*r*	.149	-.118
	p	.140	.242
Satisfaction with Data Collection Process	*r*	.035	-.062
	p	.731	.537
Satisfaction with Use of Time in Visit	*r*	.044	.033
	p	.666	.746
Satisfaction with Patient	*r*	.147	-.119
	p	.145	.238
Overall Satisfaction	*r*	.086	-.080
	p	.397	.427

Note.
**p*<.05; ***p*<.001
All *N*'s= 100. [a]The DSQ scale measures physicians' perceptions of their satisfaction with: the physician-patient relationship, the data collection process, the use of time, the patient, and overall satisfaction. Some items were worded in the negative direction and were reverse-scored, such that higher scores refer to greater physician satisfaction.

Table 16. *Correlations of PPBCS Patient Composites with zBGRS (Independent Raters' Perceptions)*

		PPBCS Patient Composites		
Independent Raters' Perceptions-zBGRS[a]		Demanding	Enjoyable	Nonadherent
Physician Effective Communication	*r*	-.048	.435*	-.046
	p	.636	.0001	.652
Patient Involvement	*r*	.107	.215*	.000
	p	.290	.032	.998
Healthy Collaboration	*r*	-.037	.364*	.048
	p	.715	.0001	.632

Note.
*$p<.05$
All *N*'s= 100. [a]The zBGRS measures independent raters' perceptions of global affect (physician effective communication, patient involvement, and healthy collaboration) in the physician-patient interaction.

Table 17. *Correlations of PPBCS Physician Composites with zBGRS (Independent Raters' Perceptions)*

		PPBCS Physician Composites	
Independent Raters' Perceptions- zBGRS[a]		Enthusiastic	Frustrated
Physician Effective Communication	*r*	.605*	-.299*
	p	.0001	.002
Patient Involvement	*r*	.233*	-.248*
	p	.020	.013
Healthy Collaboration	*r*	.420*	-.197*
	p	.0001	.049

Note.
*$p<.05$
All *N*'s= 100. [a]The zBGRS measures independent raters' perceptions of global affect (physician effective communication, patient involvement, and healthy collaboration) in the physician-patient interaction.

Table 18. *Correlations Between Physician Characteristics*

Physician Characteristics[a]	Age	Work Stress	Satisfaction with the Quality of Life	Satisfaction with Medical Practice
Age	-			
Work Stress	.08	-		
Satisfaction with Quality of Life	-.03	-.34**	-	
Satisfaction with Medical Practice	-.05	-.39**	.32**	-

Note.
**p<.05; **p<.001*
[a]Physician characteristics work stress, satisfaction with the quality of life, and satisfaction with practice were measured by the DAQ and rated on a 1-to-5 scale (e.g., 1= strongly agree, 5 = strongly disagree; 1= excellent, 5=poor; 1=very satisfied, 5= very dissatisfied). Some items were worded in the negative direction and were reverse-scored, such that higher scores refer to more physician stress and greater satisfaction with quality of life and with the medical practice.

Table 19. *Correlations of Physician Characteristics and PPBCS Composites*

		PPBCS Composites				
		Patient Composites			Physician Composites	
Physician Characteristics[a]		Demanding	Enjoyable	Nonadherent	Enthusiastic	Frustrated
Age	*r*	-.046	.140	-.204*	-.070	-.095
	p	.648	.167	.044	.492	.350
	N	99	99	99	99	99
Work Stress	*r*	-.084	.042	-.009	-.025	-.001
	p	.409	.679	.931	.806	.994
	N	98	98	98	98	98
Satisfaction with the Quality of Life	*r*	.002	.009	.045	-.019	.022
	p	.984	.930	.659	.850	.831
	N	98	98	98	98	98
Satisfaction with Medical Practice	*r*	-.002	.104	.018	.061	-.084
	p	.983	.304	.859	.550	.407
	N	99	99	99	99	99

Note.
**p<.05*
[a]Physician characteristics work stress, satisfaction with the quality of life, and satisfaction with practice were measured by DAQ and rated on a 1-to-5 scale (e.g., 1= strongly agree, 5 = strongly disagree; 1= excellent, 5=poor; 1=very satisfied, 5= very dissatisfied). Some items were worded in the negative direction and were reverse-scored, such that higher scores refer to more physician stress and greater satisfaction with quality of life and with medical practice.

