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An Empirical Examination of “Doctorship Styles”: Do Clinicians’ Styles of Care
Predict Patient Health Outcomes?

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

Doctor of Philosophy

in

Psychology

by

Ho Phi Huynh

June 2014

Dissertation Committee:
Dr. Kate Sweeny, Chairperson
Dr. David Funder
Dr. Robin DiMatteo

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The Dissertation of Ho Phi Huynh is approved:

Committee Chairperson

University of California, Riverside

Acknowledgements

“There are people who are born and die and never once are aware of their breath going in and out of their body. That’s how far they live from themselves.”

- No Ajahn Chah

Nam Mo A Di Da Phat. Up to this point in my life, I have had little time for reflection. It’s been a go-go-go process. Very rarely have I had the time or forum to express my gratitude for people who have helped shape me into the person I am today. I know that life is a process, but currently, I am happy, I am aware, and I am grateful.

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did you raise three kids by yourself after everything was taken from you, including your husband? Your commitment and strength of character will never be matched in my eyes. Your continued selfless support of your siblings in Vietnam also serves as the beacon of what it means to put family first. From you, I will always know that nothing is greater than family. Family trumps pettiness, family trumps money, and family trumps self.

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ABSTRACT OF THE DISSERTATION

An Empirical Examination of “Doctorship Styles”: Do Clinicians’ Styles of Care Predict Patient Health Outcomes?

by

Ho Phi Huynh

Doctor of Philosophy, Graduate Program in Psychology
University of California, Riverside, June 2014
Dr. Kate Sweeny, Chairperson

Effective clinicians need to motivate their patients to initiate and maintain beneficial health behaviors. Using transformational leadership theory as the theoretical framework, we proposed that clinicians’ motivational behaviors can be organized into three “doctorship styles,” or patterned approaches to patient care: passive-avoidant, transactional, and transformational. We also suggested that the styles differentially predict patient health outcomes. In Study 1, we used patient-reported questionnaires ($n = 164$) to examine the structure of doctorship styles and their relationship with patient outcomes. We found the second-order three-factor model to be the best model. Moreover, transformational doctorship was the only style that predicted patient adherence and it also positively predicted patient satisfaction above and beyond transactional doctorship. In Study 2, we used ratings of audio recordings of doctor-patient interactions and patient-reported post-visit questionnaires ($n = 297$) to examine the correlates of doctorship styles. We found that transformational doctorship positively predicted patient satisfaction and

adherence, whereas transactional and passive-avoidant doctorship were not related to these variables. Finally, we found that passive-avoidant doctorship negatively predicted patients' outlook for their future health status, whereas transformational doctorship style positively predicted patients' outlook. Together these findings provide support for the doctorship styles framework and suggest a novel and fruitful direction for the study of clinicians' motivational behaviors.

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An Empirical Examination of “Doctorship Styles”: Do Clinicians’ Styles of Care Predict Patient Health Outcomes?

Patient nonadherence is pervasive, costly, and harmful (DiMatteo, 2004; Simpson et al., 2006). Nonadherence occurs when patients fail to follow clinicians’ recommendations regarding health behaviors or treatment and can include 1) failing to fill prescriptions; 2) ceasing to take medications; 3) taking medications improperly; 4) ignoring medical advice such as dietary or lifestyle changes; and 5) incorrectly executing prescribed health behaviors (DiMatteo, Haskard-Zolnierek, & Martin, 2012). Approximately 50 percent of patients with chronic illnesses and 25 percent of all patients exhibit as least one of these behaviors in the process of their care (DiMatteo, 2004). Those failures cost the United States economy approximately \$300 billion a year due to 240 million to 275 million ambulatory visits that are essentially wasted because of patient nonadherence (Sabate, 2003). Additionally, nonadherent patients are three times less likely to have desirable health outcomes compared to adherent patients (DiMatteo et al., 2002).

To be *adherent* to treatment recommendations, patients need the correct information, the proper strategy, and the motivation to execute the health plan (DiMatteo et al, 2012). Clinicians serve as an integral component in this process. They can ensure that patients receive, understand, and remember the appropriate information and guide patients to the proper resources, and they must also play a central role in motivating patients (DiMatteo et al., 2012). The motivational component is especially significant because years of research indicate that providing competent medical care in itself is not

sufficient for patients to achieve optimal health outcomes (e.g. Kaplan et al., 1989; Stewart, 1995). However, the literature lacks an efficient organizational structure to categorize clinicians' motivational strategies and behaviors.

With the underlying understanding that clinicians differ in their ability to motivate patients to initiate and maintain beneficial health behaviors (DiMatteo et al., 2012), we integrated transformational leadership theory and health research to propose *doctorship styles* (Huynh & Sweeny, in press; For the brevity's sake, we will identify these styles as "doctorship styles" instead of "clinicians' styles of patient care". The name does not represent only doctors, but all clinicians [i.e., nurse practitioners and physician assistants]). We suggest that there are discernable patterns in clinicians' approaches to patient care and these patterns can be identified as styles of care (i.e., doctorship styles), similar to leadership styles that leaders display in their interactions with their workgroup members (Bass & Avolio, 1991; Bass & Bass, 2010). Additionally, we propose that some styles are more effective than others at motivating patients to adhere to treatment recommendations (Huynh & Sweeny, in press). In this paper, we examine the proposed structure of doctorship styles and their ability to predict consequential patient outcomes (e.g., adherence, satisfaction).

Summary of Doctorship Styles

Here we review the proposed conceptual framework and structure of doctorship styles. Additionally, we offer an alternative model, which reflects a modification of one of the styles. For a full description and discussion of doctorship styles, particularly

about the parallels between leader-follower and clinician-patient relationships, see Huynh & Sweeny (in press).

Conceptual Framework

An unsurprising conclusion from a review of health research is that clinician-patient interpersonal interactions have significant consequences for patients and providers. For example, clinicians' non-verbal behavior such as tone of voice, posture, and use of humor all play a role in patients' satisfaction, trust, and adherence (e.g., DiMatteo, 2004; DiMatteo, Taranta, Friedman & Prince, 1980; Wrench, & Booth-Butterfield, 2003). Another apparent conclusion is that the full list of clinician behaviors deemed to be productive is long and unfocused. If one were to approach the task of implementing an intervention program to improve patient outcomes (e.g., patient adherence) through changing clinicians' motivational behaviors, it would be a near impossible task to incorporate all clinician behaviors deemed beneficial to patients. An alternative to this approach is to examine the underlying mechanisms that drive each of these behaviors to be effective and then cluster them according to their commonalities. This alternative is precisely what we propose in the doctorship styles approach. We suggest that these clusters of motivational behaviors (i.e., styles) can be captured and organized through the lens of transformational leadership theory.

Transformational leadership theory stands as the most widely researched approach to understanding motivational leadership behaviors (Bass, 1985; Bass, 1990; Bass & Riggio, 2006). Its popularity stems from the fact that leaders' effectiveness is not judged by individual behaviors, but rather clusters of behaviors that are grouped together

based on their effectiveness for motivating followers. Although the study of leadership typically concern leaders in industry and their associated workgroups/members, we extend the scope of leadership research to include clinician-patient relationships. Considering the similar dynamics of the leader-follower and clinician-patient relationships (e.g., repeated interactions, uneven power status; French & Raven, 1959; Wrong, 1980), and given the comparable motivational goals of the two parties (i.e., one party motivating the other party towards the completion of a task), we expect the integration of leadership and health research to yield valuable insight for improved patient care (Huynh & Sweeny, in press).

