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Consumer satisfaction with primary health care services

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CONSUMER SATISFACTION WITH PRIMARY HEALTH CARE SERVICES: FIELD TEST OF A CAUSAL MODEL

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CONTENTS

ABSTRACT

A model of consumers' overall satisfaction with their health care was proposed and tested. Overall service satisfaction was hypothesized to be mainly a function of a consumer's perceptions of his or her actual health care and not substantially related to other consumer opinions or life satisfaction. Individual differences regarding health anxiety and perceived resources for health care were also hypothesized to influence a patient's overall service satisfaction.

Data were collected from 300 patients at an urban health maintenance organization. Patients initially provided demographic data as well as other background information. Immediately after seeing a practitioner, each patient completed two service evaluation questionnaires: (a) the Client Satisfaction Questionnaire-18B (CSQ-18B), a measure of overall service satisfaction; and (b) the Health Service Questionnaire (HSQ), an experimental, multidimensional measure of health service perceptions. The HSQ consisted of two sections, one inquiring about emotional reactions to aspects of service (HSQ-Feelings) and the other asking patients to rate the quality of those aspects of service (HSQ-Ratings). Subjects were randomly assigned to complete different sequences of the two HSQ sections and initial tests indicated that the two groups of patients had very similar response patterns. Data from the two patients groups were therefore pooled and analyzed.

Rao's factor analyses with varimax rotation were conducted separately on the two HSQ sections. Five factors emerged from the HSQ-Feelings whereas three

factors emerged from the HSQ-Ratings. Factor-based HSQ scores were internally consistent and were generally distinct from each other. Hierarchical regression showed that a large, statistically significant amount of variance in CSQ-18B scores was accounted for by the set of HSQ measures. Individual differences in overall service satisfaction were not found. Additional analyses indicated that a mean score for the items composing the eight HSQ indices was lower than the mean CSQ-18B score and the distribution of the mean HSQ scores was normal and relatively unskewed.

It is concluded that, at least for consumers of routine primary health care services, overall service satisfaction can be modeled as largely a function of key perceptions of the services actually received. The generalizability of this model and suggestions for future research are discussed.

INTRODUCTION

Research on patient satisfaction has grown rapidly and served as the subject of several reviews published from the mid-1970s to 1980 (Lebow, 1974; Locker & Dunt, 1978; Rivkin & Bush, 1974; Stamps, 1978; Swan & Carroll, 1980; Ware, Davies-Avery, & Stewart, 1978). These reviews summarized the results of empirical investigations, typically describing the statistically significant relationships that were demonstrated between patient satisfaction and various patient characteristics as well as describing the associations between aspects of service delivery and patient satisfaction. The purpose of the present review is to provide a comprehensive examination of the findings of patient satisfaction research, including reports not covered in previous reviews, and also to explore the conceptualization and measurement of patient satisfaction. Conceptual issues are dealt with first and then the measurement of satisfaction is examined. The results of empirical studies are then summarized, with attention to effect sizes as well as the statistical significance of observed relationships.

Conceptualization of Satisfaction

Current Approaches to Patient Satisfaction

Patient satisfaction research has not been explicitly guided by a well-supported definition or psychological model of satisfaction. Locker and Dunt (1978) noted the preoccupation of most researchers with identifying sociodemographic correlates of satisfaction rather than developing a solid sociopsychological theory

of satisfaction. Similarly, Gutek (1978) recommended exploring the cognitive meaning of satisfaction for respondents and Fox and Storms (1981) recommended an emphasis on understanding the "central fact of satisfaction."

Linder-Pelz model.

The major exception to a lack of psychological theory-building in patient satisfaction research is the model recently proposed by Linder-Pelz (1982b). Using the attitude theory framework of Fishbein and Ajzen (1975), Linder-Pelz characterizes patient satisfaction as a positive attitude. An attitude is defined by Fishbein and Azjen as a ". . . general evaluation or feeling of favorableness toward the object in question . . ." (1975, p. 11).

Linder-Pelz emphasizes that attitudes are affective and she equates affect with evaluation. She labels perceptions such as beliefs as cognitive, and distinguishes cognitions from attitudes. However, cognitions are included in her formulation as the expectations in a value-expectancy model:

> An attitude—such as patient satisfaction—is based on two distinct pieces of information: belief strength and attribute evaluations. Specifically, measures of belief strength (B) about attributes and measures of evaluation (E) of those attributes are multiplied and the products summed. (1982b, pp. 578-579)

The attributes in the Linder-Pelz model are distinct dimensions of health care, such as access, efficacy, cost, and convenience. Linder-Pelz mixes a variety of reactions to, and experiences with, these health care dimensions in her conceptualization of patient satisfaction. For example, all of the following are included: patient experiences that are focused with respect to location (a particular health care setting or plan) and time (a single visit), as well as patient experiences over time (treatment throughout an illness), and even broad reactions that

are not necessarily linked to being a patient or to one's direct health care encounters (the health care system in general).

Linder-Pelz (1982a) draws on job satisfaction research and other social science formulations in proposing six nonexclusive hypotheses, five of which she tests. These hypotheses state how particular value-expectancy interactions may determine patient satisfaction. Data were gathered from 125 first-time patients at a primary care clinic. These data included each patient's health care values, expectations, and sense of entitlement to care, which were collected just before seeing a physician; as well as the indivdual's postvisit satisfaction with different aspects of his or her care. Results failed to support the value-expectancy model. Expectations alone were found to account for 8% of the variance in one aspect of satisfaction, physician conduct.

Two problems seem to exist in the Linder-Pelz approach. At the methodological level there were key constructs that were not appropriately operationalized or tested. In particular, the "values" scale and the "entitlement" scale each mixed items referring to physician behavior with items referring to convenience, and expectations about physician behavior were used to construct the predictor of satisfaction with convenience.

A more fundamental problem is the conceptualization of satisfaction as a value-expectancy attitude. Satisfaction may partially include a broad domain represented by prior expectations and general values. However, satisfaction with the services an individual actually receives may be more influenced by the reaction of the patient to their immediate experience than by his or her general values and expectations regarding the medical enterprise. Another conceptual issue is the assumption of a multiplicative relationship between determinants of satis-

faction. Rather than being interactive, cognitions and affective responses may instead be quasi-independent predictors of satisfaction, each weighted according to individual patient differences.

Alternative patient satisfaction models.

Two alternatives to value-expectancy models of satisfaction are discrepancy theories and fulfillment theories. These related approaches were originally developed in job satisfaction research and have been reviewed by Lawler (1973). (For a substantially different interpretation of Lawler, see Linder-Pelz [1982a].) Fulfillment theories define satisfaction as a function of the amount received from a situation regardless of how much one feels they should and/or want to receive. Discrepancy theories include the subject's perception of what is expected or valued as the baseline for comparing actual outcomes. Thus, discrepancy theories define satisfaction as the difference between actual outcome and some other ideal outcome.

