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# Patient and Physician Perceptions of the Physician's Explanation and Patient Responses to Physicians

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## Abstract

Although theories on meta-cognition and self-monitoring imply the importance of meta-cognition in patient–physician interactions, there is no evidence to support this hypothesis. Thus, we evaluated patient and physician perceptions of the level of a physician's explanation and explored the possible influence of patient meta-cognition on patient responses to physicians. We conducted a questionnaire survey of 579 internist–patient pairs in Japan. The findings show that patient meta-cognition, and not perception, of the sufficiency of a physician's explanation plays a critical role in determining extreme patient responses to a physician, such as ignoring the physician's advice and doctor-shopping, whereas patient perception is a predictor of milder patient responses such as patient understanding and satisfaction.

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## Keywords

- *explanation*
- *meta-cognition*
- *patient–physician interaction*

## Introduction

TO EVALUATE patient–physician communication, previous studies have used quantitative measures such as the frequency, duration, type and ratio of patient and physician communication behaviors (Bronstein, Marcus, & Cassidy, 2000; Gandhi, Parle, Greenfield, & Gould, 1997; Wolinsky & Steiber, 1982). A major shortcoming of these measurements is that a quantitative method cannot measure critical elements of the interaction process or patient perspectives. In addition, because human communication is an ongoing dynamic process rather than a one-way fixed sequence of events (Billinghurst & Whitfield, 1993), these quantitative measures cannot adequately evaluate the communication process. There is evidence that measures based on physician and patient perceptions, instead of quantitative measures of a physician’s communication behavior, may provide more meaningful information (Graugaard, Eide, & Finset, 2003; Harris, 2003; Sato, Takeichi, Hara, & Koizumi, 1999; Thomas, Nicholl, & Coleman, 1995).

To overcome the problems related to earlier measures, we have advocated a method (Fig. 1) that uses patient and physician perceptions of the sufficiency of a physician’s explanation (Hagihara, Odamaki, Tarumi, & Nobutomo, 2006). Briefly, if a patient were unable to understand a physician’s explanation, the patient would presumably evaluate the explanation as insufficient. If a patient were to readily understand a physician’s explanation, the patient would presumably evaluate the explanation as sufficient (Street, 1992). Similarly, if a physician were to judge that a patient did not understand an explanation, the physician would presumably evaluate the explanation as insufficient, whereas if a physician were to judge that a patient readily understood an explanation, the physician would presumably evaluate the explanation as sufficient (Street, 1992). When the subjective evaluations by the patient and physician are the same (‘concordance’), the patient–physician communication is considered to be good (Fig. 1). However, when a patient evaluates an explanation as more sufficient than the physician does (‘patient better’), the patient may not have fully understood or may have misunderstood the explanation (Fig. 1). Similarly, when a physician evaluates an explanation as more sufficient than a patient does (‘physician better’), again the patient may not have fully understood the physician’s explanation, especially given that physicians’

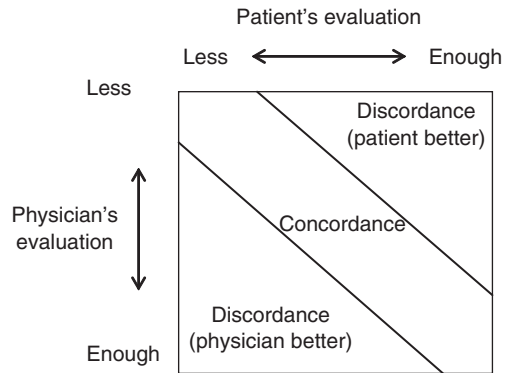


Figure 1. Patients’ and physicians’ evaluations of the sufficiency of a physician’s explanation during a medical encounter.

evaluations tend to be more favorable than patients’ evaluations (Fig. 1). Thus, we consider a composite measure consisting of both the patient’s and physician’s perceptions to be a reliable measure of physician–patient communication.

Using this measure, we have demonstrated that the patient-better situation (i.e. a patient’s evaluation is better than a physician’s) has a more positive influence on patient outcome measures than do the physician-better or concordance situations and that the physician-better situation (i.e. a physician’s evaluation is better than a patient’s) has the most negative influence on patient outcome measures (Hagihara et al., 2006; Hagihara & Tarumi, 2006). Thus, measures that classify patient–physician pairs into patient-better, physician-better and concordance situations might be effective for evaluating the quality of patient–physician communication (Hagihara et al., 2006; Hagihara & Tarumi, 2006).