Table 20. *Correlations of Physician Characteristics and PSQ Scale (Patients' Perceptions)*

		Patients' Perceptions- PSQ Scale[b]		
Physician Characteristics[a]		Physician Information-Giving	Patient Perceived Decision-Making	Patient Choice
Age	*r*	-.033	.021	-.058
	p	.748	.835	.569
	N	99	99	99
Work Stress	*r*	-.217*	-.128	-.004
	p	.032	.208	.971
	N	98	98	98
Satisfaction with the Quality of Life	*r*	.010	.097	-.017
	p	.924	.340	.866
	N	98	98	98
Satisfaction with Medical Practice	*r*	.068	.009	-.024
	p	.502	.929	.812
	N	99	99	99

Note.
*$p<.05$
[a] Physician characteristics work stress, satisfaction with the quality of life, and satisfaction with practice were measured by the DAQ and rated on a 1-to-5 scale (e.g., 1= strongly agree, 5 = strongly disagree; 1= excellent, 5=poor; 1=very satisfied, 5= very dissatisfied). Some items were worded in the negative direction and were reverse-scored, such that higher scores refer to more physician stress and greater satisfaction with quality of life and with medical practice. [b]The PSQ scale measures patients' perceptions of their satisfaction with: the physician information-giving, perceived decision-making, and choice in care. Some items were worded in the negative direction and were reverse-scored, such that higher scores refer to greater patient satisfaction.

Table 21. *Correlations of Physician Characteristics and DSQ Scale (Physicians' Perceptions)*

Physician Characteristics[a]		Physicians' Perceptions- DSQ Scale[b]				
		Satisfaction with Physician-Patient Relationship	Satisfaction with Data Collection Process	Satisfaction with Use of Time	Satisfaction with Patient	Overall Satisfaction
Age	*r*	.168	.235*	.107	.083	.191
	p	.097	.019	.293	.414	.058
	N	99	99	99	99	99
Work Stress	*r*	-.144	-.142	-.251*	-.287*	-.204*
	p	.156	.163	.013	.004	.044
	N	98	98	98	98	98
Satisfaction with the Quality of Life	*r*	.119	.096	.200*	-.053	.076
	p	.244	.346	.049	.607	.455
	N	98	98	98	98	98
Satisfaction with Medical Practice	*r*	.108	.176	.132	.127	.135
	p	.288	.082	.193	.212	.184
	N	99	99	99	99	99

Note.
*$p<.05$
[a] Physician characteristics work stress, satisfaction with the quality of life, and satisfaction with practice were measured by the DAQ and rated on a 1-to-5 scale (e.g., 1= strongly agree, 5 = strongly disagree; 1= excellent, 5=poor; 1=very satisfied, 5= very dissatisfied). Some items were worded in the negative direction and were reverse-scored, such that higher scores refer to more physician stress and greater satisfaction with quality of life and with the medical practice. [b]The DSQ scale measures physicians' perceptions of their satisfaction with: the physician-patient relationship, the data collection process, the use of time, the patient, and overall satisfaction. Some items were worded in the negative direction and were reverse-scored, such that higher scores refer to greater physician satisfaction.

Table 22. *Correlations of Physician Characteristics and zBGRS (Independent Raters' Perceptions)*

		Independent Raters' Perceptions- zBGRS Scale[b]		
Physician Characteristics[a]		Physician Effective Communication	Patient Involvement	Healthy Collaboration
Age	*r*	.003	.015	.002
	p	.973	.885	.987
	N	99	99	99
Work Stress	*r*	-.010	-.125	-.032
	p	.923	.220	.757
	N	98	98	98
Quality of Life	*r*	-.046	.026	.039
	p	.655	.802	.700
	N	98	98	98
Satisfaction with Medical Practice	*r*	-.041	-.003	-.060
	p	.690	.978	.553
	N	99	99	99

Note.
**p<.05; **p<.001*
[a] Physician characteristics: age, work stress, satisfaction with the quality of life, and satisfaction with practice were measured by the DAQ and rated on a 1-to-5 scale (e.g., 1= strongly agree, 5 = strongly disagree; 1= excellent, 5=poor; 1=very satisfied, 5= very dissatisfied). Some items were worded in the negative direction and were reverse-scored, such that higher scores refer to more physician stress and greater satisfaction with quality of life and with the medical practice. [b]The zBGRS measures independent raters' perceptions of global affect (physician effective communication, patient involvement, and healthy collaboration) in the physician-patient interaction.

