Relation of Healthcare Provider-Patient Interpersonal Impacts and Health Related Control Appraisals to Patients' Satisfaction and Compliance with Treatment

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science at Virginia Commonwealth University.

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List of Abbreviations

ANOVA	Analysis of Variance
IMI	Impact Message Inventory
PHCS	Perceived Health Competence Scale
PSPS	Participatory Style of Physicians Scale

ABSTRACT

RELATION OF HEALTHCARE PROVIDER-PATIENT INTERPERSONAL IMPACTS AND HEALTH RELATED CONTROL APPRAISALS TO PATIENTS' SATISFACTION AND COMPLIANCE WITH TREATMENT

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The current study examined healthcare provider-patient interpersonal impacts and health related control appraisals to patients' satisfaction and compliance with treatment recommendations. Secondary outcomes such as patient satisfaction are becoming increasingly important, and compliance with treatment can have direct effects on primary outcomes. Eighty-one patients at a large, urban university student health center participated in the current study. Participants completed participatory style and interpersonal impact measures both before and after the visit with their provider, and completed satisfaction questionnaires immediately following the visit, and at the two-week follow-up along with a measure assessing compliance with treatment recommendations. Providers also completed interpersonal impact measures on each patient. Results showed that meeting patient expectations for levels of participation in the medical process are important for patient satisfaction. In addition, patients were more satisfied with providers who were friendly and submissive in their interpersonal styles. The current study also proposes a model that accounts for more than 55% of the variance in patient satisfaction.

Introduction

Examination of interpersonal processes in healthcare is a rapidly growing research area for health psychology. In the past twenty-five years, the study of provider-patient communication alone has gone from non-existent to having more than 34,000 articles referenced in MEDLINE (Suchman, 2003). One researcher speaks of it this way: "As a medical student in the mid-1970's, I had no formal instruction on interviewing skills. I was simply given a list of questions constituting a complete Review of Systems and told to come back in two hours having gathered all this information, and I was left to my own devices to figure out how to get it. The term 'communication skills' was never used. Instead, people spoke of 'bedside manner,' which was regarded as a personal attribute that you were either born with or not...and if you weren't, oh well" (Suchman, 2003, p. 677). Today, in order to be accredited, all residency programs in all disciplines must teach communication and relationship skills and evaluate each resident for these competencies. This is a direct result of the research in this field, which, while substantial, is still incomplete. While correlations abound, there is little in the way of theory to guide the large body of research that exists.

In addition to the manner in which providers and patients communicate with each other, the extent to which patients are involved with providers in the health care process and in making treatment decisions have become important issues in medicine. Patient assumption of an active role vis-à-vis providers is now widely considered to be ethically correct in terms of adjusting the power asymmetry between doctors and patients, is largely required by legal mandates (e.g.,. most states have laws requiring physicians to inform women about treatment options for breast cancer), and is thought to produce positive emotional and physical health effects by inducing in patients a sense of self-efficacy (Auerbach, 2000).

It has been suggested that patients who feel comfortable with their physicians interpersonally and who are involved in their own healthcare are more likely to be satisfied with treatment, and are more likely to comply with treatment regimens, which has a direct effect on health outcomes (Aharony & Strasser, 1993). Satisfied patients are also more likely to return to the same healthcare provider, which benefits the patient and provider.

The current study examines interpersonal factors in the provider-patient relationship and health-related control appraisals as predictors of patient satisfaction with care and compliance with treatment in a student health center at an urban university. In the following sections, research on the implications of health-related control and interpersonal impacts will be presented first, followed by consideration of the literature on patient satisfaction with care and, briefly, compliance with treatment. Finally, the present study and attendant hypotheses will be reviewed in detail.

Health Related Control

The idea that the patient should have control over the various aspects of his or her own health care has gained increasing attention in the past decades. Although the view that patients have a right to self-determination is advocated on a policy level by medical professionals (e.g., Quill & Brody, 1996) patients continue to play a largely "passive role" in interacting with their physicians (Greenfield, Kaplan, & Ware, 1985), and many physicians still make minimal efforts to foster patient involvement (Braddock, Edwards, Hansberg, Laidley, & Levinson, 1999). This may be due to the fact that many physicians are unsure of how to involve patients or are uncomfortable doing so (Stevenson, 2003). Although decision making models range from complete physician control to complete patient control, most patients are said to be somewhere in the middle, respecting the advice of the physician and usually trusting that the physician is acting as an agent of the patient and acting in his or her best interest (Richards, Ramirez, Denger, Fallofield, Maher, & Neuberger, 1994)

Patients make decisions about a wide range of topics related to their medical care. For instance, patients decide when to consult a physician, what treatment to undergo, whether to comply with that treatment, and whether they wish to change their lifestyle (Broadstock & Michie, 2000). When analyzing the effects of decision-making in health care, there are several theoretical questions that one must consider. First and foremost among them is considering what constitutes a good decision (Broadstock & Michie, 2000). This question may lie at the center of the debate in research on patient decision-making. Indeed, one cannot measure the effect of a good decision if one cannot define a good decision.

In most cases, an informed decision is considered to be a good decision. Studies have shown that a shared decision-making model, one in which the doctor and the patient together make decisions is superior (especially in cases of chronic illnesses) to the more paternalistic decision-making models of the past, in which the physician would make the decisions and simply "inform" the patient of the decision that was made (Heisler, Bouknight, Hayward, Smith, & Ker, 2002). The way information is presented and framed, as well as non-verbal cues, can influence the way one thinks. Also, the definition of an informed decision is debatable. The amount and complexity of information that people are able to comprehend is different from person to person. People differ in the amount and complexity of information they want to have. Often, a condensed version of available information is provided to the patient, which greatly impacts the patient's autonomy. A good decision can also be defined by a good outcome (either primary outcomes, such as reduction in tumor size, or secondary outcomes such as satisfaction), but defining this is problematic, as satisfaction is often positively skewed (Cassileth & Lusk, 1989). At times, more than one treatment method may be indicated, and may be expected to produce similar results. In addition, the patient and the physician may have different goals pertaining to the health outcome, in which case a positive outcome would be difficult to define.

Patient participation in the decision making process is increasingly being regarded as ethically desirable because of its impact on patient autonomy and self-determination, legally desirable due to informed consent requirements, and socially desirable due to consumer rights advocates and patient charters (Auerbach, 2000; Sutherland, Llewellyn-Thomas, Lockwood, Tritchler, & Till, 1989). However, physicians still rarely encourage their patients to be involved in the decision-making process (Braddock et al., 1999). Many medical problems today have more than one treatment that would be expected to produce a desired result, making informed decisions crucial. There is evidence suggesting that allowing the patient to choose among treatment methods expected to produce similar results will positively affect the primary outcome (Mendonca & Brehm, 1983).

The amount and type of information can have an effect on the physician-patient relationship. Murray et al.(2003) examined the impact of internet information on the physician-patient relationship. They found that when the patient had accurate, relevant information about their condition before his or her visit, it benefited the physician-patient relationship, whereas wrong or irrelevant information harmed the relationship, as perceived by the physician. It is important to note in this study that the relationship was perceived as worse when the physician felt his or her authority was being challenged. Thus, good information on the patient's part can lead to a more productive visit, especially if the physician's advice corresponds to the information previously reviewed by the patient.

The degree with which patients want to be involved in their own health care differs from patient to patient (Auerbach & Pegg, 2002). The patient's desire for control and individual differences in control-related personality dimensions often moderate the effects of providing opportunities for involvement (Auerbach, 1989, 2000). Averill (1973) and Thompson (1981) recognized three major ways that people can exercise personal control in situations: cognitive/informational control, decisional control, and behavioral control. Cognitive/informational control involves reducing the perceived threat and ambiguity of a situation by processing information about the situation; decisional control in a health care setting involves patient participation in choice of and timing of diagnostic and/or treatment procedures; behavioral control refers to direct action on the environment (Auerbach, 2001). A review of the research on informational control in healthcare settings by Auerbach (2001) found that patients generally indicated that they wanted as much information as they could get about their diagnosis and treatment options. However, there was a lack of criterion-related validational data on many of the measures used in these studies. In the only study relating scale scores on any of the measures to independent ratings of patients decision-seeking behavior, no relationship was found between the patient's desire for information and their actual information-seeking behavior (Beisecker & Beisecker, 1990).

The extent to which patients want to have decisional control over their healthcare can vary not only from patient to patient, but from condition or illness to condition or illness (Auerbach, 2001). Again, in a review of the literature, Auerbach (2001) found a lack of studies using measures of the construct having criterion-related validity, but the overwhelming consensus was that patients generally wanted less decisional control than cognitive/informational control, and patients with more severe illnesses wanted less decisional control than patients with less severe illnesses. Patients want decisional control when they feel it will benefit them.

Though it is clear that most patients want some control over different aspects of their healthcare, the effect patient participation in the healthcare process may have on the process and outcomes of treatment is in question. Auerbach (2000) highlighted several of the classic arguments against patient participation, including that patients cannot process and understand the information needed top make and informed decision, cannot make rational decisions about their treatment because they are not objective about their health status, and are inconsistent and unreliable in their decision making. He noted that these arguments rest on several assumptions, including that physicians are always objective in their decision-making, and that they value different outcomes in the same way as their patients. When Auerbach (2000) examined the evidence for the arguments against patient participation, and the underlying assumptions supporting those arguments, he concluded that the paternalistic model of patient-physician interaction was outdated, and a shared decision-making model was superior.

Patient participation in medical care and treatment has been linked to more positive outcomes, both psychological and medical. For instance, in a review of the literature on patient participation in medical care, Guadagnoli and Ward (1998) found that patients' involvement in care can lead to reduced pain and anxiety, quicker recovery, and increased compliance. Devine and Cook (1983), in a meta-analysis of 49 studies, found that psycho-educational interventions in hospital patients reduced their stay by an average of 1.25 days. Patient participation in treatment has been shown to produce some positive primary outcomes as well. Mendonca and Brehm (1983) found that overweight children involved in different weight loss programs lost more weight when they thought they had chosen their own treatment program, regardless of the treatment program that was actually chosen. Other studies have shown no effect of patient participation on outcomes (Baum, Fallowfield, & Hall, 1988; Levy, Herbermann, Lee, Lippman, & D'Angelo, 1989). For some patients, it seems that patient participation in treatment processes may lead to increased anxiety (Levy et al. 1989). Guadagnoli and Ward (1998) attribute these contradicting conclusions to methodological issues, noting small sample sizes, short follow-up periods, and different measurements of outcomes.

Auerbach (2000), in an extensive review of the literature, found that giving the patient more information (informational control) was linked to positive effects on patient adjustment-related outcomes, although the mediating effect is unknown. In addition, Auerbach found no evidence to indicate that patient anxiety related to exposure to increased information has a negative effect on their ability to make decisions. In studies looking at the effect of decisional and behavioral control, there were mixed results. Auerbach attributes these mixed results to design confounds, including that in no study were patients randomly assigned to treatment groups that differed in whether patients were offered a choice of treatment.

Many of the earlier instruments used to measure patient desire for participation are problematic. Because of the problems with many of these older instruments, especially the Kranz Health Opinion Survey (KHOS, Krantz, Baum, & Wideman, 1980), the current study uses the Participatory Style of Physicians Scale (PSPS; Kiesler & Auerbach, 2003). The PSPS was designed to measure physicians' participatory style during consultations with patients. In the current study, two patient versions of this scale are used. One form measures the extent to which patients desire their provider to engage in a participatory style during their impending consultation. The other form asks the patient to evaluate the provider's actual participatory behavior during the just completed consultation. There is also a provider form, which asks the provider to evaluate their actual participatory behavior during the just completed consultation. By examining the disparity between the patients desired level of participation in decision-making and the actual level of participation in decision-making, the current study examines relationship between this disparity and patient satisfaction and compliance with treatment regimens.

