Patient Perceptions of Pharmacy Students' Hypertension Compliance Gaining Messages: Effects of Message Design Logic and Content Themes

Bruce L. Lambert

Jeann Y. Lee

Bruce Lambert (Ph.D., University of Illinois at Urbana-Champaign, 1992) is an Assistant Professor in the Department of Pharmacy Administration and Clinical Assistant Professor in the Department of Pharmacy Practice at the University of Illinois at Chicago. Jeann Lee (Pharm.D., University of Illinois at Chicago, 1993) is Master's candidate in the Department of Pharmacy Administration at the University of Illinois at Chicago.

Running Head: Perceptions of Hypertension Messages

Address: (M/C 871), 833 South Wood St., Rm. 241, Chicago, IL 60612-7231

Phone: (312) 996-2411

Fax: (312) 996-7242

Internet: bruce@ludwig.pmad.uic.edu

Patient Perceptions of Pharmacy Students' Hypertension Compliance Gaining Messages: Effects of Message Design Logic and Content Themes

Improved communication between health care providers and patients leads to improved patient satisfaction and other positive patient outcomes. While most studies of patient satisfaction have focused on doctor-patient communication, the pharmacist's role in medication counseling has recently become more prominent. This study examines written messages produced by pharmacy students in response to a hypothetical hypertension compliance gaining situation. Messages were coded for message design logic (O'Keefe, 1988) and subsequently evaluated by hypertension patients receiving treatment at a large, urban Veterans' Administration hospital. Message design logic had a significant effect on perceptions of message quality and effectiveness. To examine these differences in more detail, 11 content themes were identified in the messages. Theme elaboration was significantly correlated with patients' positive evaluations for three themes: (a) express understanding (b) encourage communication with the physician, and (c) describe alternative therapies. Implications for pharmacist-patient communication are discussed.

Patients frequently deviate from the recommendations made for them by health professionals. This departure from recommended therapy often produces harmful outcomes for the individual patients and for the health care system as a whole (Manasse, 1989). Perhaps nowhere are the public health consequences of this breakdown as severe as in the case of hypertension (i.e., high blood pressure). Nearly 50 million Americans suffer from high blood pressure, and despite the availability of effective treatments, including exercise, diet, and drug therapy, it remains a leading cause of death and disability (Clark, 1991; Joint National Committee, 1993). While access and affordability are surely part of problem, the main reason is that many patients do not follow the recommendations of health professionals (Clark, 1991; Joint National Committee, 1993).

In studies of doctor-patient communication, it has been established that improved communication between physicians and patients can bring about improved health outcomes (for reviews, see DiMatteo & DiNicola, 1982; Hall, Roter, & Katz, 1988; Ley, 1988; Roter & Hall, 1989; Roter, Hall, & Katz, 1988). In general, increased levels of patient satisfaction, recall, and, to a lesser extent, compliance, tend to be associated with increases in physician informativeness, amount of support, patient-centered talk, and partnership building (Hall, Roter, & Katz, 1987, 1988; Sherbourne, Hays, Ordway, DiMatteo, & Kravitz, 1992; Street, 1992). However, doctors are not the only health professionals who interact with patients. In fact (as other articles in this issue

demonstrate), the role of pharmacists in medication counseling and health education has become increasingly important in recent years.

Unfortunately, comparatively little is known about pharmacist-patient communication. A variety of descriptive studies of pharmacist-patient interaction have appeared (e.g., Morrow & Hargie, 1987; Weiderholt, Clarridge, & Svarstad, 1992), and research has examined prescription drug information (Bogaert, Vander-Stichele, Kaufman, & Lefebvre, 1989; Morris, 1982). Yet, many questions remain unanswered. For example, very little is known about the relationship between message features and patient perceptions in the pharmacy context. A lack of theoretical development is another shortcoming in the literature on patient satisfaction with health communication (Hall et al., 1988; Linder-Pelz, 1982; Roter et al., 1988). Studies have typically identified types of patient and provider behaviors and looked at correlations between these behaviors and various measures of satisfaction, recall, and compliance. While meta-analysis of this literature has produced useful generalizations (Hall et al., 1988), few good explanatory theories have emerged.

Message Design Logic

This study uses O'Keefe's (1988; in press; O'Keefe & Saeki, in press) theory of message design logic as a guiding framework to explain message variation and effects in the context of pharmacist-patient counseling. According to O'Keefe, individual message producers use one of three message design logics to reason from goals to messages. The three levels of message design logic--expressive, conventional, and

rhetorical--represent increasingly competent stages in communication development. Characteristics of the design logics have been described in detail elsewhere (O'Keefe, 1988, O'Keefe & McCornack, 1987), so only a summary is given here.