In addition to serving as an organizational framework, transformational leadership theory allows for specific predictions about the effectiveness of each style, which are consistently and significantly supported through cross-sectional and longitudinal studies, and experiments with random assignment (for a meta-analysis, see Judge & Piccolo, 2004). Finally, through transformational leadership research, companies have been able to systematically develop leaders to be more effective at motivating followers in a variety of settings (Collins & Holton, 2004; Dvir, Eden, Avolio, & Shamir, 2002). Therefore, using transformational leadership as the theoretical framework, we can make predictions about which doctorship style will likely be most effective and train clinicians to be more effective motivators.

Structure of Doctorship Styles

In line with transformational leadership theory (Bass & Avolio, 1991), we propose that clinicians display a range of doctorship styles (i.e., patterned approaches to

patient care). These styles can be categorized into three types: 1) laissez-faire, 2) transactional doctorship (including the three components of contingent reward, problem-focused active, and problem-focused passive), and 3) transformational doctorship (including the four components of idealized influence, inspirational motivation, intellectual stimulation, individualized consideration).

We propose that all clinicians display a wide range of behaviors during their course of patient care; however, clinicians practice certain behaviors more often than the others, and this “habit” represents their doctorship style. In addition, transformational doctorship and transactional doctorship are not at opposite ends of a spectrum (Bass, 1985). Instead, transformational doctorship augments the effects of transactional doctorship. In statistical terms, transformational doctorship explains additional unique variance in patient outcomes beyond what can be explained by transactional doctorship (e.g., Kessler, 1993; Seltzer & Bass, 1987; Waldman, Bass & Eistein, 1987). In the following sections, we summarize each style and its components, focusing primarily on the two styles we believe will occur most often in reality: transformational and transactional styles.

Laissez-faire. Laissez-faire clinicians do not maximize their capacity to care for patients; they are negligent and irresponsible. They are unsympathetic to patients’ needs and leave health concerns to patients to sort out for themselves. For example, they may order many unnecessary tests or refer patients to specialists, with the sole intention of avoiding decisions about the patients’ health (Axt-Adam et al., 1993).

Transactional doctorship. This style characterizes clinicians who set health goals for patients and provide them with instructions, feedback, and reinforcement as patients pursue those goals. For example, a clinician-patient “transaction” may begin with a description of a health plan during an initial visit (e.g., an exercise regimen, medications) and ends when the clinician provides feedback regarding the patient’s success (or failure) in executing the plan during a follow-up appointment. Transactional doctorship has three subtypes: problem-focused passive, problem-focused active, and contingent reward.

Problem-focused passive care describes clinicians who concentrate on corrective actions, such as addressing symptoms only after they have occurred. They do not actively monitor their patients’ health behavior until or unless a problem arises. On the other hand, clinicians who engage in the active form of problem-focused care monitor and follow up with patients to anticipate potential failures with adherence or deviations from patients’ standard level of health. The key is that clinicians’ behaviors are primarily geared toward avoiding or preventing major health problems. Finally, the contingent reward subtype describes clinicians who clearly articulate the goals of treatment and the beneficial outcomes patients can expect when they properly follow through with the health plan. These clinicians provide extensive feedback and offer reinforcements to patients during the course of their care (e.g., clinicians may rebuke their patients for nonadherence; Seaburn et al., 2005).

Transformational Doctorship. We propose that the transformational style characterizes clinicians who not only create health plans for patients and monitor their

progress but also inspire and motivate patients to adhere to those goals. These clinicians challenge themselves and their patients to uncover innovative treatment options that enhance patients' belief in the treatment's effectiveness. They also coach patients throughout the execution of the treatment plan or behavior change. The transformational doctorship style includes four components ("the four I's"): idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. These components are not mutually exclusive; clinicians can engage in any or all of these components in order to maximize their effectiveness as care providers.

The idealized influence component describes clinicians who exemplify the aspects of health they want their patients to exhibit. They display good health habits, which are often apparent to patients (e.g., non-smoking, regular exercise, maintenance of healthy weight; Harsha, Saywell, Thygeson, & Panozzo 1996). In short, they serve as role models for patients.

The inspirational motivation component depicts clinicians who create a compelling vision for their patients' health and clearly communicate that vision to the patient. During the process of creating a health plan, they engage patients in an information exchange process and achieve patient consensus (Charles, Gafni, & Whelan, 1997), which may lead the patient to believe that the clinician and patient are working together as a team toward a common goal (Bass & Riggio, 2006; Charles et al, 1997). These clinicians also display an enthusiastic and optimistic demeanor in their interactions with patients.

The intellectual stimulation component portrays clinicians who engage patients to view their health concerns in new ways and to come up with innovative solutions to those issues. They facilitate an environment where patients can reflect on their concerns and elicit a desire to adapt solutions based on their own evaluation of the advantages and drawbacks of adopting a new behavior (Rollnick & Miller, 1995). They do not force or coerce patients to accept a unilaterally determined solution.

Finally, the individualized consideration component characterizes clinicians who personalize the patient care process by treating each patient as a unique individual. They prioritize the process of creating warm interpersonal relationships and tend to remember previous interactions with their patients (Beck, Daughtridge, & Sloane, 2002). Moreover, these clinicians mentor and coach their patients throughout the execution of the health plan. For example, they may set goals that increase in difficulty. Finally, these clinicians can adjust their style to fit various patients' needs and allow for different levels of patient autonomy (Arora & McHorney, 2000; Deber et al., 1996.)

Alternative Model

In addition to testing the model we propose, in which there are two second-order factors (transformational doctorship has four components; transactional doctorship has three components) and one first-order factor (*laissez-faire*), we also examined an alternative model with three second-order factors: transformational, transactional, and a new passive-avoidant style. In this alternative model, transformational doctorship still contains its four proposed components; however, transactional doctorship only contains contingent reward and problem-focused active, and the passive-avoidant style contains

the components of problem-focused passive and laissez-faire. This alternative model has received support from previous leadership research (Bass & Bass, 2010). Moreover, at face value, the problem-focused passive component reflects a more passive-avoidant approach to patient care; clinicians are unlikely to provide adequate opportunities for transactions between themselves and the patients. This particular component may also reflect a departure from the other two components in transactional doctorship. The contingent reward and problem-focused active components are suggestive of involved clinicians, whereas the problem-focused passive component more accurately describes clinicians who are not particularly engaged in their patients' care. We believe that the combination of the problem-focused passive and the laissez-faire components represents a passive-avoidant style, which may help to better capture the full range of doctorship (in addition to the transformational and transactional doctorship styles; this alternative model is presented in Figure 1). Therefore we hypothesized:

Hypothesis 1: The second-order three-factor model (transformational, transaction, and passive-avoidant styles) better represents the full range of doctorship styles than the second-order two-factor model (transformational, transactional, [and first-order laissez-faire factor]).

Patient Health Outcomes Associated with Doctorship Styles

In addition to proposing the structure of doctorship styles, we also suggest that doctorship styles can be a meaningful way to determine physician effectiveness through patient adherence and patient satisfaction. Generally, we hypothesize that the passive-avoidant style will be the least effective style. Moreover, the transactional style is

positively related to desirable patient outcomes to a degree, but transformational doctorship can add to the effects of transactional doctorship by achieving additional increases in patient outcomes (i.e., augmentation effect: Kessler, 1993; Seltzer & Bass, 1987; Waldman, Bass & Eistein, 1987). Additionally, there are many demographic factors (e.g., education, race, socioeconomic status) that predict patient adherence (DiMatteo, 2004; Falagas, Zarkadoulia, Pliatsika, & Panos, 2008) and patient satisfaction (Broyles, McAugley, & Baird-Holmes, 1999; Hall & Doman, 1990; Young, Meterko, & Desai, 2000). To address the unique predictive relationship between doctorship styles and patient adherence, we controlled for these demographic variables in our analyses of doctorship styles.