Interpersonal Impacts

Interpersonal aspects of care are among of the most frequently studied topics of medical care. As early as 1973, Geersten, Gray, and Ward found that arthritis patients who described their physicians as "personal" followed medical regimens better than did those who described their physicians as "business-like." Wooley, Kane, Hughes, and Wright (1978) found that increased physician-patient communication was correlated with increased overall patient satisfaction, which in turn was correlated with a better functional outcome. This study however, assessed physician-patient communication by examining the level of patient knowledge, which is a byproduct of communication, rather than examining the communication itself. Lochman (1983) found that patients who perceive their physician as caring and sensitive to their needs tend to have a higher rating of satisfaction with care. Cleary and McNeil (1988) found that patients who feel free to express themselves during the medical history portion of the interview, who have a physician that shares control during the conclusion of the interview, and have the similar sociodemographic characteristics to their physicians are likely to be more satisfied with their medical care. On the other hand, culture, especially language barriers, has been shown to significantly undermine a positive physician-patient relationship (Ferguson & Candib 2002). As Aharony and Strasser (1993) point out though, little is known about which types of patients prefer different behaviors from their physicians. Researchers have largely failed to conceptualize patient cognitions during the medical encounter, leaving the mechanism for the patient's judgment about the relationship unspecified (Strasser, Aharony, & Greenberger, 1993). Recently, Kiesler and Auerbach (2003) have introduced a model to help conceptualize and measure the physician-patient relationship.

Kiesler and Auerbach (2003) found six weaknesses in previous physician-patient communication studies. The first is the lack of theoretical framework to guide the research. This led to the second weakness, which is conflicting findings that are nonintegratable. The third is the lack of a standardized system of coding the communication. The fourth, which stems from the third weakness, is that there is no common language or agreement on the basic definitions for coding categories. Fifth, there is a tendency for distinct, but closely related, concepts to be integrated in order to draw conclusions. The sixth weakness is the increasing number of global reviews, rather than more focused ones.

Kiesler and colleagues have focused on two main aspects of interpersonal relationships in conceptualizing physician-patient communication. These two aspects involve control (ranging from dominance and submission) and affiliation (ranging from friendliness and hostility), which have been established as universal and pervasive dimensions in human interactions (Kiesler, 1996). The following summary of the research of control and affiliation in physician-patient relationships relies heavily on the work of Kiesler and Auerbach (2003).

In 1982, Wiggins proposed an interpersonal circumplex to examine interpersonal dynamics. The circumplex categorizes interpersonal behaviors as sixteen vectors specifying the possible trigonometric blends of these two dimensions, and are arranged in a circular fashion around the axes (Kiesler & Auerbach, 2003). The inner circle designates the continuum of interpersonal behaviors, while the middle circle designates the mild-moderate segment level of a particular segment continuum. The outer circle designates the extreme level of a segment. For instance, the entire continuum of segment I is designated Submissive, the mild-moderate level is Docile, and the extreme level is Subservient.

The interpersonal circumplex can be applied to physician-patient communication to determine the nature of the interaction. For instance, according to Kiesler's circumplex, a controlling physician will "talk the patient into doing what he or she wants, be quick to inform or instruct the patient, and resist any of the patient's opposing stances. A docile-timid physician will follow the patient's lead, easily give in to the patient's wishes, readily accept the patient's advice or answers, and yield to the patient's viewpoints" (Kiesler & Auerbach, 2003, p. 1714).

One of the main benefits of the interpersonal circumplex is that it can be used to capture not just the physician's behavior during a consultation, but also the patient's behavior, and can then be used to evaluate the complementarity, or fit, between the interactants control and affiliation behaviors. According to interpersonal theory, dominance in one person will tend to evoke submissiveness from another (to a degree opposite of the degree of dominance); whereas friendliness will tend to evoke friendliness and hostility will evoke hostility. These are not static dimensions, however, as people are constantly evaluating and shifting their responses around the circumplex. The theory does not posit that this occurs in all transactions, but that each interactant tries to "establish partner interactions that complement his or her own patterns" (Kiesler & Auerbach, 2003, p. 1716).

The degree of interpersonal complementarity can be assessed using the Impact Message Inventory (IMI; Kiesler, 1987), which was developed by Kiesler in order to evaluate interpersonal behaviors in individuals who are interacting with each other. The IMI characterizes a target individual's interpersonal behavior through assessment of the respondent's covert reactions (feelings, action tendencies, cognitive attributions) evoked during encounters with the target. The current study uses a 20-item short form of the IMI octant version (IMI-C; Kiesler & Schmidt, 1993). The IMI short form produces four raw scores: dominant, hostile, submissive, and friendly; and two axis scores: control and affiliation. When pairs of IMI protocols are available for an interacting dyad, one can also obtain three interpersonal complementarity indexes: for the control and affiliation dimensions separately as well as for their interactive combination (Kiesler et al., 2001). Studies using the IMI have shown that the interpersonal aspects of the relationship between the patient and the physician are significant.

The IMI was primarily developed to assess interpersonal behaviors in psychotherapists and their clients. However, it has been used in several studies with medical and surgical patients and their healthcare providers to assess the relationship between the interpersonal behaviors and patient outcomes. For instance, in patients undergoing dental extraction surgery, patients that perceived the person giving them information on their condition as hostile and dominant were more poorly adjusted to their situation than patients who perceived the person giving them information on their condition as friendly and dominant or friendly and submissive (Auerbach, Martelli, & Mercuri, 1983). This lack of adjustment to a medical condition may be one mechanism through which interpersonal aspects of care can impact outcomes. Auerbach, Penberthy, and Kiesler (2004) found that in patients receiving dentures, the patients that rated their dentists as being less friendly, and who were rated by their dentists as more hostile, less friendly, and more dominant had poorer outcomes, specifically poorer adjustment. Frantsve (2002) found that when greater complementarity existed between oral surgeons and their patients, the patient was more involved in decision-making, and patients who were viewed by their surgeons as more hostile and less affiliative adjusted more poorly after surgery, as rated by an independent observer. In addition, when a diabetes patient's physician viewed him or her as more controlling, or when there was more complementarity in the physician's and the patient's perception of the others controlling behavior, the patient was better able to control his or her glycosylated hemoglobin A_{1C} (HA_{1C}) level (Auerbach et al., 2002). Interestingly, this study also found that diabetic patients less satisfied with treatment were those who felt more competent in managing their disease. The meaning of this is unclear, but it may suggest that more competent patients may invoke a hostile response from some physicians.

These studies show that interpersonal impacts between a physician and a patient can affect not only secondary outcomes (e.g. satisfaction and adjustment) but primary outcomes as well (HA_{1C} levels). However, it was only recently that interpersonal complementarity could be evaluated in a psychometrically sound manner (for a comment, see Kiesler 1996, pp. 100-102). In fact, Auerbach et al. (2002) and Frantsve (2002) are among the small number of authors that have made use of the new mathematical analyses available, indicating that more research in the area is needed.

The current study evaluates the degree of interpersonal complementarity between the physician and the patient during a consultation at a student health care facility. The setting and physician-patient dynamic at this type of clinic is much different than in the studies discussed earlier, because the patient and physician may only meet one time. As such, it is expected that the interpersonal complementarity between the two interactants during this one visit will be particularly important in its effect on patient measures.

Patient Satisfaction With Care

Patient satisfaction with care has long been considered an important aspect of the overall healthcare experience. In recent years, mainly as a result of the consumer advocacy movement, patient satisfaction has received special attention from health care administrators as well as physicians. Because of this, patient satisfaction is seen as a desireable outcome of any patient visit, regardless of whether this satisfaction leads to a better primary outcome (Linder-Pelz, 1982). Healthcare settings today are increasingly sensitive to quality of care, and patient satisfaction is the broadest measure of such quality.

This increasing amount of interest in patient satisfaction has not gone unnoticed by the scientific community. Over the last two decades, there has been an exponential increase in the amount of literature devoted to it. This boom in the amount of literature devoted to patient satisfaction, however, has been largely unfocused. Aharony and Strasser (1993) point out specific problems with the research on this topic, including a lack of a clear understanding of the determinants of patient satisfaction, a lack of an accepted theoretical model of the process of patient satisfaction, and a lack of a consensus on the role of patient satisfaction in actual quality of care

Research shows that patient satisfaction is often a key component of overall quality of care. Patients who are satisfied with their care are more likely to continue using medical care services, to maintain a relationship with a specific provider, and to comply with medical regimens (Aharony & Strasser, 1993). Marquis, Davies, and Ware (1983), using a 20-point satisfaction scale, found that a one-point decrease on the scale was associated with a 3.4 percentage point increase in the probability that the patient would change physicians. A constant change in physicians can cause relevant information to be lost as records are transferred. Relevant personal disclosure is also more likely in satisfied patients. This is an important aspect of care, since differential diagnosis of many illnesses relies heavily on information from the patient.

The literature on the determinants of patient satisfaction is often inconclusive. Much of this is due to the highly subjective nature of satisfaction itself, which can be based on innumerable variables. Cleary and McNeil (1988) focused on five main factors thought to be related to patient satisfaction, which include the patient's sociodemographic characteristics, physical and psychological status at the time of the visit, attitudes and expectations about medical care, and the structure, process, and outcomes of care. There are contradictory findings related to the importance of these factors. For instance, Pascoe

(1983) found that as a patient's age increased, so did his or her level of satisfaction with care. Other studies, however, have shown lower satisfaction with patients over 60 years of age (Hulka, Krupper, Daly, Cassel, & Shoen, 1975). Cleary, Keroy, Karpanos, and McMullen (1983) found that among hospitalized patients, age did not have a significant impact. In the area of the patient's psychological and physical health, a majority of the studies indicate that the better the psychological and physical health of the patient at the time of the visit, the more satisfied the patient is with his or her health care (Aharony & Strasser, 1993).

Cleary and McNeil (1988) found that, in outpatient settings, the way that care is organized and financed can have a significant impact on the patient's satisfaction. When patients have more autonomy, and organizations have more autonomy and communication with other organizations, patients tended to be more satisfied. Patients were also more satisfied when the cost was lower. In addition, accessibility, availability, and convenience of care are important factors in patient satisfaction.

Most studies examining patient satisfaction with medical care have been conducted in inpatient or outpatient settings in which the patient may see the same physician numerous times. There has been little research examining patient satisfaction with medical care in an outpatient setting such as a student health center at an urban university, where a patient may not see the same physician each time he or she visits the center. There is reason to believe, however, that satisfaction with care may be extremely important in settings like these, especially when viewed in light of compliance with treatment. If patients are satisfied with their physician at a student health center type setting, they may be more likely to comply with their treatment. However, if they are dissatisfied with their treatment, they may simply disregard the physician's recommendations and be unable to seek another physician due to restrictions of health insurers. Thus, it is imperative that physicians at a student health center type setting strive to keep their patients satisfied with the care they receive.

The studies conducted at settings where a patient may see the same physician numerous times, while pointing out numerous correlations among the variables discussed above and satisfaction, fail to provide a clear conceptual or theoretical explanation for why these correlations exist. While much of the research regarding patient satisfaction has focused on practical concerns, very little has focused on the testing and building of theories. Some researchers have concluded that patient satisfaction is merely an evaluation of the service received (Pascoe, 1983). While this definition is simple and straightforward, it may be overly subjective, and is too heavily based on marketing and consumer research and basic expectancy models (Aharony & Strasser, 1993). Neither Pascoe nor any one else has ever tested his theory of patient satisfaction.