Expressive message producers see language as a vehicle for the clear public expression of private thoughts and emotions. Expressive communicators do not strive for coherence, and expressive messages may contain incoherent, irrelevant, and offensive elements that focus on past transgressions. Conventional communicators view language as a game played by consensually agreed upon rules, and they focus on the rights and responsibilities of social actors when attempting to influence others. Coherence, relevance, and appropriateness to the present context are of the utmost importance to a conventional message producer. Rhetorical communicators view communication as the construction and reinterpretation of social selves, roles, contexts, and identities. Rhetorical message producers attend to others' perspectives, focus on the future, and strive for consensus on goals. Rhetorical communicators value flexibility and symbolic sophistication in the production and interpretation of messages.

O'Keefe has shown that rhetorical messages and message producers are perceived by others to be more effective and attractive (generally speaking) than conventional or expressive messages, in that order (O'Keefe & McCornack, 1987). On a design logic account, these differences are explained by the increased flexibility and capacity for goal integration, as well as the more comprehensive understanding of the

relationship between language and social structure that accompanies development from expressive to conventional to rhetorical functioning. The same pattern of results is expected in this investigation. To test this expectation, the present study was designed to replicate O'Keefe & McCornack's (1987) results. O'Keefe and McCornack (1987) used a hypothetical small group problem-solving scenario; the present investigation examines hypertensive patients' perceptions of messages produced by pharmacy students in response to a hypothetical compliance-gaining situation. The hypothesis being investigated is as follows:

> Hypothesis 1: Patient perceptions of pharmacist effectiveness and attractiveness will become more favorable as the level of design logic of the message producer increases from expressive, to conventional, to rhetorical functioning.

Study 1: Effects Of Message Design Logic

Method

Message Elicitation

Participants. The participants in this study were N=85 doctor of pharmacy students in the second semester of the third year of didactic course work at a large midwestern college of pharmacy. The messages were produced shortly before students had their first substantial clinical experience.

Procedure. Written messages were gathered in response to a hypothetical compliance gaining situation (avaiable from the authors). In this situation, the pharmacist is approached by a familiar patient who is notoriously late in obtaining refill prescriptions for his

antihypertensive medication. The patient complains that the medication is ineffective and expensive, and that it has unpleasant side effects. The pharmacist is asked to write what s/he would say to this patient.

Message Coding

Messages were coded as reflecting either an expressive, conventional, or rhetorical message design logic according to a system developed for this investigation (available from the authors). To establish the reliability of the coding system, two coders independently coded a sample of 25 messages, achieving exact agreement in 88% of the cases; Cohen's (1960) kappa was .80.

Expressive designs. The patient compliance situation, by its very nature, may provoke feelings of frustration, exasperation, resignation, and even resentment on the part of the pharmacist. It is characteristic of expressive messages that they include statements to signal these feelings overtly. Fourteen messages (16%) were classed as expressive. Below is one example:

> (1) Ed, the drug would work if you use it correctly. Every time I see you get a refill you are overdue, now tell me how the medication is going to work. The medication is not ineffective Ed, you just think it is. If you use it correctly Ed, I bet you are going to feel better and like the drug better too.

Conventional designs. Conventional message producers treat the medication compliance scenario primarily as an opportunity to educate the patient about the rights and obligations of practitioners and patients, and about the drug use process, the drug, the disease, the

benefits of compliance, and the risks of noncompliance. Forty messages (47%) were coded as conventional. One example is given below:

(2) Mr. Johnson, hypertension is a very difficult disease to keep under control. Even though it doesn't have many noticeable symptoms, it is very important to continue to take the medication to keep it under control. Without the medication, more serious conditions can result.

Rhetorical designs. Rhetorical message producers treat the hypertension compliance situation as an occasion to reaffirm and restructure the therapeutic relationship between pharmacist and patient. Thus, rhetorical message producers put advice about medication-taking in the context of the long-standing friendship/relationship. Thirty-one messages (36%) were coded as rhetorical, and one example follows:

(3) Mr. Johnson, I know its hard to remember to take the medication especially when you physically feel fine, but in the long run, these drugs do have an effect, and this is a small price to pay to avoid future complications. Please understand that it is your health that I am concerned with, and your doctor and I want to help you help yourself.