Adherence (Studies 1 and 2). Adherence in itself is not a health outcome; it is health behavior (DiMatteo, 2004; DiMatteo, Haskard-Zolnierek, & Martin, 2012). However, adherent patients have better health outcomes than nonadherent patients (DiMatteo et al., 2002; Simpson et al., 2006). In other words, adherence takes effort on the patient's part, and that effort is rewarded with better health. Leadership research demonstrates that followers of transformational leaders exert extra effort toward their tasks and overall goal (Bass, 1990; Bass & Riggio, 2006). Therefore, we believe transformational doctorship will predict higher patient adherence than other styles. We examine patient adherence behavior (Study 1), patients' general propensity to be adherent, adherence intentions (Study 2). Patients' adherence intentions serve as an important predictor of patient adherence behavior (Becker, 1974). We hypothesized the following:

Hypothesis 2a): Passive-avoidant doctorship is the least effective style; it either has no relationship or a negative relationship with adherence, patients' general propensity to be adherent, and adherence intentions.

Hypothesis 2b): Transactional doctorship is positively related to patient adherence, patients' general propensity to be adherent, and adherence intentions.

Hypothesis 2c): Transformational doctorship is also positively related to patient adherence, patients' general propensity to be adherent, and adherence intentions, above and beyond the effect of transactional doctorship.

Patient satisfaction (Studies 1 and 2). Patient satisfaction refers to personal evaluations of the health care process by care recipients (Sitzia, & Wood, 1997; Ware, Snyder, Wright, & Davies, 1983). Patients vary in how they rate the entities associated with their care (e.g., the care providers, the care process; (Donabedian, 1966; Donabedian, 1980; Huynh, Legg, Ghane, Tabuenca, & Sweeny, under review; Meredith, 1993). Patient satisfaction can be used to assess the quality of care (Rubin et al., 1993), to highlight areas in need of improvement (Jackson & Kroenk, 1997), and to assess patient loyalty and commitment (Sitzia, & Wood, 1997; Weiss & Senf, 1990). Additionally, patient satisfaction is associated with better adherence to treatment recommendations and health outcomes (e.g., Brody, 1980; DiMatteo, 2004; Kincey, Bradshaw, & Ley, 1975). Because leadership research indicates that transformational leadership leads to more satisfied followers (both with their leaders and the organization; Bass & Riggio, 2006) than transactional and laissez-faire leadership, we hypothesize:

Hypothesis 3a): Passive-avoidant doctorship is the least effective doctorship style; it either has no relationship or a negative relationship with patient satisfaction with the clinician and visit.

Hypothesis 3b): Transactional doctorship is positively related to patient satisfaction with the clinician and visit.

Hypothesis 3c): Transformational doctorship is also positively associated patient satisfaction with the clinician and visit, above and beyond the effect of transactional doctorship.

Health expectations following visit (Study 2). Patients who are more optimistic about their future health status may be more likely to pursue or continue their care (Desharnais, Bouillon, & Godin, 1986; Lo, 1999; Mann, 2001). Creating health regimens that patients believe will be effective is an important factor in determining whether they adhere to those regimens (Horne & Weinman, 1999). We propose that transformational clinicians are optimistic and tailor their care to each patient, which may lead to the creation of health plans that patients believe are more effective. Thus, we anticipate that patients' expectations about their future health status following the medical visit will be associated with clinicians' doctorship styles. Therefore, we hypothesized:

Hypothesis 4a): Passive-avoidant doctorship is the least effective doctorship style; it either has no relationship or a negative relationship with patients' expectations about their future health status.

Hypothesis 4b): Transactional doctorship is positively related to patients' expectations about their future health status.

Hypothesis 4c): Transformational doctorship is also positively associated to patients' expectations about their future health status, above and beyond the effect of transactional doctorship.

Overview of Studies and Hypotheses:

We propose that the integration of leadership and health research may yield important and significant contributions to improving patient care, especially in improving patient adherence. We propose that clinician behaviors can be categorized into doctorship styles according the underlying mechanisms, which make the behaviors effective. We categorize clinician behaviors into three styles and propose that these styles are best described by a second-order three-factor model: passive-avoidant, transactional, and transformational doctorship. The primary goals of this paper are to provide empirical evidence for the structure of doctorship styles and to examine each style's ability to predict patient satisfaction and adherence to treatment recommendations.

In Study 1, we examined the structure of doctorship styles by comparing two models, using patient-reported survey data. We hypothesized that the second-order three-factor model best represents the full range of doctorship styles. Additionally, we hypothesized that passive-avoidant style is the most ineffective style. On the other hand, transformational doctorship is the most effective style because it explains variance in patient adherence and satisfaction above and beyond demographic predictors and transactional doctorship.

In Study 2, we examined additional evidence for the existence of doctorship styles by using third-party observer ratings of clinician-patient interactions to overcome

potential bias in the patient-reported questionnaires from Study 1. We hypothesized that transformational doctorship is the most effective style because it positively predicts patient adherence, satisfaction, and expectations about future health status above and beyond patient demographic predictors and transactional doctorship.

Study 1

In Study 1, we examined the structure of doctorship styles by testing two competing models of doctorship. We also examined patient outcomes associated with each style.

Methods

Procedures

Trained undergraduate research assistants recruited participants from their social networks to complete the online questionnaire. The research assistants did not know the study's hypotheses and were explicitly instructed to ask participants to complete a questionnaire about their most recent medical visit. The research assistants were instructed to oversample non-undergraduate students.

Participants

Health care recipients ($n = 164$) completed an online questionnaire about their most recent medical visit and were awarded \$5 to an online retailer for their participation. Participants had most recently seen their clinician for a preventive care issue (e.g., physical; 49%) or to address an acute illness (e.g., to care for a cold, flu, or physical injury; 50%), or chronic illness (e.g., to care for diabetes or cancer; 14%). Participants could select more than one option regarding the reason for their visit. Fifty-four percent

completed our survey within 3 months of seeing their clinician, 31% between 3 and 12 months, and for 14% the visit was more than a year prior to completing our survey. Fifty-one percent of the participants had been with the clinician for more than a year, 17% between 1 and 11 months, and for 32% of participants this was their first visit with the clinician. Forty-nine percent of participants were white and 62% were female. See Table 1 for a summary of participants' demographic information.

Measures

Participants answered questions about their most recent visit medical visit, including questions about their satisfaction with the visit and clinician (“I was satisfied overall with my visit”; I was satisfied with the care I received from my doctor”; 1 = strongly disagree, 7 = *strongly agree*), and their adherence following the visit (5 items; $\alpha = .84$; Morisky, Ang, Krousel-Wood, & Ward, 2008). Participants also responded to a set of items designed to measure their clinician's doctorship styles. Items from the Multifactor Leadership Questionnaire (Bass & Avolio, 1991) were selected and modified to reflect clinician-patient relationships in the medical context instead of leader-follower relationships. The items were presented in a random order so that items pertaining to each style were not grouped together. Sample items for each component are presented below (0 = *not at all*, 5 = *frequently, if not always*): 1) Transformational: “Acts in ways that build my respect” (idealized influence), “Expresses confidence that my health goals will be achieved” (inspirational motivation), “Gets me to look at my health problems from many different angles” (intellectual stimulation), “Treats me as an individual rather than just as another one of his/her patients” (individualized consideration); 2) transactional:

“Makes clear what I can expect to receive when health goals are achieved” (contingent reward), “Directs my attention toward failures to meet standards set for my health” (problem-focused active); 3) passive-avoidant: “Fails to interfere until my health issues become serious” (problem-focused passive); “Avoids making decisions with regard to my health” (laissez-faire). See Table 2 for the full list of items.