To verify the validity of a composite measure consisting of a patient’s and physician’s perceptions of an explanation offered by the physician, our previous findings must be evaluated in light of social and psychological theories on meta-cognition (Fiske & Deret, 1996; Ikeda, 2000). Meta-cognition refers to one’s awareness and understanding that one’s opinion is different from that of another. For example, a patient’s meta-cognition with regard to a physician’s explanation during a medical encounter may be that the patient thinks her/his opinion is different from that of the physician and that the physician knows of his/her perception (Fiske & Deret, 1996; Ikeda, 2000). A score derived from our composite

measure should be highly correlated with patient (or physician) meta-cognition of the sufficiency level of a physician's explanation, as meta-cognition and our composite measure are similar in definition. When the difference between patient and physician perceptions of the sufficiency level of a physician's explanation becomes large, it is probable that the patient (or physician) perceives that his/her opinion differs from that of the other and that the other knows of his/her perception. This would result in very similar or overlapping meta-cognition and composite scores.

It has been suggested that meta-cognition and self-monitoring might influence human behavior (Ikeda, 2000; Snyder, 1983). For example, wives know their husbands' political preferences better than women in unmarried couples know their partners' political preferences; however, wives know their husbands' opinions on sexual roles less than women in unmarried couples know their partners' opinions on sexual roles (Ikeda, 2000). The evidence indicates that meta-cognition is related to a partner's behavior and that an association between meta-cognition and a partner's behavior is influenced by the power relationship within a couple. If so, meta-cognition may provide information beneficial for the control of human interactions involving power disparity, such as the patient-physician interaction (Ikeda, 2000).

In view of these findings, it is reasonable to infer that a score based on a composite of patient and physician evaluations would relate to patient behavior (Fiske & Deret, 1996; Ikeda, 2000; Snyder, 1983, 1986). Thus, the following two hypotheses were tested within the framework of linear models. (1) A composite measure of the subjective evaluations made by both the patient and physician regarding the sufficiency level of the physician's explanation (i.e. the difference between patient and physician perceptions) is better for predicting patient responsive behavior than is either evaluation alone. (2) The predictors of the responsive behavior of patients will differ depending on the type of response (i.e. understanding, satisfaction, medical compliance and 'doctor-shopping').

## Methods

### *Participants*

The participants in this study were physicians and their patients in Fukuoka Prefecture, Japan. The physicians were members of the Fukuoka Prefecture Internal Medicine Association (FPIMA), which has

20 branches. Based on the number of member physicians at each FPIMA branch, five to 70 physicians per branch were selected randomly (with a selection rate of 10.4 %). In total, 190 physicians were selected. Five patients per physician were also randomly selected, so that 950 patients were ultimately enrolled. Of the 190 randomly selected physicians, 126 returned questionnaires (response rate, 66.3%). Of the 950 randomly selected patients, 630 returned questionnaires (response rate, 66.3%). As there was no difference in age distribution between the initial 950 patients and the 630 patients who responded, it was assumed that there was no difference between respondents and non-respondents with respect to the study variables. Of the 630 patients, 51 patients were missing values for some of the study variables. The remaining 579 patient-physician pairs were used in the analysis.

### *Study period and procedure*

The study was performed between July and September 2002. To ensure physician and patient confidentiality, the FPIMA branches selected the physicians and distributed the questionnaires. We sent five to 70 packages, each of which included a questionnaire for a physician and five packages for patients, to each FPIMA branch; the FPIMA branch sent the packages to the randomly selected physicians.

Five patients per physician were selected in the following manner. On one working day during the study period, a physician gave a questionnaire package to each patient who visited at the same appointment slot for each office hour (e.g. the second patient each hour). Up to five patients were given a questionnaire package. To ensure compliance with the patient-selection process, each FPIMA branch sent a brochure explaining the selection process to participating physicians, and an FPIMA representative called to confirm the physicians' understanding. For each patient given a questionnaire, the physician evaluated his/her communication with that patient immediately after consultation. After each questionnaire item had been answered, the completed questionnaire was returned to us by mail.