There have been relatively few studies examining the effect of a patient's satisfaction with care and primary outcomes. This is largely due to a belief that patient satisfaction does not directly affect primary outcomes, but may do so indirectly through compliance with treatment or disclosure of relevant information (Linder-Pelz, 1982). Woolley, Kane, Hughes, and Write (1978) found that, despite a strong positive correlation between health outcome and patient satisfaction, 65% of patients who failed to regain their usual functional status professed satisfaction with the outcome of their care. So while health outcome is obviously an important factor in assessing patient satisfaction, it is not a critical factor. The interpersonal dynamic between the doctor and the patient seems to be an important factor in this process.

Patient Compliance

Patient compliance with treatment is perhaps one of the more practical outcomes for researchers to examine. Compliance, in the current study, is defined as the degree to which the patient's behavior (including the taking of medications) is consistent with the provider's recommendations. Ultimately, most providers would like to behave in a way that would enhance a patient's compliance with his or her treatment regimen, since this regimen, by definition, is the path by which the physician thinks the patient will benefit. A patient can be satisfied with his or her encounter with the provider, can like the interpersonal style of the provider, and can be given the right amount of information about his or her condition or illness, but in the case of outpatient medical treatment, if the patient does not comply with the treatment requests of the provider, the primary outcome may be severely affected. This is especially true when the provider's recommendation is an empirically supported treatment (as most medical treatments are), since the success of such treatments are usually determined by the degree to which the patient follows through with recommended treatments.

The cost of noncompliance, in terms of dollars, across all types of illnesses and conditions is almost impossible to ascertain. It is known, however, that noncompliance leads to increased healthcare costs and decreased cost effectiveness of treatment regimens (Cleemput, Kesteloot, & DeGesst, 2002). It can also have various public health effects.

For instance, it has been suggested that noncompliance in antibiotic treatment regimens (along with over-prescription of the drugs) has lead to the mutation of a number of bacteria responsible for deadly illnesses. These new strains of bacteria are often increasingly dangerous, since they are resistant to current medications. Noncompliance has also been associated with an increase in mortality (Urquhart, 1996), as would be expected. In light of this evidence, it is clear that any way to increase a patient's compliance with his or her treatment recommendations is highly desirable. Along with self-report of satisfaction with services, patient compliance is one of the two major dependent variables in the current study.

Statement of the Problem

Research indicates that patient participation in the decision-making process and the interpersonal relationship between the healthcare provider and the patient are factors that may influence satisfaction with medical care and compliance with treatment recommendations (Aharony & Strasser, 1993; Auerbach, 2003; Guadagnoli & Ward,1998; Kiesler & Auerbach, 2003).

The current study examines the relationship between interpersonal complementarity and patient perception of involvement in their own health care and self-reported patient satisfaction and compliance with treatment recommendations. The following results were expected:

1.) Greater concordance between a patients desired level of participation and actual level of participation during the encounter (as measured by the PSPS) would be associated with greater satisfaction with the encounter. This was based on the observation that previous findings indicate variability in absolute level of participation and satisfaction (Auerbach, 2000; 2001). Meeting the patient's expectations regarding level of participation may be more important than absolute values of participation.

2.) Based on previous findings with oral surgery patients (Auerbach et al., 1983) and with diabetes patients (Auerbach et al., 2002) it was expected in the present study that patient perception of provider submissiveness and hostility and provider perceptions of patient dominance would be associated with lower patient satisfaction.

3.) Greater interpersonal complementarity (as measured by the IMI) between the provider and the patient will lead to greater satisfaction with the encounter. Frantsve (2002) found that when greater complementarity existed between the physician and the patient, the patient was more involved in decision-making. In addition, reviews on patient decision-making by Guadagnoli and Ward (1998) and Auerbach (2000) found that greater patient involvement led to more positive secondary outcomes such as satisfaction.

4.) Greater satisfaction in the encounter will lead to greater compliance with treatment recommendations. This was an exploratory hypothesis that is based in part on findings of Geersten et al. (1973), which found that patients describing their physicians as more "personal" followed medical regimens better than those who described their physicians as more "business-like." It is also consistent with the assumption that satisfaction with treatment and with the competence of the physician is a prerequisite for compliance.

5.) Since Auerbach and colleagues (2002) found a significant impact of perceived patient competence on satisfaction (specifically that diabetics who felt more competent in handling their condition were less satisfied with their care), perceived health competence, measured by the Perceived Health Competence Scale, was expected to be a moderator of patient satisfaction.

6.) Regression analysis will be used to determine the relationship among concordance between desired level and actual provider participatory styles, interpersonal complementarity, satisfaction, and compliance with treatment. The model being explored posits that greater concordance between desired and actual provider participatory styles, and greater interpersonal complementarity leads to greater patient satisfaction, which in turns leads to greater compliance with treatment recommendations. The relationship between interpersonal complementarity and compliance with treatment will also be examined, as will the relationship between patient participation and compliance with treatment.

Method

Participants

One-hundred and twenty subjects enrolled in the study. Of these 120 participants, 81 completed the study. For 27 of the participants who did not complete the study, the healthcare providers did not provide data for them. Twelve others could not be reached for the two-week follow-up. Of the 81 participants who completed the study, one participant's data were not included because visual inspection of the data indicated that the measures were not responded to in a thoughtful manner. Thus there were 80 patient participants who completed the study, and 14 provider participants.

Patient participants: Patient participants were patients at a university student health center. The mean age of the patient participants was 21.09 years (SD= 4.95), with patient's ages ranging from 18 to 50. The modal age for all patients was 20 years of age, with 76 (95%) of the patient's ages ranging from 18 to 26. The patients were predominantly female (n=69; 86.3%) and white (n=13; 92.86%). The patients were also predominantly white (n=52; 65%). Table 1 displays patient demographics.

The patient's reasons for presenting at the clinic varied greatly, from more benign complaints such as allergies or cold-like symptoms, to more major complaints such as depression and tuberculosis. The modal reason for presenting at the clinic was for cold/flu like symptoms (n=16; 20.1%), followed by annual OB/GYN exams (n=13; 16.3%).

Table 1

Patient Demographic Variables

Demographic Variable	Caucasian (%)	African-American (%)	Asian (%)	Other (%)
Race/Ethnicity	52 (65.0%)	19 (23.8%)	4 (5.0%)	5 (6.2%)

Demographic Variable	Mean (years)	Std. Deviation	Minimum	Maximum
Age	21.09	4.951	18	50

Demographic Variable	Male (%)	Female (%)
Gender	11 (13.8%)	69 (86.3%)

Provider participants: The 14 providers were overwhelmingly female (n=13; 92.86%), and only included one male (n=1, 7.14%). There were many different types of providers seeing patients, including seven physicians (50%), six nurse practitioners (42.86%), and one physician's assistant (7.14%). Healthcare providers only identified their professional status in 51 of the 80 patient participants (26 were seen by physicians and 25 were seen by non-physicians, 24 of whom were nurse practitioners). Analyses identified no differences between these groups on any of the study measures (see Appendix). As a result, subsequent analyses did not differentiate among types of healthcare providers.

Measures

The Participatory Style of Physician Scale. The PSPS was designed to measure a physician's participatory style during consultations with patients. Two patient versions of this scale were used in the current study. Form P-D asks the patient to evaluate the desired participatory behavior of the physician. Form P-A asks the patient to evaluate the provider's actual participatory behavior during the just completed consultation. In addition, one provider version was used. The provider version asks providers to evaluate their actual participatory behavior during the just completed consultation. The 15 items on each version are almost identical in content, and vary only in the wording of instructions and pronouns. The measure was constructed to measure three subscales: *Providing Medical Information* (e.g., "discussed the benefits or risks of each of the treatment alternatives; *Gathering Personal Information* (e.g., "encouraged the patient to talk about personal concerns related to my treatment decision," and *Facilitating Shared Decision Making* (e.g., "provided the patient an equal role in the treatment decision process)." These subscales represent the essential components emphasized in the shared decision making models of Charles, Gafni, and Whelan (1997), as well as important elements found in models of informed consent in the bioethics literature (Braddock, Fihn, Levinson, Jonsen, & Pearlman, 1997). Accordingly, three subscale scores are obtained reflecting the elements of these models.

Impact Message Inventory. The Impact Message Inventory (IMI; Kiesler, 1987; Perkins, Kiesler, Anchin, Chirico, Kyle & Federman, 1979) characterizes a target individual's interpersonal behavior through assessment of the IMI respondent's covert reactions (feelings, action tendencies, cognitive attributions) evoked during encounters with the target. The current study uses a 20-item short form of the IMI octant version (IMI-C; Kiesler & Schmidt, 1993) completed both before and at the end of consultation interactions by the patient (IMIDD, IMIDA respectively) and provider interactants (IMIP). The different versions are named for the target of the IMI rather than the respondent. Thu This short form has not been previously used. The IMI-C short form produces four raw scores: dominant, hostile, submissive, and friendly; and two axis scores: control and affiliation. When pairs of IMI protocols are available for an interacting dyad, one can also obtain three interpersonal "complementarity" indexes: for the control and affiliation dimensions separately as well as for their interactive combination (Kiesler, Schmidt, & Wagner, 2001). Reliability and validity evidence for the 28-item version is ample (Kiesler, 1987, Schmidt, Wagner & Kiesler, 1999), although this short form has not been previously used. The different versions are named for the target of the IMI rather than the respondent. Thus, the IMI that the patient responds to on the provider before the visit is the IMIDD (IMI Doctor Desired), while the IMI that the provider responds to on the patient is the IMIP (IMI Patient).

Patient Satisfaction with Care Questionnaire. A ten-item questionnaire was constructed. This questionnaire includes the overall satisfaction question from the RAND fifty-five item instrument, and questions on two visit-specific domains: provider technical competence and physician sensitivity. This scale was constructed because a brief, valid measure of patient satisfaction in an outpatient student-health-center type setting was not found in the literature, and longer measures were deemed unnecessary for the present study. This new measure is face valid and is considered an acceptable measure of patient satisfaction.

Perceived Health Competence Scale (PHCS; Smith, Wallston, & Smith, 1995). The PHC is an eight-item scale that measures the degree to which an individual feels capable of effectively managing his or her health outcomes. It is a short, easily administered, and assesses an important domain in perceived control over health outcomes. The PHCS has shown excellent internal consistency (ά=.90) and excellent stability up to almost three years. In addition, the PHCS has been correlated with indicators of health status (r=0.5) showing excellent construct validity (Smith et al., 1995). It has been adapted to meet the specifics of certain conditions (e.g. diabetes, see Auerbach et al., 2002), but will be used in its original form in the current study.

Provider Information Measure and Patient Information Measure (PrIM & PIM). The PrIM and PIM are three item measures designed to examine the provider's and patient's understanding of their diagnosis, prognosis, and treatment options.

Patient Compliance Measure. A face valid measure was used, in which subjects were asked if they complied with each of the provider's recommendations, as well as how well they would rate their overall level of compliance. This is consistent with previous literature in the area of patient compliance (for a review, see Cleemput, Kesteloot & DeGeest, 2002).

Procedure

As patients wait in the waiting room, they approached the researcher, who introduced himself in the following way: "Hello, my name is XX and I'm a graduate student in the Department of Psychology here at VCU. We are conducting a study examining patient satisfaction and compliance with treatment, and I would appreciate it if you would consider enrolling. The study consists of your answering a few questions before and after your visit, and then allowing us to contact you by telephone in approximately two weeks to ask two more brief questions about the care you received.

