

Medical Service Quality:

**An approach to its assessment from both
the provider & client perspectives**

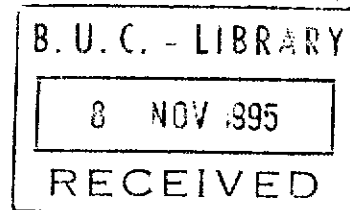
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**Medical Service Quality: An approach to its assessment
from both the provider & client perspectives**

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**By
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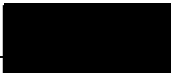
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TO MY PARENT
to whom I owe everything...

Quality is never an accident; it is always the result of intelligent effort.

John Ruskin

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Maher N. Itani

Abstract

Twenty-five hundred years ago, in *The Laws*, Plato described two types of doctor-patient relationships. In one type, which he called slave medicine, slave physicians took care of slave patients. The slave physician "never gives him any account of his complaints, nor asks him for any; he gives him some empirical injunction with an air of finished knowledge in the brusque fashion of a dictator and then is off in hot haste to the next ailing slave..." In contrast, is the "medicine befitting free men," in which the citizen physician "treats their disease by going into things thoroughly from the beginning in as scientific way and takes the patient and his family into confidence. Thus, he learns something from the sufferers.... He does not give prescriptions until he has won the patient's support, and when he has done so, he steadily aims at producing complete restoration to health by persuading the sufferer into compliance."

In Lebanon at this time, we may be revisiting history and heading toward the widespread practice of slave medicine. The best caution against this is to maintain the sanctity of the doctor-patient relationship. When physicians talk to their patients and, perhaps more important, when physicians listen and hear what their patients are trying to say, when physicians are caring, compassionate, and sensitive to their patients' needs, physicians are helping them — helping them not only to feel better, but do better. Not surprisingly, physician will find that he will feel better too. The good physician knows his patients through and through, and his knowledge is bought dearly. Time, sympathy, and understanding must be lavishly dispensed, but the reward is to be found in the personal bond that forms the greatest satisfaction with medical services delivered and ensures the optimal quality of medical services.

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Chapter 1

Introduction

1.1 An Overview

Providers of medical services have recently awakened to consumer challenges, competition, quality, and the realities of marketing. With these changes, a related and equally important issue has emerged— the impact of client-provider relationship on the overall medical service quality evaluation. Clients are increasingly frustrated with the commercialization of medical service, proliferated bureaucratic health care system and weakened client-provider relationship^{1,2,3}. It is this latter sentiment that I wish to address in this study. Isn't it a paradox that at a time when medicine has made such great advances in unraveling the mysteries of human disease, that the tension, anger, and distrust between patients and their doctors have reached a pitch never before seen in medicine discipline? Perhaps not.

1.2 Need For The Study

As client sensitivity increases, competition expands and intensifies, and medical malpractice suits become more frequent, the issue of evaluating medical service quality has emerged as a topic in need of investigation. Regardless of the difficulty, clients do evaluate the "quality" of medical services. Though an evaluation is known to occur, what is lacking is a clear understanding of how the evaluation occurs and the importance of various components of the medical service encounter to the evaluation outcome.

¹ Steinberg, EP. "Where have all the doctors gone?" *Annals of Internal Medicine*, 1980; v.93 p. 619.

² Astrachan, A. "Is medicine still a profession?" *Medicine*, 1991; v.35 p. 43.

³ Weissmann, G. "Whatever happened to 'the doctor'?" *Medical Doctor*, 1981; v.35 p. 8.

Despite the importance and distinctiveness of the medical service encounter, little scholarly work has focused on its special features. Most of the work that has been done in medical care services is general and descriptive^{4,5}, and non has taken a dyadic view of the evaluation of medical service quality – that is, from the perspectives of both the client and the provider. In addition, the important relationships between service quality, patient satisfaction, and patient's behavioral intention remain largely unexplored⁶.

1.3 General Statement Of The Problem

The problem seems to be that none of the definitions of medical services quality offered so far have been generally accepted. I do not know why they have not been accepted, but I believe that some are unsatisfactory for two associated reasons. First, researchers assume that we know, perhaps intuitively, what quality is and so never bother to work through the necessary preliminary matter of defining quality itself. Second, researchers assume that we can measure certain properties of the object, believing wrongly that quality consists of, or is defined solely by, a group of measurable properties.

1.4 Statement Of Purpose

Given these two reasons, the purpose of this research is to review current definitions of quality that help to clarify the meaning of medical services quality and examine the physician-patient relationship. After an understanding of the core physician-patient interaction is gained, this research will explore the impact of the interpersonal contacts on the overall medical service quality evaluation. Such an evaluation approach, from both the provider and client perspectives, will help to identify and analyze the

⁴ Bloom, PN. "Effective Marketing for Professional Services." *Harvard Business Review*, 1984; v.62 p. 102.

⁵ Gummesson, E. "Towards a Theory of Professional Service Marketing." *Industrial Marketing Management*, 1978; v.7 p.89.

⁶ Cronin, CJ., Taylor, SA. "Measuring Service Quality: A Reexamination and Extension." *Journal of Marketing*, 1992(July); v.56 p.55.

perceptual gaps that can arise from inconsistent perceptions of expectations and experiences between providers and clients. Also, to correct the most serious failure in medical services and, by doing so, to assure that medical services are appropriate to the patient's needs and are of optimal quality.

The second purpose of this study is to examine the relationships between medical service quality, patient satisfaction, and patient's behavioral intention. Though these relationships have been discussed theoretically, they have not been subjected to a thorough empirical test.

~~Simply stated, this research will clarify how to measure medical~~ service quality, explore what elements of medical service best define its quality, and examine whether patients actually choose either physicians that deliver the highest level of perceived service quality or those with which they are most satisfied.

1.5 Statement Of The Research Questions

This study will investigate four central questions:

1. How should medical service quality be conceptualized and measured?
2. What are the causes of medical service-quality shortfalls?
3. What is the causal order of the relationship between medical service quality and patient satisfaction?
4. What impacts do medical services quality and patient satisfaction have on patient's behavioral intention?

More specifically, the following hypotheses are to be tested.

H₁ : The level of positive client evaluation of the clinical service is related inversely to client expectations - client experiences gap.

H₂ : The level of positive client evaluation of the clinical service is related inversely to client expectations physician perceptions of client expectations gap.

H₃ : The level of positive client evaluation of the clinical service is related positively to client experiences - physician perceptions of client experiences gap.

H₄ : Client satisfaction is an antecedent of medical service quality.

H₅ : Client satisfaction has a significant impact on patient's behavioral intention.

H₆ : Medical service quality has a significant impact on patient's behavioral intention.

1.6 Statement Of Research Structure

This research integrates the concepts, ideas, and findings that have emerged from a multiphase study of medical service quality. From this research, a conceptual model of service quality and a methodology for measuring client perceptions of medical service quality were developed. This research has also developed many ideas about what physicians need to do to improve medical service quality.

In chapter two, a review of the literature dealing with issues relating to research in medical service is presented. Chapter three describes the methodology adopted in this study to gather and analyze data, and chapter four presents the findings of the data analysis. In chapter five, the final chapter, a summary of the findings is reported and implications for management, client, provider and for future research are proposed.

Chapter 2

Review Of Literature

This chapter reviews current definitions on medical services quality, discusses some major concepts and issues relating to research in medical services, and provides a mechanism for assessing or measuring the quality of medical services.

2.1 Current Definitions

To define the quality of medical services one must first unravel a mystery; the meaning of quality itself. The quality mystery – something real, capable of being perceived and appreciated, but not subject to measurement – has been puzzling us since the Code of Hammurabi was set down. Two sources were used to provide several general clues: the works of Donabedian and Steffen.

2.1.1 Avedis Donabedian

Donabedian⁷, the leading thinker in modern medical quality assurance, states that “it is useful to begin with the obvious by saying that quality is a property that medical service can have in varying degrees.” It follows that an assessment of quality is a judgment whether a specified instance of medical service has this property, and if so, to what extent. This first definition portrays a “metaphysical sense” since it reflects the philosophic tradition of using “quality” in the same sense as “property.” Thus philosophers speak of primary qualities as those properties that an object possesses independent of person's perceptions, e.g. , shape, motion, and number. Secondary qualities are those properties that depend on person's perception, e.g., color, taste, and sound.

⁷ Donabedian, A., *The Definition of Quality and Approaches to its Assessment*, vol. 1: *Explorations in Quality Assessment and Monitoring*. Ann Arbor, Michigan, Health Administration Press, 1980; p. 3.

Donabedian defines accessibility of medical service as "the ease with which it is initiated and maintained."⁸ "Continuity means lack of interruption," and coordination is "the process by which the elements ... of medical service ... are fitted together."⁹ He states that the above terms are attributes of medical service that influence its quality but are not the same thing.

Donabedian does admit that he is not sure whether "quality is a single attribute, a class of functionally related attributes, or a heterogeneous assortment gathers into a bundle by established usage, administrative fiat, or personal preferences."¹⁰ He also argues that even if the attributes that constitute quality can be identified, it would still be necessary to translate them into criteria and standards that can be used to make consistent judgments.

The definition and specification of attributes is only part of the problem, he added. The phenomena or objects to which these attributes pertain are also poorly defined. There are different concepts of what constitutes quality which, in their turn, lead to different formulations of what constitutes medical service quality. Moreover, by extension, judgments of quality are often made not about medical service in itself, but indirectly about the persons who provide the service, and about the systems within which service is provided. As a result, the attributes of these persons and systems, and the attributes of the medical service itself are used, alternately or simultaneously, both to define and to judge quality.

Given these ambiguities, I have claimed that it is inadequate to assume that quality is a property, and to continue searching for a definition of quality that helps to clarify the meaning of medical services quality.

⁸ Ibid., p. 22.

⁹ Ibid., p. 23.

¹⁰ Ibid., p. 24.

2.1.2 Grant Steffen

Steffen¹¹ defines quality as "the capacity of an object with its properties to achieve a goal." This definition shifts the focus of quality from the property to the capacity to achieve a goal and thus makes the goal the factor that determines quality. It follows, then, that quality can be measured only with reference to a goal. The more completely the goal is achieved, the higher we will judge the quality.

Accordingly, quality of medical services is "the capacity of the elements of that service to achieve legitimate medical and nonmedical goals"¹² set by the patient with the assistance of the physician. Medical goals are determined by the nature of the patient's illness and nonmedical goals by the needs of the physician and the patient to maintain autonomy. These goals are limited by what is legally permitted, ethically acceptable, and medically possible¹³.

This second definition of quality portrays a "preference sense" since it implies preference and value. Thus, we prefer things that satisfy our needs, fulfill our expectations, and achieve our goals over those things that do not. Those things that we prefer have quality, some having more quality than others.

This preferential sense must be distinguished from the metaphysical sense proposed by Donabedian. Quality in the metaphysical sense is identical with the properties of an object and does not imply preference. In contrast, quality in the preferential sense is identical not with the properties of an object but rather with the capacity of the properties to achieve a goal, this goal being a state of affairs that is preferred to other states.

¹¹ Steffen, GE. "Quality of Medical Care: A Definition." *JAMA*, 1988; v260 #1 p. 58.

¹² *Ibid.*, p. 59.

¹³ *Ibid.*, pp. 59-60.

The review I have made up to this point leads to the conclusion that despite many attempts at a definition of the quality of medical services, there is no unanimity. It is necessary, therefore, to come to an agreement on a definition and to develop a comprehensive conceptual foundation for understanding quality before attempting to assess it.

2.2 The Definition Of Quality: A Conceptual Foundation

2.2.1 Specifying What quality Is

The search for a definition of medical service quality can usefully begin with what is perhaps the simplest complete module of care: the management by a physician, or any other primary practitioner, of a clearly definable episode of illness in a given patient. It is possible to divide this management into two elements: the technical and the interpersonal (functional)¹⁴. The technical element is the application of the science and technology of medicine, and of the other health sciences, to the management of a personal health problem. Its accompaniment is the management of the social and psychological interaction between client and practitioner.

One should note, however, that the two elements are interrelated, and that it may be difficult to make a distinction between them. It is easy to see how the interpersonal relationship can influence the nature and success of technical management. One could also plausibly suggest that the nature of the technical procedures used and the degree of their success will influence the interpersonal relationship. Finally, in the application of psychotherapeutic techniques the technical and interpersonal elements in management could be virtually inseparable.

¹⁴ Donabedian, A., *The Definition of Quality and Approaches to its Assessment*, vol. 1: *Explorations in Quality Assessment and Monitoring*. Ann Arbor, Michigan, Health Administration Press, 1980; p. 4.

So far, I have argued that practitioner performance is split into at least two parts: technical and interpersonal. It is necessary to say next what constitutes quality or goodness in each of these parts.

- i) **Goodness in Technical Management:** The quality of technical management is defined primarily on the basis of the technical accuracy of the diagnoses and procedures. It consists in the application of medical science and technology in a manner that maximizes its benefits to health without correspondingly increasing its risks. The degree of quality is, therefore, the extent to which the care provided is expected to achieve the most favorable balance of risks and benefits¹⁵. Various techniques for measuring technical quality have been proposed and are currently in use in health care organizations (Joint Commission for Accreditation of Health Care Organizations 1987).
- ii) **Goodness in Interpersonal Management:** What constitutes goodness in the interpersonal management is more difficult to summarize. The quality of interpersonal relationship is defined as the milieu, manner, and behavior of the provider in delivering health care service to and communicating with the patient¹⁶. The management of the interpersonal relationship must meet socially defined values and norms that govern the interaction of individuals in general and in particular situations. These norms are reinforced in part by the ethical dicta of health professions, and by the expectations and aspirations of individual patients. It follows that the degree of quality in the management of the interpersonal relationship is measured by the extent of conformity to these values, norms, expectations, and aspirations.

2.2.2 Clients and the Definition of Quality

Obviously, clients individually and collectively contribute in many ways to the definition of medical service quality. One way is by influencing what is included in the definitions of "health" and "health services."¹⁷ It is generally believed that clients tend to have a broader view of these things and, as a result, they expect more from

¹⁵ Ibid., p. 5.

¹⁶ Ibid., p. 5.

¹⁷ Ibid., p. 24.

the physician than the physician is willing or able to give. Sometimes the client may have a narrower view. He will then resent and resist what he will consider an intrusion into private matters that should not be the physician's concern. Clients also contribute very heavily to the definition of medical service quality with their values and expectations regarding the management of the interpersonal process. In this domain, clients, individually and collectively, are the primary definer of what quality means.

Client Satisfaction: In recognition of all these considerations, client satisfaction is often seen as an important component of the quality of medical services¹⁸. ~~In this regard, it is a curiously complex~~ phenomenon. In one sense, client satisfaction or dissatisfaction correspond to the healing of a wound or the mending of a bone. Each function defines a state of the patient which is a consequence rather than an attribute of care. As such, satisfaction can be seen as an element of psychological health; this makes the achievement of the maximum attainable satisfaction one objective of care.

Client satisfaction, besides being an objective and outcome of care in its own right, can also be seen as a contribution to other objectives and outcomes. For example, a satisfied client is more likely to cooperate effectively with the practitioner, and to accept and adhere to his recommendations. Satisfaction also influences access, since the satisfied client is more likely thought to seek care again.

Client satisfaction has still another role in quality assessment. It can be regarded as the patient's judgment on the quality or the "goodness" of care. It represents the client's assessment of quality in a way that corresponds to a professional's assessment of the quality of the same care, even though the considerations that enter the two judgments may not be the same, and the conclusions may differ.

¹⁸ Ibid., p. 26.

Client satisfaction is of fundamental importance as a measure of the quality of medical services because it gives information on the provider's success at meeting those client values and expectations which are matters on which the client is the ultimate authority. The measurement of satisfaction is, therefore, an important tool for research, administration, and planning. The informal assessment of satisfaction has an even more important role in the course of each practitioner-client interaction, since it can be used continuously by the practitioner to monitor and guide that interaction and, at the end, to obtain a judgment on how successful the interaction has been.

But client satisfaction also has some limitations as a measure of quality. Clients generally have only a very incomplete understanding of the science and technology of care, so that their judgments concerning these aspects of care can be faulty. Moreover, clients sometimes expect and demand things that it would be wrong for the practitioner to provide because they are professionally or socially forbidden, or because they are not in the client's best interest.

For example, if the patient is dissatisfied because his unreasonably high expectations of the efficacy of medical science have not been met, one could argue that the practitioner has failed to educate the patient. And when the patient is dissatisfied because a desired service has been denied, the grounds for that denial could be of questionable validity, especially if it is assumed that the primary responsibility of the practitioner is to the individual client, and that the client is, ultimately, the best judge of his own interests, provided he is mentally unimpaired and properly informed.

Even these limitations do not necessarily rob patient satisfaction of its validity as a measure of quality, though. It is, however, the best representation of certain components of the definition of quality, namely, those which pertain to client expectations and valuations.

Practitioner Satisfaction: To maintain symmetry, we must consider how the degree of satisfaction of the practitioners is related to the definition of quality. A sense of general satisfaction may be conducive to the best performance of the practitioner. Practitioner satisfaction, like client satisfaction, is also, partly, a judgment of goodness that pertains to the setting and conditions of the practitioner's work, to the care provided by staff, and to the care given by practitioner himself, in general or in any particular instance. Practitioner satisfaction, then, is either a causal factor of good care or a judgment on the goodness of care. In neither capacity is it a component of the definition of "goodness" itself¹⁹.

2.3 The Definition Of Quality: Some Empirical Studies

There is an overabundance of more or less fanciful opinions about what quality means or what it should mean. In what follows, I shall review only a selection of studies that touch on the subject, and in each study I will deal only with those aspects that bears on the definition of quality.

2.3.1 The Clients' View of Quality

People are seldom asked to say what they think the quality of medical service means. The question is put indirectly. What is a good doctor, or clinic? What is a bad one? What does the respondent like and dislike about his doctor, clinic, and so on? From these opinions about the attributes of providers inferences must be drawn about the ingredients of "goodness" in the care they give. In order to make the task simpler, the respondent is often given a list of attributes and asked to rank all these or select some. When this is done, the questioner's view of the boundaries and content of the concept of quality may be imposed on the respondent. Moreover, the

¹⁹ Ibid., p. 26.

respondent's answers are influenced by his interpretation of the language in which the choices are presented.

Much of the literature on client views of the good doctor or clinic pertains to the relative importance of the technical management of illness as compared to the management of the relationship between the client and the practitioner. In the early 1950s, Rose Laub Coser²⁰, a sociologist, conducted "standardized interviews" with 51 patients at Mount Hermon hospital. The result is a fascinating account of what they think of their doctors.

When Coser asked "What is your idea of a good doctor?" the answers given by the patients seemed to classify them into two rather distinct groups. A little more than half the patients saw the good doctor as one who provided kindness, love, and security. He "talk nice," takes an interest, makes you "feel good," or is so all-knowing and all-powerful that you can rest secure in his safe-keeping. By contrast, a little less than half dwelled on the doctor's "scientific and professional competence." A two fold division also emerged in answer to the question, "What makes a good patient?" a little over half seemed to think that the good patient should be to some degree autonomous, whereas almost all the rest seemed to think the patient should be completely submissive. And most significantly, in Coser's view, those who defined the doctor's goodness in technical-professional terms saw the patient as rather autonomous. And there were the others, who defined the doctor's goodness in term of kindness, personal interest, and care. They saw the patient's own role as one of unquestioning acceptance.