To minimize the influence of the physician's presence on the patient's answers, we implemented the following procedures. After receiving a questionnaire and an explanation of the survey from the physician, the patient was to answer the questionnaire at home. Each patient was to return the completed questionnaire directly to us by mail. In a brochure, we explained that neither the physician nor the FPIMA

branch would view the contents of the completed questionnaires and that the patients could not be identified because the survey was anonymous.

### Variables

To identify the physician explanation factors related to patient behavior, patient–physician communication factors were devised for this study and measured. A physician’s explanation of treatment options are usually focused on the recommended treatment, the effect of this treatment, the side-effects and risks of this treatment and a comparison among alternative treatments. Therefore, each of these aspects was included in a four-item scale with six response categories (1= no explanation to 6 = too much explanation) to measure a patient’s or physician’s perception of the sufficiency of the physician’s explanation with respect to these items (‘physician explanation of treatment’) (see Appendix 1). The physician and patient questionnaires contained the same items and the same response categories. The reliability index (Cronbach’s  $\alpha$ ) of this measure was 0.91 for patients and 0.86 for physicians, indicating high reliability. In addition, to measure any gap between the perceptions of the patient and physician with respect to the physician’s explanation of treatment, we devised a composite measure by subtracting the patient’s score from the physician’s (i.e. physician explanation of treatment (physician) – physician explanation of treatment (patient)).

As outcome variables, five types of patient responses, differing in the level of reactivity, were used: understanding of the physician’s explanation; patient satisfaction; degree of self-regulating the doctor’s advice; ignoring the doctor’s advice; and doctor-shopping. ‘Patient understanding of physician explanations’ about treatment was measured using the same four items as used above for the physician explanation sufficiency measure, but with five different response categories ranging from 1= cannot understand at all to 5 = can understand very well (see Appendix 2). Cronbach’s  $\alpha$  for this measure was 0.89, indicating a high level of reliability. Based upon a previous study (Tokunaga, Imanaka, & Nobutomo, 2000), ‘patient satisfaction’ was measured on a four-item scale with five response categories (i.e. 1 = strongly disagree to 5 = strongly agree), where a larger value indicated greater patient satisfaction (see Appendix 3). As two further reactive behaviors, factor analysis (principle components with Varimax rotation) isolated two clean, strong clusters for poor compliance (nos 11 and 12 in Table 1): ‘self-regulation of doctor

advice’ and ‘ignoring doctor advice’ (see Appendices 4 and 5). The scales to measure the degree of these two behaviors (patient self-modification and ignoring physician advice) each examined four items with four response categories for each item (i.e. 1= never to 4 = often), where a greater value means a higher degree of patient self-regulation or ignoring physician advice. Cronbach’s  $\alpha$  values for these measures were 0.88 and 0.79, respectively, indicating a high level of reliability. As the most extreme patient behavior, doctor-shopping, defined as a patient seeing several doctors for the same illness episode, was examined using two response categories, yes and no.

In addition to these variables, the age and gender of both patients and physicians, as well as the length of the consultation, were included in the analysis.

### Analysis

Five patients were allocated to each physician, and the data were structured in a hierarchical manner. However, an analysis based on the hierarchical linear model (HLM, version 5) revealed that the frequency of doctor-shopping behavior was independent among doctors ( $\chi^2 = 121.00$ , d.f. = 119,  $p = .43$ ) (Bryk, Rausenbush, & Congdon, 1996). Therefore, to test the study hypotheses, multiple regression or multiple logistic regression was performed using the outcome variables as the dependent variables and the patient–physician communication variables as the independent variables. The composite variable consisting of the patient’s and physician’s subjective evaluations of the sufficiency level of the physician’s explanation was used with a cut-off point of mean  $\pm 2$  SD, and dummy variables were allocated to level of physician explanation of treatment. This is because, as noted previously, when a gap between the patient’s and physician’s perceptions of the level of the physician’s explanation becomes large, meta-cognition and the composite measure may almost completely overlap. By using a dummy variable for level of physician explanation of treatment, the regression coefficient referred to the difference between the mean values of a dependent variable in subgroups with and without the attribute represented by the dummy variable (i.e.  $\leq \pm 2$  SDI,  $> 2$  SD,  $< -2$  SD) (Pedhazur, 1997).