Results

Confirmatory Factor Analysis

We conducted a confirmatory factor analysis using *Mplus* Version 7 (Muthén & Muthén, 2012) on the two proposed models and a null model. Four statistics for assessing model fit were reported (suggested guidelines for determining good model fit are presented in parenthesis, Hooper, Coughlan, & Mullen, 2008): Normed chi-square measure (X^2/df ; >2.0 , Tabachnick & Fidell, 2007), comparative fit index (CFI; ≥ 0.95 , Hu & Bentler, 1999), Tucker-Lewis index (TLI; ≥ 0.95), and root-mean-square error of approximation (RMSEA; between .05-.10, MacCallum, Browne, & Sugawara, 1996). Two information criteria useful for model comparison were also reported (Raykov, & Marcoulides, 2006): Akaike (AIC) and Bayesian (BIC; Difference >10 is evidence against model with higher BIC, Raftery, 1995).

Second-order two-factor model. The second-order two-factor model was tested against a null model and the alternative model. Results indicated that this model represented mediocre fit of the data, $X^2(340) = 815.07$, $p < .001$, $X^2/df = 2.4$, CFI = .80, TLI = .78, RMSEA = .09.

Second-order three-factor model (alternative model). Results indicated that the second-order three-factor model represented more acceptable fit of the data and was the superior model between the two proposed models, $\chi^2(340) = 712.37, p < .001, \chi^2/df = 2.1, CFI = .84, TLI = .82, RMSEA = .08$, which supports Hypothesis 1. Although the chi-square test of model fit still was significant, this test is regarded as unreliable because of its vulnerability to sample size and large correlations between components (Raykov, & Marcoulides, 2006). However, the significant change in chi-square between this model and the previous model suggest that this model more adequately represented the data. Furthermore, the lower AIC (14090.53) and BIC (14385.02, difference of 97) compared to the previous model provided additional support for this model as the better fitting model. See Table 3a and Table 3b for a direct comparison between the models and Table 4 for the intercorrelations, means, and standard deviations of the doctorship factors.

Doctorship Styles Predicting Patient Satisfaction and Adherence

We combined the components of each style according to the alternative model (i.e. second-order three-factor model) and examined each style's ability to predict patient adherence and patient satisfaction using hierarchical multiple regression (Miles, & Shevlin, 2001). We used hierarchical multiple regression because we were interested in each style's unique contribution to variance in patient adherence and satisfaction; in particular, we wanted to deliberately partition variance of the outcomes by each doctorship style. Because transactional doctorship may represent an adequate model of care in some situations but may be insufficient for others, we wanted to specifically examine the effects of transformational doctorship above and beyond the effects of

transactional doctorship (i.e., does transformational doctorship augment the effects of transactional doctorship)? For each of the outcomes (adherence, patient satisfaction with clinician, patient satisfaction with medical visit), we entered the predictor variables in four steps: 1) control variables (age, income, education, race, sex, elapsed time from medical visit to survey completion, length of relationship with clinician); 2) passive-avoidant doctorship; 3) transactional doctorship; 4) transformational doctorship. Because of the high correlation between transactional and transformational styles, we examined their collinearity by regressing transactional doctorship onto transformational doctorship (Miles, & Shevlin, 2001). The resulting tolerance was higher than .20, which suggested that the estimated β s are reliable in the following regression models (associated variance inflation factor was lower than 2.0; Miles, & Shevlin, 2001). For a summary of variance accounted for (R^2 and ΔR^2) and β s for each outcome, see Table 5.

Patient adherence. Fifty-four participants reported that their clinicians prescribed them medication after the visit; therefore, only these participants provided information about their adherence behavior. Results from step 1 showed that the control variables (age, income, education, race, sex, elapsed time from medical visit to survey completion, length of relationship with clinician) accounted for significant variance in patient adherence, $R^2 = .35$, $F_{(10, 43)} = 2.27$, $p = .03$. Income ($\beta = .32$, $p = .03$) and elapsed time from medical visit to survey completion ($\beta = -.33$, $p = .02$) were the only significant predictors of patient adherence. In step 2, passive-avoidant style did not account for additional variance, $\Delta R^2 = .01$, $F_{(1, 42)} = .51$, $p = .48$; $\beta = -.09$. In step 3, the transactional style also did not account for additional variance, $\Delta R^2 = .02$, $F_{(1, 41)} = 1.04$, $p = .32$; $\beta =$

.25). In step 4, transformational doctorship significantly explained additional variance in patient adherence, $\Delta R^2 = .07$, $F_{(1, 40)} = 5.01$, $p = .03$; $\beta = .61$.

Increases in patient income predicted increases in patient adherence. Time elapsed between visit with clinician and survey completion also predicted adherence, such that as time increased participants' adherence behavior decreased. Moreover, the passive-avoidant and transactional styles did not predict patient adherence above the control variables. Transformational doctorship was the only style that positively predicted patient adherence; increases in the transformational style were related to increases in patient adherence.

Patient satisfaction with clinicians. Results from step 1 showed that the control variables accounted for significant variance in patients' satisfaction with the clinician, $R^2 = .14$, $F_{(10, 148)} = 2.35$, $p = .01$. Length of relationship with clinician ($\beta = .17$, $p = .03$) and elapsed time from medical visit to survey completion ($\beta = -.18$, $p = .03$) were the only significant predictors of patient satisfaction with clinician. In step 2, the passive-avoidant style did not account for additional variance, $\Delta R^2 = .01$, $F_{(1, 147)} = 1.70$, $p = .20$; $\beta = .11$. In step 3, the transactional style accounted for additional variance in satisfaction, $\Delta R^2 = .26$, $F_{(1, 146)} = 62.13$, $p < .001$; $\beta = .85$. In step 4, transformational doctorship significantly explained additional variance in patient satisfaction, $\Delta R^2 = .03$, $F_{(1, 145)} = 8.07$, $p < .01$; $\beta = .35$.

Patient satisfaction with visit. Results from step 1 showed that the control variables accounted for significant variance in patients' satisfaction with their visit, $R^2 = .13$, $F_{(10, 148)} = 2.12$, $p = .03$). Similar to satisfaction ratings of clinicians, length of

relationship with clinician ($\beta = .17, p = .04$) and elapsed time from medical visit to survey completion ($\beta = -.19, p = .02$) were the only significant predictors of patients' satisfaction with the visit. In step 2, passive-avoidant style did not account for additional variance, $\Delta R^2 = .01, F_{(1, 147)} = 2.09, p = .15; \beta = .12$. In step 3, the transactional style accounted for additional variance in satisfaction, $\Delta R^2 = .25, F_{(1, 146)} = 59.32, p < .001; \beta = .84$. In step 4, transformational doctorship significantly explained additional variance in patients' satisfaction with the visit, $\Delta R^2 = .05, F_{(1, 145)} = 13.46, p < .01; \beta = .44$.

Patients' satisfaction with clinicians and with their visit showed similar trends. Both outcomes indicated that the longer participants had been with their clinician, the more likely they were to be satisfied with their care. Also, the longer the elapsed time between their visit and the completion of the questionnaire, the less they were satisfied with their care. Of note regarding doctorship styles, transactional doctorship style positively predicted both types of satisfaction. Additionally, confirming the augmentation effect, transformational doctorship explained additional unique variance in both types of satisfaction ratings, such that increases in the transformational style predicted greater satisfaction above and beyond increases in the transactional style.