²⁰ Coser, RL. "A Home Away from Home." *Social Problems*, 1956; v.4 pp. 3-17.

Unfortunately, other researchers have not looked for this differentiation into types or, having looked, have failed to find it. Among the latter is Freidson's classic study conducted at Bronx hospital²¹. He interviewed patients about their reasons for liking or disliking certain doctors, and for continuing to receive care from one but not from another. To the patient, "personal interest" means that the doctor treats him as a person having his own identity, and respects him as such, showing care and concern in handling his individual problems in an individualized manner. Some patients appreciate "a joking familiarity," and others a respective reserve, but all other object to mechanical, routinized, and impersonal handling.

There is evidence of personal interest when the physician takes time, and is deliberate and careful. People dislike the physician who is "curt" or "abrupt," who treats in a "cursory way," or rushes him in and out. Communication is important as a condition of personal interest. The doctor must be willing, and take time, to hear and answer questions, and to explain. Equality of status is still another condition. The patient expects to be treated with courtesy and respect, and as a person capable of making intelligent choices, provided the physician explains the alternatives.

According to Freidson, "patients assume that all doctors possess a minimal competence," and they are concerned only with degrees of competence. Patients seem even more interested in the full exercise of existing competence on their behalf. The problem seems to be not so much that the doctor did not know, but that he did not apply his knowledge fully and assiduously in the interest of the patient. To tell whether the doctor has or has not done so, the patient looks for behavior that, in one combination or another, seems to mean "competence," in the patients estimate. Some patients rely mainly on indicators that are also evidence of personal interest: respect for the

²¹ Friedson, E. *Patients' Views of Medical Practice*. New York, Russell Sage Foundation, 1961; pp. 50-56.

patient's ability to give information, attentiveness, deliberateness, thoroughness, and time taken in obtaining the medical history of the patient and in doing the physical examination. Others with perhaps more experience illness and medical care look for the presence of specific questions, examinations, or procedures in certain situations: for example, a history of the diet and a patch test when allergy is suspected, or an electrocardiogram when there is chest pain. To some patients, competence, or its use on behalf of the patient, is indicated by a greater quantity of "objective" tests.

Within limits, a good doctor will admit uncertainty, but will ~~also take steps to ascertain the true state of the affairs by further~~ observation, more tests, and consultation. He will avoid saying, "Do not worry," or "Nothing is wrong," without a sound basis for saying so, as the patient sees it. He will also avoid unpleasant or risky modes of treatment, especially surgery. In general, a good doctor is active; he intervenes if only by naming the illness or prescribing for it. And, finally, the favorable results of his intervention are apparent within some "reasonable" period of time, as perceived by the patient.

In summary, the people studied by Freidson defined quality in terms of certain behaviors on the part of the physician, or attributes of his care, which they felt denoted personal interest or competence. And these two traits were, themselves, interrelated, since they were necessary conditions to a highly individualized application of medical knowledge to each patient's condition, in a manner that took account of the patient's needs, expectations, and preferences.

The attributes of good care identified by Freidson crop up in various combinations in many studies. Cartwright²² asked each respondent "What are the qualities, the things about your general practice, that you appreciate?" of those interviewed, 84 percent mentioned that they appreciated the general practitioner's manner or

²² Cartwright, A. *Patients and their Doctors: A Study of General Practice*. New York, Atherton Press, 1967; pp. 5-7.

personality, 67 percent mentioned the way the practitioner looked after the patient; 14 percent mentioned qualities that did not fit exclusively under either of the two previous categories, and 4 percent had only criticisms or could not remember anything particular that they appreciate in their doctors. Respondents were also asked whether there were any other qualities they felt a general practitioner ought to have, but thought theirs did not. Three-quarters of those interviewed could not think of anything, one-fifth had some criticism, and the rest were doubtful or did not know.

Perhaps the most striking thing about this study is the finding that such a large proportion of people could think of nothing that was lacking in their doctors. This corresponds to the high level of satisfaction with medical care found in the U.S.

Another study made by Sussman et al.²³ about the opinions of patients and staff both before and after physical and organizational changes were made in the outpatient clinics of Case Western Reserve University. Patients were asked early in the study to describe the "good doctor." Attributes of interpersonal and communication skills alone were mentioned by 49.1 percent of patients, whereas 26.6 percent mentioned only technical skills, and 24.3 percent mentioned both. These results correspond to the findings of Cartwright in showing an emphasis on the management of the interpersonal process, and to the findings of Coser in revealing two different orientations.

2.3.2 The providers' view of Quality

In the preceding section of this chapter we got a view of what patients think makes a good clinic or good doctor. A corresponding study conducted by Klein et al. tells us how practitioners answer similar questions. The respondents were asked to think of the best and worst clinics they knew, "in terms of the quality of patient care,"

²³ Sussman, MB., et al. *The Walking Patient: A Study of Outpatient Care*. Cleveland, The Press of the Case Western Reserve University, 1967; p. 50.

and to say what about these clinics made them conclude "this was best" or "this was worst." This study suggested that there is a large number of attributes of best clinic, many of which are difficult or impossible to measure; and those that can be measured separately cannot be combined into a "single, comprehensive" measure of patient care²⁴.

According to Sanazaro et al.²⁵, analysis of the practice of physicians as reported in the medical records of care cannot be expected to give a full picture of the considerations that enter in the physician's definition of quality. Many of what the physicians do are not in the record; in particular, information about the management of the interpersonal process is likely to be missing. But when physicians are asked to describe what they consider to be effective or ineffective care, we can infer from their answers a broad definition of health that include physical function, psychological function, and social function, and a correspondingly broad range of activities that improve or damage these aspects of function. Within this extensive domain, however, there is a clear tendency to emphasize technical management and its impact on physiological health and function.

2.3.3 Comparisons of the Views of Clients and Providers

Comparisons of the viewpoints of clients and practitioners suggest that there is a great deal of similarity between the two. The responsible exercise of technical competence occupies a core position in both. Clients do seem to place somewhat greater emphasis on aspects of the interpersonal relationship, and distinctly greater emphasis on the amenities of care than do the practitioners²⁶. One suspects that clients have a less clearly differentiated view of the relative importance of the different attributes of care, considering

²⁴ Klein, MW., et al. "Problems of Measuring Patient Care in the Out-Patient Department." *Journal of Health and Human Behavior*, 1961; v.2 p 139.

²⁵ Sanazaro, PJ., et al. "Physician Performance & Its Effects on Patients." *Medical Care*, 1970; v.8 p. 303.

²⁶ Smith, DB., et al. "Differential Perceptions of Health Care Quality in a Prepaid Group." *Medical Care*, 1970; v.4 pp. 271-74.

many to be roughly similar importance. By contrast, physician appear to have in mind a more sharply ordered hierarchy, and one that is more finely adjusted to suit the nature of the patient's medical problem. This means that, paradoxically, in certain situations physicians would place less emphasis on technical care and more emphasis on personal interest than the patient would.

There is also reason to believe that physicians are aware of the patients' preferences, at least in a rough way. At the same time we can find important discrepancies between what patients want and what physicians think the patients want²⁷. This means that problems might arise partly because physicians misperceive what patients want, and partly because they cannot, or do not wish, to respond to what they correctly perceive patients to prefer. But, whatever these tensions may be, it is clear that they are contained and counterbalanced by broad agreement on the fundamentals²⁸. It must be this that provides stability to the system, and accounts for the high levels of satisfaction with care that are so often reported by clients.

2.4 Preliminaries To Quality Assessment

The conceptual and empirical explorations of the rather general definition of quality that I have undertaken in the preceding two sections are only the first small steps towards the development of a conceptual model of medical services quality.

This section will outline additional studies essential for developing a methodology for measuring clients' perceptions of medical services quality and building the client part of medical services model. The emerged model will then be used in subsequent chapters as a framework for understanding medical services quality,

²⁷ Sussman, MB., et al. *The Walking Patient: A Study of Outpatient Care*. Cleveland, The Press of the Case Western Reserve University, 1967; p.129

²⁸ Donabedian, A., *The Definition of Quality & Approaches to its Assessment*, vol. 1: *Explorations in Quality Assessment and Monitoring*. Ann Arbor, Michigan, Health Administration Press, 1980; p. 74.

measuring it, diagnosing medical services quality problems, and deriving solutions to the problems.

2.4.1 Quality Is a Comparison between Expectations and Performance

Lewis and Booms²⁹ claimed that service quality involves a comparison of expectations with performance:

"Service quality is a measure of how well the service level delivered matches customer expectations. Delivering quality service means conforming to customer expectations on a consistent basis."

In line with this thinking, Gronross³⁰ developed a model in which he contends that clients compare the service they expect with perceptions of the service they receive in evaluating service quality. He postulated that two types of service quality exist: technical quality, which involves what the client is actually receiving from the service, and functional quality, which involves the manner in which the service is delivered.

Parasuraman, Zeithaml, and Berry³¹ defined service quality as "a global judgment, or attitude, relating to the superiority of the service." They link the concept of service quality to the concepts of perceptions and expectations as follows: "Service quality is viewed as the degree and direction of discrepancy between clients' perceptions and expectations"³². They developed an instrument known as

²⁹ Lewis, RC., et al. "The Marketing Aspects on Services Marketing." quoted in Parasuraman, A., et al. "A Conceptual Model of Service Quality and its Implications for Further Research." *Journal of Marketing*, 1985 (Fall); v.49 p. 42.

³⁰ Gronroos, C. *Strategic Management and Marketing in the Service Sector*. Helsingfors, Swedish School of Economics and Business Administration, 1982; quoted in "A Conceptual Model of Service Quality and its Implications for Further Research." *Journal of Marketing*, 1985 (Fall); v.49 p. 42.

³¹ Parasuraman, A., et al. "SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality." *Journal of Retailing*, 1988 (Spring); v.64 p. 16.

³² Parasuraman, A., et al. "A Conceptual Model of Service Quality and its Implications for Further Research." *Journal of Marketing*, 1985 (Fall); v.49 p. 48.

SERVQUAL^{33,34} for measuring customers' perceptions of service quality. Additionally, they developed a model of service quality³⁵ based on the magnitude and directions of five "gaps," which include client expectations-experiences discrepancies in addition to differences in service design, communications, management, and delivery (See Figure 2.1). The five service quality gaps are:

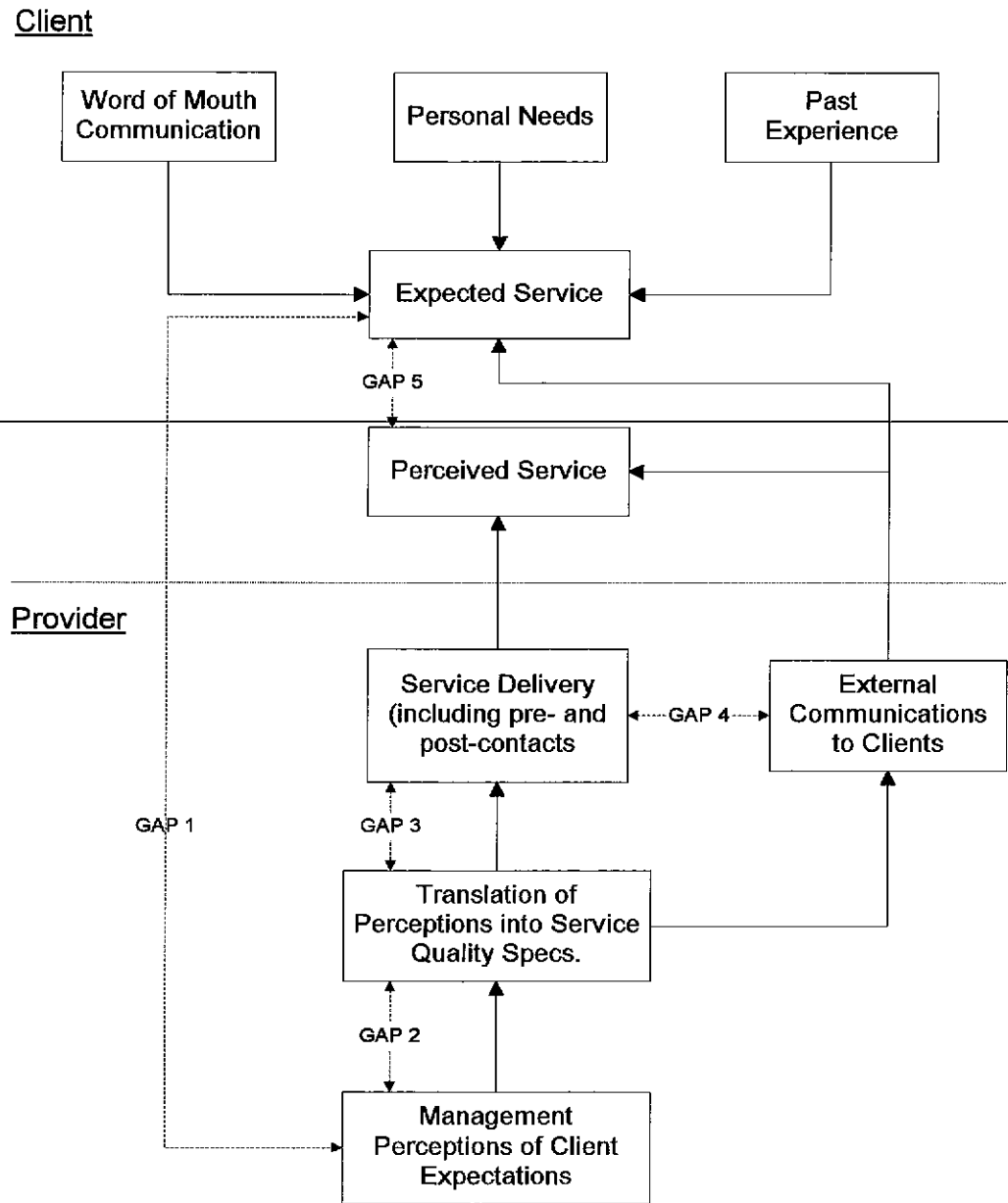
- **Gap 1** : Difference between client's expectations and management's perceptions of these expectations.
- **Gap 2** : Difference between management's perceptions of clients' expectations and service quality specifications.
- **Gap 3** : Difference between service quality expectations and service actually delivery.
- **Gap 4** : Difference between service quality and the influence of external communications on clients' expectations.
- **Gap 5** : Difference between clients' expectations and clients' perceptions of service delivery, which is caused by the combined influences of Gaps 1 to 4.

³³ Parasuraman, A., et al. "SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality." *Journal of Retailing*, 1988 (Spring); v.64 pp. 12-40.

³⁴ Parasuraman, A., et al. "Refinement and Reassessment of the SERVQUAL Scale." *Journal of Retailing*, 1991 (Winter); v.67 pp. 420-50.

³⁵ Zeithaml, V.A., et al. "Communication and Control Processes in the Delivery of Service Quality." *Journal of Marketing*, 1988 (April); v.52 pp. 35-36.

FIGURE 2.1 Conceptual Model of Service Quality



2.4.2 Quality Evaluations Involve Structures, Processes, and Outcomes

Donabedian³⁶ described the measurement of effective medical service system in terms of "structures, processes and outcomes."

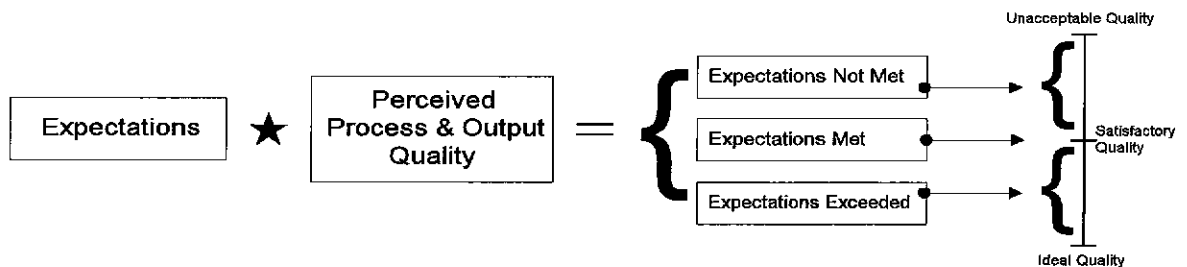
- i) **Structure** : Structure denotes the attributes of the settings in which care occurs. This includes the attributes of material resources (such as facilities, equipment, and money), of human resources (such as the number and qualifications of personnel), and of organizational structure (such as medical staff organization, methods of peer review, and methods of reimbursement).
- ii) **Process** : Process denotes what is actually done in giving and receiving care. It includes the patient's activities in seeking care and carrying it out as well as the physician's activities in making a diagnosis and recommendation or implementing treatment.
- iii) **Outcome** : Outcome denotes the effects of care on the health status of patients and population. Improvements in the patient's knowledge and salutary changes in the patient's behavior are included under a broad definition of health status, and so is the degree of the patient's satisfaction with care.

Lehtinen³⁷ viewed service quality in terms of "process quality" and "output quality." Process quality is judged by the client during the service. Output quality is judged by the client after the service is performed. Figure 2.2 shows how service quality evaluations are a function of the expectations clients bring to the service situation, and the process and output quality they perceive they receive.

³⁶ Donabedian, A. "The Quality of Care: How can it be Assessed?" *JAMA*, 1988; v.260 #12, p. 1745.

³⁷ Lehtinen, J. "Customer Oriented Service System." Unpublished working paper, Helsinki, Service Management Institute, Finland, 1983; quoted in Berry, L., et al. "Quality Counts in Services, Too." *Business Horizons*, 1985 (May-June); v.27 p. 45.

FIGURE 2.2 Continuum of Perceived Service Quality



2.5 Model Development

In medical care literature, perceptions are defined as patients' beliefs concerning the medical services received or experienced. Expectations are defined as "desires or wants of patients, i.e., what they feel an ideal standard of performance the physician should offer rather than would offer." These expectations may be based, in part or in total, on past relevant experiences, including those gathered vicariously. For example, one may form expectations about a visit to a physician from one's own experience or by observing or being informed about someone else's experience.

In computing medical services-quality gaps, a modified version of the SERVQUAL is more appropriate due to the unique characteristics of physicians and physician-client relationship. For example, physicians typically have advanced degrees, meet credential requirements, and often hold equity positions in their organizations.

The interactive nature of medical services indicates a need to examine the perceptions of both parties involved in the service encounter. Overall, physicians' perceptions most directly affect the design and delivery of the services offered, whereas clients' perceptions more directly determine evaluation of the service delivered. Hence, both parties are very important and must be considered if a more thorough understanding of service quality is to be gained.