Everyone that enrolls will be entered into a drawing for a gift certificate. Would you be interested in enrolling?" The patient was informed that no member of the Student Health Center staff will see their results, and that choosing not to enroll would in no way effect their care at the clinic. If any questions were asked, the researcher answered them. If the patient agreed to enroll, he or she then read and signed the consent form. Once the subject had been given a chance ask questions and consented to enroll in the study, the subject completed a simple demographic form, the IMIDD, PSPS and the PHC before seeing the provider. The patient then saw the provider when called, and completed the visit according to the standard protocol for all patients at the Virginia Commonwealth University Student Health Center. Following the consultation, the patient went back into the waiting room, and the provider completed the eight-item PSPSP, the Provider Information Measure, and the IMI. Meanwhile, the patient will completed the PSPSDA, the IMI, the Patient Information Measure, the PHC, and the Patient Satisfaction with Care Questionnaire. All measures were then collected by the researcher. About two weeks later, the patient was re-contacted by the researcher and asked to verbally respond to the patient compliance measure and the Patient Satisfaction with Care Questionnaire. This ended the patient's participation in the study, and the patient was thanked for his or her enrollment. After the study was completed, two subjects were randomly picked to win the $50 prize. They were called and told of their winnings. A check was then mailed to them.

Results

Descriptive data on the measures administered to providers and patients will be presented first. This will be followed by presentation of data assessing the relationship among the measures used to predict outcome. The final section will examine the relationship between these predictors and measures of patient satisfaction and compliance.

Descriptive Data

Participatory Style of Physicians Scale (PSPS). The PSPS was administered to patients before (PSPSD) and after (PSPSA) the visit with the provider, and was administered to healthcare providers following the visit only (PSPSD-A). The PSPS was constructed on rational grounds to comprise three subscales tapping into provision of medical information, opportunities of shared decision making, and solicitation of personal information by the healthcare provider. Because the PSPS has not been widely used, an exploratory factor analysis was conducted on the PSPSA to evaluate whether the structure of the scale was consistent with this a priori clustering of items. It may be noted in Table 2 that one factor accounted for 60.67% of the variance, with an eigenvalue of 9.1. Two other factors had eigenvalues equal to or above 1.0 (1.4 and 1.0) but failed to account for a significant portion of the variance due to the influence of the first factor.

Exploratory factor analyses were also conducted on the PSPSD and PSPSD-A. These analyses produced results very similar to the factor analysis for the PSPSA, and thus will not be presented here. Since only one factor on which items loaded substantially accounted for so much variance in the PSPS, a single mean item score based on all 15 items was used to represent scores on this measure in subsequent analyses.

Table 2

Factor Analysis and Factor Loadings on the PSPSA

Factor	Initial Eigenvalues	
	Total	% of Variance
1	9.100	60.669
2	1.470	9.701
3	1.022	6.814
4	.703	4.685
5	.556	3.710
6	.429	2.858
7	.379	2.529
8	.296	1.971
9	.272	1.812
10	.225	1.501
11	.179	1.193
12	.145	.970
13	.087	.581
14	.081	.540
15	.055	.366

Item	Factor 1	Factor 2	Factor 3
1	.781	.296	-.320
2	.575	.404	-.013
3	.847	.226	-.195
4	.879	-.257	.036
5	.797	-.185	.041
6	.906	.034	.06
7	.912	-.163	.029
8	.706	.550	.105
9	.570	-.015	.514
10	.885	-.154	.046
11	.935	-.218	-.040
12	.209	.371	.832
13	.892	.130	.001
14	.637	.188	.092
15	.573	.406	.234

A reliability analysis was conducted to examine the internal consistency of the PSPS. The PSPSD was shown to have a Cronbach alpha of .941, the PSPSA of .944, and the PSPSD-A a Cronbach alpha of .963. Item-total statistics were conducted to determine if removing any of the items would significantly raise the reliability of the measure. The results showed that all of the items significantly contributed to the reliability of the measure, and that deleting any items would not significantly raise the reliability.

Descriptive statistics for the PSPS are presented in Table 3. Since no normative data exists for the PSPS, no relational comparisons can be made with PSPS data obtained in other situations. However, based on the scale descriptives, the PSPS scores obtained in the present study (all item means were greater than four on a five-point scale) indicate that patients desired and received a high level of participation, and their providers felt that patients participated in the medical process to a high degree.

The PSPSD was compared with the PSPSA to determine the extent to which patients' actual level of participation matched their desired level of participation (see table 3 for descriptive statistics on the measures). A t-test showed that there was no significant difference between the means, indicating that, as a group, patients desired level of participation (M=4.57) matched the level of participation they felt they were able to have (M=4.46; t(79)=1.64, p=.104). There was also no significant difference between the provider's view (M=4.43) of how much he or she allowed the patient to participate, and the patient's view of how much he or she was actually able to participate in the medical process, t(79)=.325, p=.746.

Intercorrelations among the three PSPS measures are presented in Table 4. It may be noted that there was a significant correlation between the patient's desired level of participation and his or her actual level of participation r(79)=.613, p<.001, indicating that patients who desired more participation in the medical process felt that, relative to the group as a whole, they were able to participate more. Providers' view of participation provided was slightly correlated with patient's views of level of participation (r=.28).

Table 3

Descriptive Statistics on All Measures

Measure	Mean	Std. Dev.	Min.	Max.
Dependent Variables				
Mean Satisfaction After Visit	4.5308	.58859	1.87	5.00
Mean Satisfaction at Follow-up	4.4411	.57332	2.35	5.00
Compliance	3.36	.872	1	4
Independent Variables				
PSPS Desired Total	4.5683	.63600	1.00	5.00
PSPS Actual Total	4.4610	.68838	1.13	5.00
PSPS Doctor Total	4.4324	.62111	1.22	5.00
IMI Doctor Desired Dominance Score	1.5012	.43261	1.00	4.00
IMI Doctor Desired Hostility Score	1.1526	.37276	1.00	4.00
IMI Doctor Desired Submissive Score	1.7111	.48485	1.00	4.00
IMI Doctor Desired Friendliness Score	2.8450	.61127	1.40	4.00
IMI Doctor Actual Dominance Scale	1.3281	.33866	1.00	2.20
IMI Doctor Actual Hostility Scale	1.1238	.26064	1.00	2.20
IMI Doctor Actual Submission Scale	1.8391	.54891	1.00	3.40
IMI Doctor Actual Friendliness Scale	2.9623	.63815	1.40	4.00
IMI Patient Dominance Scale	1.2690	.43537	1.00	3.00
IMI Patient Hostility Scale	1.3132	.56451	1.00	3.60
IMI Patient Submission Scale	2.1239	.62307	1.00	3.40
IMI Patient Friendliness Scale	2.7365	.59163	1.20	4.00
Control-Doctor	-.5110	.55105	-1.80	.60
Affiliation-Doctor	1.8385	.76980	-.60	3.00

Table 3 (cont.)

Descriptive Statistics on All Measures

Control-Patient	-.8548	.62426	-2.20	.27
Affiliation-Patient	1.4233	.94562	-2.40	3.00
Complementarity-Control	1.3758	.83233	.00	3.60
Complementarity-Affiliation	.9527	.89300	.00	5.00
Complementarity-Total	2.3285	1.12838	.55	7.20
PHC Total	4.5209	.87593	1.13	6.00

Table 4

Pearson's Correlations Among PSPS Measures

	PSPS Desired	PSPS Actual
PSPS Desired	--	--
PSPS Actual	.613**	--
PSPS Doctor	.073	.281*

** p is significant at the .001 level; *p is significant at the .05 level

Impact Message Inventory (IMI). A 20-item version of the IMI was administered to patients before the visit with the healthcare provider (IMIDD) as well as after the visit (IMIDA). It was also administered to the providers after the visit (IMIP). The IMI was constructed to provide measures of four theoretically based dimensions: dominance, submissiveness, friendliness, and hostility. Each item on the IMI loads onto one of these four dimensions, creating four subscales of five items each. Mean item scores were calculated for each subscale for each IMI administration. Because the 20-item IMI has not been previously used, alpha reliabilities on each of the four subscales for all three IMI measures were computed. These reliabilities are presented in Table 5. Overall, alpha reliabilities for patient IMI subscales were low relative to those obtained on the provider IMI subscales.

Table 5

Reliability (Alpha) Scores for IMI Subscales

	IMI Doctor Desired	IMI Doctor Actual	IMI Patient
Dominance	.441	.312	.776
Submissiveness	.610	.580	.710
Friendliness	.675	.682	.685
Hostility	.779	.566	.891

An affiliation and control axis score was also calculated for each patient IMI and the provider IMI. The affiliation score was calculated by subtracting the hostility score from the friendliness score, while the control score was calculated by subtracting the submissive score from the dominance score. Following this calculation, three complementarity scores were calculated when an interacting dyad was present (using the IMIDA and the IMIP). These three complementarity scores are affiliation, control, and total complementarity (an interaction of affiliation and control). The affiliation complementarity score was calculated by taking the absolute value of the difference between patient and provider affiliation scores, while the control complementarity score was calculated by taking the absolute value of the sum of the patient and provider control score. These scores are calculated in this manner based on the fact that, in an interpersonal interaction, dominance on the part of one individual will evoke submissiveness on the part of the other, while friendliness will evoke friendliness and hostility will evoke hostility. The closer the complementarity score is to zero, the greater the degree of complementarity that is present. To calculate the total complementarity score, the control complementarity and the affiliation complementarity scores are added together; again, scores approaching zero indicate greater complementarity (Kiesler, Schmidt, & Wagner 2001).

Overall, there were substantial differences on the four basic subscales of the IMI within each respondent (see Table 3). Examination of these scores indicated that patients' predominant desire was to have a friendly healthcare provider. A repeated measures ANOVA of the four IMIDD scores indicated that differences among them were highly significant, F(3, 237)=308.63, p<.001. Post hoc contrasts indicated that friendliness scores were significantly higher than each of the other three (all p's <.001). Desired submissiveness scores were higher than dominance (p=.001). Desired hostility scores were significantly lower that the other three scores (all p's <.001). A similar pattern of scores was obtained for the IMIDA, F(3, 237)=296.54, p<.001. Again, patients rated their physicians as more friendly than hostile (p<.001) and more submissive than dominant (p<.001). With regard to the IMIP, a repeated measures analysis again revealed a significant difference in the four subscales, F(3, 237)=163.73, p<.001. Interestingly, providers rated their patients as more submissive than dominant (p<.001), and more friendly than hostile (p<.001). A summary of all post hoc contrasts are presented in Table 6.

Complementarity scores for control and affiliation indicated that the interpersonal interaction between patients and providers was more complementary with respect to affiliation (M=.95, SD=.89) than to control (M=1.38, SD=.83).

Table 6

*Significant Differences between IMI Subscales Within Each Measure**

	Dominance	Submissiveness	Friendliness	Hostility
IMI Doctor Desired	1.50^a	1.71^a	2.85^a	1.15^a
IMI Doctor Actual	1.33^a	1.84^a	2.96^a	1.12^a
IMI Patient	1.27^a	2.12^b	$2.73^{a\,b}$	$1.31^{a\,b}$

*Similar superscripts indicate subscales that are significantly different from each other. All differences are significant at the p<.001 level.