Message Evaluation

Participants. Messages were evaluated by N=85 patients at the ambulatory hypertension clinic of a Veterans' Administration hospital located in a large midwestern city. The patients were all men, predominantly middle-aged and African-American. Exact data on age and ethnicity were not available.

Procedure. Patients were approached in the clinic before being seen by an pharmacotherapist. Participants were told that a research project was being conducted on pharmacists' communication skills, that the research had nothing to do with their treatment, and that participation was voluntary. Patients who agreed to participate were interviewed. All interviews were conducted by the same individual. Ordinarily, patients' would be asked to read the background story and message themselves, but visual impairments and low levels of literacy among the participants made it necessary to conduct interviews instead.

The interview had three parts. The first part asked each participant to listen as the interviewer read a brief background story about a situation a pharmacist might find him or herself in. This background story was identical to the hypothetical situation described above, but it was put into the third person and simplified slightly (e.g., 'hypertension' was changed to 'high blood pressure'). Then, the interviewer read each participant one of the messages that had been produced by a pharmacy student. Each participant heard only one message, and each message was heard by only one participant. Messages and subjects were intentionally confounded as sources of error variance (Jackson, 1992). Next, each participant responded on 9-point semantic differential-type scales to 14 questions about the quality and effectiveness of the message and about the likeability and professionalism of the pharmacist. Questions were read to participants. Points on the semantic differential scales were articulated by asking participants to respond on a scale of 1 to 9, and by specifying the

scale end points for each question (e.g., 1 meaning "not good at all" and 9 meaning "very good"). The questions were based on those used in

---

Table 1 about here

O'Keefe & McCornack (1987), adapted to fit the context of pharmacist-patient communication (see Table 1).

Results

The first step in the analysis was to examine correlations between the various evaluative items and pharmacist message design logic. Responses on the fourteen items were highly correlated. Inter-item correlations ranged in size from .65 to 1.0, with a mean correlation of .84. Participants who evaluated target messages did not make fine discriminations between dimensions of interpersonal attraction, message quality and task effectiveness. Rather, messages were evaluated in terms of a composite dimension of quality.

In addition, ratings on all of the dimensions were highly correlated with message design logic. Correlations ranged from .58 to .66, with a mean correlation of .62. Message design logic exerted a clear positive effect on participants' ratings of message quality. As level of design logic increased, so did ratings of overall quality and effectiveness.

To examine the effect of design logic in more detail, a one-way analysis of variance (ANOVA) was performed. The independent variable was message design logic, with three levels, expressive, conventional, and rhetorical. The dependent variable was the sum of the 14 rating items. There was a large, significant effect of message design logic on the

summed quality score ($F(2, 82) = 48.75$, $f = .72$, $p<.0001$). To determine which groups differed, a post hoc test was done using the least significant differences criterion. Summed evaluative scores for rhetorical messages ($M = 124.00$, $SD = 6.00$) were significantly higher than those of both conventionals ($M = 111.85$, $SD = 17.33$) and expressives ($M = 69.71$, $SD = 29.74$), and summed evaluative scores for conventional messages were significantly higher than those of expressive messages.

Discussion

The results provided clear support for Hypothesis 1. Though patients did not discriminate between various dimensions of evaluation, global perceptions did become more favorable as the level of design logic of the message producer increased from expressive through conventional to rhetorical functioning. The main findings of O'Keefe and McCornack (1987) were replicated successfully in the context of a hypothetical health communication situation, and the present study stands as additional support for the general analysis of message variation and effects offered by O'Keefe and her colleagues.

However, the foregoing analysis, though enlightening in some respects, is limited in the amount of information it provides about the differential effectiveness of specific message features, because the design logic coding systems are systems for coding whole messages. When effectiveness is found to vary across levels of message design logic, global message attributes explain such differences. For example, the greater effectiveness of rhetorical messages is explained by reference

to global characteristics of the message such as its future orientation, concern for the relationship, flexibility with respect to roles and goals, and so on (O'Keefe, 1988; O'Keefe & McCornack, 1987). Analogously, less favorable impressions of expressive messages are said to result from the inclusion of content that is offensive, pragmatically pointless, incoherent, irrelevant, and so on.