Most patient satisfaction studies have implicitly used a discrepancy approach. When patient satisfaction has been defined, investigators generally refer to a matching of expected care with the perception of the care actually received (e.g., Ashcraft, Penchansky, Berki, Fortus, & Gray, 1978; Fox & Storms, 1981; Greene, Weinberger, & Mamlin, 1980; Korsch, Gozzi, & Francis, 1968; Larsen & Rootman, 1976; Pope, 1978; Risser, 1975; Weinberger, Greene, & Mamlin, 1981a, 1981b; Zastowny, Roghmann, & Hengst, 1983).

Both fulfillment approaches and discrepancy approaches suffer from logical and empirical weaknesses (Lawler, 1973). Fulfillment approaches assume that objective outcomes alone determine satisfaction and neglect consideration of the

psychological standard involved in evaluating those outcomes. Although discrepancy approaches do address the comparison of outcomes to some psychological standard, they assume that any deviation from what is expected produces dissatisfaction. Deviations from expectations could lead to surprise but not necessarily to dissatisfaction. It seems particularly unlikely that, as assumed by discrepancy theories, receiving more than expected should produce less satisfaction than obtaining what is anticipated. Empirical evidence has shown that confirmation of expectations actually produces extremes of satisfaction, depending on what those expectations are. In the Linder-Pelz (1982a) study, patients whose high expectations were confirmed were the most satisfied and patients with low expectations and corresponding negative occurrences were the most dissatisfied.

Summary of currently used approaches.

Patient satisfaction research has proceeded with little attention to defining or conceptualizing the psychological nature of satisfaction. Discrepancy approaches, which view prior expectations as determinants of satisfaction, have often been used implicitly in patient satisfaction research. However, such approaches have been faulted for having logical weaknesses. When applied to patient satisfaction and explicitly tested, neither a discrepancy approach nor a value-expectancy attitude model received strong empirical support.

It may be that the term "expectation" is too broad and that it is necessary to distinguish different types of expectations. The discrimination of various expectations and the role of expectations in determining satisfaction have been examined by consumer satisfaction researchers. Although patients have increasingly become viewed by patient satisfaction investigators as consumers of services

(Friedman & DiMatteo, 1979; Reeder, 1972), patient satisfaction research has not attended to the conceptual and methodological developments of marketing-based models of consumer satisfaction.

Conceptualization of Consumer Satisfaction

Definition of consumer satisfaction.

Hunt (1977a, 1977b) has reviewed papers from two marketing research symposia devoted to the conceptualization and measurement of consumer satisfaction. He concludes that satisfaction is an evaluative reaction resulting from the interaction of the product/situation with the individual's expectations. Hunt emphasizes that satisfaction/dissatisfaction is an evaluation, a "quasi-cognitive construct," rather than an emotion. If satisfaction did not involve some detachment and assessment it would be identical to the emotional sense of pleasure or happiness evoked by the situation or object. This view contrasts with the Linder-Pelz (1982b) definition of satisfaction as an affective response. Yet, as Hunt indicates, something can be pleasurable and still cause dissatisfaction because it was evaluated as being below some subjective standard.

There is substantial agreement among marketing researchers that consumer satisfaction is multidimensional. Andreasen (1977) refers to cognitive process modelers who emphasize that consumers evaluate purchase aternatives along several dimensions. An example is the the work sponsored by the U.S. Department of Agriculture that lead to the Index of Consumer Satisfaction with Food Products (Pfaff, Pfaff, Lingoes, & Blivice, 1976). Smallest Space Analysis (Guttman, 1968) of data from a national survey of U.S. households indicated that consumers

evaluate food products on such attributes as taste, freshness, price, healthfulness, appearance, and packaging. Hunt (1977b) reviewed the consumer satisfaction research regarding multidimensionality and concluded that a claim to the contrary should have the responsibility at this point for demonstrating its validity.

Most marketing research points toward a compensatory choice model for describing how an individual combines judgments of attributes into an overall evaluation (Day, 1977). According to this approach, salient attributes of a product or service are identified and evaluated by the consumer, who experiences overall satisfaction as long as favorable evaluations occur for either the majority of attributes or for the most important attributes. Neutral satisfaction would therefore result from the interaction of positively and negatively valenced items and probably not reflect a true lack of positive or negative response to the product or service (Miller, 1977).

Models of consumer satisfaction.

Expectancy approaches are the major models used to conceptualize consumer satisfaction (Day, 1977; Hunt, 1977b). The three basic expectancy models that have been formulated are the contrast model, the assimilation model, and the assimilation-contrast model.

1. Contrast model. The contrast model (Ilgen, 1971; Weaver & Brickman, 1974) is based on Helson's (1964) adaptation-level theory of judging stimuli. Helson states that such judgments are determined by previous experience with the general category of stimuli (adaptation level) and the perceived discrepancy between this level and the new stimulus. The consumer magnifies discrepancies between expectations and performance. Performance that is somewhat higher than

expectations will be evaluated as satisfactory, whereas performance slightly less than expected will be judged as unsatisfactory.

2. Assimilation model. Evaluative consistency approaches (e.g., Carlsmith & Aronson, 1963; Festinger, 1957) underlie the assimilation model of consumer satisfaction. Inconsistencies between expectations and performance are believed to produce psychological tension for individuals. Consumers alleviate this tension by adjusting their perceptions of performance to match their expectations. Unlike the contrast model, the assimilation approach predicts that performance that is moderately lower than expectations will not cause dissatisfaction because perceptions of performance will be assimilated to match higher expectations (Surprenant, 1977).

3. Assimilation-contrast model. Based on the work of Sherif and Hovland (1961), this approach is a hybrid model. Expectations serve as a standard for judging a product or service, but there is a latitude of acceptance surrounding this standard. Discrepancies that are within this latitude will be assimilated as follows: (a) expectations that are lower than outcomes will lead to decreased performance evaluations, lessening satisfaction more than if performance matches expectations; (b) expectations that are higher than outcomes will increase performance judgments, causing greater satisfaction than if performance and expectations matched. Contrast effects occur when discrepancies between performance and expectations are relatively large. In such cases the latitude of acceptance is exceeded and the predictions of the contrast model are considered to apply.

Summary of research findings on consumer satisfaction.

The contrast model is implicit in conventional approaches to consumer behavior (Engel, Kollat, & Blackwell, 1973; Howard & Sheth, 1969). This model was the first of the three consumer satisfaction models to be experimentally tested and supported (Cardozo, 1965). This research was followed by findings that matched the other two models. Olshavsky and Miller (1972), who criticized the methodology of studies that supported the contrast model, were the first to provide experimental evidence in favor of assimilation effects. Shortly thereafter, Anderson (1973) published the initial experimental findings indicating the existence of assimilation-contrast mechanisms in consumer satisfaction.

Oliver (1977) compared the research evidence for the contrast and assimilation models and concluded that the latter approach holds predictive superiority. Examination of all three models in a more recent critical review (LaTour & Peat, 1979) led to a more complicated judgment. The authors concluded that the ambiguity of the attribute being evaluated will determine how assimilation and contrast effects operate. Briefly, assimilation effects apparently occur in reaction to ambiguous attributes, whereas contrast effects result when responding to less ambiguous attributes.