Table 23. *Independent Samples T-Tests of PPBCS Composite Differences by Physician Gender*

		PPBCS Composites[a]									
		Physician Factors				Patient Factors					
		Enthusiastic		Frustrated		Demanding		Enjoyable		Nonadherent	
Physician Characteristics	*N*	Mean (*SD*)	*t*(df)	Mean (*SD*)	*t*(df)	Mean (*SD*)	*t*(df)	Mean (*SD*)	*t*(df)	Mean (*SD*)	*t*(df)
Gender											
Female	40	.14 (37)	*t*(98)= 3.07*	.05 (.39)	*t*(98)= 1.31	-.01 (.36)	*t*(98)= -.35	.08 (.35)	*t*(98)= 1.88	.01 (.36)	*t*(98)= .09
Male	60	-.09 (.36)		-.03 (.23)		.01 (.28)		-.06 (.34)		-.00 (.34)	

Note.
*$p<.05$
All means, standard deviations, and *t*-tests are rounded up to the second decimal place. [a]PPBCS ratings were *z*-scored within-rater to control for inter rater differences in the use of the scale. The means and standard deviations shown here are in *z*-scored units. Analyses were conducted at the physician level (i.e., ratings were averaged for interactions (3 patients per physician) within-physician.

Table 24. *Independent Samples T-Tests of PSQ Scale (Patients' Perceptions) Differences by Physician Gender*

		Patients' Perceptions-PSQ Scale Composites[a]					
		Physician Information-Giving		Patient Perceived Decision-Making		Patient Choice	
Physician Characteristics	*N*	Mean (*SD*)	*t*(df)	Mean (*SD*)	*t*(df)	Mean (*SD*)	*t*(df)
Gender							
Female	40	4.37 (.50)	*t*(98)= .72	3.78 (.68)	*t*(98)= .32	3.80 (.87)	*t*(98)= -.18
Male	60	4.30 (.50)		3.74 (.56)		3.83 (.82)	

Note.
*p<.05; **p<.001
All means, standard deviations, and *t*-tests are rounded up to the second decimal place. [a]The PSQ scale measures patients' perceptions of their satisfaction with: the physician information-giving, perceived decision-making, and choice in care.

Table 25. *Independent Samples T-Tests of DSQ Scales (Physicians' Perceptions) Differences by Physician Gender*

		Physicians' Perceptions-DSQ Scale Composites[a]									
		Satisfaction with Physician-Patient Relationship		Satisfaction with Data Collection Process		Satisfaction with Use of Time		Satisfaction with the Patient		Overall Satisfaction	
Physician Characteristics	*N*	Mean (*SD*)	*t*(df)	Mean (*SD*)	*t*(df)	Mean (*SD*)	*t*(df)	Mean (*SD*)	*t*(df)	Mean (*SD*)	*t*(df)
Gender											
Female	40	3.89 (.25)	*t*(98)= 1.12	3.74 (.34)	*t*(98)= 1.01	3.40 (.29)	*t*(98)= .28	3.61 (.58)	*t*(98)= -.26	3.79 (.19)	*t*(98)= .96
Male	60	3.81 (.42)		3.66 (.43)		3.98 (.39)		3.64 (.47)		3.74 (.31)	

Note.
**p<.05; **p<.001*
All means, standard deviations, and *t*-tests are rounded up to the second decimal place. [a]The DSQ scale measures physicians' perceptions of their satisfaction with: the physician-patient relationship, the data collection process, the use of time, the patient, and overall satisfaction.

Table 26. *Independent Samples T-Tests of zBGRS (Independent Raters' Perceptions) Differences by Physician Gender*

		Independent Raters' Perceptions-zBGRS Scale Composites[a]					
		Physician Effective Communication		Patient Involvement		Healthy Collaboration	
Physician Characteristics	*N*	Mean (*SD*)	*t*(df)	Mean (*SD*)	*t*(df)	Mean (*SD*)	*t*(df)
Gender							
Female	40	.25 (.62)	*t*(98)= 3.21**	.06 (.53)	*t*(98)=.33	.21 (.58)	*t*(98)= 2.17*
Male	60	-.08 (.40)		.03 (.44)		-.01 (.40)	

Note.
**p<.05; **p<.001*
All means, standard deviations, and *t*-tests are rounded up to the second decimal place. [a]zBGRS ratings were *z*-scored within-rater to control for inter rater differences in the use of the scale. The means and standard deviations shown here are in *z*-scored units. The zBGRS measures independent raters' perceptions of global affect (physician effective communication, patient involvement, and healthy collaboration) in the physician-patient interaction.