### Results

Table 1 presents the subject profiles and the zero-order correlation coefficients among the study variables. Nearly all (96.72%) of the physicians were male, and the mean age was  $53.28 \pm 9.24$  years of the patients,

Table 1. Correlation coefficients between pairs of study variables (N = 579)

	1	2	3	4	5	6	7	8	9	10	11	12	Mean±SD n (%)	Range	Cronbach's α	Scale items
<i>Patient and physician profiles</i>																
1. Patient gender (male: 0, female: 1)	-												255 (44.04)			
2. Physician gender (male: 0, female: 1)	0.00	-											560 (96.72)			
3. Patient age (years)	0.12†	0.09*	-										62.07±14.63	15.00-94.00		
4. Physician age (years)	0.08	0.10*	0.17‡	-									53.28±9.24	30.00-77.00		
5. Length of physician consultation period (months)	0.05	0.06	0.27‡	0.19‡	-								102.82±110.98	0.03-816.00		
<i>Patient-physician communication factors</i>																
6. Physician explanation of treatment (patient)	-0.06	-0.01	0.08	-0.04	-0.06	-							19.04±3.52	4.00-24.00	0.91	4
7. Physician explanation of treatment (physician)	0.06	0.03	0.04	0.16‡	0.08	0.03	-						17.20±3.16	4.00-24.00	0.86	4

(Continued)

Table 1. (Continued)

	1	2	3	4	5	6	7	8	9	10	11	12	Mean±SD n (%)	Range	Cronbach's α	Scale items
8. Level of physician explanation of treatment <sup>a</sup>	-0.09*	-0.02	0.02	-0.14‡	-0.10*	0.74‡	-0.64‡	-	-	-	-	-	1.76±4.61	-15.00-20.00		
<i>Outcome variables</i>																
9. Understanding of physician explanation of treatment	-0.09*	-0.02	0.07	-0.03	-0.07	0.79‡	0.01	0.60‡	-	-	-	-	15.76±2.51	8.00-20.00	0.89	4
10. Patient satisfaction	0.02	-0.02	0.07	0.03	0.05	0.59‡	0.02	0.43‡	0.51‡	-	-	-	15.28±3.30	4.00-20.00	0.88	4
11. Self-regulation of doctor advice	-0.04	0.01	0.17†	0.03	-0.04	0.11	0.06	0.04	0.08	0.17†	-	-	13.57±2.75	4.00-16.00	0.88	4
12. Ignorance of doctor advice	-0.26‡	0.05	0.15*	-0.04	0.10	0.04	0.01	0.02	0.13*	0.09	0.36‡	-	13.03±2.42	6.00-16.00	0.79	4
13. Doctor-shopping (yes)	-0.11	0.10	0.14*	0.08	0.15*	-0.13*	0.04	-0.12	-0.13*	-0.10	0.03	0.10	84 (14.51)			

<sup>a</sup> Score for factor no. 7 - score for factor no. 6

\**p* < .05; †*p* < .01; ‡*p* < .001

55.96 percent were female, and the mean age was  $62.07 \pm 14.63$  years. With regard to the patient–physician communication factors, the mean value for the composite measure of the physician explanation (no. 8) was positive (1.76), indicating that patients perceived that they had received more information about treatment in the physician explanation than the physicians thought they had provided. Among the outcome variables, the mean scores for patient self-modification and ignoring physician advice were  $13.57 \pm 2.75$  and  $13.03 \pm 2.42$ , respectively. About 15 percent of the subjects (14.51%) engaged in doctor-shopping.

Of the 13 variables, some that were related to physician explanation (specifically, nos 6–8) were highly correlated with each other. As the level of physician explanation (no. 8) was derived by subtracting the patient perception score from the physician perception score, a high correlation of this variable with patient and physician perception scores (nos 6 and 7) would be expected. Interestingly, patient and physician perceptions of the physician’s explanation of treatment were not at all correlated ( $r = 0.03$ ). Understanding of physician explanation of treatment (no. 9) and patient satisfaction (no. 10) were closely related to physician explanation of treatment (patient) (no. 6), demonstrating that a patient’s perception of the level of the physician’s explanation was important to patient understanding and satisfaction.