Study 2

In Study 2, we examined doctorship styles by coding audio recordings of clinician-patient interactions. This design overcomes the reliance on patient-reported evaluations of their clinicians' doctorship styles, which may reflect a biased perception of their clinicians.

Methods

Description of Data

We used data from the *Clinician Patient Communication to Enhance Outcome (CPC)* Program conducted by the Institute for Healthcare Communication (IHC; previously the Bayer Institute for Health Care Communication) in 1994-1998 (Haskard et al., 2008), which includes an extensive database of audio recordings and patient- and clinician-reported data. This large-scale study involved 156 clinicians from three primary care specialties practicing in various settings (e.g., university medical centers, Department of Veterans Affairs, staff-model HMOs); 37% of the clinicians were women. The study also included 2196 adult patients (18 years old or older); 54% of patients were women, 85% were receiving treatment for an existing problem, and 38% were being seen for a new problem (either the new problem alone or in conjunction with an existing problem).

The CPC program was designed to assess multiple outcomes (e.g., patient satisfaction, adherence intentions) of patient and clinician communication training. Clinicians were randomly assigned to one of four experimental conditions in a fully crossed 2 X 2 design: clinician trained, patient trained, clinician and patient trained, neither clinician nor patient trained. Clinician-patient interactions were audio recorded at three different times: 1) at baseline before training occurred, 2) after the completion of training, and 3) 6 months after the completion of training. Patients and clinicians completed post-visit questionnaires at all three phases. The database has consented audio recordings of 2196 interactions (approximately 14 patients per clinician on average).

Each audio recording has a unique number identifying the clinician, patient, and site of the recording. Because these recordings are from primary care visits, the visits vary greatly in length, with some interactions lasting well over 30 minutes.

Selection of the Sample

To address feasibility concerns and rater fatigue, we restricted our sample to 300 audio recordings of clinician-patient interactions and patient-reported questionnaires at baseline (i.e., before any training). This selection sidesteps the potential conflation of the clinician communication training from the original study with the current study's goal to examine outcomes of doctorship styles. For each clinician (100 total), we selected three patients based on their social economic status (i.e., lowest, median, and highest income patient for each physician). Both English (90%) and Spanish (10%) interactions were included. Technical problems occurred during the coding process with three audio recordings, each belonging to a different clinician. Our final sample included 100 clinicians and 297 patients. See Figure 2 for an illustration of the data structure.

Sample characteristics. Of the 297 patients, the majority was women (57%) and white (58%). See Table 6 for summary of patient demographics. Of the 100 clinicians, 39 were female; 47 identified as White, 44 Asian American, 7 Hispanic, and 2 African American. The average age of the clinicians was 37.59 ($SD = 9.63$).

Procedures and Measures

Four raters coded each audio recording, and each rater coded 100 audio recordings. Recordings were provided to raters in a counter-balanced order to reduce fatigue effects (Haskard, Williams, DiMatteo, Heritage, Rosenthal, 2008). Raters listened

to the full audio recording of each interaction and then evaluated the clinician on items representing the components of doctorship styles. Raters received two waves of training. In the first wave, each item on the rating scale was explained in great detail to ensure there was consensus on the meaning of each item. All raters then listened to the same audio recording (not included in the sample) and provided initial ratings. Then the raters, along with the first author, discussed each item at length with regard to the target audio recording. The goal of this exercise was not necessarily to gain consensus for the ratings themselves but for the raters to fully comprehend the meaning and intent of each item. Similar to wave 1, in wave 2 of training, raters listened to and coded two additional audio recordings and discussed them in a group with the first author until consensus was formed about the meaning of each item. Inter-rater reliability was satisfactory (intraclass correlation coefficient = .71; Shrout & Fleiss, 1979).

Rating measures. Items describing doctorship styles were reworded and presented from an observer perspective. For example, “The clinician...: 1) “avoids responding to urgent questions” (passive-avoidant); 2) “sets clear goals for patient’s health and specifies the benefits of achieving these goals” (transactional); 3) “expresses confidence in the patient’s ability to become or stay healthy” (transformational; 1= *not at all*, 7 = *very frequently*). Additionally, raters listened for discussions between clinicians and patients regarding patients’ adherence behavior (e.g., when a clinician asks a patient how her medication regimen is going) and rated the whether the patient was adherent (1= *not at all*, 7 = *a great deal*). This measure aims to capture patients’ general propensity to be adherent.

Patient questionnaire from CPC Program. In addition to the ratings of audio recordings, we examined post-visit patient-reported questionnaires collected in the original study. These questionnaires were marked by the same identification number as the audio recordings to permit linkage between the measures. The questionnaire included an assessment of patient satisfaction with the clinician (“How would you rate the overall care you received from the doctor who treated you today?”; 1 = *poor*, 5 = *excellent*). They also rated their *intention* to adhere to treatment recommendations (“Do you intend to do what this doctor has asked you to do?”; 1 = *definitely no*, 5 = *definitely yes*) and their expectation for their future health status (“I expect my health to get worse”; 1 = *definitely true*, 5 = *definitely false* [reverse coded]).

Results

Analyses – Multilevel Modeling

Due to the clustered nature of the data (i.e., patients nested within clinicians), which can violate the independence assumption in regression analyses, we began by using multilevel modeling (MLM) to explore the data. MLM is advantageous because it allowed us to partition the error variance at the appropriate level of analysis (either at the patient or clinician level; Raudenbush & Bryk, 2002). For each of the four outcomes (patient-reported adherence intentions, satisfaction, expected health status after visit, and coder-rated patient adherence behavior), we tested an unconditional ANOVA model in HLM 7 Student Edition (Raudenbush & Bryk, 2014). We examined the intraclass correlation coefficient (ICC) to determine whether the proportion of variance in each outcome was due to differences between clinicians rather than differences between

patients treated by the same clinician. A large ICC indicates that patients seeing the same doctor are very similar and/or that there are great differences across clinicians (Adelson & Owen, 2012). MLM should only be used when ICCs are greater than .10 (e.g., Lee, 2000). For all four outcomes, none of the ICCs were greater than .06 (test of U_0 is not significant at the $\alpha < .05$ level, all $X^2_{S(98)} = 96.71, ps > .13$). These results indicated that patients are quite different within doctor groups and/or there are not great differences across clinicians, and more importantly, we would unlikely violate the independence assumption when conducting regression analyses. Therefore, we continued to examine our hypotheses using hierarchical multiple regression, similar to Study 1. For a more detailed summary of MLM results, see Table 7.

Multiple Hierarchical Regression

Similar to Study 1, for each of the outcomes (patient-reported adherence *intentions*, satisfaction, expected health status after visit, and coder-rated patient adherence behavior), we entered the predictor variables in four steps: 1) control variables (patient sex, income, education, race); 2) passive-avoidant doctorship; 3) transactional doctorship; 4) transformational doctorship. Tolerance values were all higher than .20, which indicated that collinearity was not an issue (Miles & Shevlin, 2001). For a summary of variance accounted for (R^2 and ΔR^2) and β s for each outcome, see Table 8.