Measurement issues.

Three important measurement issues are involved when assessing consumer satisfaction. These issues are the expectation(s) used as a standard, the domain of the consumption system to inquire about, and the dimensions of that domain on which to focus.

1. Types of expectations. Stating that satisfaction depends on one's expectations still requires the type of consumer expectation to be specified. Miller (1977) has described four different expectations that can provide a subjective standard for judging a product or service: (a) ideal, (b) minimum, (c) expected, and (d) deserved. The ideal, or wished for level, represents a maximum whereas the minimum is the least acceptable level. The expected level is based on past averaged experience. Investments and costs required on the part of consumer establish his or her subjective sense of what should be, viz., the deserved level.

In order to measure satisfaction, it is necessary to establish which type of expectation is used. Information from different consumers will be colored by different expectations unless a common evoked set is defined (Hunt, 1977b). The assessment procedure that a consumer uses should therefore state whether an ideal, a minimum, an expected, or a deserved level is to be used as the basis for response.

2. Domain of consumption system. Satisfaction may vary depending on the domain of the consumption system that is measured (Aiello, Czepiel, & Rosenberg, 1977). Marketing researchers have considered consumer satisfaction to depend on distinctions between macro-marketing system dissatisfaction versus micro-marketing system dissatisfaction (Renoux, 1973) or a trilevel split among system satisfaction, enterprise satisfaction, and product/service satisfaction (Czepiel, Rosenberg, & Akerele, 1975). For example, an individual may have a very positive opinion of physicians and health care delivery in general (macro domain) but have misgivings concerning the care he or she is actually receiving for their current health needs (micro domain). These distinctions highlight the fact that the satisfaction a consumer has with the broader domain of a complex ser-

vice may not match satisfaction resulting from a particular service experience. The measurement and meaning of satisfaction information will therefore be clearest if the domain of the consumption system under consideration is explicit and consistent.

3. Dimensions of the consumption domain. There are multiple dimensions that determine consumer satisfaction. These dimensions can be conceptualized as two sets. One set encompasses the attributes of the consumption domain. The other set includes the evaluative criteria that a consumer applies to those attributes.

The work of Andrews and Withey (1974, 1976) provides an example of how the two sets of dimensions have been measured at a macro domain of satisfaction. Using national samples, these researchers investigated the aspects of life that could be separately evaluated as well as the criteria that people use to judge these dimensions of life. Subjects responded to 123 items inquiring about role situations and values and 28 items assessing perceived overall quality of life. Multidimensional scaling, cluster analysis, and factor analysis of these data resulted in the identification of 30 semi-independent domains representing aspects of life and values concerning those aspects of life. Multiple classifaction analysis indicated that, depending on the sample, 50%-60% of the variance in an index of overall quality of life was accounted for by these dimensions. No significant interactions occurred among the domains. Further analysis showed that selected subsets of from six to 16 domains attained approximately the same predictive power and produced consistent findings across population subgroups. Among the selected domains representing aspects of life were marriage, family, money, health, community, national government, leisure activities, and job. Included

among the domains indexing values were achieving success, beauty and attractiveness, safety, fun, and independence. This model of satisfaction suggests that not only does an individual recognize multiple dimensions to be judged, (s)he may also use multiple criteria in making those judgments.

A Conceptualization of Patient Satisfaction

A dual level conceptualization of patient satisfaction can be developed that draws on current research and findings regarding both consumer satisfaction and patient satisfaction. The first level is the definition of the psychological processes hypothesized to underlie satisfaction. This is followed by considering patient satisfaction at a broader, macro level as a factor in modeling health-related behavior and treatment outcome.

Psychological factors.

Patient satisfaction is defined as a health care recipient's reaction to salient aspects of the context, process, and result of their service experience. This view characterizes patient satisfaction as an evaluation of directly received service. The evaluation is seen as a comparison of salient characteristics of the individual's health care experience to a subjective standard. The comparative process is in turn assumed to include two interrelated psychological activities: (a) a cognitively based evaluation, or grading, of the structure, process, and outcome of services, and (b) an affectively based response, or emotional reaction, to the structure, process, and outcome of services. The subjective standard used for judging a health care experience may be any one, or a combination, of the following: a subjective ideal, a subjective sense of what one deserves, a subjective

average of past experience in similar situations, or some minimally acceptable level.

Both an assimilation effect and a contrast effect may operate with regard to the patient's subjective standard. Experiences that fall within a latitude of acceptance relative to the subjective standard would be assimilated, whereas experiences that are either more positive or more negative would produce a contrast effect. Given that there may be some ambiguity for patients about aspects of health care delivery, the latitude of acceptance may be fairly broad around the subjective standard. A wide latitude of acceptance would lead to assimilation of the experience and, in most instances, to a sense of satisfaction. Satisfaction would therefore be fairly common.

Exceptions leading to dissatisfaction would be: (a) instances of such poor health care delivery that a contrast effect occurs, or (b) instances where a negative subjective standard existed and care was not positive enough to exceed the latitude of acceptance. Those situations involving care markedly lower than a patient's subjective standard include single episodes as well as encounters over time that eventually lead to a contrast effect. Continued negative experience could eventually produce a negative subjective average as one's standard, in which case all but dramatically positive experiences would be assimilated and produce dissatisfaction.

Role of satisfaction in modeling health care.

As a variable in understanding health-related behavior and clinical outcome, satisfaction is hypothesized to be both a dependent variable and a predictor of subsequent health-related behavior. Degree of satisfaction, along a continuum

from totally satisfied to totally dissatisfied, is a dependent measure of the structure, process, and outcome of service. Degree of satisfaction also is seen as contributing to subsequent patient committment to, and compliance with, recommended treatment as well as affecting the likelihood of returning to the same provider and health care delivery program.

Reciprocal relationships may also exist between satisfaction and both outcome and utilization. Regarding outcome, a satisfied patient is seen as participating more carefully and accurately in his or her treatment and therefore achieving a better clinical outcome than a dissatisfied patient. Positive changes in health leading to recovery should also help maintain or enhance the patient's satisfaction. Intertwined with this outcome-satisfaction cycle is the relationship of utilization and satisfaction. For patients who have some choice of their provider and health care system, the degree of satisfaction with their current utilization and clinical progress should have differential effects on how often they use a health service and whether or not they will seek care elsewhere.

Assumptions of the proposed model.

Several assumptions underlie the proposed definition and model of patient satisfaction. First, it has been assumed that patients generally do discriminate and, to some extent, judge the quality of multiple aspects of their health care experience. Second, satisfaction of recipients with their actual health care has been presented as distinguishable from the general opinions of patients or nonpatients about the health care enterprise. Satisfaction is also described as a dynamic process involving psychological activities of assimilation and contrast that, over time and experience, may modify the subjective standard or standards relied

upon by a patient. Finally, patient satisfaction has been viewed as a useful variable for modeling health-related behavior and treatment outcome. Information bearing on these assumptions is presented in the following review of the empirical findings of patient satisfaction research.