Table 2 shows the factors related to the five types of patient reactions or responsive behaviors, which reflect an increasing degree of reactivity to a physician. In the first multiple regression model, with understanding of physician explanation of treatment as the dependent variable, physician explanation of treatment (patient) was the only significant predictor ( $p < .001$ ). Considering that the dependent variable relied on the patient’s perception of the sufficiency of the physician’s explanation, it is reasonable that a patient’s perception would be a significant predictor of the patient’s understanding. In the second multiple regression model, patient satisfaction was the dependent variable, and physician explanation of treatment (patient) and length of physician consultation period were significant predictors ( $p < .001$  and  $.05$ , respectively). We cannot judge the causal relationship between the length of the consultation period and patient satisfaction because the analysis was based on cross-sectional data. However, a patient’s perception of the physician’s explanation of treatment would be expected to serve as a significant predictor of patient satisfaction. The third multiple

regression used self-regulation of the doctor’s advice as the dependent variable, and patient age and physician explanation of treatment (patient) were significant predictors ( $p < .001$  and  $.01$ , respectively). In particular, older age was associated with greater self-regulation of the doctor’s advice.

In the fourth multiple regression model of patient–physician communication, ignoring the doctor’s advice was the dependent variable, and physician explanation of treatment (patient) and level of physician explanation were significant predictors ( $p < .01$  and  $.05$ , respectively). Specifically, a score for the level of physician explanation of treatment that was  $< -2$  SD of the mean was significant. This implies that, after controlling for the effects of other variables, patients with a low score ( $< -2$  for level of physician explanation had a higher score for ignoring doctor advice (by 1.94 on average) than patients with scores between  $-2$  SD and  $+2$  SD of the mean for level of physician explanation. Among the covariates, patient gender, patient age and physician age were significant predictors of ignoring doctor advice ( $p < .001$ ,  $.001$  and  $.5$ , respectively). These results suggest that female patients, older patients and patients consulting with younger doctors are more likely to ignore the doctor’s advice.

The fifth multiple logistic regression revealed that the level of physician explanation of treatment, patient gender and patient age were significant predictors of doctor-shopping behavior ( $p < .01$ ,  $.01$  and  $.05$ , respectively). Compared with baseline levels, the gap between the patient’s and physician’s perceptions of the physician’s explanation was  $< -2$  SD and was 0.151 times less likely to be related to doctor-shopping (95% CI: 0.026–0.788; Table 2). Doctor-shopping behavior among male patients was 2.269 times that among female patients (95% CI: 1.220–4.221; Table 2). For a one-year increase in patient age, doctor-shopping was 0.971 times less likely (95% CI: 0.949–0.994; Table 2).

## Discussion

We tested two hypotheses in this study. First, a composite measure of the subjective evaluations made by both the patient and physician regarding the sufficiency level of the physician’s explanation is better for predicting patient responses than is either evaluation alone. Second, the predictors of the behaviors of patients in response to the physician will differ depending on the type of response. Although the second hypothesis was supported, the



Table 2. Patient-physician communication factors related to outcome variables (N = 579)

	Understanding		Patient satisfaction		Self-regulation		Ignorance		Doctor-shopping	
	Beta (SE)	t	Beta (SE)	t	Beta (SE)	t	Beta (SE)	t	OR (95% CI)	
Intercept	9.24 (0.95)	9.74‡	3.09 (1.28)	2.41*	9.01 (1.33)	6.78‡	16.00 (1.48)	10.85‡		
Patient gender (male 1, female 0)	-0.09 (0.17)	-0.52	0.34 (0.23)	1.44	0.05 (0.25)	0.19	-1.39 (0.27)	-5.11‡	2.269 (1.220-4.221)†	
Physician gender (male 1, female 0)	0.11 (0.50)	0.22	-0.32 (0.67)	-0.48	-0.69 (0.69)	-1.00	-0.41 (0.76)	-0.54	0.969 (0.947-1.006)	
Patient age (years)	0.01 (0.01)	1.41	0.00 (0.01)	0.25	0.04 (0.01)	4.75‡	0.05 (0.01)	4.89‡	0.971 (0.949-0.994)*	
Physician age (years)	0.01 (0.01)	0.90	0.02 (0.01)	1.38	0.01 (0.01)	0.74	-0.04 (0.02)	-2.29*	0.998 (0.966-1.032)	
Length of physician consultation period (months)	-0.00 (0.00)	-0.39	0.00 (0.00)	2.17*	-0.00 (0.00)	-0.35	0.00 (0.00)	1.70	0.998 (0.995-1.001)	
Physician explanation of treatment (patient)	0.53 (0.03)	17.83‡	0.58 (0.04)	14.27‡	0.13 (0.04)	3.04‡	0.13 (0.05)	2.85‡	0.979 (0.879-1.091)	
Physician explanation of treatment (physician)	-0.00 (0.03)	-0.08	-0.00 (0.04)	-0.02	-0.02 (0.04)	-0.48	0.02 (0.05)	0.35	1.028 (0.926-1.141)	
Level of physician explanation of treatment <sup>a</sup> (referent: ≤ 1 ± 2 SD)	0.91 (0.84)	1.08	0.56 (1.13)	0.50	-0.42 (1.17)	-0.36	-1.03 (1.29)	-0.80	0.986 (0.987-1.002)	
> 2 SD	-0.04 (0.53)	-0.08	1.16 (0.72)	1.61	0.18 (0.77)	0.23	1.94 (0.87)	2.22*	0.151 (0.026-0.788)†	
< -2 SD										
	Adjusted R <sup>2</sup> = 0.49 F = 56.97‡		Adjusted R <sup>2</sup> = 0.35 F = 31.98‡		Adjusted R <sup>2</sup> = 0.06 F = 4.76‡		Adjusted R <sup>2</sup> = 0.11 F = 7.82‡			