A t-test revealed this difference to be significant, t(79)=2.90, p=.005. Because the 20-item version had not been previously used, the results of the IMI data from this study were compared to previously reported data on the IMI in order to test for any differences. Kiesler and Auerbach (2004) examined IMI data for 14 studies that used both the 56 and the 28-item versions of the measure. There were three studies in which complementarity data could be collected, and only one that used the IMI with patients and physicians (Auerbach et al., 2002). The Auerbach et al. (2002) study, using a 28 item version of the IMI, reported similar item means for control complementarity and overall complementarity (M=1.23 and M=2.61 respectively for the Auerbach et al. (2002) study vs. M=1.38 and M=2.33 respectively for the present study), but a much higher mean for affiliation complementarity (1.38 for the Auerbach et al. (2002) study vs. .95 for the present study). A t-test examining the difference in affiliation complementarity between the Auerbach et al. (2002) study and the present study was significant, t(127)=2.71, p<.01, indicating that the patients and providers in the present study found each other to be significantly more complementary on the affiliation dimension than the patients and providers in Auerbach et al., (2002). T-tests between the other means showed that the differences between the two studies were not significant, t(127)=.993 for control complementarity, and t(127)=1.402 for total complementarity.

Within the IMIDA, there were several significant correlations. Patients who felt their providers were more controlling (measured as being less submissive and more dominant) rated having less affiliation with their providers r(79)= -.416, p<.001. Patients who rated their providers as friendlier also had greater complementarity along the control dimension r(79)=.353, p<.001, meaning the less dominant the patient was, the more dominant the provider was, and likewise for submissiveness. All other correlations are presented in Table 7.

Perceived Health Competence Scale (PHCS). The PHCS was administered to patients before their visit with the provider. This scale was used to determine the degree to which the patient felt competent at managing his or her health outcomes. The results indicated that, overall, patients expressed competence at managing their own health outcomes (item M=4.52 on a 6-point scale, SD=.88).

Interrelationships Among IMI Measures, PSPS Measures, and the PHC

Correlations among IMI, PSPS, and PHC scores are presented in Table 8. It may be noted that patients who rated themselves as having participated more in the medical process generally rated greater affiliation with their provider on the IMI r(79)=.403, p<.001. Healthcare providers who felt their patients were less controlling (as measured by the IMIP) also felt they let patients take a more active role over their healthcare

Table 7

Correlations among subscales on the Impact Message Inventory

	IMIDD Dominance	IMIDD Hostility	IMIDD Sub	IMIDD Friendliness	IMIDA Dominance	IMIDA Hostility
IMIDD Dominance	--	--	--	--	--	--
IMIDD Hostility	.608**	--	--	--	--	--
IMIDD Sub	.442**	.553**	--	--	--	--
IMIDD Friendliness	.372**	.183	.465**	--	--	--
IMIDA Dominance	.096	-.033	.033	-.098	--	--
IMIDA Hostility	-.113	-.001	.081	-.054	.244*	--
IMIDA Submissiveness	.106	.121	.299**	.147	.302**	-.012
IMIDA Friendliness	.155	.070	.153	.394**	.162	-.353**
IMIP Dominance	-.072	-.076	-.098	-.047	.051	-.073
IMIP Hostility	-.016	-.056	-.092	.044	.057	-.061
IMIP Submissiveness	-.023	.010	.034	-.057	.136	-.160
IMIP Friendliness	-.029	.002	.013	-.131	.048	-.067

** Correlations are significant at the p<.01 level

* Correlations are significant at the p<.05 level

Table 8

Pearson Correlations of the PSPSD, PSPSA, PSPSD-A and PHC with the IMID, IMIA, and IMID-A

Scale	PSPSD	PSPSA	PSPSD-A	PHC
IMIDD Hostility Scale	.024	.111	-.070	.142
IMIDD Submissive Scale	-.068	-.006	.013	-.002
IMIDD Friendliness Scale	-.050	-.104	-.005	.025
IMIDD Dominance Scale	.002	.098	-.129	.082
IMIDA Hostility Scale	-.024	-.347**	.013	.058
IMIDA Submissive Scale	.034	.232*	.191	-.175
IMIDA Friendliness Scale	-.020	.344**	.191	.055
IMIDA Dominance Scale	-.003	.056	.010	-.202
IMIP Hostility Scale	-.013	-.144	-.220*	-.148
IMIP Submissive Scale	-.037	.098	.092	.033
IMIP Friendliness Scale	-.099	.070	.220*	-.079

Table 8 (cont.)

Pearson Correlations of the PSPSD, PSPSA, PSPSD-A and PHC with the IMID, IMIA, and IMID-A

Scale	PSPSD	PSPSA	PSPSD-A	PHC
IMIP Dominance Scale	-.019	-.102	-.298**	-.212
Control-Doctor	-.035	-.196	-.184	.051
Affiliation-Doctor	-.009	.403**	.154	.565
Control-Patient	.023	-.169	-.299**	.109
Affiliation-Patient	-.054	.112	.269**	.038
Complementarity-Control	.003	.245*	.641**	.100
Complementarity-Affiliation	.160	-.015	.070	-.091
Complementarity-Total	.130	.169	.307**	.002

** Correlation is significant at the 0.01 level

* Correlation is significant at the 0.05 level

decisions, as measured in the providers' PSPS r(79)= -.299, p=.007. Although the patients' PSPS-A trended in this direction, it was not significant r(79)= -.169, p=.133. Providers who rated their patients as less controlling also rated having less affiliation with their patients r(79)=.444, p<.001. In addition, providers reported having more affiliation with older patients than younger patients r(79)=.238, p<.001. Finally, overall complementarity between the provider and the patient was significantly correlated with the PSPS-DA total r(79)=.307, p=.006, indicating that there was greater complementarity when providers felt they allowed the patients' to make their own decisions regarding their healthcare. Again, the patients' reports did not corroborate this finding. The PHC was not significantly correlated with any of the predictor or outcome variables.

Predictors of Patient Satisfaction and Compliance

The two main outcome measures in this study were patient satisfaction, as measured by the Patient Satisfaction with Care Questionnaire, and patient compliance with treatment recommendations, as measured by the Patient Compliance Measure. The intercorrelations among IMI, PSPS, and PHC scores (predictors) and the outcome measures (satisfaction just after the visit and at the two-week follow-up, and patient compliance) are presented in Table 9.

Included among the predictor variables are "concordance" measures for the PSPS and the IMI. For the PSPS, the match of a patient's desired level of participation and actual level of participation was calculated by subtracting the total score of the PSPSD (given prior to the visit) was subtracted from the PSPSA (given after the visit). Using this method, a score of zero indicated a perfect match. Therefore, a negative correlation with outcome measures would indicate that lower match scores (scores indicating a greater match) are associated with higher satisfaction or compliance scores. On the IMI, the match of a patient's desired level of provider affiliation and control were calculated separately using the same method that was used for the PSPS concordance score. For the concordance variable, as predicted in hypothesis 1, greater concordance between the patients desired level of participation and actual level of participation during the encounter (as measured by the PSPS) was associated with greater satisfaction with the encounter, $r(79)= -.537$, $p<.001$. Similar results were found between level of participation match and satisfaction at the two week follow-up, $r(79)= -.294$, $p=.008$. However, there was no correlation between level of participation match and patient

Table 9

Pearson's Correlations of IMI Subscales, PSPS Measures, and Concordance Variables with Patient Satisfaction After the Visit, at the Two-Week Follow-Up, and Patient Compliance

	Satisfaction After the Visit	Satisfaction at the 2-Week Follow-Up	Patient Compliance
IMIDD Dominance	.087	.154	.184
IMIDD Submissive	.011	.074	.009
IMIDD Friendliness	.133	.195	.115
IMIDD Hostility	.147	.151	.037
IMIDA Dominance	-.049	-.032	.078
IMIDA Submissive	.142	.214	-.084
IMIDA Friendliness	.541**	.452**	.050
IMIDA Hostility	-.562**	-.406**	.147
IMIP Dominance	-.003	.025	-.099
IMIP Submissive	.062	.105	-.227
IMIP Friendliness	.022	.093	-.074
IMIP Hostility	-.053	.037	-.083
PSPS Desired	.054	-.083	.027
PSPS Actual	.516**	.286*	-.083
PSPS Doctor	.012	-.003	-.099
PSPS Concordance	-.537**	-.294**	.075
IMI Affiliation Concordance	.544**	.387**	-.072
IMI Control Concordance	-.197	-.247*	-.006
Comp. – Affiliation	-.064	-.219	.000
Comp. – Control	.156	.217	-.207
Comp.-Total	.064	-.013	-.148

** Correlation is significant at the p<.01 level

* Correlation is significant at the p<.05 level

compliance. Greater concordance between the affiliation scores on the IMIDD and the IMIDA was significantly correlated with patient satisfaction both immediately following the visit, r(79)=.544, p<.001, and at the two-week follow-up, r(79)=.387, p<.001.

Satisfaction at the two-week follow-up was only moderately correlated with IMI control concordance, r(79)= -.247, p<.05, and not significantly correlated with satisfaction immediately following the visit, r(79)= -.197.

Based on previous findings with oral surgery patients (Auerbach et al., 1983) and with diabetes patients (Auerbach et al., 2002) showing that patient perception of provider submissiveness and hostility and provider perceptions of patient dominance were associated with lower patient satisfaction, these relationships were examined in the current study. Higher provider affiliation scores (meaning patients who viewed their providers as more friendly than hostile) were associated with greater patient satisfaction both after the visit r(79)=.639, p<.001 and at the two week follow-up r(79)=.512, p<.001. Lower provider control scores (meaning patients who viewed their physicians as more dominant) were associated with higher patient satisfaction at the two week follow-up r(79)= -.233, p=.037, but not immediately after the visit r(79)= -.172, p=.128. This finding contradicted the original hypothesis. Contrary to the original hypothesis, provider perceptions of patient dominance were not significantly correlated with patient satisfaction scores r(79)=.025, p=.825. Also contrary to the original hypothesis, overall complementarity scores were not significantly associated with patient satisfaction either immediately following the visit r(79)=.064, p=.573 or at the two week follow-up r(79)= -.013, p=.908.

Based on the correlational analysis presented earlier, hierarchical regression analysis was used to determine the relationship among concordance between desired level and actual provider participatory styles, concordance between affiliation and control scores on the IMIDD and IMIDA, patient affiliation with the provider, actual patient participation level, and satisfaction with treatment. The model being explored posited that greater concordance between desired and actual provider participatory styles, greater concordance between control and affiliation scores on the IMIDD and IMIDA would lead to greater patient satisfaction with the encounter. Actual participation levels and patient affiliation scores will be entered first, while PSPS concordance and IMI concordance scores will be entered into the second step. This is being done to obtain the most parsimonious explanation for the variance in patient satisfaction scores. This first model was significant F(2, 77) =36.70, p<.001, and accounted for 48.8% of the variance in patient satisfaction scores immediately following the visit. Both patient affiliation scores and PSPSA scores were significant, β=.515, p<.001 and β=.309, p=.001 respectively.

To examine the amount of variance in patient satisfaction scores that can be accounted for by the PSPS concordance and the two IMI concordance scores (affiliation and control), these three variables were entered into the second step. Again, the overall model in step two was significant F(5, 74)=20.43, p=.002, and accounted for 58.0% of the variance in patient satisfaction scores immediately following the visit. This increase was significant, F(3, 74)=5.38, p=.002. While PSPS concordance was a significant predictor, β=-.311, p<.001, IMI control concordance and IMI affiliation concordance were not, β=.097, p=.246 and β=.768, p=.445 respectively. Patient affiliation and PSPS actual scores were still significant predictors (see Table 10).