Measurement of Patient Satisfaction

Measurement Issues

There is a lack of standardization regarding the method of measuring patient satisfaction. Instruments have typically been simple, ad hoc measures (Westbrook & Oliver, 1981). Most published studies of patient satisfaction have used measures that are composed of either a few broad questions about satisfaction or unstandardized, single-item subscales that tap reactions to one or two health care dimensions (Linn & Linn, 1975; Stamps & Finkelstein, 1981; Ware, Davies-Avery, & Stewart, 1978).

Domains of the health care system.

The distinction made by consumer satisfaction researchers regarding domains of the consumption system has rarely been explicitly recognized in the measurement of patient satisfaction. The construct "patient satisfaction" has been assessed in two quite different ways (Howell, Osterweis, & Huntley, 1976). One approach to instrument development has relied on community samples and included many items referring to health care providers in general or to aspects of the macro domain of medical care (Westbrook & Oliver, 1981). An example of an item using the indirect approach to measure provider conduct is "Doctors always do their best to keep the patient from worrying" (Ware, Snyder, Wright, & Davies,

in press). In contrast, a more direct approach is exemplified by measures developed with individuals receiving health care and who responded to items specifically referencing that care. An illustrative item addressing provider conduct is "The doctor has relieved my worries about my illness" (Wolf & Stiles, Note 3).

Although indirect approaches and direct approaches seem logically to refer to different types of health care experience, it has been argued that indirect scales are appropriate for measuring the satisfaction of patients with their actual health care. The rationale for such use of indirect measures is that a patient's reactions to macro items supposedly matches his or her evaluations of their own health care (Hulka, Zyzanski, Cassel, & Thompson, 1970; 1971). Likewise, it has been proposed that the construct of satisfaction remains the same when item wording is varied (Davies & Ware, 1981). However, Davies and Ware also note in the same article that revising macro items to have micro referents should be accompanied by psychometric evaluation of the modified scales. Despite the instructions given in some indirect measures to respond in terms of current experiences, if one is presently receiving care, such directions may not override the generalized item referents. A patient may, or may not, substitute or overlay the particular referents from their immediate experience instead of reacting strictly in terms of the generalized referents that are presented.

Research findings indicate that the indirect approach and the direct approach to measuring satisfaction actually assess satisfaction with different domains of health care, a macro domain for the indirect measures and a micro domain for the direct measures. One line of evidence is the difference indicated by respondents between their own care and what they believe people in general receive. Respondents across studies have consistently rated their own care more favorably

than either health care providers in a collective sense or the macro domain of the medical enterprise (Andersen, Kravits, & Anderson, 1971; Strickland, 1972; Rivkin & Bush, 1974; Ware, Snyder, & Wright, 1977). Similar distinctions have been reported regarding clients of various human service organizations (Gutek, Lau, Majchrzak, Allen, & Tyler, Note 1; Katz, Gutek, Kahn, & Barton, 1975), leading Gutek (1978) to conclude that there is not a strong relationship between direct and indirect measures of satisfaction.

Studies using experimental designs have regularly found that direct and indirect approaches produce dissimilar results. Higher satisfaction scores have been reported from patients randomly assigned to complete a direct measure compared to patients in the same setting who completed an indirect measure (Roberts, Pascoe, & Attkisson, in press; Stewart & Wanklin, 1978). Patients randomly assigned to alternative treatment programs who completed both direct and indirect measures have shown significant differences only on the direct measures (Alpert, Kosa, Haggerty, Robertson, & Heagarty, 1970; Shah, Robinson, Kinnis, & Davenport, 1972). Other designs requesting patients to complete indirect measures, direct measures, and an assessment of overall satisfaction with the care received have found in multivariate analyses that overall service satisfaction is only related to the direct measures (Caplan & Sussman, 1966; Counte, 1979; Pascoe, Attkisson, & Roberts, in press). Similar results were reported by Wilson and McNamara (1982), who used an analogue approach to study satisfaction with contrasting patient-provider interactions.

A different analytic approach used nonmetric multidimensional scaling to examine responses to a pool of indirect and direct inquiries about patient satisfaction (Roghmann, Hengst, & Zastowny, 1979). Each of the two sets of items com-

prising the pool were balanced in terms of positive and negative wording. Results showed that the direct and indirect items did not mix well as a single cluster and instead represented separate domains. This finding has been replicated for satisfaction with physicians (Zastowny et al., 1983) as well as satisfaction with dentists (Hengst & Roghmann, 1978).

Logical and empirical evidence therefore both support the distinction between direct and indirect measures of patient satisfaction. Although both may tap satisfaction with health care, direct measures seem to assess a micro domain, composed of services actually received, and indirect measures apparently index a macro domain, which is represented by the medical enterprise and providers at a collective level.

Macro measures.

Several measures have been reported that assess satisfaction with the macro domain of medical service and were developed by standard methods of scale construction. Five of these measures used factor scaling: (a) Aday and Andersen (1975) used national samples and measured two dimensions, cost-convenience and provider characteristics; (b) Bice and his colleagues (Bice & Kalimo, 1971; Bice & White, 1971) reported scales developed in a cross-national investigation that measured availability/convenience, physician conduct, and utilization tendencies; (c) Rojeck, Clemente, and Summers (1975) constructed a three-item scale measuring general satisfaction with health care as part of a larger analysis of community satisfaction with services; (d) Ware and his associates (Ware & Snyder, 1975; Ware et al., in press; Ware, Wright, Snyder, & Chu, 1975) constructed scales from community samples that assessed 20 dimensions of patient attitudes toward

health care; and (e) Davies and Ware (1981) also used community samples to develop a dental satisfaction measure that included multi-item scales tapping access, availability/convenience, cost, pain, and quality.

Guttman scaling, Thurstone scaling, and Likert scaling have also been used to develop macro satisfaction measures. Guttman scales were developed by Andersen (1968) to assess respondents' "value of physicians" and "value of health care" and Suchman (1964) constructed Guttman scales measuring skepticism toward medical care and physician interest in patients' welfare. Hulka and her colleagues (Hulka et al., 1970) first used Thurstone scales to measure physicians' professional competence and personal qualities as well as opinions about cost/convenience of health care. These scales were subsequently modified by the researchers to produce Likert-type scales (Zyzanski, Hulka, & Cassel, 1974).

Newer, nonmetric methods of scale development have been employed by another group of patient satisfaction researchers. Micro items and items adapted from the Hulka instrument (Hulka et al., 1970; Zyzanski et al., 1974) were used to measure satisfaction with dentists (Hengst & Roghmann, 1978) and satisfaction with physicians (Roghmann et al., 1979; Zastowny et al., 1983). Correlations among the items were the proximity inputs for multidimensional scaling (Green & Carmone, 1970; Shepard, Romney, & Nerlove, 1972). Two dimensional solutions emerged for the separate sets of macro and micro items. Hierarchical clustering analysis (Johnson, 1967) was applied to each dimension, resulting in what was labeled as "positive" and "negative" dimensions within each of the micro and macro groups of items.