Potential gaps that relate to expected and experienced service and represent both sides of the service exchange should have a significant impact on the service evaluation. In general, these gaps include:

- An intraclient gap between client expectations and client experiences and,
- client-physician gaps between client expectations and physician perceptions of those expectations, as well as between client experiences and physician perceptions of those experiences.

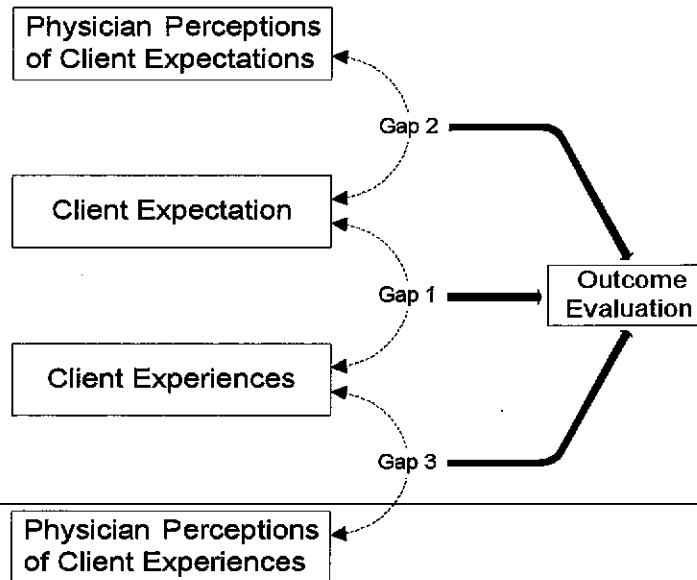
More specifically, Figure 2.3 shows three gaps that are relevant to my study.

Gap 1 = client expectations - client experiences

Gap 2 = client expectations - physician perceptions of client expectations

Gap 3 = client experiences - physician perceptions of client experiences

FIGURE 2.3 Potential Causes of Medical Service-Quality Shortfalls



Implicit in these gaps are the following hypotheses to be tested.

- H₁** : The level of positive client evaluation of the clinical service is related inversely to gap 1.
- H₂** : The level of positive client evaluation of the clinical service is related inversely to gap 2.
- H₃** : The level of positive client evaluation of the clinical service is related positively to gap 3.

Gap 1 hypothesized to be related to positive client evaluation because it measures the difference between client expectations and experiences, a standard approach to determine satisfaction and assessing an encounter.

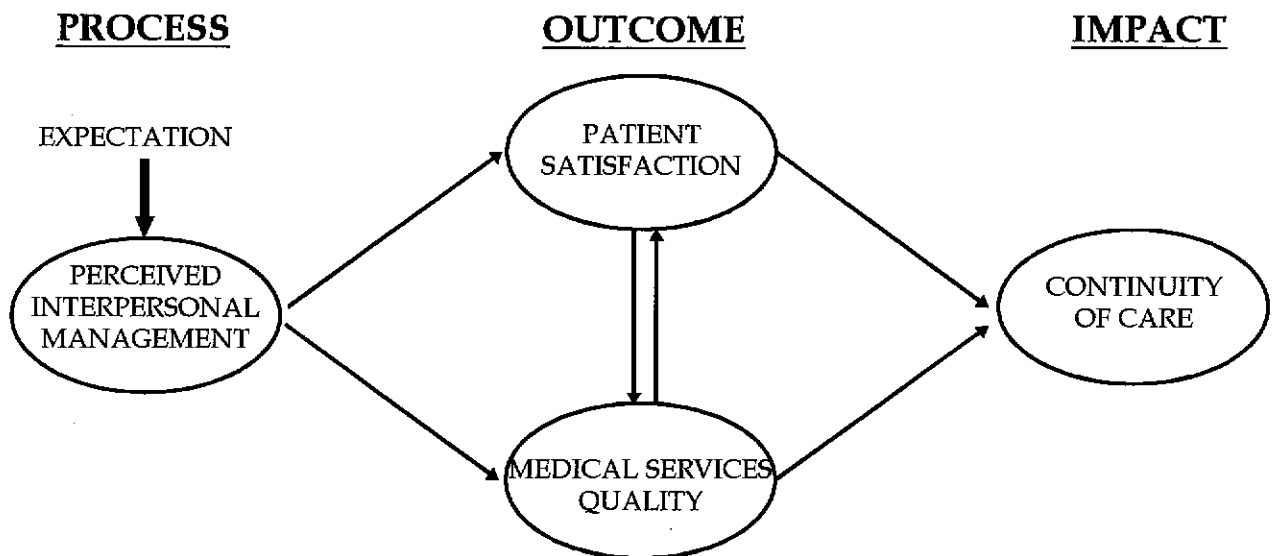
Gap 2 and gap 3 are hypothesized to be related to positive client evaluation because they reflect differences between client's expectations/experiences and the physician's perceptions of them. The physician would design, develop, and deliver the service offering on the basis of his/her perceptions of client expectations. Likewise, modifications to the service offering would be affected by the physician's perceptions of client experiences. Whether these

experiences exceed, match, or are below expectations can have a profound effect on future client-physician relationships. For example, if a physician exceeds the client's expectations, a true person-to-person bonding relationship often is initiated or furthered, which in turn builds client loyalty and may also encourage referrals. Therefore, one can argue that gaps in either of these gaps areas can directly influence positive client evaluation.

The second objective of my study is to examine the relationships between medical service quality, patient satisfaction, and patient intention to return to the same physician if a need arises (See Figure 2.4). The following three additional hypotheses are to be tested:

- H₄ : Client satisfaction is an antecedent of medical service quality.
- H₅ : Client satisfaction has a significant impact on patient's behavioral intention.
- H₆ : Medical service quality has a significant impact on patient's behavioral intention.

FIGURE 2.4 Conceptual Model of Medical Service Quality



This model will be used as a framework for this research as it provides a structure for understanding medical service quality, measuring it, diagnosing service quality problems, and deriving solutions to the problems.

Chapter 3

Research Design And Methodology

I believe that one way to address the objectives presented in chapter two is through a survey technique. A structured questionnaire was devised and pretested. The pretest was conducted through personal interviews and was meant to test the questionnaire. The actual survey was conducted between July 25 and September 8 in accordance with guidelines traditionally followed in the research field³⁸.

3.1 Sample And Research Procedure

3.1.1 Sample

Thirty six physicians involved in primary care, specializing in internal or family medicine, are included in this study. Each physician's office randomly provided ten adult patients having made at least one prior visit, which constituted the patient sample. The identities of the physicians and their patients remain anonymous since the purpose of this research is not to evaluate the physicians but to assess and improve medical services quality.

3.1.2 Research Procedure

The data used to examine the research questions were obtained from questionnaires handled to both physicians and patients. Each physician received a questionnaire identical to the one the patient received, with the exception of (1) changes in the introductory instructions and in the demographic and classification questions, and (2) deletion of section 3, talking about overall evaluation of medical service and patient's behavioral intentions. Physicians were

³⁸ Churchill, GA. *Basic Marketing research*. Orlando, The Dryden Press, 1992.

instructed to respond to the items the way they believed their patients would respond. This procedure allowed for a direct comparison between patients' perceptions and physicians' generalized perception of the patients' views³⁹.

Questionnaires were delivered to 36 physicians and 360 patients. There were 23 questionnaires returned by the physicians, yielding a 64 percent response rate without follow-up. Of the 360 patients sampled, 107 responded yielding a 30 percent response rate.

Any patient whose data were missing on the statements being tested was eliminated from that analysis. In addition, one physician failed to respond to several items; he was dropped including his patients from further analysis. The result was a final overall patient sample size of 99 across the 22 physicians. While the sample in the current study may be considered small for attempting to make inferences for the entire population, it is adequate for scale development and testing purposes.

3.2 Description Of The Selected Variables

Statements presented in the questionnaire pertained to the relationship of the patient with his/her physician and corresponding support staff, as well as observations on various services provided. Past researches in the medical area assisted in item generation^{40,41,42,43}. In addition, care was taken to include statements that corresponded to the ten critical dimensions of service quality proposed by Zeithaml, Parasuraman, and Berry⁴⁴. Those critical

³⁹ Brown, SW., Swartz, TA. "A Gap Analysis of Professional Service Quality." *Journal of Marketing*, 1989 (April); v.53 p.95.

⁴⁰ Ibid., p.94

⁴¹ Ware, JE., et al. "Consumer Perceptions of Health Care Services: Implications for Academic Medicine." *Journal of Medical Education*, 1975 (Sept.); v.50 p.844.

⁴² Rubin, RR., et al. "Patient Judgments of Hospital Quality." *Medical Care*, 1990; v.28 #9 (Suppl.) pp.s45-s56

⁴³ Donabedian, A., *The Definition of Quality and Approaches to its Assessment*, vol. 1: *Explorations in Quality Assessment and Monitoring*. Ann Arbor, Mich, Health Administration Press, 1980; pp. 131-32.

⁴⁴ Zeithaml, VA. et al. *Delivering Service Quality: Balancing Customer Perceptions & Expectations*. New York, The Free Press, 1990; pp. 21-22.

dimensions or evaluation criteria that patients use in assessing service quality are:

1. **Courtesy** – politeness, respect, consideration, and friendliness of physician and physician's staff.
2. **Access** – approachability and ease of contact.
3. **Communication** – keeping patients informed in language they can understand and listening to them.
4. **Understanding** – making the effort to know patients and their obligations.
5. **Empathy** – caring, individualized attention provided to patients.
6. **Reliability** – ability to perform the promised service dependably and accurately.
7. **Tangibles** – appearance of physical facilities, equipment, staff, and communication material
8. **Responsiveness** – willingness to help patients and provide prompt service.
9. **Competence** – possession of the required skills and knowledge to perform the service.
10. **Assurance** – knowledge and courtesy of physicians and their ability to convey trust and confidence.

These evaluation criteria are a function of the expectations patient bring to the service situation, and experiences patient received during the encounter. Expectation reflects what the patient hopes to receive, while experience reflects what the patient perceive he/she is getting.

3.3 Description Of All Measures Used To Collect Data

Following this approach, 11 statements were developed (rated on a 5-point Likert scale ranging from "Strongly Disagree = 1" to "Strongly Agree = 5") related to patients' expectations on the quality of the service that clinics should offer and 32 statements were developed related to patients' experiences on the quality of service actually delivered (See Table 3.1).

TABLE 3.1 Questionnaire Items Used to Measure Patient Expectations & Experiences

<u>Patient Expectations</u>	<u>Patient Experiences</u>
<ol style="list-style-type: none"> 1. Appointment should be made easily & quickly. 2. I expect the doctor's fee to be reasonable for the professional service rendered. 3. I expect my doctor to keep up on the latest medical technologies. 4. I expect my doctor to be sincerely interested in me as a person. 5. I expect my doctor to examine me carefully before deciding what is wrong. 6. I expect my doctor to explain tests & procedures to me. 7. I would like to have more health-related information available in the reception area. 8. I would like to have brochures available from my doctor explaining my medical problem and treatment. 9. I expect the doctor's office to be open at times that are convenient to my schedule. 10. I expect my doctor to be available in an emergency. 	<ol style="list-style-type: none"> 1. My doctor hears what I have to say. 2. My doctor gives me enough information about my health. 3. My doctor gives me brochures explaining my medical problem and treatment. 4. My doctor is careful to explain what I am expected to do. 5. My doctor is extremely attentive to details. 6. My doctor spends enough time with me. 7. My doctor examine me carefully before deciding what is wrong. 8. I have complete trust in my doctor. 9. My doctor takes real interest in me. 10. I have my doctor's full attention when I see him/her.
<ol style="list-style-type: none"> 11. Where my medical care is concerned, my doctor should make all the decisions. 	<ol style="list-style-type: none"> 11. My doctor always treats me with respect. 12. My doctor thoroughly explains to me the reasons for the tests and procedures that are done on me. 13. My doctor's staff is friendly and courteous. 14. The staff at my doctor's office is very flexible in dealing with my individual needs & desires. 15. My doctor's office staff is more interested in serving the doctor than meeting my needs. (R) 16. The staff acts in a professional manner. 17. My doctor prescribes many drugs and pills. (R) ‡ 18. My doctor orders too many X-rays and lab tests. (R) 19. My doctor takes unnecessary risks in treating me. (R) 20. My doctor's main interest is in making as much money as he/she can. (R) 21. My doctor and the staff talk as if I am not even there. (R) 22. My doctor will not admit when he/she does not know what is wrong with me. (R) 23. There are some things about the medical care I receive from my doctor that could be better. (R) 24. My doctor explains a little about my medical problems. (R) 25. My doctor is better trained than the average doctor. 26. Compared to other doctors, my doctor makes fewer mistakes. 27. My doctor keeps up on the latest medical discoveries. 28. My doctor gives me choices when deciding my care. 29. My doctor is present during his/her clinic hours. 30. I'm kept waiting a long time at my doctor's office. (R) 31. My doctor's office is conveniently located for me. 32. My doctor is on staff at a hospital convenient for me.

‡ (R) indicates that the score on the statement has been reversed.

The patient's questionnaire also contained a question about patients' overall perceptions of clinic quality, a question about patients' overall satisfaction towards the medical services delivered, and a question about whether or not patient intended to return to the same doctor if a need was to arise.

The overall quality perceptions statement was measured on a five-point scale with end points labeled "Very Poor = 1" and "Excellent = 5 ." The statement was phrased as follows: "The quality of medical services delivered in this clinic is ____." The overall patient satisfaction with the service delivered statement was measured on a five-point scale with end points labeled "Completely Unsatisfied = 1" and "Completely Satisfied = 5 ." The statement was phrased as follows: "My feelings towards the medical services delivered in this clinic can best be described as ____." The intention-to-return statement, measured on a five-point "Strongly Disagree = 1" – "Strongly Agree = 5" scale, was worded as follows: "If I were to find myself in the same situation I was in when I went to this clinic, I would want to receive my treatment there again." Last, various demographic and classification questions were presented in both questionnaires. (See Appendix A for a sample of patient's questionnaire)

3.4 Description Of The Conceptual Framework For Analyzing The Data⁴⁵

3.4.1 Reliability

Reliability simply means that a set of latent construct indicators are consistent in their measurements. In more formal terms, reliability is the degree to which a set of two or more indicators "share" in their measurement of a construct. High reliable constructs are those in which the indicators are highly intercorrelated, indicating that they

⁴⁵ For a more detailed discussion of the various multivariate techniques, see Hair, JF., et al. *Multivariate Data Analysis with Readings*, New York, Macmillan Publishing Company, 1992; Chapters 2, 6, & 10.

all are measuring the same latent construct. As reliability decreases, the indicators become less consistent and thus are poorer indicators for the latent construct.

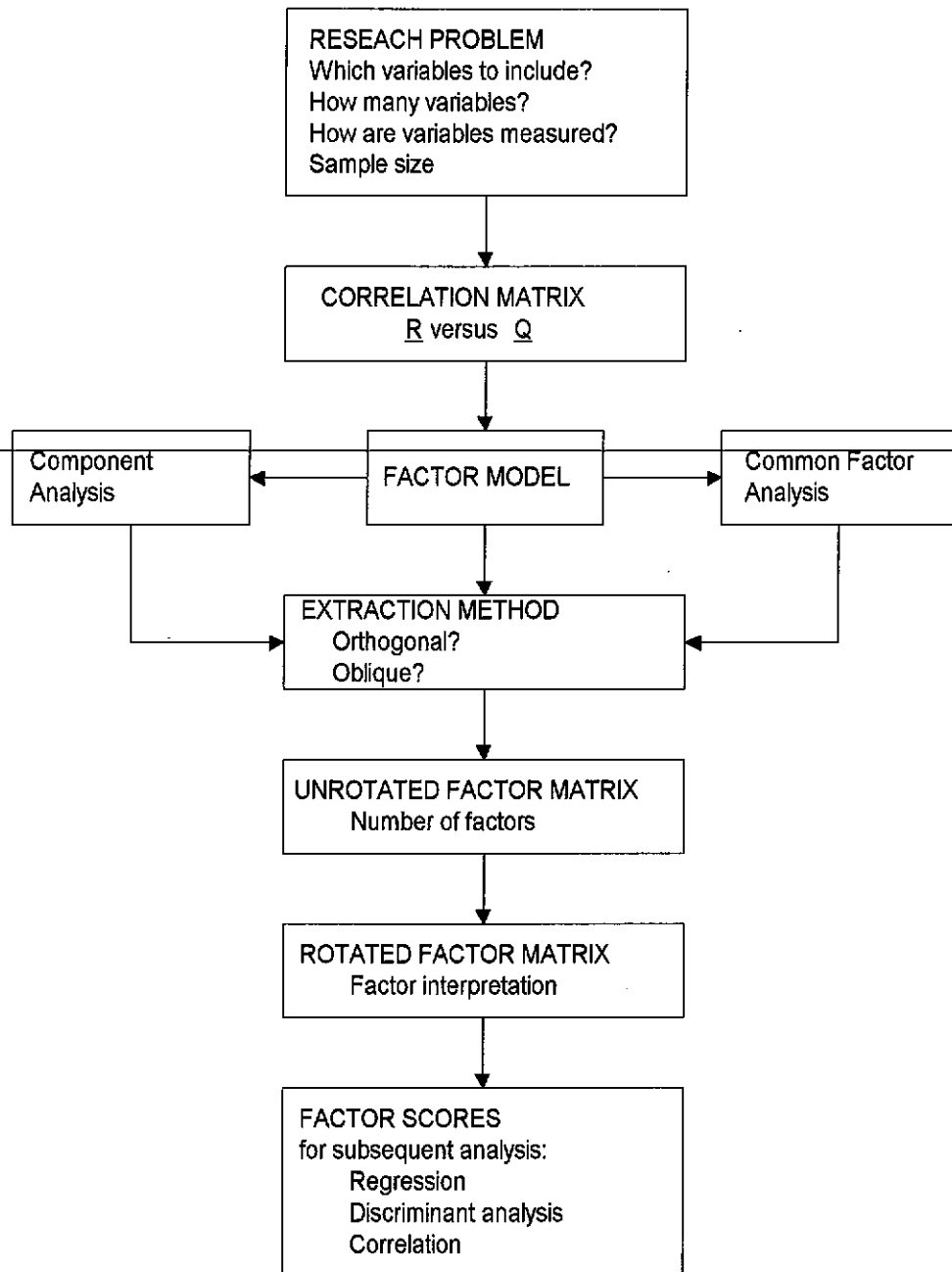
A commonly used measure of reliability for a set of two or more construct indicators is the Cronbach coefficient alpha. Values range between 0 and 1.0, with higher values indicating higher reliability among the indicators.

3.4.2 Exploratory Factor Analysis

Exploratory factor analysis can be utilized to examine the underlying patterns or relationships for a large number of variables and find a way of condensing or summarizing the information into a smaller set of factors or components with a minimum loss of information.