Table 10

Summary of Hierarchical Regression Analysis for Variables Predicting Patient Satisfaction Immediately Following the Visit with the Healthcare Provider

Variable	B	SE B	β
Step 1			
PSPS Actual Total	.393	.068	.515*
Patient Affiliation	.264	.076	.309*
Step 2			
PSPS Actual Total	.169	.077	.197*
Patient Affiliation	.341	.082	.446*
PSPS Concordance	.169	.077	-.311*
IMI Affiliation Concordance	.058	.075	.084
IMI Control Concordance	.088	.076	.097

Note: R^2=.488 for Step 1: ΔR^2=.092 for Step 2 (p's<.01)
*p<.05

Discussion

Findings on patient's and provider's participatory styles will be presented first. This will be followed by consideration of interpersonal impacts, patient satisfaction, and compliance. The final section will discuss limitations of the current study. Directions for further research are addressed in all sections.

Participatory Styles

The PSPS, which was administered to patients before and after the visit and also administered to physicians after the visit, was shown to be a valid and reliable instrument. However, the current study did not support the hypothesis that the scale measured three separate factors. The scores on the PSPSD did show that patients in this study prefer to be very involved in the decision-making process. These results may generalize to other college-aged populations, but may not necessarily generalize to other older generations of healthcare consumers, due to generational differences in expectations. Since there was no prior normative data on the PSPS, no direct comparisons between types of patients could be made.

Healthcare providers at this site were very willing to give patients control over their own healthcare decisions. Much of this may have been due to the nature of the presenting complaints, which were mostly cold or flu-like symptoms or involved OB/GYN exams. These complaints may have lent themselves more readily to a shared decision-making model than would other presenting complaints. Again, while these results may generalize to other student health centers around the country, caution should be taken in generalizing these results to other healthcare settings, where the presenting complaints and age ranges of patients differ as well.

Patients attained the amount of participation they desired in the current study, and the hypothesis that a higher concordance between a patient's desired and actual level of participation would be associated with higher levels of patient satisfaction was supported. This concurs with other findings by Kiesler and Auerbach (in press) showing that concordance between what a patient desires and what a patient is able to achieve in the areas of decision-making, amount of information received, and interpersonal behavior is important to patients in the medical process. The current study also showed that higher absolute levels of participation are associated with higher patient satisfaction scores. This supports recent reviews on patient decision-making by Guadagnoli and Ward (1998) and Auerbach (2000), who found that greater patient involvement led to more positive secondary outcomes such as satisfaction. The latter correlation was stronger immediately following the visit than at the two week follow-up, whereas the correlation was equally strong at both time points for PSPS concordance. This may indicate that meeting the patient's expectations is more important than high absolute levels of participation in relation to patient satisfaction. It could also indicate that this population was generally very involved in the decision making process. Further studies using the PSPS should attempt to find patient populations that have low expectations for involvement in the medical process to clarify these results. It is interesting to note that level of desired participation was not associated with patient satisfaction. Patient compliance was not associated with any of the PSPS variables.

Patients in this study felt very competent at managing their own health outcomes. As a comparison, Smith, Walston & Smith (1995) found a lower mean than the current study found among college students in the original study using the PHC (item M=3.99 on a 6-point scale, SD=.72). This difference was significant, t(264)=5.10, p<.01, indicating that the population of college students in the present study felt more competent at managing their own health outcomes. This difference may indicate a trend of rising health competence among college students that coincides with the rise of medical information sharing over the internet and should be investigated further.

Interpersonal Impacts

Interpersonal aspects of the patient-provider relationship were also important in determining patient satisfaction with the visit. In the current study, providers often saw patients for a very brief period of time, and may only see that patient once. This is somewhat different than the more traditional model of one patient having the same provider that he or she sees multiple times. Other studies examining the interpersonal dynamic and its relation to patient satisfaction have been with patients in this latter population (i.e. Auerbach et al, 2002). Thus, the impact of this one interpersonal encounter on satisfaction with the visit and compliance with treatment recommendations was hypothesized to be crucial.

Patients at the study site generally desired friendly, submissive providers. This somewhat contradicts the original hypothesis that patients would be lass satisfied if they perceived their providers to be submissive. These data are consistent though, with the PSPS data from the current study showing that patients also wanted to be very involved in their healthcare process. Patients who want to be more involved may desire physicians who they feel are more submissive to their demands. Overall, patients in the current study viewed their providers as friendly. They also viewed their providers as more submissive than dominant, although this was not related to higher satisfaction scores. Caution should be used, however, in interpreting these results, as the 20-item IMI used in the current study showed relatively low reliability scores compared to the 28-item or 56-item version of the IMI used in other studies.

Some aspects of the interpersonal relationship were found to be related to patient satisfaction in the current study, while other hypothesized relationships were not obtained. It was hypothesized that patient perception of provider submissiveness and hostility and provider perceptions of patient dominance would be associated with lower patient satisfaction. Dominance and submissiveness scores (on the part of the provider or the patient) were not related to patient satisfaction. Friendliness and hostility scores, however, were highly correlated with patient satisfaction. It was hypothesized that patients who viewed their providers as friendlier or less hostile were much more likely to be satisfied with their visit than patients who viewed their providers as less friendly or more hostile, and this hypothesis was supported by the current study. These data also support the findings reviewed by Kiesler and Auerbach (2003), showing that patient satisfaction is positively correlated with affiliation.

It was hypothesized that greater interpersonal complementarity would be associated with higher satisfaction scores. This was not supported in the current study. None of the three complementarity scores (Affiliation, Control, Total) was associated with patient satisfaction. This may have occurred for a number of reasons. First, patient satisfaction scores were highly skewed toward the higher end of the scale. Most patients were highly satisfied with their providers, leaving little variability in patient satisfaction scores. Second, providers in the current study were reluctant to complete this measure, and many of the patient IMI's may have been compromised by the provider's time constraints. Patient IMI scores were not associated with any of the other outcome measures either. While time constraints may have been a factor, the more likely reason for the lack of a correlation between complementarity and satisfaction with the visit is that satisfaction scores were highly skewed, leaving little variation in the scores that would make a significant correlation more likely.

Patients in the current study who had more control complementarity with their provider also rated having higher levels of participation. This is slightly different than the results found in Franstve (2002) that showed that overall complementarity scores were positively correlated with greater opportunities for participation. The current study did find, however, that total complementarity scores were positively correlated with the provider's PSPS measure, indicating that provider were more likely to view themselves as allowing patients to be involved in the medical process when there was greater complementarity. The reason for this inconsistency between the patient and provider is still unknown, and future research could concentrate on this area.

Patient Satisfaction and Compliance

Patient satisfaction scores in the current study were very positively skewed. Generally, patients were very satisfied with their visits. There were some aspects of the clinic in the current study that may have impacted this. Most patients at the Student Health Center did not pay for their services. All students at the University can be seen for free as long as their current health fee has been paid (this fee is included in the students tuition and fees). Getting medical services for no charge may lead to greater satisfaction scores, and could be one reason that all of the scores for satisfaction were so positively skewed.

The current study hypothesized that greater patient satisfaction with the visit would lead to greater levels of compliance with treatment recommendations. The data did not support this hypothesis. Patient satisfaction levels were not significantly associated with patient compliance. None of the study variables was associated with patient compliance. This may be a result of the way compliance was measured in the current study (self-report data), which will be discussed in a later section.

This study also hypothesized that concordance between desired and actual levels of participation, in addition to high levels of interpersonal complementarity would lead to greater levels of patient satisfaction. This model did account for a significant portion of the variance in patient satisfaction scores, but interpersonal complementarity was not a significant predictor of patient satisfaction. Further analysis revealed that while high levels of participation led to higher satisfaction scores, the concordance between desired and actual levels of participation are an important determinant of patient satisfaction. Contrary to the original hypothesis, however, perceived health competence was not a significant moderator of patient satisfaction, nor was it associated with any of the other study variables.

The current study supports a model that accounts for more than half of the variance in patient satisfaction. Secondary outcomes such as patient satisfaction have received more attention over the past few decades, and many healthcare providers now recognize their importance, even if these secondary outcomes do not lead to enhanced primary outcomes as in this study (Linder-Pelz, 1982). Even though this study did not show that increased patient satisfaction led to increased compliance with treatment recommendations, other studies have obtained this finding (Aharony & Strasser, 1993). In addition, increased patient satisfaction may lead to enhanced primary health outcomes through more indirect means such as more regular visits to the provider, or greater levels of disclosure by the patient about relevant medical issues. Thus, patient satisfaction cannot be discounted as an important outcome of a medical visit. Providers should strive to achieve greater satisfaction by discovering how much the patient expects to participate in the medical process, and then allowing the patient that level of participation. In addition, providers should attempt to be friendlier, especially during the first visit. By doing these things, providers may be able to increase the satisfaction of their patients.

Study Limitations

There were several significant limitations of the study. One of the main limitations was that all measures were self-report. Complete reliance on self-report measures is not often the most desireable method of data collection, but in this study, the constraints of the population and study site required that this method be used. Measures of some constructs can only realistically be collected by self-report, such as patient satisfaction, whereas others, such as patient compliance, actually lend themselves to more objective collection methods.

Data on patient compliance with treatment recommendations was especially limited by the fact that compliance was measured by self-report. Many studies examining patient compliance use biological outcome measures for an accurate, objective measure of compliance (for a review, see Aharony & Strasser, 1993). However, this method of data collection for patient compliance was not feasible in the current study. This study assessed the degree to which the patient *thought* he or she was complying with the provider's treatment recommendations rather than the degree to which he or she was necessarily *actually* complying. One can make the argument that, as it relates to patient satisfaction, interpersonal complementarity, and concordance of level of participation, the degree to which the patient thought that he or she was complying with the treatment recommendations is actually the more important variable. All of the independent variables thought to influence patient compliance in the current study (interpersonal complementarity, concordance of level of participation, and patient satisfaction) are thought to act on the patient's *desire* to comply with treatment recommendations rather than to understand what those recommendations actually are. Regardless, patient compliance was not found to be related to any of the study variables, and a more objective measure may have produced different results.

The current study did not address other possible determinants of patient satisfaction, such as everything that occurs before the visit with the provider. Variables such as time spent in the waiting room, number of forms that are necessary to complete before the visit, and the interaction with the health center staff were not accounted for. It is possible that this may have a bigger impact in a setting where the patient may see the provider only once than in a setting where the patient will have numerous visits with the same provider over an extended period of time. A patient who is annoyed by waiting for a long period of time may inadvertently evoke a hostile reaction from the provider, which could significantly alter that patient's level of satisfaction with the encounter. Future studies examining patient satisfaction may desire to take these variables into account.

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APPENDIX A

ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN PHYSICIANCS AND NON-PHYSICIANS

Analysis of Variance for Differences between Physicians and Non-Physicians

Variable	Physicians		Non-Physicians		F(2,77)*
	Mean	Std. Dev.	Mean	Std. Dev.	
IMI Control-Patient	-.602	.486	-.426	.501	.773
IMI Affiliation-Patient	1.932	.479	1.786	.900	.434
IMI Control-Doctor	-.813	.636	-.862	.628	.056
IMI Affiliation-Doctor	1.433	.821	1.607	.764	.768
Complementarity-Control	1.414	.736	1.288	.709	.366
Complementarity-Affiliation	.805	.643	.859	.866	1.308
Complementarity-Total	2.229	.616	2.147	1.077	1.306
Mean Satisfaction After Visit	4.539	.431	4.562	.579	.145
PSPS Concordance	.409	.597	.362	.472	.694
Complementarity	3.400	.816	3.480	.947	.840

* No results were significant at the $p<.05$ level

APPENDIX B

SELF-REPORT MEASURES

Subject Information

Name: ________________________________

Age: ________

Gender (circle one): M F

Race/Ethnicity: ____________________

Telephone Number where you may be contacted: __________________________

Please write clearly

(This is to allow us to contact you in approximately two-weeks to ask you about your satisfaction with the visit again, and your level of compliance with treatment recommendations. Once this information has been received, any records with your name and phone number will be destroyed.)