Table 27. *Means of Mixed Factorial ANOVA Comparing Physician Gender-Ethnicity Group Membership and Patient SES on Physician Satisfaction (DSQ)*

	Means for Physician Gender-Ethnicity Group Membership[a]		Means for Patient SES			Means for Physician Gender-Ethnicity Group Membership x Patient SES					
Dependent variable	Majority (MA)	Minority (MI)	Low	Medium	High	MA, Low SES	MA, Medium SES	MA, High SES	MI, Low SES	MI, Medium SES	MI, High SES
Satisfaction with Physician-Patient Relationship	3.82	3.88	3.82	3.88	3.86	3.78	3.80	3.89	3.87	3.96	3.82
Satisfaction with Data Collection Process	3.66	3.73	3.72	3.72	3.65	3.73	3.67	3.59	3.71	3.77	3.72
Satisfaction with Use of Time	3.99	3.96	3.95	4.02	3.96	3.97	4.02	3.98	3.92	4.01	3.94
Satisfaction with Patient	3.62	3.62	3.50	3.58	3.77	3.53	3.58	3.73	3.46	3.58	3.80
Overall Satisfaction	3.75	3.78	3.74	3.77	3.78	3.75	3.73	3.79	3.73	3.82	3.78

Note.
Significant mean differences are in bold. All means are rounded up to the second decimal place. [a]The physicians in this study were categorized into two groups: "majority" gender ethnicity or "minority" gender ethnicity. The majority gender-ethnicity group consisted of either Caucasian or Asian male physicians. The minority gender-ethnicity group consisted of Hispanic, African American, or "other" ethnicity female or male physicians. There were 53 physicians in the majority gender-ethnicity group and 47 physicians in the minority gender-ethnicity group. These two groups are based on research an demographics in medicine as described in DiMatteo, Murray, and Williams (2009).

Appendix A

Physician-Patient Behavioral Characteristics Scale (PPBCS)

Instructions: Fill in the scale while listening to the interaction. Please pay attention to the patient's behavior as well as to the physician's. Rate the patient in the first section, and the physician in the second section by circling a number from 1 (not at all) to 7 (a great deal) for each of the behavioral characteristics listed below.

THE PATIENT…

	Not at all						**A great deal**
is Adherent (compliant)	1	2	3	4	5	6	7
is Demanding	1	2	3	4	5	6	7
has a Difficult Personality	1	2	3	4	5	6	7
is Draining	1	2	3	4	5	6	7
is Easy to Communicate with	1	2	3	4	5	6	7
is Enjoyable	1	2	3	4	5	6	7
is Frustrating	1	2	3	4	5	6	7
is Manipulative	1	2	3	4	5	6	7
is Reasonable	1	2	3	4	5	6	7
is Self-destructive	1	2	3	4	5	6	7
is Time-consuming	1	2	3	4	5	6	7
Abuses drugs or alcohol	1	2	3	4	5	6	7
Neglects his or her own health	1	2	3	4	5	6	7
Overreacts to symptoms/ problems	1	2	3	4	5	6	7
Understands the doctor's explanations	1	2	3	4	5	6	7

THE PHYSICIAN…

	Not at all						**A great deal**
is Angry with the patient	1	2	3	4	5	6	7
is At Ease with the patient	1	2	3	4	5	6	7
is Enthusiastic about caring for the patient	1	2	3	4	5	6	7
is Hopeless about the patient	1	2	3	4	5	6	7
is Frustrated with the patient	1	2	3	4	5	6	7
Looks Forward to the patient's next visit	1	2	3	4	5	6	7
is Negative about the visit	1	2	3	4	5	6	7
is Tense when dealing with the patient	1	2	3	4	5	6	7
Communicated well with the patient	1	2	3	4	5	6	7

Appendix B

Clinician-Patient Communication Global Rating Scale
Bayer Institute for Health Care Communication

Tape Code: _____ Coder Number: _____
Date Coded: _____
Visit Length _____ Audio Quality: Excellent Good Fair Poor

THE PHYSICIAN

	Poor						Excellent
The physician connected with the patient as a person.	1	2	3	4	5	6	7
The physician was empathic with the patient.	1	2	3	4	5	6	7
The physician was informative to the patient.	1	2	3	4	5	6	7
The physician invited the patient to share their understanding, perspective, and feelings.	1	2	3	4	5	6	7
The physician is sensitive to potential communication problems, acknowledges them and facilitate repair.	1	2	3	4	5	6	7
The physician invited the patient to participate in decision-making.	1	2	3	4	5	6	7
The physician shares control and power with the patient.	1	2	3	4	5	6	7
Overall how would you rate this physician's communication.	1	2	3	4	5	6	7

THE PATIENT

	Poor						Excellent
The patient was able to take initiative and introduce his/her agenda.	1	2	3	4	5	6	7
The patient asked the doctor questions.	1	2	3	4	5	6	7
The patient was an active participant in a discussion about treatment options.	1	2	3	4	5	6	7
The patient understood what s/he was supposed to do or was able to get clarification.	1	2	3	4	5	6	7

THE INTERACTION

	Poor						Excellent
This was a collaborative relationship with a two-way conversation.	1	2	3	4	5	6	7
This interaction included discussions of prevention and health promotion.	1	2	3	4	5	6	7