Figure 3.1 shows the general steps followed in any application of exploratory factor analysis. The starting point in factor analysis is the research problem. The analyst needs to answer several questions at this point: What variables should be included? How many variables should be included? How are the variables measured? And is the sample size large enough? Regarding the question of variables, any variables relevant to the research problem can be included as long as they are appropriately measured. Raw data variables for factor analysis are generally assumed to be of metric measurement. Regarding the sample size question, the researcher generally would not factor-analyze a sample of fewer than 50 observations. As a general rule, there should be four or five times as many observations as there are variables to be analyzed.

FIGURE 3.1 Exploratory Factor Analysis Decision Diagram



One of the first decisions in the application of factor analysis focuses on the approach to use in calculating the correlation matrix. The analyst could derive the correlation matrix based on the computation of correlations between the variables. This would be an R-type factor analysis, and the result would be a factor pattern demonstrating the underlying relationships of the variables. The analyst could also elect to derive the correlation matrix based on the correlations between the individual respondents. This is Q-type factor analysis, and the results would be a factor matrix that would identify similar individuals.

Numerous variations of the general factor model are available.

The two most frequently employed factor analytic approaches are component analysis and common factor analysis. Selection of the factor model depends upon the analyst's objective. The component model is used when the objective is to minimize most of the original information in a minimum number of factors for prediction purposes. In contrast, common factor analysis is used primarily to identify underlying factors or dimensions not easily recognized.

How do we decide on the number of factors to extract? When a large set of variables is factored, the analysis will extract the largest and best combinations of variables first, and then proceed to smaller, less understandable combinations. In deciding when to stop factoring, two commonly used stopping criteria can be used: Latent root criterion, and Scree test criterion⁴⁶.

- i) **Latent Root Criterion:** The most commonly used technique is referred to as the latent root criteria. In component analysis only the factors having latent roots (eigenvalues) greater than 1.0 are considered significant; all factors with eigenvalues less than 1.0 are considered insignificant and disregarded. With common factor model, eigenvalue cutoff level should be lower.

⁴⁶ Ibid., pp.236-237.

ii) Scree Test Criterion: The scree tail test is derived by plotting the eigenvalues against the number of factors in their order of extraction, and the shape of the resulting curve is used to evaluate the cutoff point. The point at which the curve first begins to straighten out is considered to indicate the maximum number of factors to extract.

In addition, the analyst must specify how the factors are to be extracted. Two options are available: orthogonal factors and oblique factors. In an orthogonal solution, the factors are extracted in such a way that the factor axes are maintained at 90 degrees, meaning that each factor is independent of all other factors. Therefore, the correlation between factors is arbitrarily determined to be zero. In an oblique solution, the factor solution is computed so that the extracted factors are correlated. Oblique solutions assume that the original variables or characteristics are correlated to some extent; therefore, the underlying factors must be similarly correlated.

Unrotated factor solutions achieve the objective of data reduction, but the analyst must ask if the unrotated factor solution will provide information that offers the most adequate interpretation of the variables under examination. In most instances the answer to this question will be no. Therefore, the basic reason for employing a rotational method is to achieve simpler and theoretically more meaningful factor solutions.

Several different approaches are available for performing either orthogonal or oblique rotations. Orthogonal rotational approaches are more widely used because the analytical procedures for performing oblique rotations are not as well developed and are still subject to considerable controversy. When the objective is to utilize the factor results in a subsequent statistical analysis, the analyst should always select an orthogonal rotation procedure, because the factors are orthogonal and therefore eliminate collinearity. However, if the analyst is simply interested in obtaining theoretically meaningful constructs or dimensions, the oblique factor rotation is

more desirable because it is theoretically and empirically more realistic.

Three major orthogonal approaches have been developed. They are QUARTIMAX, VARIMAX, and EQUIMAX⁴⁷.

1. **Quartimax Rotation:** This rotation is aimed at maximizing the variances of normalized factor loadings across factors for each variable; this is equivalent to maximizing the variances in the rows of the matrix of normalized factor loadings.
2. **Varimax Rotation:** This rotation is aimed at maximizing the variances of normalized factor loadings across variables for each factor; this is equivalent to maximizing the variances in the columns of the matrix of normalized factor loadings. This is the method that is most commonly used.
3. **Equimax Rotation:** This rotation can be considered to be a "weighted mixture" of the varimax and quartimax rotation. Specifically, it is aimed at simultaneously maximizing the sum of variances of normalized factor loadings across factors and maximizing the sum of variances of normalized factor loadings across variables; this is equivalent to simultaneously maximizing the variances in the rows and columns of the matrix of raw factor loadings.

In interpreting factors, a decision must be made regarding which factor loadings are worth considering. It is a rule of thumb that when the sample size is 50 or larger, factor loadings greater than +0.3 or less than -0.3 are considered significant; factor loadings greater than +0.4 or less than -0.4 are considered more important; and if the loadings are greater than +0.5 or less than -0.5, they are considered very significant.

3.4.3 Confirmatory Factor Analysis

Confirmatory factor analysis known by many names, among them structural equation modeling, and often simply LISREL analysis⁴⁸ (the name of one of the more popular software packages), is a

⁴⁷ Ibid., pp.235-236.

⁴⁸ Jöreskog, KG., et al. *LISREL VIII: Structural Equation Modeling with the SIMPLIS Command Language*. Mooresville, Ill., Scientific Software, 1993.

multivariate technique to test (confirm) a prespecified relationship. It can be specified with a path diagram showing the proposed structure of the model based on theoretical grounds. The underlying constructs, called latent variables, are analogous to factors in factor analysis. Here it might be helpful to distinguish between exploratory factor analysis and confirmatory factor analysis. Exploratory factor analysis refers to discovering underlying factor structures without prior specification of the number of factors and their loadings. On the other hand, confirmatory factor analysis tests specific expectations regarding the number of factors and their loadings.

In general, the full structural equation model consists of two components: the measurement part and the structural part.

In the measurement part, the two basic equations are:

$$X = \Lambda_X \xi + \delta$$

$$Y = \Lambda_Y \eta + \varepsilon$$

Both Λ_X and Λ_Y are factor pattern matrices. Λ_X contains regression coefficients of X on ξ variables while Λ_Y contains the coefficients of regressions of Y on η variables. The measurement errors, sometimes called residuals, are represented by the vectors δ and ε for X and Y , respectively. In short, this part of the full structural equation model delineates relations between the measured (observed) and latent (unobserved) variables.

The basic equation for the structural part of the general model can be expressed by:

$$\eta = B \eta + \Gamma \xi + \zeta$$

The matrix Γ specifies the hypothesized causal effects of the exogenous latent variables ξ on the endogenous latent variables η . The matrix B contains the hypothesized causal effects among the endogenous latent variables. The structural errors or residuals are represented by the vector ζ . In short, this part defines the hypothesized causal structure among the latent variables.

In addition to the vectors and matrices mentioned, there are also the measurement error variance-covariance matrices labeled as Θ_{δ} for the X variables, and Θ_{ϵ} for the Y variables. In addition, Φ and Ψ are the variance covariance matrices for ξ and for ζ respectively.

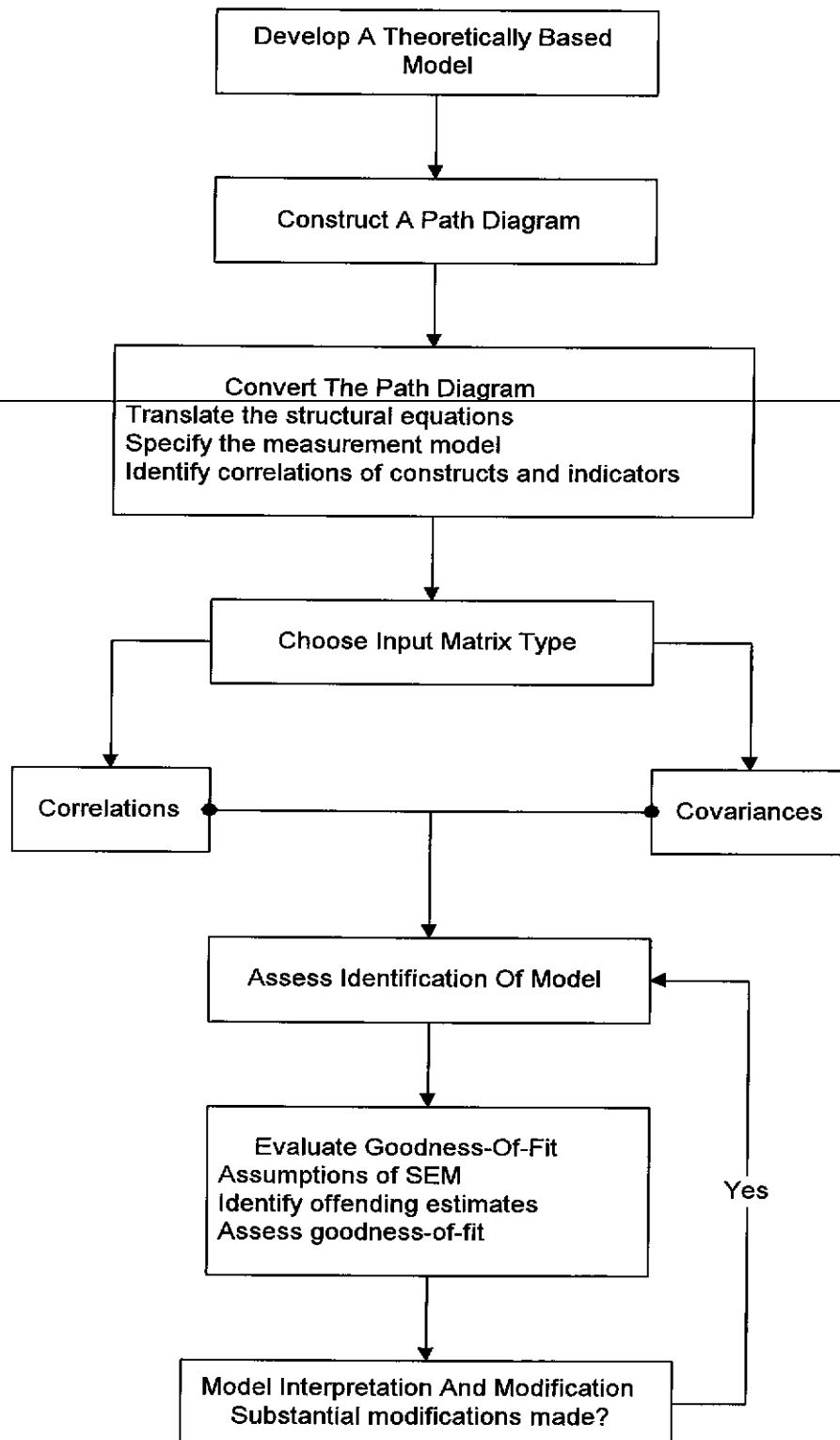
In tabular form:

TABLE 3.2 Mathematical Notations used in LISREL Analysis

<u>Name</u>	<u>Notation</u>	<u>Description</u>
	X	Observed exogenous variables
	Y	Observed endogenous variables
Xi	ξ	Latent exogenous variables
Eta	η	Latent endogenous variables
Zeta	ζ	Errors in equation
Delta	δ	Unique factors for X
Epsilon	ϵ	Unique factors for Y
Lambda X	Λ_X	Factor loadings of X on ξ
Lambda Y	Λ_Y	Factor loadings of Y on η
Beta	B	Direct effects of η on η
Gamma	Γ	Direct effects of ξ on η
Phi	Φ	Covariance matrix for ξ
Psi	Ψ	Covariance matrix for ζ
Theta Delta	Θ_{δ}	Error covariance matrix for the X
Theta Epsilon	Θ_{ϵ}	Error covariance matrix for the Y

Since structural equation modeling involves complex computational procedures, several software packages are available to better facilitate applications of the technique. LISREL 7 is one of the most widely used packages. Figure 3.2 represents a step-by-step procedure to follow while performing the confirmatory factor analysis using LISREL 7.

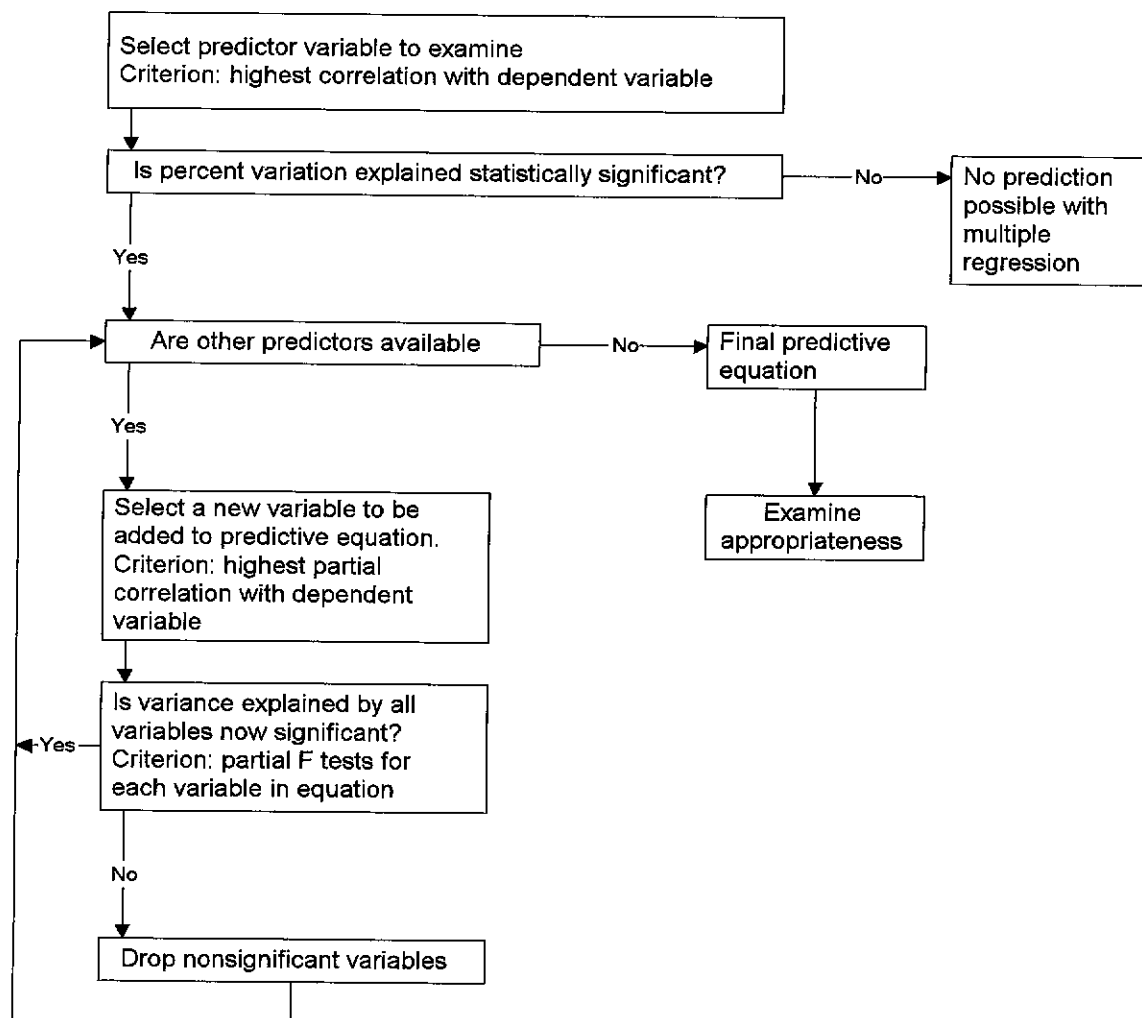
FIGURE 3.2 Confirmatory Factor Analysis Decision Diagram



3.4.4 Stepwise Regression Analysis

Stepwise regression analysis allows you to examine the contribution of each predictor variable to the regression model. It is based on the notion that predictor variables should be inserted one at a time until a satisfactory regression equation is found. Figure 3.3 represents a step-by-step procedure to be followed in the application and generation of stepwise regression analysis.

FIGURE 3.3 Stepwise Regression Analysis Decision Diagram



Having identified the design and the methodology of this research, the variables to be included, and the analysis tools to be used, it is an important step now to list the findings and evaluate them in the light of the hypotheses to be tested. This is in fact the objective of the following chapter.

Chapter 4

Research Findings

After presenting the methods followed and tools used for analyzing the data collected for this study, it is the intent of this chapter to present the findings and analyze them.

4.1 Dimensionality & Reliability Of Service Quality Measures

The internal consistency of the modified SERVQUAL scale for assessing patients' perceptions of service quality in the clinical environment was examined. The analyses conducted related to the underlying dimensionality, and scale's reliability. Dimensionality assessment was based on correlation and factor analyses. Reliability assessments were based on the internal consistency of the items (using the Cronbach coefficient alpha) representing the same dimension of service quality as well as the overall scale.

An initial description of the data revealed that items nonresponses on the perceptions portion of the scale were common. No such tendency appeared on the expectations part of the scale. These results suggest that patients may have a clear idea on desirable levels of service attributes, but that actual service performance become difficult to assess either because of the time lapse or the unique nature of the service experience.

4.1.1 Dimensionality

In order to examine the underlying dimensions for the set of expectation statements and the set of experience statements, principal components analyses on the patients' responses were conducted on their respective correlation matrices. Each group of

variables was analyzed by using a Varimax Normalized rotation, with a factor loading of 0.45 or better. The number of factors to be extracted was determined by evaluating the scree plot and the eigenvalues scores.