Presenting Complaint (briefly describe why you came to the student health center today):

Is your visit today by appointment (circle one)? Yes No

Date: ___________

Physician's Participatory Style - Patient Form (D)

We want to know how you ideally would like your healthcare provider to help you during your consultation visit. Respond to the following items by circling the number on each 5-point scale that best represents what you most want your healthcare provider to do during your upcoming consultation.

1 - strongly disagree
2 - disagree somewhat
3 - am uncertain
4 - agree somewhat
5 - strongly agree

DURING OUR VISIT, I WANT MY HEALTHCARE PROVIDER TO ......

1. discuss my diagnosis and the nature of any decisions to be made.
   1-----2-----3-----4-----5

2. encourage me to talk about any personal concerns I have regarding aspects of my care.
   1-----2-----3-----4-----5

3. make me feel comfortable enough to ask questions and seek explanations.
   1-----2-----3-----4-----5

4. discuss my available treatment alternatives.
   1-----2-----3-----4-----5

5. take my preferences into account when deciding the best ways to treat my illness.
   1-----2-----3-----4-----5

6. make me feel comfortable enough to question his/her recommendations.
   1-----2-----3-----4-----5

7. discuss the benefits and risks of my available courses of action.
   1-----2-----3-----4-----5

— continued on next page —

1 - strongly disagree
2 - disagree somewhat
3 - am uncertain
4 - agree somewhat
5 - strongly agree

DURING OUR VISIT, I WANT MY HEALTHCARE PROVIDER TO ......

8. consider my personal goals and feelings in arriving at decisions about my care.
1-----2-----3-----4-----5

9. not pressure me to accept a treatment alternative he/she prefers.
1-----2-----3-----4-----5

10. discuss the short-term and long-term consequences of available treatments.
1-----2-----3-----4-----5

11. make sure I understand my condition, treatment alternatives, and their risks.
1-----2-----3-----4-----5

12. support my treatment choice even though I don't follow his/her recommendation.
1-----2-----3-----4-----5

13. discuss any uncertainties associated with alternative courses of action.
1-----2-----3-----4-----5

14. get me to state which course of treatment I prefer.
1-----2-----3-----4-----5

15. provide me an equal role in arriving at decisions about my care.
1-----2-----3-----4-----5

Date: _____________

Perceived Health Competence Scale (PHC)

Indicate the extent to which you disagree or agree with each statement by circling the appropriate number.

	Strongly Disagree . . . . Strongly Agree
1.) I handle myself well with respect to my health.	1. . . . .2. . . . .3. . . . .4. . . . .5. 6
2.) No matter how hard I try my health condition just doesn't turn out the way I would like.	1. . . . .2. . . . .3. . . . .4. . . . .5. 6
3.) It is difficult for me to find effective solutions to the health problems that come my way.	1. . . . .2. . . . .3. . . . .4. . . . .5. 6
4.) I succeed in the projects I undertake to improve my health condition.	1. . . . .2. . . . .3. . . . .4. . . . .5. 6
5.) I'm generally able to accomplish my goals with respect to my health.	1. . . . .2. . . . .3. . . . .4. . . . .5. 6
6.) I find that my efforts to change things I don't like about my health condition are ineffective.	1. . . . .2. . . . .3. . . . .4. . . . .5. 6
7.) Typically, my plans for handling my health condition don't work out well.	1. . . . .2. . . . .3. . . . .4. . . . .5. 6
8.) I am able to do things for my health condition as well as other people.	1. . . . .2. . . . .3. . . . .4. . . . .5. 6

Date: _____________

Impact Message Inventory-IMI-Patient on Doctor (D)

Respond to each of the following items by circling the number on the 4-point scale that best captures how you would like your doctor to make you feel.

1- Not at all **2- Somewhat**
3- Moderately so **4- Very Much So**

WHEN I AM WITH THE DOCTOR I WANT HIM/HER TO MAKE ME FEEL.....

1. appreciated by him/her. 1----2----3----4
2. in charge. 1----2----3----4
3. distant from him/her. 1----2----3----4
4. taken charge of. 1----2----3----4
5. complimented. 1----2----3----4
6. dominant. 1----2----3----4
7. like an intruder. 1----2----3----4
8. that he/she wants to be the center of attention. 1----2----3----4
9. welcome with him/her. 1----2----3----4
10. that I want to point out his/her good qualities to him/her. 1----2----3----4
11. forced to shoulder all the responsibility. 1----2----3----4
12. that he/she wants me to put him/her on a pedestal. 1----2----3----4
13. as important to him/her as others in his/her life. 1----2----3----4
14. that he/she thinks I have most of the answers. 1----2----3----4
15. that he/she doesn't want to get involved with me. 1----2----3----4
16. that he/she thinks he's/she's always in control of things. 1----2----3----4
17. that I can ask him/her to carry his/her share of the load. 1----2----3----4
18. that he/she sees me as superior. 1----2----3----4
19. that he'd/she'd rather be left alone. 1----2----3----4
20. that he/she weighs situations in terms of what he/she can get out of them. 1----2----3----4

Date: _______________

Physician's Participatory Style - Patient Form (A)

We want to know how you feel about the visit you had with your healthcare provider. Respond to the following items by circling the number on each 5-point scale that best represents your view of what happened during your visit.

1 - Strongly disagree
2 - Disagree somewhat
3 - Am uncertain
4 - Agree somewhat
5 - Strongly agree

DURING OUR CONSULTATION, MY HEALTHCARE PROVIDER......

1. discussed my diagnosis and the nature of any decisions to be made.
   1-----2-----3-----4-----5

2. encouraged me to talk about any personal concerns I had regarding aspects of my care.
   1-----2-----3-----4-----5

3. made me feel comfortable enough to ask questions and seek explanations.
   1-----2-----3-----4-----5

4. discussed my available treatment alternatives.
   1-----2-----3-----4-----5

5. took my preferences into account when deciding the best ways to treat my illness.
   1-----2-----3-----4-----5

6. made me feel comfortable enough to question his/her recommendations.
   1-----2-----3-----4-----5

7. discussed the benefits and risks of my available courses of action.
   1-----2-----3-----4-----5

— Please continue on the next page. —

1 - Strongly disagree
2 - Disagree somewhat
3 - Am uncertain
4 - Agree somewhat
5 - Strongly agree

DURING OUR CONSULTATION, MY HEALTHCARE PROVIDER ......

8. considered my personal goals and feelings in arriving at decisions about my care.
1-----2-----3-----4-----5

9. did not pressure me to accept a treatment alternative he/she preferred.
1-----2-----3-----4-----5

10. discussed the short-term and long-term consequences of available treatments.
1-----2-----3-----4-----5

11. made sure I understood my condition, treatment alternatives, and their risks.
1-----2-----3-----4-----5

12. supported my treatment choice even though I didn't follow his/her recommendation.
1-----2-----3-----4-----5

13. discussed any uncertainties associated with alternative courses of action.
1-----2-----3-----4-----5

14. got me to state which course of treatment I preferred.
1-----2-----3-----4-----5

15. provided me an equal role in arriving at decisions about my care.
1-----2-----3-----4-----5

Date: ___________

Impact Message Inventory-IMI-Patient on Healthcare Provider (A)

Respond to each of the following items by circling the number on the 4-point scale that best captures your feelings while you were with the healthcare provider

1- Not at all **2- Somewhat**
3- Moderately so **4- Very Much So**

WHEN I WAS WITH THE HEALTHCARE PROVIDER HE/SHE MADE ME FEEL.....

1. appreciated by him/her. 1----2----3----4
2. in charge. 1----2----3----4
3. distant from him/her. 1----2----3----4
4. taken charge of. 1----2----3----4
5. complimented. 1----2----3----4
6. dominant. 1----2----3----4
7. like an intruder. 1----2----3----4
8. that he/she wants to be the center of attention. 1----2----3----4
9. welcome with him/her. 1----2----3----4
10. that I want to point out his/her good qualities to him/her. 1----2----3----4
11. forced to shoulder all the responsibility. 1----2----3----4
12. that he/she wants me to put him/her on a pedestal. 1----2----3----4
13. as important to him/her as others in his/her life. 1----2----3----4
14. that he/she thinks I have most of the answers. 1----2----3----4
15. that he/she doesn't want to get involved with me. 1----2----3----4
16. that he/she thinks he's/she's always in control of things. 1----2----3----4
17. that I can ask him/her to carry his/her share of the load. 1----2----3----4
18. that he/she sees me as superior. 1----2----3----4
19. that he'd/she'd rather be left alone. 1----2----3----4
20. that he/she weighs situations in terms of what he/she can get out of them. 1----2----3----4

Date: _________

Information - Patient

We would like to ask you some brief questions about your medical condition.

1.) In your own words, what is your current diagnosis?

Were you informed of your diagnosis today?

2.) What is your current understanding of your prognosis (the probable course and outcome of your condition/illness) for the condition or illness that you presented with today?

Were you informed of your prognosis today?

3.) How is the condition or illness that you presented with today being treated? (Please list)

A.)

B.)

C.)

D.)

E.)

F.)

G.)

During today's consultation, did your healthcare provider discuss with you how you will be treated?

Date: ____________

Satisfaction with Care

We want to know how you feel about <u>today's visit.</u> Think about today's visit, from the time it began until it ended. Respond to each of the following items by circling the number on the 5-point scale that best represents your opinion (please note that on #1, you are able to answer N/A, or Not Applicable, if that question does not apply to your visit today).

1 - Poor 2 - Fair 3- Good 4 - Very Good 5 - Excellent

1. Please rate your satisfaction with the technical quality (the technology, medical equipment used) of the services you received from your healthcare provider here today.

1----2----3----4----5 N/A

2. Please rate your satisfaction with the thoroughness of your healthcare provider today.

1----2----3----4----5

3. Please rate your satisfaction with the competence of your healthcare provider today.

1----2----3----4----5

4. Please rate your satisfaction with the amount of information provided to you by your healthcare provider today.

1----2----3----4----5

5. Please rate your satisfaction with the level of respect your healthcare provider showed you today.

1----2----3----4----5

1 - Poor 2 - Fair 3- Good 4 - Very Good 5 - Excellent

6. Please rate your satisfaction with the sensitivity of your healthcare provider today.

1----2----3----4----5

7. Please rate your satisfaction with the friendliness of your healthcare provider today.

1----2----3----4----5

8. Please rate your satisfaction with other Student Health Center staff today (not including your healthcare provider.

1----2----3----4----5

9. Please rate your satisfaction with the time you spent waiting to see your provider today.

1----2----3----4----5

10. Overall, please rate your satisfaction with today's visit.

1----2----3----4----5

Date: ______________

Physician's Participatory Style - Doctor Form (A)

We want to know what you did during your visit with this patient. Respond to the following items by circling the number on each 5-point scale that best represents your view
of what happened during your visit.