Micro measures.

Several micro measures developed by standard scale construction methods have focused on satisfaction with one's health care provider. Summated ratings (Likert, 1932) and descriptive analyses of correlations have typically been used in developing these provider oriented micro measures. Three such measures have been reported that focus on affective, behavioral, and cognitive dimensions of the physician-patient interaction (DiMatteo & Hays, 1980; Vuori, Aaku, Aine, Erkko, & Johansson, 1972; Wolf, Putnam, James, & Stiles, 1978). An investigation of satisfaction with physician assistants (Nelson, Jacobs, & Johnson, 1974) measured interpersonal skill, technical quality of care, and outcome and convenience, as well as a macro scale addressing the appropriateness of physicians delegating tasks to assistants. Risser (1975) developed an instrument to measure satisfaction with three dimensions of outpatient nursing care: trusting relationship, technical-professional skill, and educational relationship.

Other provider oriented micro measures have been developed through factor analysis of Likert-type items. Gray (1980) used an unspecified factor analytic technique to develop a seven-item satisfaction scale measuring physician conduct. Wolf and his associates (Wolf, Note 2; Wolf & Stiles, Note 3) have carefully field tested and refined their original Medical Interview Satisfaction Scale (Wolf et al., 1978). A pool of 44 items was submitted to factor analysis and reliability analysis and yielded 29 items. A subsequent principal components analysis with varimax rotation was conducted and the 29 items produced the four subscales of the current Medical Interview Satisfaction Scale: rapport, communication comfort, distress relief, and compliance.

Micro measures have also been reported that address satisfaction with aspects of health care besides just the provider. One method for developing such measures is adjusting the wording of macro measures of satisfaction. Weinberger et al., (1981a) reworded the items of the Hulka questionnaire to have more personal referents, supplemented these with their own items, and through item analysis constructed three scales: nonmedical aspects (surroundings, appearance, and convenience), competence of provider, and personal qualities of provider. Similarly, items from the Ware scales were made more direct regarding care received (e.g., referring to all the doctors at a particular setting) and through reliability analysis were developed into three scales measuring efficacy of treatment, technical competence of provider, and personal qualities of provider (Linn, Ware, & Greenfield, 1980; Linn & Greenfield, 1982).

Another method used for developing micro measures that include nonprovider scales is factor analysis of originally generated micro items. Mangelsdorff (1979) used principal components analysis with varimax rotation on responses of military personnel and their families to produce three Likert-type scales called physician interactions, nonphysician interactions, and ancillary services provided. Aday, Andersen, and Fleming (1980) used an unspecified type of factor analysis to develop Likert-type scales measuring physician conduct and cost-convenience. Likewise, an unspecified type of factor analysis was conducted by Linder-Pelz (1982a) on her data and resulted in Likert-type scales measuring physician conduct, convenience, and general satisfaction with one's health care. Penchansky and Thomas (1981) used principal axis factor analysis of 16 micro and macro items and, using the unusually low minimum eigenvalue of .25, reported five factor scales labeled as availability, accessibility, accommodation, affordability, and acceptability.

Different scale construction methods have been used in developing unidimensional micro measures that assess general satisfaction across all aspects of service delivery. The results of a principal components factor analysis were used to derive a Likert-type general scale that can be used with consumers of various health and human service programs (Larsen, Attkisson, Hargreaves, & Nguyen, 1979). In contrast, Franklin and McLemore (1967) combined Thurstone and Likert scaling techniques to develop a measure of general satisfaction with student health services.

A few measures have been reported that are alternatives to the usual Likert-type scales. Semantic differential scaling has been reported in two patient satisfaction studies: (a) Counte (1979) developed four scales to measure the satisfaction of multiple sclerosis (MS) patients with their physician, psychologist, MS treatment center, and the hospital in which the treatment center was located; and, (b) Rosen, Nystedt, Bygdeman, and Lundstrom (1979) used 11 semantic differential items for women to indicate their satisfaction with nonsurgical treatment for terminating pregnancy. Besides semantic differential items, visual card-sorting tasks have also been developed as an alternative procedure for measuring micro satisfaction with health care (Attkisson, Roberts, & Pascoe, in press; Pascoe & Attkisson, in press).

Reliability

Reliability levels can be evaluated according to the stage of instrument development and intended use of the measure. Nunnally (1967) states that in the early phase of research on hypothesized measures of a construct, modest reliabilities of .60 or .50 are sufficient. Another criterion offered by Helmstadter (1964)

is whether a measure is intended to compare groups or to compare individuals. For the former comparison a reliability of .50 is considered acceptable whereas a minimum reliability level of .90 is recommended for comparison of individuals.

All but a few reported reliability estimates of macro measures are .50 or greater. Initial development of the Hulka questionnaire (Hulka et al., 1970) showed that the cost/convenience scale had an alternate forms reliability of .43. Subsequent refinement of the measure (Zyzanski et al., 1974) reported an internal consistency for this scale of .55. Ware and Snyder (1975) computed both internal consistency and test-retest coefficients for their 20 scales. An accessibility scale and an availability scale had internal consistency coefficients of .49 and .47 respectively, but both scales had test-retest estimates above .50. Recent investigations of a 43-item version of the Ware measure found the internal consistency of the finances scale to be .43 in one study (Roberts et al., in press) and in the other study (Pascoe et al., in press) all scales were above .50. The remaining report of a macro scale having a reliability estimate below .50 was Zastowny et al. (1983), who specified the odd-even reliability of their "general negative" scale as .35.

The reported reliabilities of almost all micro scales are also at least .50. Two exceptions are the .17 odd-even reliability for the Zastowny et al. (1983) "specific negative" scale and the .49 alpha of the Linder-Pelz (1982a) convenience scale. In addition, DiMatteo and Hays (1980) reported test-retest reliabilities below .50 for three of their scales. However, these estimates were based on data from less than half of their sample and both Spearman-Brown and alpha estimates computed from the full sample of 287 patients were above .50 for all of the DiMatteo and Hays scales.

Although the reliability estimates of patient satisfaction measures are generally at or above .50, there are virtually no scales reporting reliabilities above .90 when used in primary care settings. In the few instances where reliabilities have exceeded .90, the items were either not described (Counte, 1979) or not balanced regarding favorable and unfavorable wording (Mangelsdorff, 1979). The lack, or potential lack, of balanced wording could have introduced acquiescent response bias (Ware, 1978) that inflated the reliability figures. The evidence therefore suggests that available scales are perhaps reliable enough for making group comparisons but none are presently suitable for comparing individuals.

Dimensions of Satisfaction

Although different satisfaction measures have dealt with various aspects of medical care, there appears to be a limited number of dimensions involved in patient satisfaction. One approach to determining the categories of service characteristics that potentially affect patients' evaluations has been conducted by Ware and his colleagues (Ware, Davies-Avery, & Stewart, 1978; Ware, Snyder, & Wright, 1976, 1977). Ware and his associates completed a content analysis of 900 published questionnaire items and responses to open-ended questions as well as multivariate studies of relationships among satisfaction measures. The factors influencing satisfaction that emerged were designated: accessibility/convenience, "art" of care, availability, continuity, efficacy/outcome of care, finances, physical environment, and technical quality of care.