One difficulty with this kind of explanation comes in trying to translate research findings into practical advice. It is not very helpful to suggest that student pharmacists focus on the future, be concerned with the relationship, and be flexible about goals and roles. Neither is it fruitful to tell students to avoid offensive content, or to be relevant and coherent. Students inevitably have a difficult time putting such advice to work in concrete situations, which should not be surprising. We have yet to meet a pharmacy student who chose to be incoherent, irrelevant or offensive in his or her contact with patients. Similarly, the only students who truly know what is meant by the advice "focus on the future" etc. are the students who already do so. It has been our experience that students need examples of exactly what to say. Abstract descriptions, phrased in the analyst's vocabulary, are of little or no use to practitioners. Study 2 seeks to remedy these deficiencies.

Study 2: Effects of Content Themes

To generate findings at a level of abstraction that can be translated into practical advice and to understand which message features account for the most variance in patients' perceptions of

effectiveness, a finer grained, unit-by-unit analysis of the Patient Compliance messages was undertaken. This study had two objectives: (a) to identify specific thematic features in the messages, and (b) to ascertain whether these message features were related to patient evaluations.

Method

Segmentation into Units

The first step in this analysis was to segment N=85 messages into idea units (O'Keefe & Saeki, in press; Witte & Faigley, 1983). An idea unit is roughly the same as an independent clause. Each clause with a grammatical subject and verb was counted as a unit. One exception was that sentences with compound predicates (e.g., "This medication lowers your blood pressure and makes you healthier in the long run") were treated as separate units (e.g., "This medication lowers your blood pressure," and "[This medication] makes you healthier in the long run"). To establish the reliability of the unitizing procedure, two coders independently unitized 30 messages. Reliability according to Guetzkow's (1950) U was .074. This value corresponds to a 7.4% discrepancy between coders on the reliability sample. Disagreements were resolved using the first author's codings, and the remaining messages were unitized by the first author alone.

Identification and Classification of Synonymous Elements

Next, a classification scheme was developed to group synonymous elements. Elements were treated as synonymous if they expressed the same idea using slightly different vocabulary or using the same vocabulary

with slight variations in syntax. Fifty-eight substantive idea-types were identified in this manner. One "other" category was used to group low frequency elements. The reliability of the idea-type coding system was established by having two coders independently code 25 previously unitized messages, a total of 143 units. The coders achieved exact agreement in 75% of the cases. Reliability, according to Cohen's (1960) kappa was .74. Disagreements were resolved by discussion, and the remaining units were coded by the first author alone.

To simplify subsequent analyses and to impose conceptual order on the 59 idea-types, 11 content themes were identified, and idea-types that elaborated on the same theme were grouped together. Placement of an idea-type into a theme category was determined by consensus between the two authors. The 11 content themes are given in Table 2. Ten low frequency idea-types were omitted from the thematic analysis because they did not elaborate any clearly identifiable theme(s).

Table 2 about here

Results and Discussion

Correlations Between Themes

For each message, theme elaboration was computed by summing the frequency of occurrence of each idea-type belonging to a given theme. Correlations between themes were examined for the 11 content themes. Themes were not highly correlated with one another. Correlations between themes ranged from -.22 to .28. The mean absolute value for correlations between themes was .11. Only seven of the 55 correlations were significant, and these were relatively small, with absolute values on

the order of .25. Each message, rather than being a coherent grouping of functionally similar elements, was instead a relatively fragmented collection of independently elaborated themes. This image of compliance gaining messages is consistent with O'Keefe & Saeki's (in press) findings, but conflicts with the standard holistic-functional view of messages (for a detailed discussion of this point, see O'Keefe & Lambert, in press).

Message Design Logic and Theme Elaboration

Next, correlations between theme elaboration and message design logic were examined. As Table 4 shows, message design logic was significantly correlated only with Theme 4, Express Understanding, (r = .43, $t(83) = 4.34$, $p<.0001$), and Theme 5, Express Concern (r = .40, $t(83) = 3.98$, $p<.0001$). To gain a clearer understanding of the relationship between message design logic and theme elaboration, a

---

Table 3 about here

---

series of one-way ANOVA's was done with message design logic as the independent variable (three levels: expressive, conventional, and rhetorical) and theme elaboration as the dependent variable (see Table 5). The use of multiple univariate tests instead of a multivariate analysis of variance is justified here because of the exploratory nature of this research (Huberty & Morris, 1989).