TABLE 4.1 Component Analysis Correlation Matrix for Expectations (N = 99)

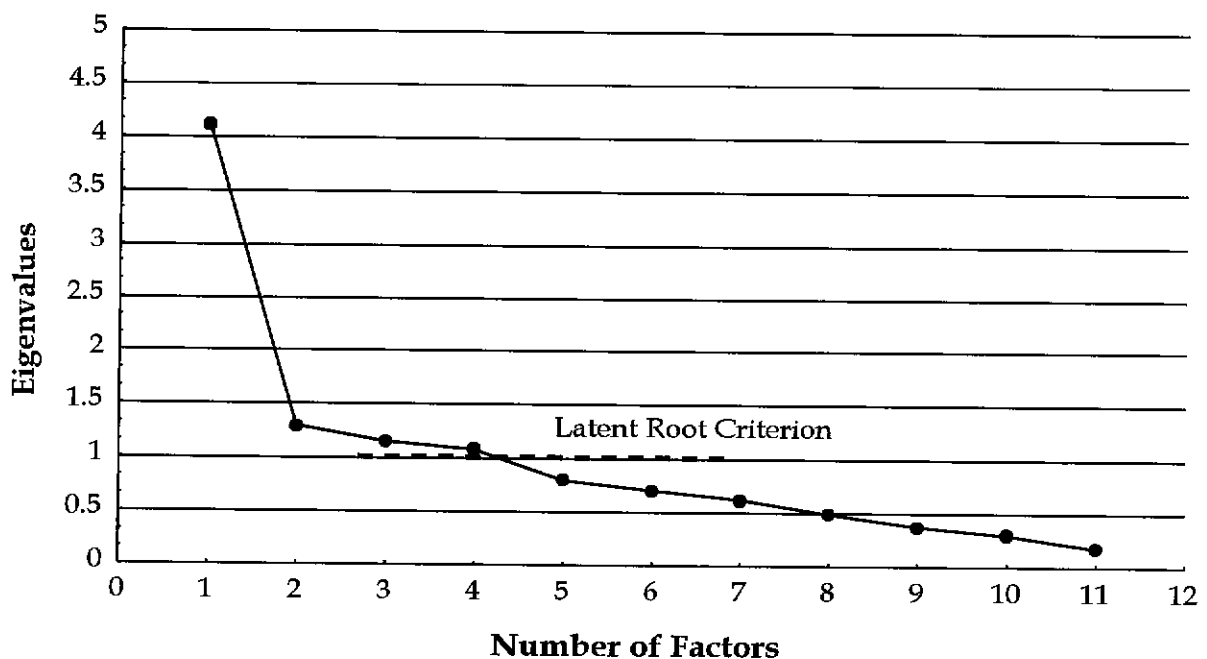
Expectation Variables	Correlation Among Variables											
	\hat{E}_1	\hat{E}_2	\hat{E}_3	\hat{E}_4	\hat{E}_5	\hat{E}_6	\hat{E}_7	\hat{E}_8	\hat{E}_9	\hat{E}_{10}	\hat{E}_{11}	
\hat{E}_1 Appointment	1.000											
\hat{E}_2 Fees	.218	1.000										
\hat{E}_3 Up-to-date	.177	.257	1.000									
\hat{E}_4 Friendliness	.098	.185	.356	1.000								
\hat{E}_5 Examination	.231	.437	.568	.590	1.000							
\hat{E}_6 Explanation	.175	.294	.625	.423	.376	1.000						
\hat{E}_7 Health Information	.051	.190	.197	.217	.293	.403	1.000					
\hat{E}_8 Brochures	.098	.185	.247	.493	.406	.500	.493	1.000				
\hat{E}_9 Visiting Hours	.245	.326	.254	.253	.314	.346	.415	.346	1.000			
\hat{E}_{10} Availability	.411	.135	.324	.319	.277	.381	.289	.333	.526	1.000		
\hat{E}_{11} Decisions	-.022	.028	.342	.286	.160	.288	.105	.391	.116	.376	1.000	

Correlations significant at the 0.05 level.

Table 4.1 shows the correlation matrix for the set of expectation statements. Inspection of the correlation matrix reveals that 40 of the correlations are significant at the 0.05 level, but it is difficult to derive a complete and clear understanding of their relationships. From a component analysis of these variables, it should be possible to do so.

The starting point in factor analysis is to determine the number of factors to retain for examination and possible rotation. Data on expectations produced four factors with eigenvalues greater than the latent root criterion value of 1.0. The scree plot (Figure 4.1), however indicates that three factors may be appropriate. In viewing the eigenvalue for the fourth factor, it was determined that it must not be included in the analysis since its value located in the straighten part of the curve.

FIGURE 4.1 Eigenvalue Plot for Expectations



The three retained factors accounted for 63.08 percent of the variation in item scores. These factors and items loadings on them are reported in Table 4.2.

TABLE 4.2 VARIMAX Rotated Component Analysis of Expectations

Item Labels [#]	Factors		
	Professionalism	Professional Responsibility	Auxiliary Communication
Appointment should be made easily & quickly [‡]	— —	— —	— —
Dr. should charge reasonable fees	.600	-.450	.280
Dr. should keep up on latest technologies	.759	.280	.070
Dr. should be friendly	.633	.334	.181
Dr. should examine me carefully	.842	-.016	.195
Dr. should explain tests & procedures	.580	.296	.396
Health-related information should be available	.123	.013	.772
Brochures should be available	.328	.406	.552
Clinic should be open at times convenient to me	.189	-.060	.803
Dr. should be available in an emergency	.160	.418	.603
Dr. should make all the decisions	.201	.806	.097
Eigenvalue	4.013	1.166	1.129
Variance explained	40.13%	11.66%	11.29%

[#] Scale items are shortened so as to reflect content

[‡] Item deleted due to low item-factor correlation

Table 4.3 shows the correlation matrix for the set of experiences statements. However, interpretation of this correlation matrix is extremely difficult since it contains 528 separate entry. From a component analysis of these variables, it should be possible to derive a complete and clear understanding of their relationships.

TABLE 4.3 Component Analysis Correlation Matrix for Experiences (N = 99)

Experience Variables	Correlation Among Variables																																						
	E ₁	E ₂	E ₃	E ₄	E ₅	E ₆	E ₇	E ₈	E ₉	E ₁₀	E ₁₁	E ₁₂	E ₁₃	E ₁₄	E ₁₅	E ₁₆	E ₁₇	E ₁₈	E ₁₉	E ₂₀	E ₂₁	E ₂₂	E ₂₃	E ₂₄	E ₂₅	E ₂₆	E ₂₇	E ₂₈	E ₂₉	E ₃₀	E ₃₁	E ₃₂							
E ₁ Listen	1.000																																						
E ₂ Informative	.484	1.000																																					
E ₃ Brochures	.546	.525	1.000																																				
E ₄ Instructions	.480	.365	.345	1.000																																			
E ₅ Attentive	.625	.555	.384	.610	1.000																																		
E ₆ Time Span	.386	.419	.168	.420	.390	1.000																																	
E ₇ Examination	.562	.435	.194	.424	.684	.566	1.000																																
E ₈ Trust	.437	.381	.304	.379	.408	.335	.438	1.000																															
E ₉ Caring	.445	.444	.392	.370	.307	.514	.419	.392	1.000																														
E ₁₀ Attention	.323	.310	.370	.485	.430	.342	.442	.392	.552	1.000																													
E ₁₁ Respect	.350	.323	.242	.322	.427	.237	.420	.522	.559	.605	1.000																												
E ₁₂ Explanation	.414	.370	.402	.430	.496	.293	.410	.529	.552	.584	.474	1.000																											
E ₁₃ Friendliness	.365	.349	.268	.314	.347	.135	.259	.479	.380	.304	.360	.409	1.000																										
E ₁₄ Needs	.125	.022	.077	.148	.187	.121	.070	.224	.158	.133	.069	.301	.485	1.000																									
E ₁₅ Staff's Skill	.180	.142	.346	.302	.270	.044	.240	.421	.224	.394	.243	.307	.666	.550	1.000																								
E ₁₆ Coordination	.011	-.122	.234	-.145	-.050	.107	-.006	-.095	-.008	.030	-.066	-.089	.030	.050	.011	1.000																							
E ₁₇ Prescriptions	.050	.079	.019	-.002	.081	.013	.012	.173	.072	.154	.127	.030	.092	.036	.308	.226	1.000																						
E ₁₈ Diagnostic Tests	.017	.041	.019	.031	.012	.090	-.036	.077	.044	.119	.016	-.047	-.059	.092	.110	.369	.431	1.000																					
E ₁₉ Risk-Taking	-.078	-.073	-.085	.052	.062	.132	-.014	.159	.012	.101	.123	-.095	.039	-.052	.089	.289	.512	.509	1.000																				
E ₂₀ Money-making	.097	-.004	-.031	.119	.086	.128	.067	.340	.186	.360	.283	.182	.263	.056	.336	.253	.565	.439	.579	1.000																			
E ₂₁ Support	.053	.245	.176	.102	.140	.148	.042	.316	.212	.452	.212	.156	.309	.028	.287	.426	.454	.284	.559	.680	1.000																		
E ₂₂ Uncertainty	.105	.141	.059	.157	.124	.221	.060	.264	.256	.323	.299	.203	.220	.110	.208	.272	.440	.232	.504	.637	.742	1.000																	
E ₂₃ Treatment	.069	.112	.051	.008	.158	.219	.002	.167	.149	.152	.094	.240	.133	.119	.002	.299	.190	.379	.332	.339	.308	.493	1.000																
E ₂₄ Information	.155	.106	.060	-.012	.071	.086	.104	.154	.042	.170	.146	.156	.052	.019	.072	.216	.483	.303	.411	.452	.308	.493	.398	1.000															
E ₂₅ Skills	.312	.251	.162	.265	.063	.102	.242	.338	.273	.400	.294	.283	.294	.116	.303	-.088	.168	.111	.153	.235	.473	.416	.393	.398	1.000														
E ₂₆ Mistakes	-.135	-.109	.105	-.042	-.056	-.144	-.118	-.079	-.079	.008	.204	.015	-.006	-.063	.027	.012	.192	.133	.212	.075	.144	-.074	-.145	.159	.304	1.000													
E ₂₇ Up-to-date	.135	.204	.160	.237	.184	.177	.143	.253	.233	.191	.067	.280	.078	.078	-.011	.200	.095	.110	.278	.203	.278	.223	.143	.307	.273	.223	1.000												
E ₂₈ Choices	-.036	.095	.176	.267	.158	.152	-.029	.096	.168	.200	.096	.139	-.029	.091	.150	-.030	.052	.039	-.144	.091	.016	.013	.100	.009	.049	-.098	.131	1.000											
E ₂₉ Presence	.253	.343	.223	.394	.166	.064	.055	.105	.191	.105	.222	.043	.272	.085	.119	.118	-.057	-.111	.002	.061	.146	.160	.134	.068	.122	-.130	.127	.002	1.000										
E ₃₀ Waiting	.279	.158	.075	.070	.349	.118	.169	.156	.112	.130	.114	.050	.237	.015	.191	.115	.045	-.031	.062	.213	.153	.132	.128	.211	.044	-.170	-.054	-.016	.166	1.000									
E ₃₁ Location	.089	.202	.590	.379	.236	.165	.146	.221	.284	.292	.144	.353	.244	.214	.263	-.191	.079	.047	.070	.089	.115	.049	.059	.099	.115	.044	-.170	-.054	.166	1.000									
E ₃₂ Hospitalization	.159	.212	.392	.258	.265	.324	.292	.204	.284	.212	.160	.223	.151	.054	-.075	-.146	-.016	-.059	-.027	.033	.085	.002	.008	.033	.086	.018	.155	.142	.005	-.082	.432	1.000							

Correlations significant at the 0.05 level.

Factor analysis results for the experiences data appear in Table 4.4. Six factors, with eigenvalues greater than 1.0, accounted for 59.09 percent of the overall variance are extracted using Latent root criterion followed by a Scree test criterion (See Figure 4.2).

FIGURE 4.2 Eigenvalue Plot for Experiences

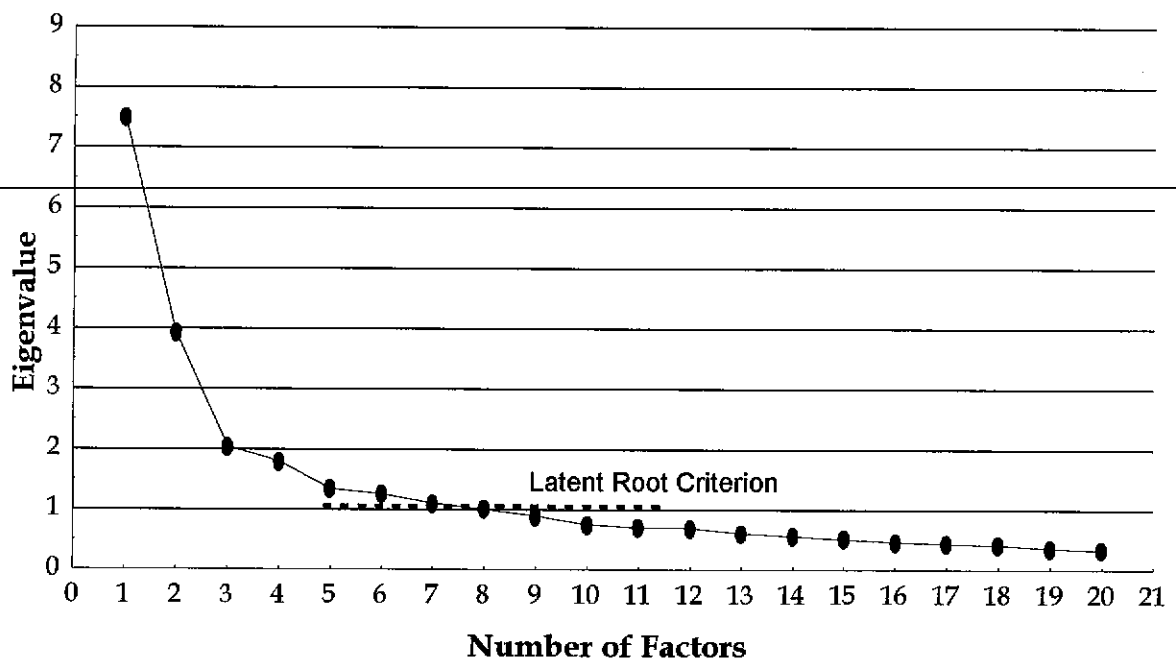


TABLE 4.4 VARIMAX Rotated Component Analysis of Experiences

Item Labels	Factors				
	Physician Interactions	Diagnostic	Staff Interactions	Professional Competence	Convenience
Dr. hears what I have to say	.747	-.008	.063	.054	-.237
Dr. gives me enough information	.683	.040	-.025	.035	.098
Dr. gives me brochures [‡]	--	--	--	--	--
Dr. explains what I must do	.650	-.018	.186	.159	.174
Dr. extremely attentive to details	.840	.025	.117	.074	-.025
Dr. spends enough time with me	.701	.132	-.111	-.136	.190
Dr. examines me carefully	.805	-.045	.036	.065	-.090
I completely trust my Dr.	.571	.203	.472	.041	.033
Dr. takes real interest in me	.670	.105	.262	-.053	.259
I have his full attention	.586	.230	.388	.082	.149
Dr. treats me with respect	.588	.168	.284	-.087	-.030
Dr. explains reasons for tests	.551	.085	.433	-.026	.306
Staff is friendly & courteous	.267	.076	.788	.065	.027
Staff fulfills my needs	.015	-.030	.705	-.047	.063
Staff acts in a professional manner	.151	.122	.822	.218	-.177
Staff's main concern is to serve Dr. [‡]	--	--	--	--	--
Dr. prescribes many drugs & pills	.017	.714	.009	.303	-.145
Dr. orders many X-rays & tests	-.015	.645	-.103	.200	-.093
Dr. takes unnecessary risks	-.030	.770	-.072	.179	-.020
Dr. main interest is in making money	.091	.789	.247	.080	-.073
Little attention I was getting	.103	.794	.236	-.034	.185
Dr. will not admit he doesn't know	.140	.763	.208	-.215	.110
Treatment could be better	.095	.614	.063	-.393	.192
Dr. explains a little about my illness	.108	.676	-.049	.057	-.078
Dr. is better trained than others	.307	.108	.243	.675	.020
Dr. makes fewer mistakes	-.204	.134	-.059	.729	.236
Dr. keeps up on latest discoveries	.191	.278	.133	.462	.311
Dr. gives me choices [‡]	--	--	--	--	--
Dr. is present during clinic hours [‡]	--	--	--	--	--
I kept waiting a long time	-.273	-.152	-.155	.149	.519
Clinic's location is convenient	.199	.046	.312	.247	.604
Dr. is on staff at a convenient hospital	.372	-.038	-.071	.013	.617
Eigenvalue	7.487	3.917	2.028	1.785	1.329
Variance explained	26.738%	13.989%	7.241%	6.375%	4.747%

[‡] Item deleted due to low item-factor correlation

Factor analysis was also conducted using expectations and experiences items together. The results did not identify the two stated distinct factors representing expectations and experiences. Moreover, rotation results did not identify any conceptually meaningful dimensions.

4.1.2 Reliability

Reliability analysis was performed to refine the extracted factors further. The coefficient alpha values were 0.777 and 0.727 for the expectation factors professionalism and auxiliary communications respectively. Corrected item-to-total correlations were also examined; that is, the scores for an item and the summated scores of the rest of the items comprising a factor were correlated.

Individual expectation items analysis indicated that all statements in each of the factors should remain; none had a correlation with the total scores lower than the 0.35 cut-off value. Item analysis results for expectations scores are presented in Table 4.5. Items means and standard deviations are also included in this table.

TABLE 4.5 Expectations Scale Item-to-Total Correlations, Reliabilities, Item Means, & S.D.

Items in Each Factor	Item-to-Total Correlations	Mean	S.D.
Professionalism ($\alpha = 0.777$)			
Dr. should charge reasonable fees	.375	4.515	.645
Dr. should keep up on latest technologies	.624	4.545	.627
Dr. should be friendly	.521	4.667	.685
Dr. should examine me carefully	.677	4.646	.690
Dr. should explain tests & procedures	.575	4.374	.750
Auxiliary Communications ($\alpha = 0.727$)			
Health-related information should be available	.521	3.626	1.006
Brochures should be available	.503	4.162	1.007
Clinic should be open at times convenient to me	.555	3.717	1.040
Dr. should be available in an emergency	.491	4.303	.886
Professional Responsibility (Fix $\alpha = 1$)			
Dr. should make all the decisions	--	4.303	.886
Overall Scale ($\alpha = 0.820$)[‡]			

[‡] Coefficient alpha for the overall scale (as a linear combination of subscales).

Coefficient alpha values for the experiences factors were 0.900 , 0.790 , 0.729 , 0.612 ,and 0.185 for physician interactions, staff interactions, diagnostic, and convenience, respectively. Using a cut-off of 0.50, it would appear that the factor "convenience" must be dropped out.

Individual-item analysis for the retained factors indicated that all items in each of the factors should remain. None of the item-to-total correlations for the experience items were less than the cut-off value. Item-to-total correlations in the experiences factors ranged from 0.770 to 0.355 . Item analysis results for experiences scores are presented in Table 4.6.

TABLE 4.6 Experiences Scale Item-to-Total Correlations, Reliabilities, & Item Means & S.D.