Despite recommendations that different characteristics of health care be measured separately in order to better understand patient satisfaction (Ware, 1981; Ware et al., 1977), the dimensions identified by Ware and his associates are

probably not orthogonal. For example, Ware, Davies-Avery, and Stewart (1978) have noted that the "art" of care and technical quality of care may actually represent one dimension of provider behavior. Their second-order factor analysis of the 20 scales in an early version of the Patient Satisfaction Questionnaire led Ware and Snyder (1975) to reduce the number of dimensions of satisfaction to four: physician conduct, availability of care, continuity/convenience of care, and access mechanisms. Similarly, a second-order principal components analysis with varimax rotation was conducted on data from two recent studies using the eight scales of Ware's 43-item Patient Satisfaction Questionnaire (Pascoe et al., in press; Roberts et al., in press). The results indicated one large first factor accounting for 42% of the reliable variance, on which humaneness, quality, and general satisfaction loaded, and a second factor responsible for 14% of the variance that included accessibility and availability.

The fact that fewer orthogonal dimensions are derived when less scales are used as input is not a surprising difference between the second-order analysis of Ware & Snyder and the second-order analysis of the combined data from Pascoe et al. and Roberts et al. More importantly, the macro domain of satisfaction seems to be characterized by a large first factor that is composed of general satisfaction and reactions to health care providers.

Besides content analysis of items or higher order factor analysis, secondary analysis of psychometric data from published scales can help clarify the dimensionality of patient satisfaction. This secondary analysis involves computing reliability of difference scores to determine the amount of overlap shared by all possible pairs of scales within an instrument. The reliability of difference between two scales is based on the reliability of each scale and the correlation between

those scales (Cohen & Cohen, 1983; Magnusson, 1967). The higher the reliability of difference, the more likely it is that separate dimensions are being measured. A standard of .50 or greater has been used in previous research as an indication that distinct dimensions are being assessed (Dohrenwend, Shrout, Egri, & Mendelsohn, 1980; Vernon & Roberts, 1981).

Based on studies publishing both scale reliabilities and interscale correlations, macro measures have demonstrated limited support for the measurement of separate dimensions. Secondary analysis indicates that no reliable differences were found among scales within each of the following investigations: (a) the current version of the Hulka instrument (Zyzanski et al., 1974); (b) a subsequent comparison of the Hulka instrument to a macro measure (Counte, 1979); and (c) the current macro scales described by Zastowny et al. (1983). Only slightly more successful was the Dental Satisfaction Questionnaire (Davies & Ware, 1981) in which one scale was reliably different from over half of the other six multi-item scales.

The best evidence that separate dimensions of macro satisfaction can be reliably differentiated comes from two investigations using the Ware et al. 43-item Patient Satisfaction Questionnaire. In one of these studies (Pascoe et al., in press), all of the seven scales measuring separate dimensions had at least half of their reliability of difference coefficients above .49. As would be expected, an eighth scale measuring general satisfaction was not reliably different from most of the other seven scales. The other study using this instrument (Roberts et al., in press) showed that only the dimension measuring quality of care was not reliably different in most cases from the other dimensions. Interestingly, the Roberts et al. study found that Ware's general satisfaction scale was reliably different from all but two of the other scales.

Secondary analysis of research using micro measures shows that reliably distinguishing dimensions of satisfaction depends on the measure used. For measures addressing nonprovider dimensions as well as provider dimensions, no reliable difference was found in one case (Zastowny et al., 1983), another showed reliable differences only between the nonprovider dimension and the provider dimensions (Weinberger et al., 1981a), and a third indicated reliable differences among all four of its scales (Counte, 1979).

The micro measures focusing only on provider oriented dimensions also produce mixed evidence. Analyses of these provider oriented instruments found most scales to not be reliably different in two cases (DiMatteo & Hays, 1980; Risser, 1975). Results from more recent investigations of the original Risser instrument (Ventura, Fox, Corley, & Mercurio, 1982) and a slight modification of that questionnaire (Hinshaw & Atwood, 1982) are basically consistent with Risser's original data, i.e., aside from the responses of one of Hinshaw and Atwood's subsamples there were no reliable differences among the Risser subscales. In contrast, the four scales of the current version of the Medical Interview Satisfaction Scale (Wolf, Note 2; Wolf & Stiles, Note 3) had reliability of difference values ranging from .56 to .72.

The evidence from different approaches, though not totally consistent, does suggest that separate dimensions of health care at both the macro domain and the micro domain determine consumer satisfaction. At the macro domain, reliability of difference analysis found some evidence for as many as six dimensions, which could be reduced with second-order factor analysis to as few as two: (a) provider conduct-general satisfaction, and (b) accessibility-availability. Reliability of difference analysis of micro measures, especially the carefully refined Medical In-

terview Satisfaction Scale (Wolf, Note 2; Wolf & Stiles, Note 3), points to as many as four dimensions of provider behavior that affect patient satisfaction and indicates that these provider dimensions are distinct from the setting of services.

Validity

Even though some researchers have addressed the validity of their measures, there are currently neither macro nor micro measures that appear fully validated. This lack of complete validation is not surprising given the infrequent attention to explicitly defining the psychological nature, and macro versus micro domains, of patient satisfaction. Instead of starting with theoretical investigations and psychometric studies, patient satisfaction research has often moved directly to applications for evaluation and program planning (Stamps & Finkelstein, 1981).

Standards of validity.

Ideally, patient satisfaction measures should be valid with respect to both internal and external criteria. Conventional guidelines for criterion validity, content validity, and construct validity (American Psychological Association, 1974) are applicable to patient satisfaction measures. Ware and his associates have emphasized that patient satisfaction measures need to demonstrate external validity as well as internal validity (Davies & Ware, 1981; Ware, Davies-Avery, & Stewart, 1978; Ware et al., 1975). External, or utilitarian, criteria include the reflection of actual qualitative differences in the structure, process, and outcome of care as well as accurately predicting subsequent health-related behaviors such as compliance, utilization, and patient selection of provider services. Hulka and Zyzanski (1982, p. 653) state that external validity is more important than inter-

nal validity, but do not substantiate the basis for such a conclusion. However, relative inattention to internal validity seems inadvisable. Without careful internal validation it is difficult to establish appropriate measures of different domains and dimensions of satisfaction.

Threats to validity.

Patient satisfaction research is marked by several potential validity threats. The possible validity problems involve: (a) the content and format of the instrument used, (b) sampling difficulties, (c) judgement ability of patients, and (d) potential artifacts of the assessment situation. Each of these is examined here.