<sup>a</sup> Physician explanation of treatment (physician) - Physician explanation of treatment (patient)

\*p < .05; †p < .01; ‡p < .001

first was not. Specifically, the predictors of patient responses, which reflected increasing levels of reactivity, differed depending on the type of response (Table 2). However, a composite measure of the patient's and physician's subjective evaluations of the physician's explanation was not consistently a predictor of patient response (Table 2).

Several points should be noted regarding this finding. First, a patient's subjective evaluation of the sufficiency of a physician's explanation about treatment was a predictor of a patient's understanding of the explanation, a patient's satisfaction with care and a patient's self-regulation of the doctor's advice. As these responses were determined by patients based on subjective criteria and represent relatively mild responses to a physician, it is reasonable that they would be predicted by the patient's perception of the sufficiency of the physician's explanation. However, a patient's subjective evaluation was not a predictor of the two most extreme responses, ignoring the doctor's advice and doctor-shopping behavior (Table 2). These results may seem counterintuitive; a patient's perception would seem to be an important factor in the decision to ignore the doctor's advice or to shop around for another doctor, but this was not the case. The significant variable was the composite variable consisting of the patient's and physician's subjective evaluations of the level of the physician's explanation. The composite variable was dummy-coded using the mean  $\pm 2$  SD as a cut-off point; therefore, this finding indicated that when the patient's evaluation was much better than the physician's evaluation (i.e. by  $-2$  SD for treatment), the composite variable was positively related to ignoring the doctor's advice and negatively related to doctor-shopping behavior. As previously noted, composite scores below the cut-off point of the mean  $-2$  SD should be very close to patient meta-cognition of the level of the physician's explanation. Meta-cognition influences behavior, and the association between meta-cognition and behavior is influenced by an unequal power distribution in a relationship (Ikeda, 2000). In the present study, the patient-physician interaction represented a human relationship with power disparity. Considering that only those composite scores  $< -2$  SD of the mean (i.e. scores overlapping meta-cognition) were associated with patient behavior (ignoring doctor advice and doctor-shopping), it appears that patient meta-cognition, and not patient perception, of the sufficiency of a physician's explanation plays a critical role in determining a patient's response such as ignoring the doctor's advice or doctor-shopping.

Second, when a patient's evaluation of the sufficiency level of the physician's explanation was much better than the physician's evaluation (i.e. by  $-2$  SD in treatment), the patient was less likely to engage in doctor-shopping. Kaplan et al. have reported that patients are twice as likely to stay with physicians who have a participatory decision-making style than with those who do not (Kaplan, Greenfield, Gandek, Rogers, & Ware, 1996). As the participatory decision-making style is based on precise understanding of a patient's problems by both the patient and physician, this style might result in a patient perception that the physician's explanation is sufficient. Thus, our finding would be in line with that of Kaplan et al.

Third, as for self-regulation and ignoring doctor advice, the regression coefficients for patient perception of the level of the physician's explanation were positive and significant ( $B = 0.13, p < .01$  for self-regulation, and  $B = 0.13, p < .01$  for ignoring; Table 2). The composite score reflecting a gap between the physician and patient perceptions of the level of explanation was also a significant predictor of ignoring the doctor's advice ( $B = 1.94, p < .05$ ; Table 2). This result may seem counterintuitive; if a patient were to receive a sufficient explanation from a doctor, the patient would likely comply with the doctor's advice. However, a patient's evaluation of the physician's explanation as sufficient includes the patient-better case, in which the patient did not fully understand or misunderstood the explanation (Fig. 1). This implies that patient satisfaction with the level of the physician's explanation does not necessarily lead to better patient compliance with medical advice.