Items in Each Factor	Item-to-Total Correlations	Mean	S.D.
Physician Interactions ($\alpha = 0.900$)			
Dr. hears what I have to say	.610	4.586	.589
Dr. gives me enough information	.553	4.424	.730
Dr. explains what I must do	.618	4.485	.645
Dr. extremely attentive to details	.770	4.455	.627
Dr. spends enough time with me	.570	4.374	.777
Dr. examines me carefully	.680	4.576	.573
I completely trust my Dr.	.640	4.626	.582
Dr. takes real interest in me	.714	4.424	.671
I have his full attention	.664	4.343	.702
Dr. treats me with respect	.592	4.606	.586
Dr. explains reasons for tests	.632	4.424	.686
Staff Interactions ($\alpha = 0.790$)			
Staff is friendly & courteous	.645	4.434	.771
Staff fulfills my needs	.568	3.990	.909
Staff acts in a professional manner	.699	4.364	.762
Diagnostic ($\alpha = 0.868$)			
Dr. prescribes many drugs & pills (R)	.636	3.566	1.108
Dr. orders many X-rays & tests (R)	.554	3.515	1.155
Dr. takes unnecessary risks (R)	.663	4.152	.837
Dr. main interest is in making money (R)	.720	4.364	.874
Little attention I was getting (R)	.721	4.313	.922
Dr. will not admit he don't know (R)	.669	4.202	1.040
Treatment could be better (R)	.499	3.717	1.107
Dr. explains a little about my illness (R)	.583	3.788	1.043
Professional Competence ($\alpha = 0.612$)			
Dr. is better trained than others	.490	4.192	.888
Dr. makes fewer mistakes	.355	3.687	1.131
Dr. keeps up on latest discoveries	.467	4.242	.893
Convenience ($\alpha = 0.185$)			
I kept waiting a long time (R)	-.081	3.323	1.008
Clinic's location is convenient	.242	4.313	.751
Dr. is on staff at a convenient hospital	.198	3.990	.827
Overall Scale ($\alpha = 0.868$)			

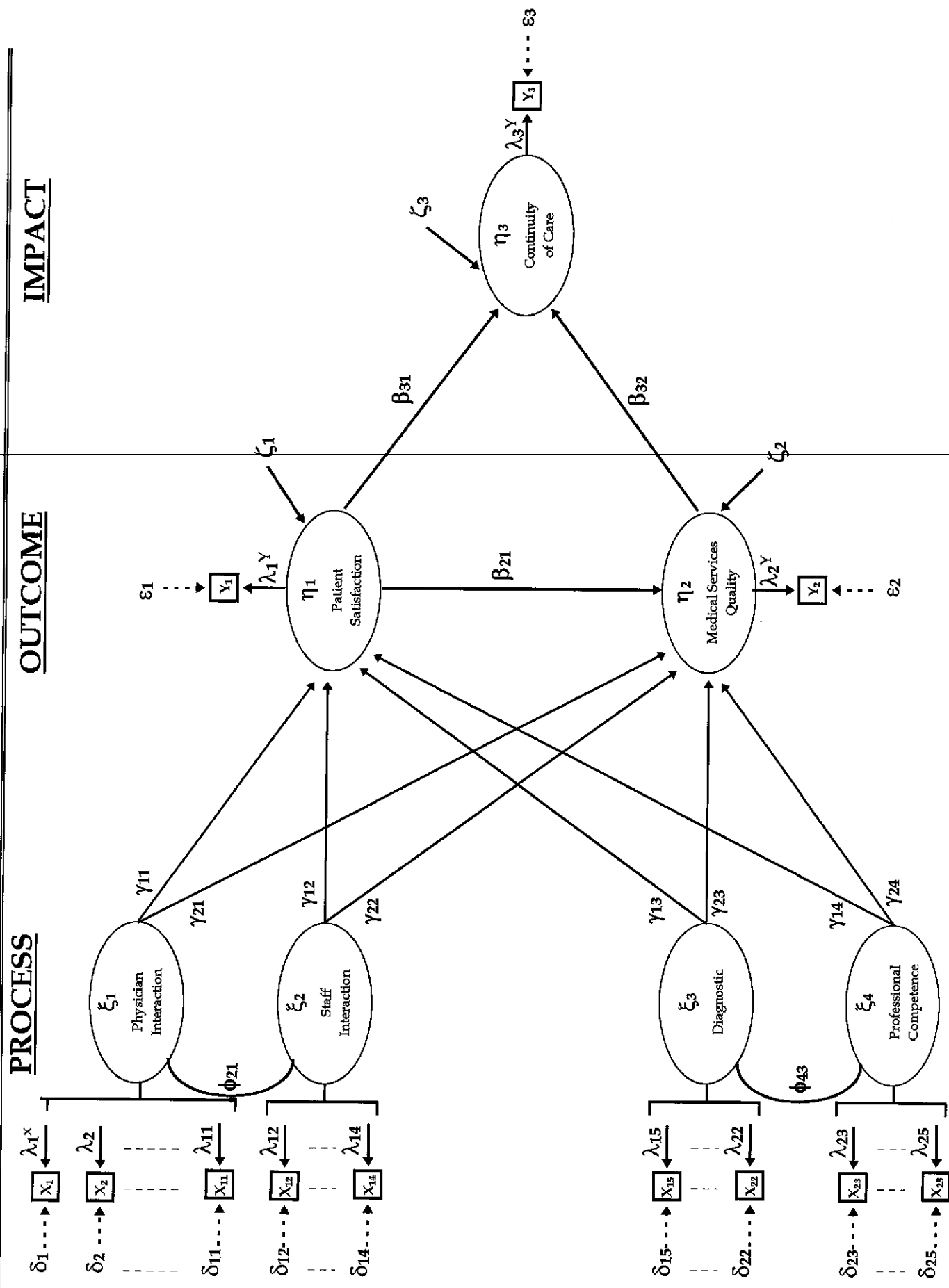
Reliabilities for linear combinations of the expectations and experiences subscales were also computed to assess the overall internal consistency of the expectations and experiences measures. The overall coefficient alpha values were 0.820 and 0.868 for the expectations and experiences scores, respectively. These values suggest that both measures exhibit desirable levels of internal consistency at the aggregate level, but the internal consistency of the experience factors is much stronger than that observed for the expectation factors.

4.2 Validity Of Service Quality Measures

Figure 4.3 specifies the causal model that is the subject of the discussion. The latent variables measuring service outcome and impact are represented by the symbol η . The latent variables measuring service process are represented by the symbol ξ . The parameter ϕ allows for correlated constructs (factors); λ parameter is analogous to factor loading; and the random variable δ represents unique error in measurement.

The proposed recursive structural equation model involves seven variables, four of which are exogenous (physician interaction, staff interaction, diagnostic, and professional competence) while three are endogenous (satisfaction, quality, and continuity).

FIGURE 4.3 Medical Services Quality Model



4.2.1 Overall Measures of Model Fit

This model is interpreted using LISREL 7 (see Appendix B for a copy of the LISREL input program)^{49,50}. The available fit measures which are directly computed by LISREL are the chi-square statistic (χ^2), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), and root mean square residual (RMSR).

Small and nonsignificant χ^2 values indicated a good fit. The GFI and the AGFI, which assess the relative amount of the variance and covariance jointly explained by the model, were considered acceptable if values were 0.90 or greater. The RMSR, a measure of the average of the fitted residuals, was acceptable if close to zero. A brief interpretation of the results from the LISREL analysis is given in Table 4.7.

TABLE 4.7 Standardized Parameter Estimates & t-Statistics for the Casual Model

Parameter	Estimate	t-Value
γ_{11}	3.250	4.201
γ_{12}	1.400	3.550
γ_{13}	2.716	6.106
γ_{14}	.353	4.495
γ_{21}	1.204	10.467
γ_{22}	.449	5.020
γ_{23}	.949	3.838
γ_{24}	.102	3.034
χ^2 ($df=332$)	681.570	($p = .000$)
GFI	.667	
AGFI	.595	
RMSR	.099	

Significant at the 0.05 Level

⁴⁹ Jöreskog, KG., et al. LISREL [Computer program]. Mooresville, IN: Scientific Software.

⁵⁰ Jöreskog, KG., et al. LISREL 7: A Guide to the Program & Applications. Chicago: SPSS.

This casual model of medical service quality has a chi-square value of 681.57, ($df=332$) with a probability level of 0.00. This value is significant, indicating a possible data misfit. Hence the null hypothesis of no difference between the observed and model implied correlation matrix is rejected.

The goodness-of-fit index (GFI) and the adjusted goodness-of-fit index (AGFI) are 0.667 and 0.595, respectively. Since the GFI for the present analysis lags the recommended value of 0.90, the data seem to misfit the model.

The root mean square residual (RMSR) is also given in the LISREL output and has a value of 0.099. Since the RMSR is a measure of the overall residual variance in fitting each parameter to the data, the low index for the present analysis indicates an acceptable fit.

4.2.2 Individual Measures of Model Fit

The standardized maximum likelihood estimates of interest are also given in Table 4.7. Elements of Gamma essentially can be interpreted as regression coefficients.

All Gamma elements are significantly different from zero. Professional competence directly affects medical service quality the least while physician interaction affects medical service quality the most. Therefore, the patient-physician relationship is the most vital force of the mechanism of health care delivery and the medium for the production of positive health outcomes.

4.3 Hypotheses Testing

The interactive nature of medical services indicates a need to examine the discrepancies or gaps exists regarding physician and patient perceptions of service quality if a more thorough understanding of service quality is to be gained. Three gaps are relevant to my study can be identified:

Gap 1 = client expectations - client experiences

Gap 2 = client expectations - physician perceptions of client expectations

Gap 3 = client experiences - physician perceptions of client experiences

4.3.1 H_1 : The Effects of Gap 1 on Quality Evaluation

The following hypothesis to be tested:

H_0 : The level of positive client evaluation of the clinical service is not related to client expectations - client experiences gap.

vs.

H_1 : The level of positive client evaluation of the clinical service is related inversely to client expectations - client experiences gap.

Mean gap location was computed for each item, identified through the factor analyses, on which a comparison between a patient's expectations and experiences was possible. It is equal to the difference between the patient's responses to each item. Mean gap location could be computed for only four items (see Table 4.8). Mean gap size was computed by taking the absolute difference between each patient's expectation and experience item. Each mean gap location score was compared with the overall evaluation quality score by using Pearson's correlation; a significant negative correlation indicated support for H_1 .

TABLE 4.8 Gap 1: Client Expectations – Client Experiences

Gaps	Mean Gap Location	Mean Gap Size	Correlation with Quality
Dr. keeps up on latest medical discoveries	.012	.375	-.606
Dr. interested in me	.011	.281	-.189
Dr. explains reasons for tests	-.003 [‡]	.312	-.110
Dr. examines me carefully	.007	.366	-.211

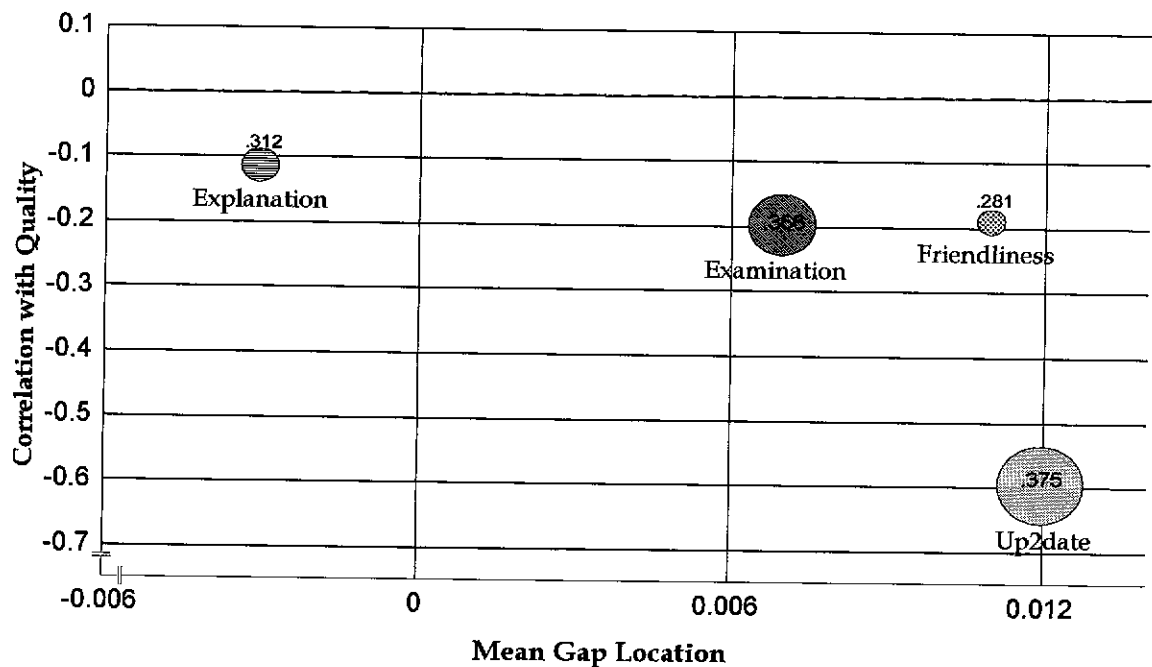
Significant at the 0.05 level (one-tailed test)

[‡] A negative sign indicates that patient's experiences exceed his expectations

Correlation scores for three gaps are in the hypothesized direction and significantly different from zero. As a result H_1 is supported— the further the gap is located, the lower the patient will evaluate the overall quality of medical services. Of the three gaps, the “technology” gap had the most negative impact on medical service quality. This suggests that technology is a prime element of a high quality of medical services.

A graphical illustration might be helpful to explain further the effect of Gap 1 on quality of medical services. Figure 4.4 represents a scatter diagram that shows the correlation of each gap with its mean gap location. Included in this figure the size of the mean gap size; the larger the dot, the bigger the size of the mean gap.

FIGURE 4.4 Scatter Diagram of Gap 1



The important thing to be noted about Figure 4.4 is that the bigger the gap size, the lower the patient will evaluate the overall

quality of medical services. Even though "Friendliness" mean gap size is relatively small, it is correlated with quality. This might be because its location contributed negatively to quality evaluation.

4.3.2 H₂ : The Effects of Gap 2 on Quality Evaluation

The following hypothesis to be tested:

H₀ : The level of positive client evaluation of the clinical service is not related to client expectations - physician perceptions of client expectations gap.

vs.

H₂ : The level of positive client evaluation of the clinical service is related inversely to client expectations - physician perceptions of client expectations gap.

Gap 2 was computed by taking the difference between each individual patient's expectation score on each item identified through the factor analyses and his/her physician's score on the same item. Table 4.9 gives the mean gap scores (direction and magnitude) for gap 2 and the corresponding correlations.

TABLE 4.9 Gap 2: Client Expectations – Physician Perception of Patient Expectations

	Mean Gap Location	Mean Gap Size	Correlation with Quality
Factor 1: Professionalism			
Dr. should charge reasonable fees	.207	.541	-.184
Dr. should keep up on latest technologies	-.285 [‡]	.453	-.151
Dr. should be friendly	.274	.553	-.047
Dr. should examine me carefully	-.154	.322	-.370
Dr. should explain tests & procedures	.177	.678	.040
Factor 2: Auxiliary Communications			
Health-related information should be available	.329	1.015	-.259
Brochures should be available	.513	.957	.099
Clinic should be open at times convenient to me	-.037	-.861	-.233
Dr. should be available in an emergency	.198	.830	-.113
Factor 3: Professional Responsibility			
Dr. should make all the decisions	.176	.717	-.036

Significant at the 0.05 level (one-tailed test)

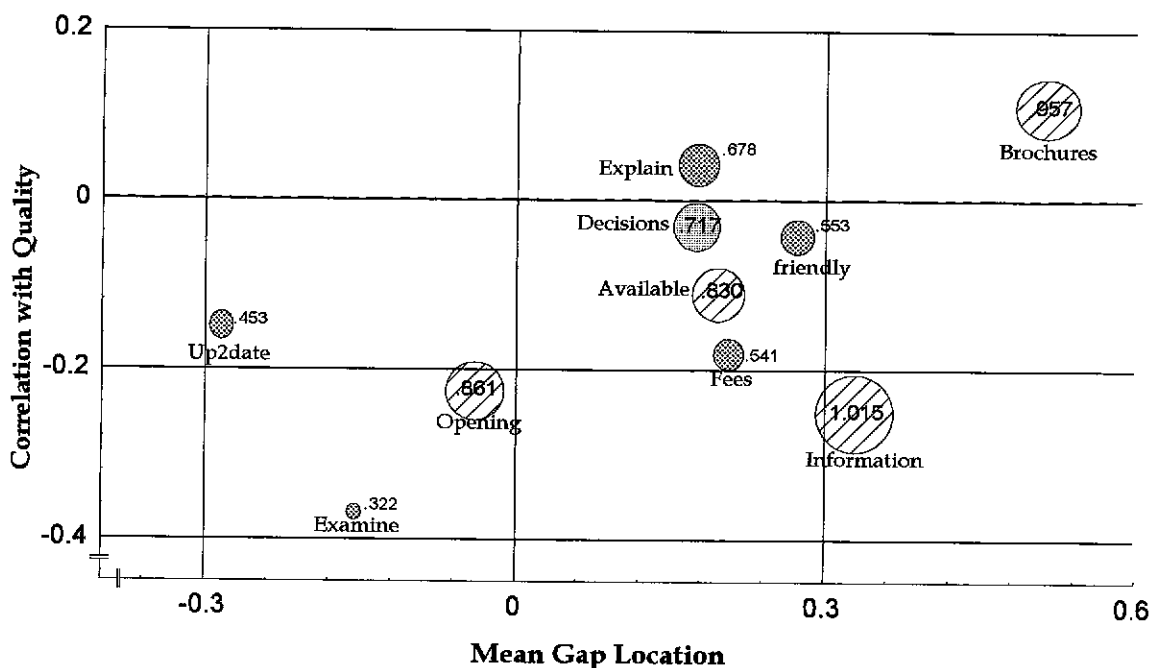
‡ A negative sign indicates that patient's expectations exceed physician's perceptions of patient expectations

Only three correlation scores are in the hypothesized direction and significantly different from zero. As a result, H_2 is not supported. This lack of support may be a function of the weakness in measuring the gap. Physicians' perceptions about what patients expect from superior quality service were congruent with the expectations expressed by patients themselves (small mean gap size ≈ 1).

Therefore, the relationship hypothesized may not have been truly tested. Instead, there is signal to support the saying that matching patients' expectations with those of their physicians has been shown to be a major determinant of an ideal service quality.

The scatter diagram of gap 2 did not show any meaningful pattern to support H_2 either (see Figure 4.5). Mainly, this is due to the fact that patients are declaring that the medical service received is of superior quality (average quality score=4.7) whatever gap 2 is.

FIGURE 4.5 Scatter Diagram of Gap 2



4.3.3 H₃ : The Effects of Gap 3 on Quality Evaluation

The following hypothesis to be tested:

H₀ : The level of positive client evaluation of the clinical service is not related to client experiences - physician perceptions of client experiences gap.

vs.

H₃ : The level of positive client evaluation of the clinical service is related positively to client experiences - physician perceptions of client experiences gap.

Similarly, gap 3 was computed by taking the difference between each individual patient's experience score on each item identified through the factor analyses and his/her physician's score on the same item. Mean gap scores (direction and magnitude) for gap and the corresponding correlations are provided in Table 4.10.

Table 4.10 revealed that there is consistency between characteristics patients considered as indicators of high-quality service and those physicians believed were critical to patients themselves (small mean gap size ≈ 1). Moderate positive correlations are present for only four items. Again, this is due to the fact that patients are declaring that the service received is of superior quality (average quality score=4.7) whatever gap 3 is, and hence weak relationship exists ($-0.165 < r < 0.154$ for seventeen items). These inconsistent relations may be due to measurement problems and/or sampling bias. As a result, H₃ is not supported.

Therefore, the relationship hypothesized may not have been truly tested. Instead, there is signal to support the saying that matching patients' experiences with those of their physicians has been shown to be a major determinant of an ideal service quality.