The conceptual context of many patient satisfaction measures does not seem sensitive to the range of dimensions that may influence a patient's evaluation. For example, measures that either focus on one dimension or inquire primarily about general service satisfaction are probably insensitive to the multiple dimensions that may influence a patient's reactions. These unidimensional or general measures may not adequately tap aspects of care responsible for relative dissatisfaction, which would lead to inflated reports of satisfaction. Although multidimensional measures are less prone to such problems, the best-documented multidimensional measures are oriented toward either macro domain dimensions (e.g. the Ware et al. Patient Satisfaction Questionnaire) or micro domain subcomponents of the provider dimension (e.g. the Wolf et al. Medical Interview Satisfaction Scale). Comparatively less research has been accomplished to develop and refine micro domain measures that include both nonprovider and provider dimensions.

The wording of items in many patient satisfaction instruments invites acquiescent response bias. Ware (1978) analyzed studies of bias in patient satisfaction questionnaires due to acquiescent response set and found that 40% to 60% of respondents agree with statements regardless of content. These field studies showed that acquiescent response set accounted for significantly elevated satisfactions scores when results were computed from favorably worded items and for significantly depressed scores when results were generated from negatively worded items. If a questionnaire is used to gain patient responses, positively and negatively worded items must be balanced in order to avoid acquiescent response set bias. Unfortunately, this balance does not generally occur in actual scales (Ware, Davies-Avery, & Stewart, 1978). Among published multidimensional questionnaires, the most carefully balanced macro measures are Hulka's, Ware's, and the Roghmann et al. "general" scales. The most carefully balanced multidimensional micro measures include DiMatteo's, Wolf's, and the Roghmann et al. "specific" scales.

Another potential problem with the format of current patient satisfaction measures involves the response alternatives used in the questionnaires. Although satisfaction is usually assumed to be a continuous variable with a potential range from low to high, dichotomous and trichotomous response alternatives are used in some cases, e.g., the Roghmann et al. scales, and the validity field tests of the Hulka measure conducted by Stamps and Finkelstein (1981). This coarse approach has been criticized for arbitrarily creating a cutoff between "satisfied" and "dissatisfied" that is insensitive (Locker & Dunt, 1978) and artificial (Marquis, Davies, & Ware, in press) as well as introducing analytical artifacts such as restricted reliability (Guilford, 1954) and reduced correlation coefficients (Hulka & Zyzanski, 1982).

Even when several scale steps have been used, most patient satisfaction scales have included a midpoint marked as "uncertain," "unsure," or some equivalently labeled step. Instead of being an unscored, off-scale alternative, all reported patient satisfaction instruments using this format score such a midpoint as though being uncertain is synonymous with indicating a moderate or midrange sense of satisfaction. Also, research on instrument development has shown that such midpoints allow an associated "neutral response bias" and consequently are less advantageous than a format that omits a neutral midpoint (Nunnally, 1967).

Sampling differences can affect the validity of patient satisfaction investigations. If patients are sampled early in a particular course of agency contact, they may not have had sufficient time for the effects of treatment to be evident or not have made enough visits to finalize their evaluations (Larsen et al., 1979). In contrast, if sampling is begun long after a patient first contacts an agency, those dissatified patients who can afford to seek care elsewhere will have exited, leaving mainly satisfied respondents to serve as potential subjects. Self-selection by patients regarding participation in a service satisfaction study can compound this problem of biased sampling. Even though some studies, especially those with captive groups, have reported high return rates, response rates can drop as low as 18% in patient satisfaction studies (Harris, 1978). Low response rates suggest that differential responding has influenced some studies, i.e., patients who were relatively less pleased with service may have expressed their disfavor by declining to particiapte in satisfaction studies.

Social-psychological artifacts may also affect reports of satisfaction. Several such artifacts have been discussed in reference to research on consumer satisfaction (Olander, 1977; Pfaff, 1977), satisfaction with social service programs

(Scheirer, 1978), satisfaction with primary health care services (Lebow, 1974; Rivkin & Bush, 1974), and satisfaction with mental health services (Cowen, 1978; LeVois, Nguyen, & Attkisson, 1981). Using categories described by Scheirer (1978) and LeVois et al. (1981), there are six types of social-psychological artifacts that can lead to elevated reports of patient satisfaction: (a) social desirability response bias, (b) tendencies to ingratiate oneself with program staff, (c) the Hawthorne effect, (d) reinforcement for high ratings by maintenance of a personally rewarding program, (e) cognitive consistency pressures to make satisfaction ratings congruent with one's continued program participation, and (f) experimenter bias in cases where evaluators are affiliated with the program in question.

Little data are available to clarify the actual effect size of social-psychological artifacts on patients ratings of satisfaction with medical services. A study of service satisfaction among gynecologic patients (Noyes, Levy, Chase, & Udry, 1974) reported that scores tended to be more favorable when a questionnaire was administered orally compared to a written administration of the same instrument, but no information regarding effect size was given. Likewise, data from chronic patients (Stewart & Wanklin, 1978) did not provide effect sizes, although indicating an apparent interaction between setting of interview and type of satisfaction measure. In this latter study, reported satisfaction varied according to whether data were obtained at the patient's home or the physician's office, but this distinction was much more pronounced with macro items than when the same items had micro referents. Finally, a study examining the effects of experimenter attributes and the information set provided to patients (Pascoe & Attkisson, in press) found that 2% of the variance in satisfaction was accounted for by experi-

menter attributes and another 1% was due to information set. Collectively, the limited data on social-psychological artifacts therefore suggest that although such effects do operate, patients' self-reports are not substantially biased by these artifacts.

The ability of patients to judge health care delivery has also been questioned and presented as another potential artifact. In particular, it has been suggested that patients are unable to judge the technical quality of care and therefore provide data that are heavily influenced by their emotional needs (Ben-Sira, 1976, 1980, 1982; Bloom, 1965; DiMatteo, Prince, & Taranta, 1979; Mechanic, 1968; Ross & Duff, 1982; Ross, Wheaton, & Duff, 1981) or aspects of their general life satisfaction (Linn, 1975; Linn & Greenfield, 1982).

Empirical evidence indicates that patients may be more capable judges than skeptics have implied. Research comparing how patients and providers evaluate different aspects of health care has shown a high degree of agreement on the relative importance of the dimensions investigated (Pascoe & Attkisson, in press; Smith, 1972). Studies using both actual patients (Korsch et al., 1968; Stiles, Putnam, Wolf, & James, 1979; Stiles, Putnam, James, & Wolf, 1979) and subjects in an analogue experimental design (Wilson & McNamara, 1982) have found that respondents are sensitive to verbal and nonverbal elements of the health care process, and fairly accurate in distinguishing the quality of provider behaviors, such as courtesy and competence, differentiating between these behaviors, and basing their satisfaction ratings on these discriminations. The satisfaction ratings of patients have also been found to correspond to criteria for physician excellence customarily used by health providers, such as more years of training, avoidance of excessive patient loads, positive motivation of the physician toward patients, and peer supervision of physicians (Kirsch & Reeder, 1969).