Table 4 about here

A significant effect of message design logic was found on Theme 1 ($F(2,82) = 3.64$, f = .28, $p<.03$). A post hoc test was conducted using

the criterion of least significant difference to examine the effect in more detail. As is clear from Table 5, simple warnings and directives about taking the medication were given more frequently by conventional message producers (M = 1.85), than by their expressive (M = 1.21) or rhetorical (M = 1.29) counterparts. This evidence is consistent with the expectation that conventional message producers will tend (a) to focus on rights and obligations of the participants (e.g., "It's up to you to take your medication") and (b) give task relevant directives (e.g., "Take the medication as directed," "Do not stop taking the medication"). This effect did not appear in the correlation analysis because it was curvilinear with respect to level of design logic.

Message design logic also produced a significant effect on Theme 4 ($F(2,82) = 9.64$, $f = .43$, $p<.0002$) and Theme 5 ($F(2, 82) = 9.54$, $f = .48$, $p<.0002$). Post hoc tests revealed that rhetorical message producers elaborated Theme 4 and Theme 5 more than their expressive and conventional counterparts (see Table 4). This pattern of differences is consistent with the coding system and with theoretical expectation that rhetorical message producers will tend, more so than others, to include message contents that (a) focus on the personal relationship (e.g., "I am concerned about your health and well being"), (b) strive for cooperation and consensus (e.g., "We need to work together"), and (c) acknowledge the validity of the other's perspective (e.g., "I understand your feelings").

Effect of Theme Elaboration on Perceptions of Overall Quality

The final analysis examined relationships between theme elaboration and patients' evaluations. We examined the correlations between theme elaboration for the 11 themes and the sum of the liking, competence, and effectiveness ratings produced in response to the questions in Table 1. This dependent measure used in Study 1 (see Table 3).

Theme 3, Doctor Communication, was significantly correlated with the summed evaluative rating score (r=.21, $t(85)$=2.00, p<.05). Perhaps patients felt that pharmacists were indirectly expressing concern by suggesting contact with the physician (see Hall et al., 1988). Theme 6, Describe Alternatives, was positively related to patients' overall evaluations as well (r = .25, $t(85)$ = 2.34, p<.05). Again, it is likely that patients viewed this task-related information as evidence of the pharmacist's concern, and that is why it created favorable impressions.

Theme 4, Express Understanding, was also positively correlated with the composite score (r = .38, $t(85)$ = 4.05, p<.01). The correlation between theme 5, Express Concern, and the summed evaluation score approached significance (r = .20, $t(85)$ = 1.89, p<.08). It is hardly surprising that patients had favorable impressions of pharmacists who included expressions of concern and understanding in their messages.

General Discussion

The results of the two studies reported here begin to demonstrate how O'Keefe's analysis of communication competence, when combined with a finer-grained analysis of messages, can explain message variation and effects in health communication. Previous work on the effect of message

design logic (O'Keefe & McCornack, 1987) and independent analyses of the correlates of patient satisfaction in provider-patient interaction (Hall et al., 1988; Street, 1992) were replicated in the context of pharmacist-patient communication, at least in part. For example, Hall et al. (1988) found satisfaction to be positively associated with the amount of information provided, with the number of partnership building utterances spoken by a physician and with the frequency of (positive) socioemotional behaviors. Similarly, Street (1992) found a higher frequency of patient-centered remarks to be associated with more favorable patient impressions of doctors' partnership building.

The results presented here are consistent with findings from the literature on doctor-patient interaction in that positive and supportive socioemotional statements (Themes 4 and 5) and certain task-relevant statements (Themes 3 and 6) are perceived favorably by patients. Since the analyses were carried out at a low level of abstraction, results are easier to translate into practical advice for clinicians. Specifically, when patients report medication problems, pharmacists should express understanding and concern, discuss alternative treatment options, and encourage further consultation with the patient's physician.

Limitations and Future Research

The study is limited in that it used messages produced by students rather than practicing pharmacists, and it used hypothetical scenarios rather than recordings of real interactions. The group of patients who served as message evaluators were primarily middle-aged African-American men with little education. This group represents a narrow segment of the

population, though one that is at greatly increased risk for hypertension and associated illnesses. Also, a standard set of dependent variables (e.g., Hall et al., 1988) was not used because the current study attempted to replicate O'Keefe & McCornack (1987). In the future, an attempt should be made to use standard dependent measures. Additional outcome measures should be used. Dimensions to be used in future studies include a more straightforward measure of satisfaction, measures of informativeness, recall, compliance, and quality of life.