Patient satisfaction. Results from step 1 showed that the control variables did not account for significant variance in patient satisfaction, $R^2 = .02, F_{(8, 282)} = .65, p = .73$). In step 2, passive-avoidant style did not account for additional variance, $\Delta R^2 = .01, F_{(1, 281)} = 1.46, p = .23; \beta = -.07$. In step 3, the transactional style also did not account for additional

variance in satisfaction, $\Delta R^2 = .001$, $F_{(1,280)} = .23$, $p = .63$; $\beta = .03$. However, in step 4, transformational doctorship significantly explained additional variance in patient satisfaction, $\Delta R^2 = .02$, $F_{(1, 279)} = 5.22$, $p < .02$; $\beta = .22$). These results indicate that transformational doctorship is the only significant predictor of patient satisfaction with overall care provided by the clinician, such that increases in transformational doctorship were related to increases to patient-reported satisfaction.

Patient-reported adherence intentions. Results from step 1 showed that the control variables did not account for significant variance in patients' adherence intentions, $R^2 = .04$, $F_{(8, 282)} = 1.42$, $p = .20$). In step 2, passive-avoidant style did not account for additional variance, $\Delta R^2 = <.001$, $F_{(1, 281)} = .001$, $p = .97$; $\beta < .01$, nor did the transactional style in step 3, $\Delta R^2 = .002$, $F_{(1, 280)} = .56$, $p = .46$; $\beta = -.05$. In step 4, transformational doctorship did not significantly explain additional variance in adherence intentions, $\Delta R^2 = <.001$, $F_{(1, 179)} = .52$, $p = .47$; $\beta = .07$.

Coder-ratings of patients' general propensity to be adherent. Results from step 1 showed that the control variables accounted for significant variance in patients' general propensity to be adherent, $R^2 = .05$, $F_{(8, 282)} = 2.00$, $p = .047$). Ethnicity predicted adherence ($\beta = .14$, $p = .03$), such that Hispanic patients showed more propensity to be adherent. In step 2, passive-avoidant style did not account for additional variance, $\Delta R^2 = .01$, $F_{(1, 281)} = 1.20$, $p = .23$; $\beta = .07$). In step 3, the transactional style marginally accounted for additional variance in coder-ratings of patients' general propensity to be adherent, $\Delta R^2 = .01$, $F_{(1,280)} = 3.23$, $p = .07$; $\beta = .11$. In step 4, transformational doctorship significantly explained additional variance in coder-ratings of patients' general

propensity to be adherent, $\Delta R^2 = .06$, $F_{(1,179)} = 19.77$, $p < .001$; $\beta = .41$). Unlike patient-reported adherence intentions, doctorship styles differentially predicted coder-ratings of patients' general propensity to be adherent. Transformational doctorship positively predicted coder-ratings of patients' general propensity to be adherent above and beyond transactional doctorship, such that increases in transactional and transformational doctorship were related to increases in coder-ratings of patients' general propensity to be adherent, whereas the passive-avoidant style was unrelated to either types of adherence indicators.

Expected health status following visit. Results from step 1 showed that the control variables accounted for significant variance in patients' expectations about their health status following the visit, $R^2 = .07$, $F_{(8, 282)} = 2.62$, $p < .01$. Patients' sex predicted expectation of health status, such that males expected poorer health after the visit, $\beta = -.21$, $p < .001$. In step 2, passive-avoidant style accounted for additional variance, $\Delta R^2 = .02$, $F_{(1, 281)} = 7.54$, $p < .01$; $\beta = -.16$. In step 3, the transactional style did not account for additional variance in expectations, $\Delta R^2 = < .001$, $F_{(1,280)} = .04$, $p = .85$; $\beta = .01$). In step 4, transformational doctorship significantly explained additional variance in patients' expectations about their health status following the visit, $\Delta R^2 = .02$, $F_{(1,179)} = 5.47$, $p = .02$; $\beta = .22$.

Discussion

In two studies, we examined the factor structure and predictive ability of doctorship styles, or clinicians' styles of patient care. As hypothesized, we confirmed that the second-order three-factor model best represents the full range of doctorship styles.

The styles include (in increasing order of effectiveness, with components in parenthesis): passive-avoidant (laissez-faire, problem-focused passive), transactional (problem-focused active, contingent reward), and transformational doctorship (idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration). This basic framework is also supported in the leadership literature (Bass & Bass, 2008). Each style represents a cluster of behaviors that affect change in patients in similar manners. Clinicians who primarily use a passive-avoidant style tend to not be engaged in their patients' care, whereas clinicians who use a transactional style may set strict outlines for their interactions with their patients. Finally, the transformational style characterizes clinicians who are not only actively involved in their patients' care, they also connect with their patients on an individual level, serve as a role model for the patients, ask questions that stimulate patients to think about their health in new ways, and display optimism about their patients' ability to initiate and maintain health behaviors.

We hypothesized that transformational doctorship would be the most effective style, positively predicting patient outcomes that extend above and beyond the positive effects of transactional doctorship. On the other hand, we hypothesized that the passive-avoidant style would have no effect or a negative effect on patient outcomes. In two studies, we found support for these hypotheses regarding patient adherence, satisfaction, and expectations about health status following the medical visit.

The relationship between patient adherence and doctorship styles was examined in three different ways: 1) patient-reported responses for both the measurement of doctorship style and adherence, 2) patient-reported adherence *intentions* with coder-rated

measurement of doctorship styles, and 3) coder-ratings of patients' general propensity to be adherent and coder-rated doctorship styles. We found that the passive-avoidant style was unrelated to patient adherence for all measures. Moreover, transactional doctorship was only marginally related to patient adherence, measured by coder ratings. On the other hand, transformational doctorship positively predicted relationships with patient adherence when measured via patient-report and with an indicator of patients' adherence via coder-ratings of patients' general propensity to be adherent. Patient-reported adherence *intentions* had no significant relationships with any control variables or doctorship styles.

In regard to the null findings of patient-reported adherence intentions, we should note that there was very little variability in responses (i.e., the overwhelming majority said that they intended to strictly adhere to the clinicians' recommendations). This variability issue likely led to the lack of relationship between this variable and any predictor, including demographic predictors. Moreover, this finding represents a larger issue in measuring intentions generally: people typically have good intentions, but intentions are poorly correlated with behavior (Bagozzi, 1992; Webb & Sheeran, 2006).

A more productive alternative to asking about patients' intentions may be to examine how they actually behaved in their encounters with clinicians and, to a lesser extent, to directly ask them to report on past adherence behavior (Morisky, Green, & Levine, 1986). In both cases, we found that transformational doctorship predicts patient adherence and patients' general propensity to be adherent above and beyond patient demographic factors and transactional doctorship. These findings support the notion that

the behaviors that compose transformational doctorship underline what may truly important in achieving patient adherence. Not only do clinicians need to provide information and help to put in place the appropriate strategies, they also need to motivate patients toward adherence (DiMateo et al., 2012).

Moreover, we found that transformational doctorship consistently predicted patient satisfaction, whether directed at the clinician or the visit. Transactional doctorship positively predicted both measures of patient satisfaction in Study 1 but was not correlated with patient satisfaction in Study 2. Taken together, these results support the augmentation effect (Kessler, 1993; Seltzer & Bass, 1987; Waldman, Bass & Eistein, 1987). Even when transactional and transformational doctorship account for overlapping variance in the outcome, transformational doctorship explains additional unique variance. This finding indicates that clinicians may indeed gain satisfied patients by displaying transactional doctorship, but to gain the maximum level of satisfaction, clinicians need to engage in transformational doctorship.