TABLE 4.10 Gap 3: Client Experiences – Physician Perception of Patient Experiences

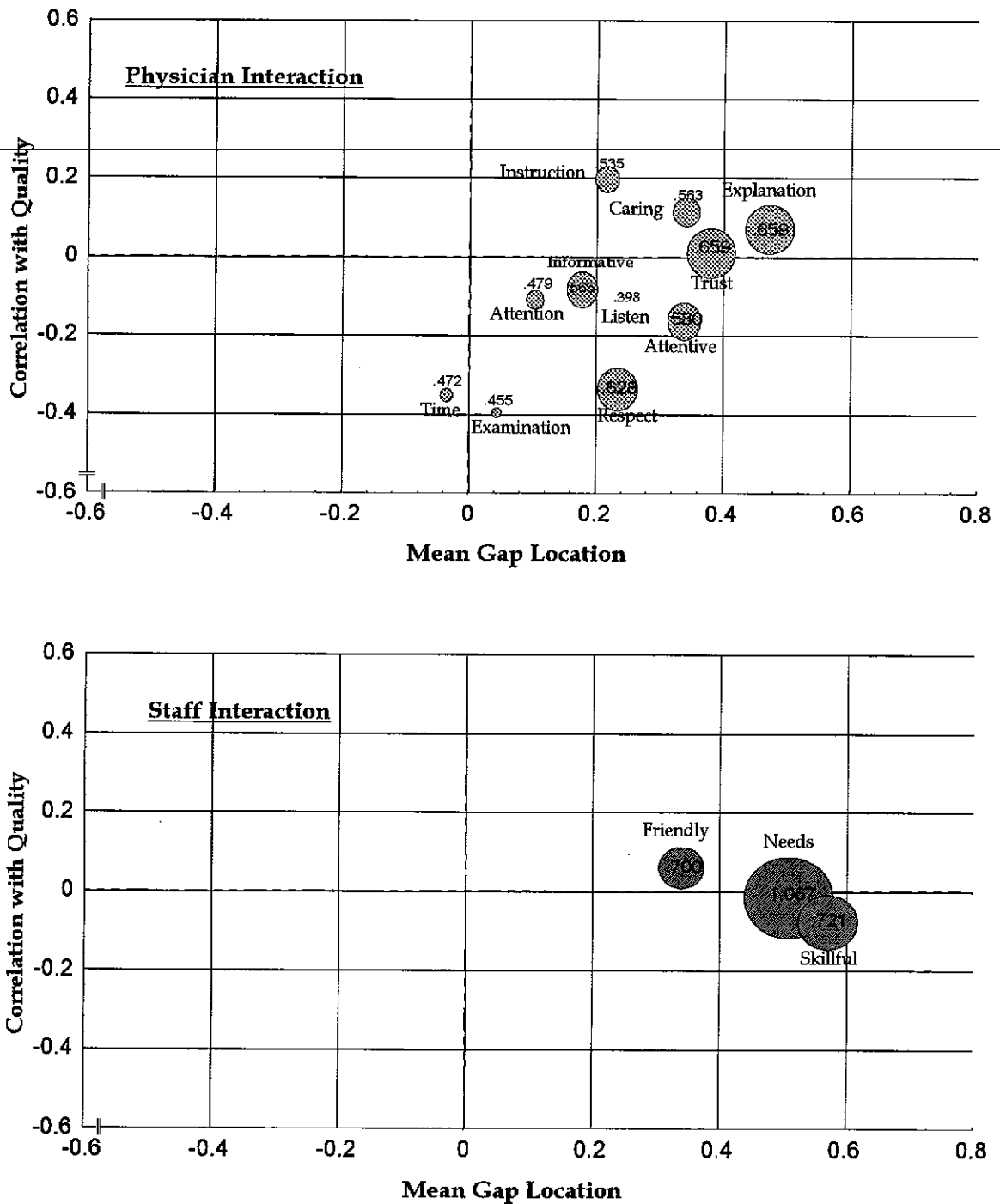
	Mean Gap Location	Mean Gap Size	Correlation with Quality
Factor 1: Physician Interactions			
Dr. hears what I have to say	.248	.398	-.134
Dr. gives me enough information	.181	.565	-.088
Dr. explains what I must do	.217	.535	.193
Dr. extremely attentive to details	.338	.580	-.165
Dr. spends enough time with me	-.035 [‡]	-.472	-.360
Dr. examines me carefully	.045	.455	-.409
I completely trust my Dr.	.472	.659	.053
Dr. takes real interest in me	.342	.563	.115
I have his full attention	.106	.479	-.112
Dr. treats me with respect	.237	.628	-.337
Dr. explains reasons for tests	.383	.659	.006
Factor 2: Staff Interactions			
Staff is friendly & courteous	.335	.700	.055
Staff fulfills my needs	.518	1.067	-.028
Staff acts in a professional manner	.569	.721	-.080
Factor 3: Diagnostic			
Dr. prescribes many drugs & pills (R)	-.361	1.053	-.044
Dr. orders many X-rays & tests (R)	.288	-.960	.295
Dr. takes unnecessary risks (R)	.666	-.784	-.126
Dr. main interest is in making money (R)	-.120	.661	.066
Little attention I was getting (R)	.411	-.515	.426
Dr. will not admit he doesn't know (R)	.089	-.730	-.092
Treatment could be better (R)	-.089	1.180	.130
Dr. explains a little about my illness (R)	-.128	.833	.219
Factor 4: Professional Competence			
Dr. is better trained than others	.096	.789	.154
Dr. makes fewer mistakes	-.379	-.860	-.343
Dr. keeps up on latest discoveries	-.010	-.583	-.125

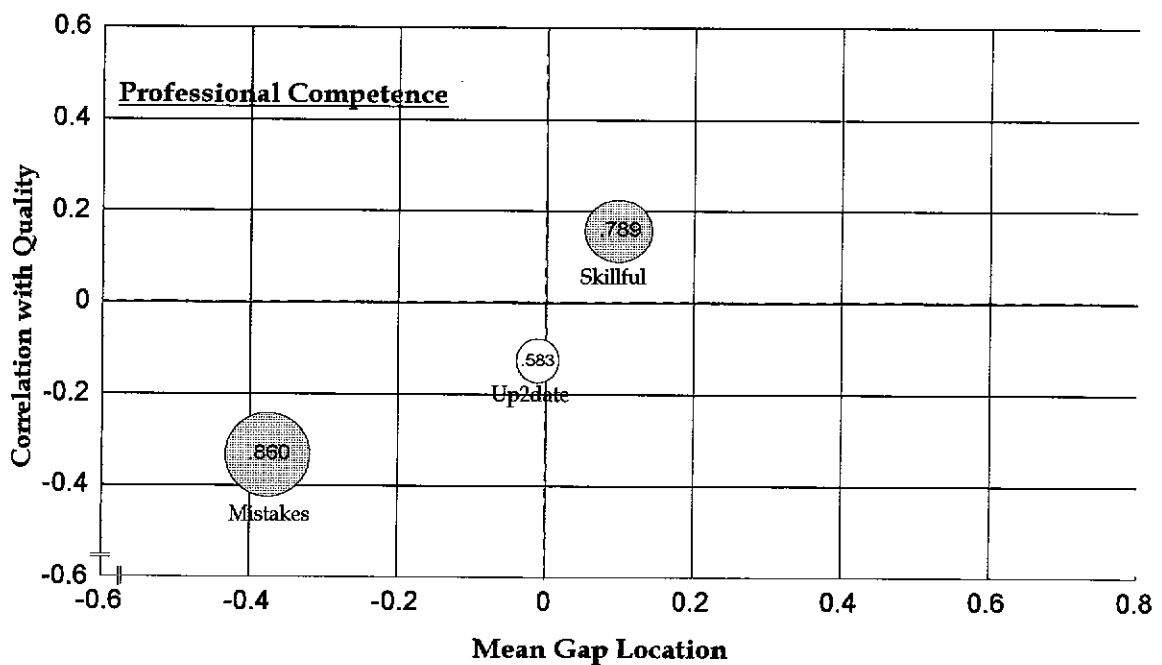
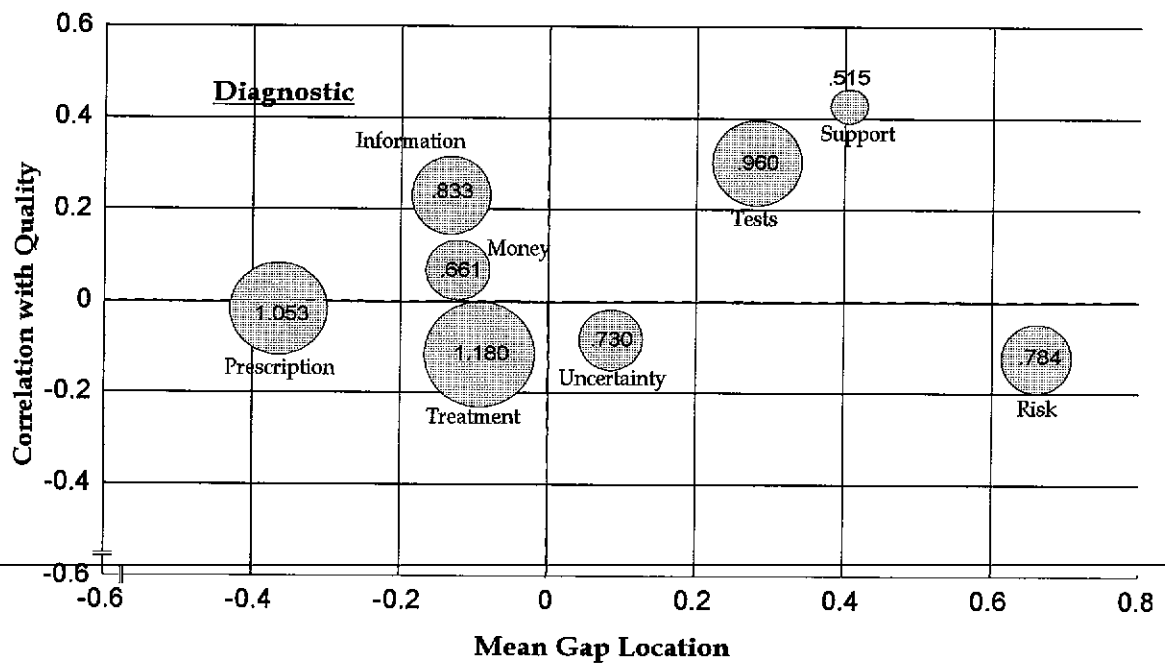
Significant at the 0.05 level (one-tailed test)

‡ A negative sign indicates that patient's experiences exceed physician's perceptions of patient experiences

The categorized scatter diagrams of gap 3 did not show any meaningful pattern (see Figure 4.6). Again, this is due to the fact that patients are asserting that the service received is an ideal quality whatever gap 3 is. Further research is needed to know why this correlation constitutes a bias in patient ratings.

FIGURE 4.6 Scatter Diagram of Gap 3





4.4 Regression Analysis


To explore how the individual gaps measured relate in determining the overall evaluation, a stepwise regression analysis was performed using the expectation and experience factors' summed gap location

scores (gaps 2 and 3), as well as the individual difference scores representing gap 1.

A significant regression equation was achieved with an adjusted R^2 of 0.444 after adjusting for multicollinearity. The beta weights and other summary statistics from regression analysis is reported in Table 4.11.

TABLE 4.11 Stepwise Regression Results After Multicollinearity Adjustment

Gaps	Gaps in Equation		Gaps not in the Equation	
	Beta	Partial t Value	Partial Correlation	t Value
Latest Technologies	-.712	-4.200		
Physician Interactions	-.375	-2.215		
Dr. Interested [‡]			--	--
Explanation			-.248	-1.088
Examination			-.044	-.187
Professionalism [‡]			--	--
Auxiliary Communications			.052	.222
Professional Responsibility			.117	.501
Staff Interactions			.329	1.480
Diagnostics [‡]			--	--
Professional Competence			-.239	-1.046

 Significant at the 0.05 Level

[‡] Highly Correlated with Physician Interaction Gap

Regression equation characteristics:

$R^2 = 0.497$

D.W. = 1.976

Adjusted $R^2 = 0.444$

F = 9.398 p < 0.001

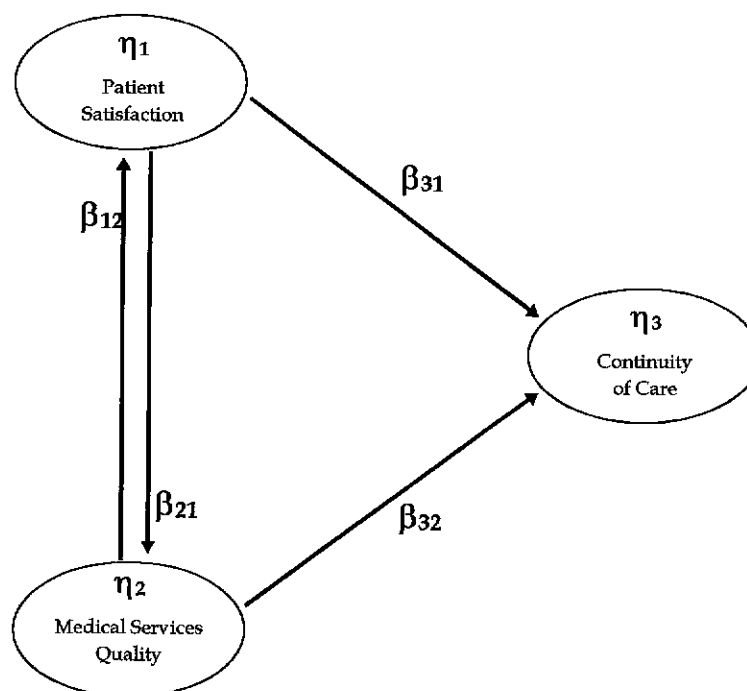
Examination of the beta weights reveals that latest technology and physician interactions are the only two significant independent regression variables. This finding suggests that professional competence gap and physician interaction gap are the most important factors in causing service quality shortfalls.

4.5 Relationship Between Service Quality, Patient Satisfaction, & Patient Intention

Figure 4.7 identifies the casual model used to investigate two additional questions.

- ◆ What is the casual order of the relationship between medical service quality and client satisfaction?
- ◆ What impacts do medical service quality and client satisfaction have on patient's intention to return to the same physician.

FIGURE 4.7 Relationship Between Service Quality, Patient Satisfaction, & Continuity of Care



4.5.1 H₄ : Casual Order Between Service Quality & Patient Satisfaction

The following hypothesis to be tested:

H₀ : Client satisfaction is not related to medical service quality.

vs.

H₄ : Client satisfaction is an antecedent of medical service quality.

The analysis of the LISREL estimate (β_{12}) suggests that medical service quality has a significant ($p < 0.05$) effect on client satisfaction (see Table 4.12). This finding indicates that perceived service quality leads to satisfaction. Thus H₄ receive strong support from the result, though the direction of the effect observed in the consideration of H₄ is the opposite of that hypothesized.

TABLE 4.12 Standardized Parameter Estimates & t-Statistics for the Casual Model

Parameter	Estimate	t-Value
β_{21}	.303	1.595
β_{12}	1.506	2.154
β_{31}	.546	2.862
β_{32}	.304	4.909

Significant at the 0.05 Level

4.5.2 H₅ : Impact of Patient Satisfaction on Continuity of Care

The following hypothesis to be tested:

H₀ : Client satisfaction has no impact on patient's behavioral intention to continue care in the same clinic.

vs.

H₅ : Client satisfaction has a significant impact on patient's behavioral intention to continue care in the same clinic.

The analysis of the LISREL estimate (β_{31}) suggests that medical service quality has a significant ($p < 0.05$) effect on client satisfaction.

This finding indicates that the more satisfied the patient is, the more likely he/she will come back and maintain a relationship with the physician.

4.5.3 H₆: Impact of Service Quality on Continuity of Care

The following hypothesis to be tested:

H₀ : Medical service quality has no impact on patient's behavioral intention to continue care in the same clinic.

vs.

H₆ : Medical service quality has a significant impact on patient's behavioral intention to continue care in the same clinic.

From the significance tests summarized in Table 4.12, service quality appears to have a stronger and more consistent effect on behavioral intentions than does satisfaction. Not surprisingly, medical service quality exerts a strong influence on patient's behavioral intentions to remain with his/her physician, keep appointment, comply with treatment, refer other patients to his/her physician and use service. Such behavioral consequences should result in better medical care and improve outcomes, but only if satisfaction correlated primarily with health care of strong interpersonal quality. Otherwise, the patient may remain with a congenial physician who provides inappropriate care.

This chapter presented a detailed description of all the findings obtained from the survey conducted. The empirical results suggests that medical service quality could be conceptualized and measured at three different stages: process, outcome, and impact. Also, this chapter investigated the casual order of the satisfaction-medical service quality relationship. The analysis of the research model provides empirical support for the notion that perceived service quality in fact leads to satisfaction and that medical service quality exerts a stronger influence on patient's behavioral intentions than does patient satisfaction.

Chapter 5

Conclusions And Implications

The employment of a modified SERVQUAL instrument had accomplished an "objective" assessment of medical service quality. Much is learned regarding the patient-physician relationship and encounter: (1) physicians are spending enough time with their patients during the encounter, (2) physicians are answering the patients questions honestly, completely, and understandably, and (3) physicians are treating patients with respect and are being friendly with them.

Patient-physician encounter is not a routine one, not a legal arrangement or business transaction, and since medicine is not a mathematical discipline, the relationship is not a computer exercise. It rather is an evolving person-to-person interaction, transcending ethnic, economic, and sociocultural differences, an interchange, generating confidence, mutual trust, and respect. The interaction is influenced and molded both by the kindness, skill, interest, and personality of the physician and by the personality, life situation, and health status of the patient. It involves an awareness of the patient as a human being who is ill, his/her emotional reactions, coping capacity, impact on the patient's life situation, and the physician's interest in supporting the patient through his experience. This interaction also involves supplementing excellent professional care with the attention to the patient's personal needs.

5.1 Managerial Implications

This study shows that gap analysis is a straightforward and appropriate way to identify whether there exists inconsistencies between provider and client perceptions of service performance. Addressing these gaps seems to be a logical basis for formulating

strategies and tactics to ensure more consistent expectations and experiences, thus increasing the likelihood of satisfaction and a positive quality evaluation. More consistent expectations and experience perceptions can be achieved in one or both of the following ways.

1. Alter service provider behaviors and expectations (adjust the physician's own behavior and expectations to be consistent with the client's expectations).
2. Alter client expectations and experiences (educate the client so new expectations, consistent with what the service provider is offering, are developed).

5.1.1 Altering physicians' behaviors and expectations

The physician obviously has more control over the first method of adjusting expectations, but even these self-initiated actions represent a significant challenge. For example, assuming a genuine client orientation is fundamental to altering physician behaviors. However, because of their extensive specialized and technical product training and their past immunity to overt competition, many physicians appear to be much more task- and self-oriented than client-oriented.