1 - strongly disagree
2 - disagree somewhat
3 - am uncertain
4 - agree somewhat
5 - strongly agree

WHEN I MET WITH THIS PATIENT:

1. I discussed his/her diagnosis and the nature of any decisions to be made.
1-----2-----3-----4-----5

2. I encouraged the patient to voice any personal concerns regarding aspects of his/her care.
1-----2-----3-----4-----5

3. I made him/her feel comfortable enough to ask questions and seek explanations.
1-----2-----3-----4-----5

4. I discussed with the patient his/her available treatment alternatives.
1-----2-----3-----4-----5

5. I took the patient's preferences into account when deciding the best ways to treat his/her illness.
1-----2-----3-----4-----5

6. I made him/her feel comfortable enough to question my recommendations.
1-----2-----3-----4-----5

7. I discussed the benefits and risks of his/her available courses of action.
1-----2-----3-----4-----5

— continued on next page —

1 - strongly disagree
2 - disagree somewhat
3 - am uncertain
4 - agree somewhat
5 - strongly agree

WHEN I MET WITH THIS PATIENT:

8. I considered the patient's personal goals and feelings in arriving at decisions about his/her care.
1-----2-----3-----4-----5

9. I did not pressure him/her to accept a treatment alternative I preferred.
1-----2-----3-----4-----5

10. I discussed the short-term and long-term consequences of his/her available treatments.
1-----2-----3-----4-----5

11. I made sure the patient understood his/her condition, treatment alternatives, and their risks.
1-----2-----3-----4-----5

12. I supported the patient's treatment choice even though he/she didn't follow my recommendation.
1-----2-----3-----4-----5

13. I discussed any uncertainties associated with alternative courses of action..
1-----2-----3-----4-----5

14. I got the patient to state which course of treatment he/she preferred.
1-----2-----3-----4-----5

15. I provided the patient an equal role in arriving at decisions about his/her care.
1-----2-----3-----4-----5

Date: ______________

Impact Message Inventory-IMI-Doctor on Patient (A)

Respond to each of the following items by circling the number on the 4-point scale that best captures your feelings while you were with the patient.

1- Not at all **2- Somewhat**
3- Moderately so **4- Very Much So**

WHEN I WAS WITH THE PATIENT HE/SHE MADE ME FEEL.....

1. appreciated by him/her. 1----2----3----4
2. in charge. 1----2----3----4
3. distant from him/her. 1----2----3----4
4. taken charge of. 1----2----3----4
5. complimented. 1----2----3----4
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8. that he/she wants to be the center of attention. 1----2----3----4
9. welcome with him/her. 1----2----3----4
10. that I want to point out his/her good qualities to him/her. 1----2----3----4
11. forced to shoulder all the responsibility. 1----2----3----4
12. that he/she wants me to put him/her on a pedestal. 1----2----3----4
13. as important to him/her as others in his/her life. 1----2----3----4
14. that he/she thinks I have most of the answers. 1----2----3----4
15. that he/she doesn't want to get involved with me. 1----2----3----4
16. that he/she thinks he's/she's always in control of things. 1----2----3----4
17. that I can ask him/her to carry his/her share of the load. 1----2----3----4
18. that he/she sees me as superior. 1----2----3----4
19. that he'd/she'd rather be left alone. 1----2----3----4
20. that he/she weighs situations in terms of what he/she can get out of them. 1----2----3----4

Date: ____________

Information - Doctor

We would like to ask you some brief questions about your patient's medical condition.

1.) What is the patient's current diagnosis?

Was the patient informed of his/her diagnosis during today's consultation?

2.) What is the patient's prognosis?

Was the patient informed of his/her prognosis during today's consultations?

3.) How will the patient being medically treated? (Please list)
A.)
B.)
C.)
D.)
E.)
F.)
G.)

During today's consultation, did you discuss with the patient how he/she will be medically treated?

APPENDIX C

CONSENT FORMS

RESEARCH SUBJECT INFORMATION AND CONSENT FORM
(Patient)

TITLE: Relation of Healthcare Provider-Patient Interpersonal Impacts and Health Related Control Appraisals to Patients' Satisfaction and Compliance with Treatment

VCU IRB NO.: 4198

This consent form may contain words that you do not understand. Please ask the study staff to explain any words that you do not clearly understand. You may take home an unsigned copy of this consent form to think about or discuss with family or friends before making your decision.

Purpose of the Study

In this research, we are interested in studying the effects of communication and patient participation on patients' satisfaction with treatment and compliance with their doctor's recommendations.

You have been asked to participate in this study because you are a potential patient at the Student Health Center.

Description of the Study and Your Involvement

If you decide to be in this research study, you will be asked to sign this consent form after you have read it and have had all your questions answered and understand what will happen to you.

In this study, you will be asked to respond to some questionnaires now. They will ask you about how much you want your healthcare provider to discuss various aspects of your healthcare with you, how you would like your healthcare provider to behave during the visit, and how much you feel you are able to control the outcome of your healthcare. This will take about 5 minutes. Then, after you see your healthcare provider, you will be asked to respond to some questionnaires asking how much your healthcare provider discussed various aspects of your healthcare with you, what your healthcare provider did during the visit, and how satisfied you were with the visit. Your healthcare provider will not see your responses to any questions. Your healthcare provider will be responding to questionnaires about how much he/she discussed various aspect of your healthcare with you, and how he/she feels you behaved during the visit. You will not be able to see the responses of your healthcare provider. In addition, your healthcare provider will be indicating your diagnosis to the researchers (you will be providing it to the researchers as well). If you do not wish for your diagnosis to be provided to the researcher, please do not participate. However, since you are only identified by your first name, risk of identification is minimal. About two weeks later, we will call you and ask again how satisfied you were with your visit, and if you complied with his/her treatment recommendations.

Risks and Discomforts

As with most studies, there is a minimal chance that confidentiality will inadvertently be breached and your information about your medical condition will be made public. Every effort will be made to keep this from happening. The only identifying information we are collecting is your first name and phone number. Identifying information is being double coded and kept separately under lock and key so as to ensure your information is kept confidential. This information will be destroyed when all data has been collected. Some of the questions you will be asked to respond to may make you feel uncomfortable. You do not need to answer any questions you do not want to answer. You may discontinue the study at any time.

Benefits

This research is not intended to provide direct benefits to you at this time. However, your answers and your opinions will help us better understand the mechanisms of patient satisfaction and compliance and also improve the satisfaction of future patients in the care they receive.

Costs

The only cost to you is the time you spend participating.

Payment for Participation

After all of the data has been collected, two participants will be selected at random to win a $50 cash prize. The participants will be contacted by phone and told of their winnings. One person cannot win both $50 prizes. You must be able to be reached by phone to win the $50 prize.

Alternative

This is not a treatment study. Your alternative is not to participate.

Confidentiality

We will not tell anyone the answers you give us; however, information from the study and information from your medical record and the consent form signed by you may be looked at or copied for research or legal purposes by Virginia Commonwealth University. Personal information about you might be shared with or copied by authorized officials of the Federal Food and Drug Administration, or the Department of Health and Human Services (if applicable). No member of the VCU Health System staff will ever see the responses to the questionnaires.

What we find from this study may be presented at meetings or published in scientific journals, but your name will not ever be used in these presentations or journals.

Voluntary Participation and Withdrawal

Your participation in this study is voluntary. You may decide not to participate. If you do participate you may withdraw from the study at any time. Your decision will not affect your medical care at this institution.

Questions

In the future, you may have questions about your study participation.

If you have any questions, you may contact:

Stephen M. Auerbach, Ph.D.
Professor of Psychology
Virginia Commonwealth University
806. W. Franklin Street
Richmond, VA 23284-2018
(804) 828-1172

sauerbac@saturn.vcu.edu

or

Thomas Campbell, B.A.
Department of Psychology
Virginia Commonwealth University
808 W. Franklin Street
Richmond, VA 23284-2018
(804) 828-1867
tacampbell@vcu.edu

If you have any questions about your rights as a research subject, you may contact:

Office for Research Subjects Protection
Virginia Commonwealth University
800 East Leigh Street, Suite 111
P.O. Box 980568
Richmond, VA 23298
Telephone: 804-828-0868

Consent:

I have been given the chance to read this consent form. I understand the information about this study. Questions I wanted to ask about the study have been answered. My signature says that I am willing to participate in this study.

Participant name printed Participant Signature Date

Witness Signature **(Required)** Date

Signature of person conducting informed consent Date

Investigator signature (if different from above) Date

RESEARCH SUBJECT INFORMATION AND CONSENT FORM
(Provider)

TITLE: Relation of Healthcare Provider-Patient Interpersonal Impacts and Health Related Control Appraisals to Patients' Satisfaction and Compliance with Treatment

VCU IRB NO.: 4198

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In this research, we are interested in studying the effects of communication and patient participation on patients' satisfaction with treatment and compliance with their doctor's recommendations.

You have been asked to participate in this study because you are a healthcare provider at the Student Health Center.

Description of the Study and Your Involvement

If you decide to be in this research study, you will be asked to sign this consent form after you have read it and have had all your questions answered and understand what will happen to you.

In this study, you will be asked to respond to some questionnaires. One of these questionnaires you will complete only once, before any patient subjects are enrolled. The other questionnaires will be completed after you see each patient. They will ask you about how much you want your patient to discuss various aspects of his or her healthcare with you, how the patient made you feel during the appointment, and what you discussed with the patient. This will take about 5 minutes. The patient will not see your responses to any questions. The patient will be responding to questionnaires about how much he/she discussed various aspect of his/her healthcare with you, and you made him/her feel during the visit. You will not be able to see the responses of the patient.

Risks and Discomforts

Some of the questions you will be asked to respond to may make you feel uncomfortable. You do not need to answer any questions you do not want to answer. You may discontinue the study at any time.

Benefits

This research is not intended to provide direct benefits to you at this time. However, your answers and your opinions will help us better understand the mechanisms of patient satisfaction and compliance and also improve the satisfaction of future patients in the care they receive.

Costs

The only cost to you is the time you spend participating.

Alternative

This is not a treatment study. Your alternative is not to participate.

Confidentiality

We will not tell anyone the answers you give us; however, information from the study and information from your medical record and the consent form signed by you may be looked at or copied for research or legal purposes by Virginia Commonwealth University. Personal information about you might be shared with or copied by authorized officials of the Federal Food and Drug Administration, or the Department of Health and Human Services (if applicable). No member of the VCU Health System staff will ever see the responses to the questionnaires.

What we find from this study may be presented at meetings or published in scientific journals, but your name will not ever be used in these presentations or journals.

Voluntary Participation and Withdrawal

Your participation in this study is voluntary. You may decide not to participate. If you do participate you may withdraw from the study at any time. Your decision will not affect your medical care at this institution.

Questions

In the future, you may have questions about your study participation.

If you have any questions, you may contact:

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or

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Department of Psychology
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Richmond, VA 23284-2018
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tacampbell@vcu.edu

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P.O. Box 980568
Richmond, VA 23298
Telephone: 804-828-0868

Consent:

I have been given the chance to read this consent form. I understand the information about this study. Questions I wanted to ask about the study have been answered. My signature says that I am willing to participate in this study.

____
Participant name printed   Participant Signature   Date

____
Witness Signature **(Required)**   Date

____
Signature of person conducting informed consent   Date

____
Investigator signature (if different from above)   Date

Vita

Thomas A. Campbell was born on June 12, 1980 in South Bend, Indiana, and is a United States Citizen. He graduated from Patrick Henry High School, Emory, VA in 1998. He received his Bachelor of Arts in Psychology from Randolph-Macon College in 2002, and graduated with honors. He subsequently worked as a research assistant in the Clinical Behavioral Pharmacology Lab at Virginia Commonwealth University (VCU) before entering the doctoral program in Clinical Psychology at VCU.