We also found that patients' expectations about their future health status following the medical visit was negatively related to passive-avoidant doctorship and positively related transformational doctorship. These findings illustrate the importance of having the full range of doctorship. First, we found that being passive-avoidant is not only unproductive (i.e., not predicting patient adherence and satisfaction), it may actually be harmful as well. Visiting with a clinician who is not actively engaged in the care process be associated with patients' pessimism about their future health outcomes. This pessimism may have dire consequences for the patient (Petersen et al., 2008). On the

other hand, clinicians' display of transformational doctorship may be positively related to patients' optimism.. This effect may be due to the fact that transformational clinicians are optimistic themselves, which may become contagious for the patient (Barsade, 2002; Sy, Côté, & Saavedra, 2005). Moreover, transformational clinicians formulate health plans that are tailored to the patients to reflect their individual ability (Chesney, 2000). This process may help patients to believe in the effectiveness of the recommended regimen, which may lead them to be optimistic that their health will in fact improve (Horne & Weinman, 1999).

Limitations and Future Directions

One of the strengths of our studies was the combined use of patient-reported data with coder ratings of doctor patient interactions, which sidesteps issues with potential bias that come with having only patient-reported data. However, our findings about patient adherence still relied on correlations of common source data (i.e., patient-reported doctorship ratings with patient reported adherence behavior and coder-rated doctorship with coder-rated patient adherence). The most telling finding would have been a relationship between coder-rated doctorship and patient-reported adherence intentions. However, the intention measure may be inherently flawed, thus producing ceiling effects (Bagozzi, 1992; Webb & Sheeran, 2006). Moreover, we operationalized adherence differently between Studies 1 & 2. In Study 1, we assessed adherence by asking participants about their adherence behavior following their medical visit. However, in Study 2, we examined patients' adherence intentions and patients' general propensity to be adherent as rated by coders. In addition to the limitation noted about intention

measures generally, the coder-ratings of patients' general propensity to be adherent may be an inadequate measure of patients' adherence behavior following the interaction of interest. That is, coders may have rated adherence behavior that has resulted from previous interactions with other care providers (e.g., taking medications that other care providers have prescribed). There was no straightforward measure of adherence behavior following the visit of interest for Study 2. Therefore, future research should examine the relationship between doctorship styles and objective measures of adherence, consistently across multiple studies (e.g., pill count, electronic medication monitors; Bangsberg, Hecht, Charlebois, Chesney, & Moss, 2001; Choo et al., 1999). These findings would add to the understanding of the impact of doctorship styles.

An additional point to note is that we used archival data. Clinicians today may be different from doctors in 1994-1998, and interactions may be much shorter today than they were back then, even in primary care. However, research indicates that people can make very accurate judgments about people in thin slices of interactions (Ambady & Rosenthal, 1992). These accurate judgments suggest that even in short interactions, clinicians may still be able to display the full range of doctorship styles. Thus, research should aim to examine doctorship styles in medical interactions where there is limited time and resources (e.g., surgical consultations).

Another potential concern regarding findings from Study 2 is that the MLM analyses revealed that clinician may not be that different from each other (i.e., raters cannot distinguish which clinicians are transformational or transactional). However, this finding may also reflect the fact that patients within a clinician are not very similar to

each other compared to other patients and their clinicians. The most parsimonious explanation may be the small number of patients we examined per clinician. Because we had feasibility and rater fatigue concerns, we limited our examination to only three patients per clinician. For researchers with more expansive resources, it may be worthwhile to reexamine this data using all of the patient interactions per each clinician (an average of 14 patients) or explore data sets that include many more patients per clinician.

Finally, our findings resulted from correlational data. Although we stipulated about the nature of the relationships between doctorship styles and patient outcomes, we did not establish any direct causal links. For example, although transformational doctorship is positively related to patient adherence and satisfaction, we do not yet know if transformational doctors are engendering these effects from their patients. Future research should conduct experiments to randomly assign clinicians to different doctorship style training conditions to examine the potential causal effects of doctorship styles on patient outcomes.

Conclusions

This paper serves as the first empirical examination of doctorship styles, or patterned approaches to patient care. Through two studies involving a combination of patient-reported data and coder-ratings of patient-clinician interactions, we found evidence for three primary styles: passive-avoidant, transactional, and transformational. Moreover, we found that the passive-avoidant style is negatively related to optimistic outlooks on health, whereas transactional doctorship is positively associated with patient

adherence and patient satisfaction. Finally, we also found that transformational doctorship is the most effective doctorship style because it is the only style that consistently and positively predicted all patient outcomes, above and beyond the effects of demographic factors and the effects of transactional doctorship. These findings suggest that the doctorship styles framework is a valuable tool for organizing clinician behaviors and predicting meaningful patient health outcomes.

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Table 1

Study 1 Participants' Demographic Information

% Female	62%
Education	--
Only high school diploma	27%
Associate's degree	14%
Bachelor's degree	35%
Master's degree	14%
Professional or doctoral degree	10%
Income	
< \$10,000	33%
\$10,000 - \$19,999	17%
20,000-29,999	11%
\$40,000-69,000	22%
> \$70,000	21%
Race	--
White	49%
Hispanic	13%
African-American	10%
Asian	20%
Other/Did not state	8%
% Native English Speakers	85%

Note: n = 164

Table 2

Doctorship Measure Organized by Style and Individual Components

Transformational

Idealized Influence

Acts in ways that builds my respect

Displays a sense of power and confidence

Talks about important values (e.g., health, well-being, etc.)

Inspirational Motivation

Talks optimistically about the future with regard to my health

Talks enthusiastically about what needs to be accomplished with regard to my health

Articulates a compelling vision of the future with regard to my health

Expresses confidence that my health goals will be achieved

Intellectual Stimulation

Seeks differing perspectives when solving my health problems

Gets me to look at my health problems from many different angles

Suggests new ways of looking at how to meet my health goals

Individual Consideration

Spends time teaching and coaching me towards better health outcomes

Treats me as an individual rather than just as another one of his/her patients

Helps me to develop my strengths with regard to my health

Transactional

Contingent Reward

Provides me with additional assistance in exchange for my efforts made towards my health

Discusses in specific terms what is necessary for achieving desired health outcomes

Makes clear what I can expect to receive when health goals are achieved

Expresses satisfaction when I meet expectations

Problem-focused Active

Focuses attention on irregularities, mistakes, exceptions, and deviations from standards with regard to my health

Concentrates his/her full attention on dealing with mistakes, complaints, and failures with regard to my health

Keeps track of all mistakes

Directs my attention toward failures to meet standards set for my health

Passive-avoidant

Problem-focused Passive

Fails to interfere until my health issues become serious

Waits for things to go wrong with my health before taking action

Demonstrates that health problems must become chronic before taking action

Laissez-Faire

Avoids getting involved when important health issues arise

Is not available when needed

Avoids making decisions with regard to my health

Delays responding to urgent questions

Table 3a

Overall Fit Indices for Proposed Models of Doctorship Styles

Model	X^2	df	X^2/df	ΔX^2
Null	2747.14**	378	7.27	-
Second-order two factor	815.07**	340	2.4	1932.07**
Second-order three factor	712.37**	339	2.1	107.2**

Table 3b

Overall Fit Indices for Proposed Models of Doctorship Styles Continued

Model	CFI	TLI	RMSEA	AIC	BIC
Null	-	-	0.208	-	-
Second-order two factor	0.8	0.78	0.09	1419191	14482.62
Second-order three factor	0.84	0.82	0.08	14090.53	14385.02