Altering physicians' behaviors and expectations is possible if they become more aware of the wide array of factors their clients consider in evaluating them and the quality of the service provided. Physicians must realize that the intangibility and technical complexity of a medical service lead many clients to seek and evaluate surrogate indicators of quality, including such factors as paraprofessional, staff behaviors, and office ambiance. This client propensity suggests that physicians should broaden their perception of the scope of the service encounter and its attendant quality determinants.

5.1.2 Altering clients' expectations and experiences

The just-mentioned strategies for changing the physician's behaviors would have the dual benefit of altering the client's expectations and

experiences. This observation suggests that the two approaches for developing more consistent expectations and performance perceptions actually are interrelated, not separate and distinct. Before initiating any new programs to alter client perceptions, the physician should learn more about his or her clients' expectations and experiences. Insights from client surveys, focus group, or even more informal means of research are likely to provide a valuable information base for programs to alter client perceptions.

One major means of altering client expectations is through educational and/or promotional communications. Today's competitive environment is encouraging professionals to take subtle and in some cases aggressive steps to promote their services. In this situation, an increasing number of providers are faced with the dilemma of overpromising versus creating realistic client expectations and experiences.

Another strategy for altering clients' perceptions is to involve the client more in the decision-making process pertinent to his or her case. This participative or relationship marketing approach to client relations seems to encourage a more positive client experience and a reduction of malpractice suits.

5.2 Educational Implications

Patients education can be viewed as the essence of medicine practice. It has been defined as "...the process of influencing patient behavior, producing changes in knowledge, attitudes, and skills required to maintain and improve health. The process may begin with the imparting of information, but also includes interpretation and integration of the information in such a manner as to bring about attitudinal or behavioral changes that benefit the person's health status."⁵¹

⁵¹ Rankin, SH., et al. *Patient Education: Issues, Principles & Practices*. Philadelphia, JB Lippincott Company, 1990; pp. 85-86.

This definition states that patient education is built on physician-patient relationships that foster growth through respecting one another, caring, and working together. Patient education is the most powerful tool health physicians have to assure safer discharges from their care and to transfer power to the patient and the family. Some physicians believe patients don't want to know about their illness or treatments and that providing such information only serves to upset or confuse patients. But after evaluation of the patients' responses, we found that patients wanted to know specifics about their illness and its treatment.

Patient education is the most effective means of returning control to the patient by reducing feelings of helplessness and enhancing the ability to be the chief decision maker in the management of one's health and illness problems. But how can physicians motivate patients to learn and participate in decision making?

5.2.1 Motivating Patients To Learn

Probably the most important factor in motivating patients to respond to patient education with the desired behavioral changes is the recognition of what motivates each individual patient. For one patient, motivation may be assurance that he will be in control of his own life; motivating factors for another patient may be predicated on his desire to please the physicians. Some patients are able to state clearly what motivates them, but other patients may not recognize what works as a motivator. Clues to the individual motivation factors can be obtained from the client's life-style, his family members, his socioeconomic status, and his growth and development data. Physicians must avoid the assumption that their own motivators apply to their patients.

Frequently, motivation is divided into intrinsic and extrinsic factors⁵². Intrinsic factors are those factors that are internally integrated into the patient's personality and *modus operandi*. They include such things as the patient's anxiety level, his success in past educational settings, and his openness to learning. Extrinsic factors include the environment for learning, the pleasure of acquiring new knowledge, and the type of interaction in the learning process. Extrinsic motivation factors are factors that physicians can control. If physicians establish a climate of mutual trust and safety, the environment for learning situation can be a positive motivator. Likewise, by injecting fun and some levity into the learning situation, physicians can make the pleasure of learning become a positive force.

It is generally agreed that it is part of the physician's role to educate patients. In reality this is often not carried out successfully because physicians are not responsible for patients' behavior. Physicians can try out best to enhance the learning process and use extrinsic motivation factors, but motivation is essentially an inner drive, and if this drive and a sense of personal responsibility are not operating in them, there is little physicians can do to foster these motivators.

Ideally, physicians should be able to teach patients to be their own advocates and to expect patient-education services on inpatient and outpatient basis. Many patients will respond to this approach, however, physicians must be cognizant of the few patients who do refuse to take responsibility for their own learning; once physicians have made every attempt to provide patient education to their patients, physicians must finally release their own sense of responsibility for them.

⁵² Ibid., p.91.

The success of patient education is highly dependent on individuals and how they perceive their roles. It seems that patient education is dependent on personalities; specifically, those who like to teach and are confident doing it. If we say that patients have the right to know and should be taught by physicians, what can we do to get those physicians who don't like to teach to join the patient-education team? "Patient's Bill of Right" is the solution.

5.2.2 Bill Of Rights For Patients

In the interest of "more effective patient care and greater satisfaction for the patient, and his physician," the American Hospital Association has adopted a "Patient's Bill of Rights"⁵³ as a national policy statement intended to "give the patient something to go by." Major issues of this statement are presented below:

1. The patient has the right to considerate and respectful care.
2. The patient has the right to obtain from his physician complete current information concerning his diagnosis, treatment, and prognosis in terms the patient can be reasonably expected to understand.
3. The patient has the right to receive from his physician information necessary to give informed consent prior to the start of any procedure and/or treatment.
4. The patient has the right to every consideration of his privacy concerning his own medical care program.
5. The patient has the right to expect that all communications and records pertaining to his care should be treated as confidential.
6. The patient has the right to participate in decision making affecting his health.

5.3 Professional Implications

Physicians clearly have greater responsibility for rectifying fault physician-patient relationships than do patients. Physicians are required to:

⁵³ Kelly, LY. "The Patient's Right to Know." *Nursing Outlook*, 1976 (Jan.); v.24 pp. 26-32.

1. Improve communication skills for understanding patient needs and expectations.
2. Further develop interviewing skills for taking difficult medical histories.
3. Develop better patient rapport skills for dealing with adverse patient behavior.
4. Improve their medical problem-solving skills for dealing with particularly vague symptom complexes, with particular attention to the possibility of undiagnosed depression and common somatiform disorders.

5.4 Implications For Future Research

This study is presented as a point of departure rather than a final statement in this dialogue on the nature, assessment, and improvement of quality medical service. Additional research is needed on evaluating medical service quality. The dyadic data from one study of one profession should not be construed as representing the entire medical services encounter or all professional services. However, the study does provide a test of the usefulness of gap analysis and its application to the evaluation of service encounters in general and professional services in particular.

The focus of our research is the dyadic interaction between a single physician and a single client, yet often the client's time is spent interacting with support staff and/or multiple physicians. Furthermore, the professional practice may interact with several people within the client firm or household. After an understanding of the core professional-client interaction is gained, research should explore contacts on the service evaluation process.

Finally, it should be pointed that SERVQUAL is designed to measure interpersonal quality only. However, interpersonal quality cannot be sustained without accurate diagnoses and procedures. Such technical quality should be the focus of future studies.

5.5 Limitations

The findings and implications should be approached with caution due to several limitations of the study. One limitation of my study is the lack of one-to-one correspondence between expectation and experience measures. Measurement scales for each must be developed and refined.

In addition, this study has focused on identifying medical service quality various dimensions, yet empirical investigation assessing the impact of each dimension is lacking. Questions particularly warranting investigation include: Does process quality have a greater role than outcome quality in the overall professional service evaluation? How important is the image or reputation of the service provider in the client's quality evaluation?

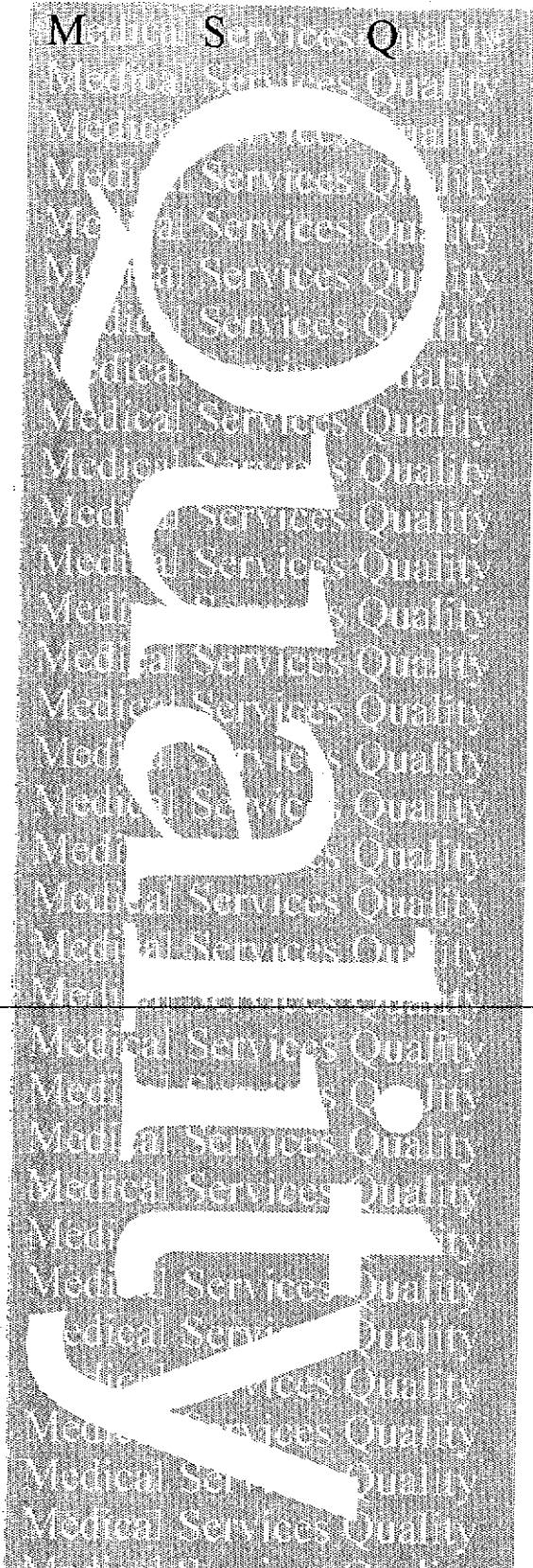
Another important limitation is that this analysis dealt with only one physician specialty (primary-care medicine) and was cross-sectional in nature. Generalizing the results to other specialties should be done with caution. Additional research on factors affecting quality of medical services should be expanded to different specialties, such as Pediatricians, Cardiologists, Urologists, etc., and should be done longitudinally in order to assess the impact of time on quality.

Finally, the results presented here are drawn from a relatively small sample size. The use of larger sample sizes is suggested as a method of increasing the validity of the findings and assuring the credibility of the statistically significant findings. The value or contribution of this study's findings exists in the methods and techniques used to identify the factors influencing the quality of the service delivered.

5.6 Final Words

There has been an increasingly emphasis on the prevention of disease and people are gradually becoming aware that they can and should have more control and responsibility for their own care. Patients are becoming to understand that knowledge about illness and medical care is not the exclusive property of physicians. They are better informed than previously and are beginning to accept as their right that questions are answered. They want (1) better accessibility to services; (2) more comprehensive and coordinated services; (3) more personalized services; (4) the right to know what is being done for him and why; and (5) the right to monitor the quality of care he/she receives.

I suspect that many physicians and patients have not addressed many of these issues. Without doubt, it is difficult and painful task to examine some of them and determine what values, if any, we have concerning them. Socrates said "that life without ... examination is not worth living." This is a strong statement and surely each of us has the option to address or ignore these issues. I am convinced that the physician-patient relationship will be strengthened and the quality of medical service delivered will be improved if the physician and patient together address these issues.



Patient
Judgements
of
MSQ

Section I - Expectations

The following set of statements deal with your opinions of medical services. Please show the extent to which you think clinics offering medical services should possess the features described in each statement. Do this by using the scale presented below. If you strongly agree with the following statements, place a five inside the box. If your feelings are not strong, place a number between one and five inside the box to properly reflect the actual strength of your feelings. There are no right or wrong answers - all we are interested in is a number that best shows your expectations about clinics offering medical services.

.....1.....2.....3.....4.....5.....
Strongly Disagree Disagree Neither Agree Agree Strongly
 nor Disagree Agree

- Appointments should be made easily and quickly.
- I expect the doctor's fees to be reasonable for the professional service rendered.
- I expect my doctor to keep up on the latest medical technologies.
- I expect my doctor to be sincerely interested in me as a person.
- I expect my doctor to examine me carefully before deciding what is wrong.
- I expect my doctor to explain tests and procedures to me.

- I would like to have more health-related information available in the reception area.
- I would like to have brochures available from my doctor explaining my medical problem and treatment.
- I expect the doctor's office to be open at times that are convenient to my schedule.
- I expect the doctor to be available in an emergency.
- Where my medical care is concerned, my doctor should make all the decisions.

Section II : Experiences

The following set of statements relate to your feelings about the medical services delivered in this clinic. For each statement, please show the extent to which you believe medical services have the feature described by the statement. Once again, placing a five inside the box means you strongly agree that medical services have that feature, and a one means you strongly disagree. You may use any of the numbers in the middle as well to show how strong your feelings are. There are no right or wrong answers - all we are interested in is a number that best shows your perceptions about medical services.

.....1.....2.....3.....4.....5.....
Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

- My doctor hears what I have to say.
- My doctor gives me enough information about my health.
- My doctor gives me brochures explaining my medical problem and treatment.
- My doctor is careful to explain what I am expected to do.
- My doctor is extremely attentive to details.
- My doctor spends enough time with me.
- My doctor examines me carefully before deciding what is wrong.

- I have complete trust in my doctor.
- My doctor takes real interest in me.
- I have my doctor's full attention when I see him/her
- My doctor always treats me with respect.
- My doctor thoroughly explains to me the reasons for the tests and procedures that are done on me.
- My doctor's office staff is friendly and courteous.

- The staff at my doctor's office is very flexible in dealing with my individual needs and desires.
- My doctor's office staff always acts in a professional manner.
- My doctor's office staff is more interested in serving the doctor than meeting my needs.
- My doctor prescribes many drugs and pills.
- My doctor orders too many X-rays and lab tests.
- My doctor takes unnecessary risks in treating me.
- My doctor's main interest is in making as much money as he/she can.
- My doctor and the staff talk as if I am not even there.
- My doctor will not admit when he/she does not know what is wrong with me.
- There are some things about the medical care I receive from my doctor that could be better.
- My doctor explains a little about my medical problems.
- My doctor is better trained than the average doctor.
- Compared to other doctors, my doctor makes fewer mistakes.
- My doctor keeps up on the latest medical discoveries.
- My doctor gives me choices when deciding my medical care.
- My doctor is present during his/her clinic hours.
- I am kept waiting a long time when I am at my doctor's office.
- My doctor's office is conveniently located for me.
- My doctor is on staff at a hospital which is convenient for me.

Section III : Other Measures

The following set of statements relate to your feelings about this particular clinic. Please respond by circling the number which best reflects your own perceptions.

The quality of medical services delivered in this clinic is

1 2 3 4 5
Very Poor Excellent

My feelings towards the medical services delivered in this clinic can best be described as

1 2 3 4 5
Completely Unsatisfied Completely Satisfied

If I were to find myself in the same situation I was in when I went to this clinic, I would want to receive my treatment there again.

1 2 3 4 5
Strongly Disagree Strongly Agree

Section IV : Facts about you

Gender: Male Female Age: ___ years old

Level of Education:

Brevet or less Bachelor's Degree Doctor's Degree
 Baccalaureate II Master's Degree Others

Who choose the doctor? (Check all that apply)

Patient or family member chose Someone else chose
 My insurance/health plan required it

Was part or all of your doctor bill paid by some type of health insurance? Yes No

About how many times have you been treated at this clinic? ___

Thank you very much for your thoughtful cooperation!

Please return your completed survey in the attached envelope.

Beirut, July 25th 1995

Dear staff,

Please give this questionnaire to the patient who has been treated previously at this clinic.

TO THE PATIENT ANSWERING THIS QUESTIONNAIRE:

I am conducting a research study on **Medical Services Quality**. The purpose of this research is to explore the concept of medical service quality and its evaluation from both the physician and patient perspectives.

Most of the questions require your subjective judgment on "*how medical services ought to be*" and "*how medical services actually are.*" The information you provide will help physicians in securing to deliver the best level of service and treatment to all patients.

When you complete the questionnaire, please return it to the staff in the attached envelope I have provided.

Thank you in advance for your cooperation in this important study.

Sincerely,



Maher Itani

P.S. Should you have any questions about this survey, please call me directly at, (01) 863043, Graduate School of Business and Management, Lebanese American University.

Appendix A
Patient Questionnaire

Appendix B

LISREL Input

LISREL MODEL FOR MEDICAL SERVICE QUALITY

```
/DA NI=28 NO=99 MA=KM
/LA
/'LISTEN' 'INFORE' 'INSTRUCT' 'ATTENTIV' 'TIMESPAN' 'EXMN' 'TRUST'
/'CARE' 'ATT' 'RESPECT' 'EXPLN' 'STFFRD' 'NEED' 'STFSKILL' 'PRESCR'
/'TEST' 'RISK' 'MONEY' 'SUPPORT' 'UNCERTAI' 'TREATMNT' 'INFO'
/'PHYSKILL' 'MSTKS' 'UP2DATE' 'QUAL' 'SAT' 'CONT'
/KM FU FI=MAHER.COR
/SE
/'QUAL' 'SAT' 'CONT'
/'LISTEN' 'INFORE' 'INSTRUCT' 'ATTENTIV' 'TIMESPAN' 'EXMN' 'TRUST'
/'CARE' 'ATT' 'RESPECT' 'EXPLN' 'STFFRD' 'NEED' 'STFSKILL' 'PRESCR'
/'TEST' 'RISK' 'MONEY' 'SUPPORT' 'UNCERTAI' 'TREATMNT' 'INFO'
/'PHYSKILL' 'MSTKS' 'UP2DATE'
/MO NX=25 NK=4 NY=3 NE=3
LY=FU,FI LX=FU,FI BE=FU,FI GA=FU,FI PH=ST PS=ZE TD=DI
/LK
/'PHYINT' 'STFINT' 'DIAGN' 'PROFCOMP'
/LE
/'QUAL' 'SAT' 'CONT'
/FR LY(1,1) LY(2,2) LY(3,3)
/ST 0.005 LY(2,1) LY(1,3) LY(3,2)
/FR LX(1,1) LX(2,1) LX(3,1) LX(4,1) LX(5,1) LX(6,1) LX(7,1) LX(8,1)
LX(9,1) LX(10,1) LX(11,1) LX(12,2) LX(13,2) LX(14,2) LX(15,3) LX(16,3)
LX(17,3) LX(18,3) LX(19,3) LX(20,3) LX(21,3) LX(22,3) LX(23,4) LX(24,4) LX(25,4)
/ST 0.05 LX(9,1) LX(14,2) LX(22,3) LX(23,4)
/FR PH(2,1) PH(4,3)
/FR BE(2,1) BE(1,2) BE(3,1) BE(3,2)
/FR GA(1,1) GA(1,2) GA(1,3) GA(1,4) GA(2,1) GA(2,2) GA(2,3) GA(2,4)
/OU AD=OFF TO SE MI RS EF MR SS SC TV
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