Conclusion

While interaction between physicians and patients has been investigated in detail, less is known about interaction between pharmacists and patients. Given the increasing salience of the pharmacist's role as a health communicator, the pervasiveness of drug therapy as a method of treatment, and the dangers of medication misuse, it is crucial to develop a better understanding of pharmacist-patient interaction. This study described the thematic structure of pharmacy students' messages and examined patients' perceptions of these messages. Ongoing research using practicing pharmacists in realistic settings will shed additional light on the dynamics of pharmacist-patient interaction.

References

Bogaert, M., Vander Stichele, R., Kaufman, J-M., & Lefebvre, R. (Eds.). (1989). Patient package insert as a source of drug information. New York: Medica.

Clark, L. T. (1991). Improving compliance and increasing control of hypertension: Needs of special hypertensive populations. American Heart Journal, 121, 664-669.

Cohen, J. (1960). A coefficient of agreement for nominal scales. Educational and Psychological Measurement, 20, 37-46.

DiMatteo, M. R., & DiNicola, D. D. (1982). Achieving patient compliance: The psychology of the medical practitioner's role. New York: Pergamon.

Guetzkow H. (1950). Unitizing and categorizing problems in coding qualitative data. Journal of Clinical Psychology, 6, 47-58.

Hall, J. A., Roter, D. L., & Katz, N. R. (1988). Meta-analysis of correlates of provider behavior in medical encounters. Medical Care, 26, 657-675.

Huberty, C. J., & Morris, J. D. (1989). Multivariate analysis versus multiple univariate analyses. Psychological Bulletin, 105, 302-308.

Jackson, S. A. (1992). Message effects research. New York: Guilford Press.

Joint National Committee. (1993). The fifth report of the joint national committee on the detection, evaluation, and treatment of high blood pressure (JNC V). Archives of Internal Medicine, 153, 154-183.

Ley, P. (1988). Satisfaction, compliance, and communication. British Journal of Clinical Psychology, 21, 241-254.•

Linder-Pelz, S. (1982). Toward a theory of patient satisfaction. Social Science & Medicine, 16, 577-582.

Manasse, H., Jr. (1989). Medication use in an imperfect world: Drug misadventuring as an issue of public policy, part 1. American Journal of Hospital Pharmacy, 46, 929-944.•

Morris, L. A. (1982). A survey of patients' receipt of prescription drug information. Medical Care, 20, 596-605.

Morrow, N. C., & Hargie, O. D. (1987). An investigation of critical incidents in interpersonal communication in pharmacy practice. Journal of Social and Administrative Pharmacy, 4, 112-118.•

O'Keefe, B. J. (1988). The logic of message design: Individual differences in reasoning about communication. Communication Monographs, 55, 80-103.

O'Keefe, B. J. (in press). Variation, adaptation, and functional explanation in the study of message design. In G. Philipsen & T. Albrecht (Eds.), Developing theories of communication. Albany, NY: SUNY Press.

O'Keefe, B. J., & Lambert, B. L. (in press). Managing the flow of ideas: A local management approach to message deign. In B. Burleson (Ed.), Communication Yearbook 18, Newbury Park, CA: Sage.

O'Keefe, B. J., & McCornack, S. A. (1987). Message design logic and message goal structure: Effects on perceptions of message quality in

regulative communication situations. Human Communication Research, 14, 68-92.

O'Keefe, B. J., & Saeki, M. (in press). Refusals and rejections: Designing messages to serve multiple goals. Human Communication Research.

Roter, D. L., & Hall, J. A. (1989). Studies of doctor patient interaction. Annual Reviews of Public Health, 10, 163-180.

Roter, D. L., Hall, J. A., & Katz, N. R. (1987). Relations between Physicians' behaviors and analogue patients' satisfaction, recall, and impressions. Medical Care, 25, 437-451.

Roter, D. L., Hall, J. A., & Katz, N. R. (1988). Patient-physician communication: A descriptive summary of the literature. Patient Education and Counseling, 12, 99-119.

Sherbourne, C. D., Hays, R. D., Ordway, L., DiMatteo, M. R., & Kravitz, R. L. (1992). Antecedents of adherence to medical recommendations: Results from the medical outcomes study. Journal of Behavioral Medicine, 15, 447-468.

Street, R. L. (1992). Analyzing communication in medical consultations: Do behavioral measures correspond to patients' perceptions? Medical Care, 30, 976-988.

Weiderholt, J. B., Clarridge, B. R., & Svarstad, B. L. (1992). Verbal consultation regarding prescription drugs: Findings from a statewide study. Medical Care, 30, 159-173.

Witte, S. P., & Faigley L. (1983). Evaluating college writing programs. Carbondale, IL: Southern Illinois University Press.