Table 4

Intercorrelations, Means, and Standard Deviations of Doctorship Factors

Factors	1	2	3	4	5	6	7	8	9	10	11
1. Idealized Influence	1										
2. Inspirational Motivation	.71**	1									
3. Intellectual Stimulation	.49**	.61**	1								
4. Individual Consideration	.71**	.86**	.70**	1							
5. Contingent Reward	.70**	.79**	.62**	.82**	1						
6. Problem-focused Active	.40**	.48**	.56**	.51**	.59**	1					
7. problem-focused Passive	-0.22*	-0.20*	-0.1	-0.20*	-0.13	.26**	1				
8. laissez-faire	-0.24*	-0.15	-0.02	-0.19*	-0.13	.25**	.69**	1			
9. Transformational	.81**	.91**	.82**	.94**	.84**	.57**	-0.20*	-0.16	1		
10. Transactional	.61**	.71**	.66**	.75**	.89**	.89**	0.08	0.07	.79*	1	
11. Passive-Avoidant	-0.25*	-0.19*	-0.07	-0.21*	-0.14	.28**	.93**	.91**	-0.20*	0.08	1
<i>M</i>	2.97	2.76	2.13	2.48	2.47	1.88	0.92	0.78	2.58	2.17	0.85
<i>SD</i>	0.93	1.11	1.28	1.21	1.12	1.15	0.97	0.82	0.99	1.01	0.83

Note: * $p < .05$, ** $p < .01$; $n = 164$

Table 5

Study 1 Hierarchical Multiple Regression Analyses Predicting Patient Outcomes from Doctorship Styles

Predictor	Adherence to Medication		Satisfaction (Clinician)		Satisfaction with Visit	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1						
Control Variables	0.35*		.14*		.13*	
Step 2						
Passive-avoidant	0.01	-.09	0.01	0.11	0.01	0.12
Step 3						
Transactional	0.02	0.25	.26**	.85**	.25**	.84**
Step 4						
Transformational	0.07*	0.61*	.03*	.35**	.05**	.44**
Total R^2	0.44		0.44		0.44	
n	54		159		159	

Note: * $p < .05$, ** $p < .01$

Table 6

Study 2 Patient Demographic Information

% Female	55%
Education	--
Did not complete high school	17%
Completed high school	20%
Completed some college	37%
Completed college/graduate degree	24%
Income	
< \$10,000	33%
\$10,000 - \$19,999	17%
20,000-29,999	11%
\$40,000-69,000	22%
> \$70,000	21%
Race	--
White	58%
Hispanic	21%
African-American	7%
Asian	6%
Other/Did not state	8%

Note: n = 297

Table 7

Study 2 Multilevel Modeling Results

Estimation of Variance Components	Patient Satisfaction	Expected Health Status	Adherence (intentions)	Adherence (coder-rated)
Variance in clinician means (u_0)	0.04	0.01	0.002	0.03
Variance within clinicians (r)	0.6	1.37	0.39	0.78
Intraclass correlation coefficient	0.06	0.01	0.01	0.01

Table 8

Study 2 Hierarchical Multiple Regression Analyses Predicting Patient Outcomes from Doctorship Styles

Predictor	Adherence Intentions		Adherence (Coder-rated)		Satisfaction		Health Status Expectation	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1								
Control Variables	0.04		.05*		0.02		.07**	
Step 2								
Passive/Avoidant	0	0	0.01	-.07	0.01	-.07	.02**	-.16**
Step 3								
Transactional	0	-.05	0.01	0.11	0	0.03	0	0.12
Step 4								
Transformational	0	0.07	0.06**	.41**	.02*	.22*	.02*	.22*
Total ΔR^2	0.04		0.10	0.11	0.04	0.04	.011	
<i>n</i>	291		291	291	291	291	291	

Note: * $p < .05$, ** $p < .01$

Figure 1

Second-order Three-factor Model of Doctorship Styles

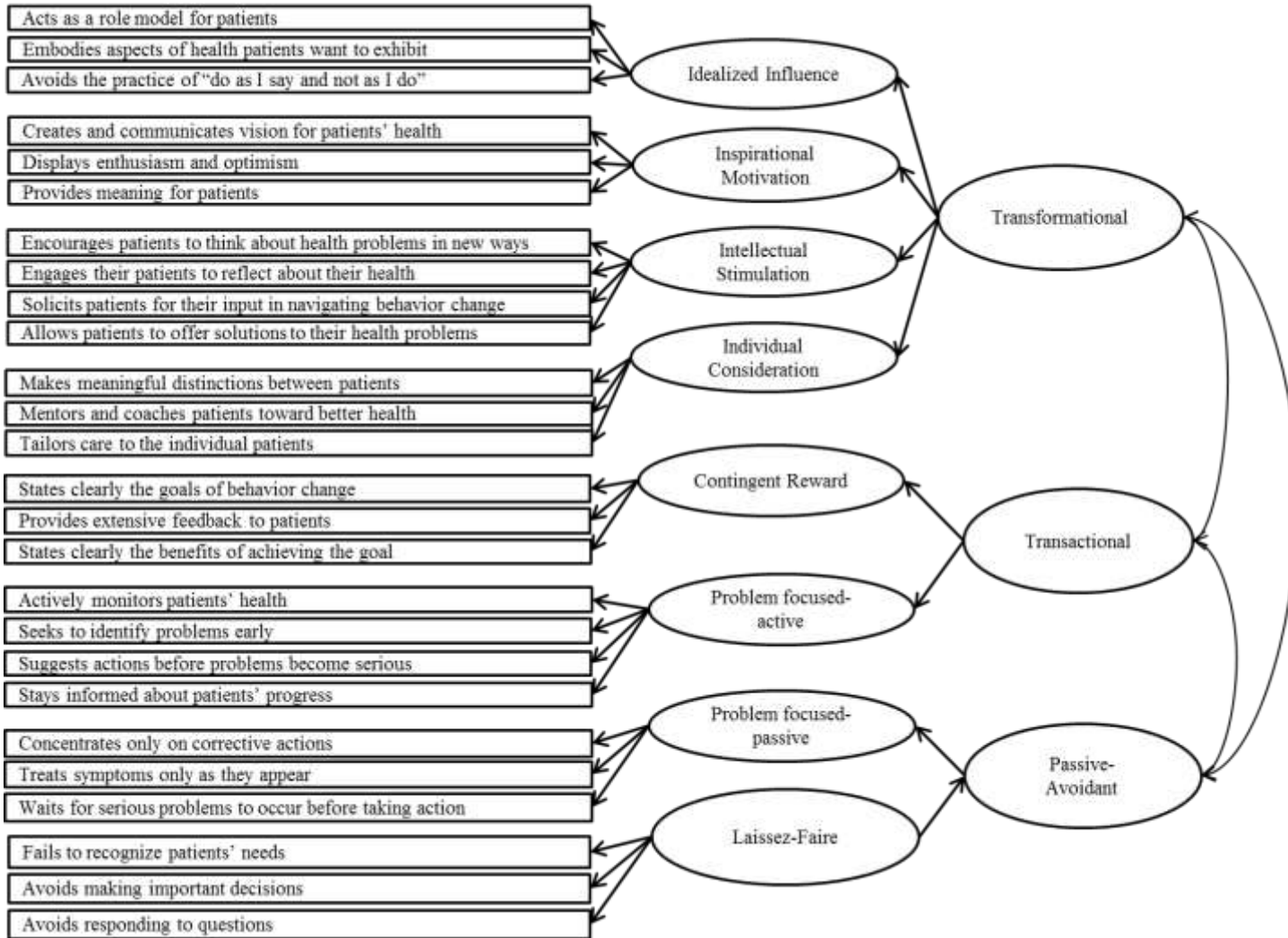


Figure 2

Structure of Study 2 Data