Fourth, there was no association between the physician and patient perceptions of the physician's explanation during medical consultation (Table 1). This report is believed to be the first study in Japan of physician and patient perceptions with regard to the sufficiency of physician explanations. The results indicate that a physician's judgment regarding the level of an explanation is unrelated to the patient's perception, indicating that the physician's judgment is inaccurate. This has been corroborated in previous studies. In patient-physician communication about terminal care, physicians have little knowledge of their patients' preferences (Kai et al., 1993). As compared with American patients, Japanese patients are less satisfied with physicians' explanations of their conditions and medications (Kurata, Watanabe, McBrige, Kawai, & Andersen, 1994). Thus, inaccurate physician judgment may lead to an increasing number of medical disputes in

Japan in the future. Further studies are necessary to verify these findings.

We must note several limitations to our study. First, the effects of the composite measure, consisting of patient and physician perceptions of the level of the physician's explanation, on patient responsive behavior was evaluated in light of theories on meta-cognition. We regard the composite measure as being similar to patient meta-cognition. It is probable that the composite measure or meta-cognition is related to self-monitoring. However, patient or physician meta-cognition and self-monitoring were not evaluated in this study. It will be necessary to measure patient or physician meta-cognition and self-monitoring and to evaluate the associations among the composite measure, meta-cognition, and self-monitoring in future studies. Second, the connotation of the term doctor-shopping might differ among cultures and may range from the act of seeking a second opinion, to visiting several doctors as a result of an underlying psychiatric illness such as somatoform disorder or hyperchondriasis. The 14.51 percent of patients who engaged in doctor-shopping might have differed with regard to how seriously they pursued other medical opinions, but the study design and data did not allow us to consider these differences. Third, our findings are generally applicable to interactions between internists, but not doctors with other specialties, and patients in Japan, as well as to FPIMA member physicians and their patients.

## Conclusions

(1) The predictors of patient responsive behaviors, which ranged in their levels of reactivity, differed depending on the type of patient response. (2) A composite measure of patients' and physicians' subjective evaluations was not consistently a predictor of patient response. (3) Patient meta-cognition, and not patient perception, of the level of a physician's explanation plays a critical role in determining a patient's reaction such as ignoring the doctor's advice and doctor-shopping.

## Appendices 1 and 2

### *Physician explanation of treatment*

The respondent's perception of the level of a physician's explanation was scored according to six response categories: 1 = no explanation; 2 = very little explanation; 3 = little explanation; 4 = neutral; 5 = much explanation; 6 = too much explanation.

The patient's understanding of a physician's explanation, listed below, was scored according to five response categories: 1 = cannot understand at all; 2 = cannot understand; 3 = neutral; 4 = can understand; 5 = can understand very well.

1. Physician's explanation of the treatment method.
2. Physician's explanation of the effects of the treatment.
3. Physician's explanation of the side-effects and dangers of the treatment.
4. Physician's explanation of the comparison with other treatments.

## Appendix 3

### *Patient satisfaction*

The response categories for scoring the aspects of patient satisfaction listed below were: 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree.

1. I am satisfied with the care.
2. I am satisfied with the consequences of the treatment.
3. If I need care again in the future, I will consult my physician.
4. If my family or friends need care in the future, I will recommend my physician.

## Appendix 4

### *Self-regulation of doctor advice*

The response categories for scoring the aspects of self-regulation listed below were: 1 = never; 2 = seldom; 3 = sometimes; 4 = often.

1. I regulate the volume of the drug.
2. I regulate the frequency of taking the drug.
3. I decrease the number of drugs taken.
4. I stop taking a drug entirely.

## Appendix 5

### *Ignoring doctor advice*

The response categories for scoring the aspects of ignoring a physician's advice, as listed below, were: 1 = never; 2 = seldom; 3 = sometimes; 4 = often.

1. I ignore doctor advice on diet.
2. I ignore doctor advice on drinking and smoking.
3. I ignore doctor advice on physical exercise and recreation.

4. I do not follow the required frequency of consulting a doctor.

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