There has been one instance where an external measure of pediatrician competence was not significantly related to an ad hoc measure of parental satisfaction with the physician (Ross et al., 1981). Instead, satisfaction was significantly related to type of practice, and the interaction of quality of psychosocial care with length of time using the pediatric service. However, in a subsequent analysis of this data set, Ross and Duff (1982) comment that nonsignificance of certain findings may have been due to attenuated variances. The reported ratings of technical care suggest that this may have been the case with Ross et al.'s 1981 publication, since technical quality was rated uniformly high across all practices.

Although research has shown some overlap between ratings of service satisfaction and indices of patients' life circumstances, the effect sizes are not large. Two studies (Linn, 1975; Rojeck et al., 1975) reported significant positive relationships between service satisfaction and opinions about one's community, but neither study reported effect sizes. Linn and Greenfield (1982) found that depression accounted for less than 1% of the variance in ratings of service efficacy made by chronically ill patients. Psychological distress was found to account for 2% of the variance in service ratings in one study (Tessler & Mechanic, 1975) and 4% in another (Greenley, Young, & Schoenherr, 1982). The latter research also reported that the effect is magnified if a subject's questionnaire response reveals psychological distress but (s)he does not admit or discuss their personal problems with the provider.

In each of two studies with public health patients (Attkisson et al., in press; Pascoe et al., in press) a rating of general life satisfaction explained less than 2% of the variance in micro measures of service satisfaction. A subsequent study with another sample of public health patients (Roberts et al., in press) found sig-

nificant relationships between scales indexing domains of life satisfaction and a macro measure of service satisfaction, but not with a micro measure of service satisfaction. The effect sizes of the four life dimensions scales that were significant in the multivariate analyses ranged from 4%-7%. From the available evidence, it appears that service satisfaction, especially at the micro domain, is not simply a reflection of general life satisfaction.

Studies bearing on the judgment ability of patients therefore suggest that most patient assessments of service, particularly at the micro domain, are relatively independent of general life outlook, based on discriminations among different aspects of care, and resemble providers' evaluations of service quality.

Overview of Research Results

Most patient satisfaction studies report that scores are negatively skewed, often leading to statements that patients are satisfied (Fox & Storms, 1981; Lebow, 1974; Locker & Dunt, 1978; Stamps, 1978; Swan & Carroll, 1980). Even though such negatively skewed distributions may reflect the true nature of patient satisfaction (Zastowny et al., 1983), two measurement issues should be considered regarding reports of high satisfaction—the influence of artifacts and lack of a known cutoff between satisfaction and dissatisfaction.

High satisfaction scores may be partly due to the potential methodological problems described earlier. If relatively dissatisfied individuals are not sampled, either because they terminated participation in a program or because they refuse to provide data, reported satisfaction will be artificially high. Instruments that do not include dimensions responsible for dissatisfaction, have items with inappropriate referents, or manifest other shortcomings may not be sensitive to the

range of satisfaction that patients experience. Halo responding, demand characteristics, and other artifacts can all contribute to inflated satisfaction ratings.

Besides the potential of artifacts to elevate reports of satisfaction, there is no evidence to show at what point satisfaction stops and dissatisfaction begins. Davies and Ware (1981) have noted that satisfaction scores only rank respondents rather than allowing a concrete distinction between satisfied and dissatisfied patients. Empirical work by Ware and his colleagues (Marquis et al., in press) also gives no indication that behavioral consequences of satisfaction are more easily predicted from one segment of the distribution of satisfaction scores than from another. The absence of a clear cutoff score and the possibility that patient reports may be affected by artifacts should temper a conclusion that patients are highly satisfied.

Patient Variables

The patient variables that have been studied in patient satisfaction research can be grouped into three areas: (a) attitudes, (b) sociodemographic characteristics, and (c) health-related behaviors. The first category, patient attitudes, includes the information described earlier regarding opinions and expectations about the medical enterprise as well as life satisfaction.

The present review of empirical findings will focus on studies linking service satisfaction to patient sociodemographic characteristics and to the patient behaviors of service utilization, selection of provider, and compliance with treatment. Where possible, effect sizes are noted that are based on multivariate analyses indicating the unique percent of variance accounted for. Following the general guidelines of Cohen and Cohen (1983), an effect size of .01, or 1% of the variance explained, is "small," .09 is "medium," and .25 is "large."

Sociodemographic characteristics.

Reported associations between patient sociodemographic characteristics and patient satisfaction have been summarized in previous reviews. Ware, Davies-Avery, and Stewart (1978) organized the findings of the 13 publications they reviewed around the following categories: age, education, family size, income, marital status, social class, race, sex, and occupational level. More recently, Fox and Storms (1981) used the first seven of these sociodemographic categories to structure their synopsis of 16 studies, including 12 covered by Ware and his colleagues. Ware and his associates conclude that, except for the categories of marital status, race, and social class, trends exist regarding sociodemographic characteristics and satisfaction with dimensions of medical care. In contrast, the findings concerning sociodemographics and satisfaction are characterized by Fox and Storms as chaotic and are seen as not having consistent relationships. Fox and Storms also question whether useful policy information or theoretical benefits will be gained by some improved measurement of associations between satisfaction and sociodemographics. Instead, they recommended that attention be directed at understanding the psychological conditions that underlie patient satisfaction and probably account for the discrepant findings.

The sociodemographic categories that have demonstrated the most consistent relationships with service satisfaction are the age and sex of patients. Typically, increased service satisfaction is significantly associated with being older and being female. Even Fox and Storms (1981) found such relationships in their study of telephone respondents. Discrepant results tend to be reported in studies investigating either a unique type of organizational setting or a narrow range of diagnosed health problems. For example, females reported significantly less satisfac-

tion than males when service settings were military health care agencies (Mangelsdorff, 1979) and when treatment was for hypertension (Shortell, Richardson, LoGerfo, Diehr, Weaver, & Green, 1977). Other contradictory findings, particularly those involving the relationship between age and service satisfaction, can generally be traced to differences in the particular dimension of service that was assessed. Younger patients have been found to report significantly more satisfaction than older patients with access to medical services (Hulka, Krupper, Daly, Cassel, & Schoen, 1975) as well as the outcome of care (Blanchard, Treadwell, & Blanchard, 1977; Kirscht, Haefner, Kegeles, & Rosenstock, 1966).

The amount of variance in satisfaction accounted for by a patient's age and sex appears to be small. Six studies included these sociodemographic categories in multivariate analyses and provided effect size information (Fleming, 1981; Linn & Greenfield, 1982; Linn, Linn, & Stein, 1982; Roghmann et al., 1979; Shortell et al., 1977; Tessler & Mechanic, 1975). In some cases a single study reported separate multivariate analyses for different dimensions of patient satisfaction. The 10 effect sizes for age ranged from 0 (Roghmann et al., 1979) to .035 (Linn & Greenfield, 1982) with a mean equal to .013. The two effect sizes for sex were .006 (Fleming, 1981) and .023 (Shortell et al., 1977).

Health-Related Patient Behavior

Utilization.

In most patient satisfaction studies utilization of services has been based on either patient self-report or indexed in some unspecified way. An exception is the work of Linn et al. (1982), who reviewed patients' medical records to establish

each subject's level of utilization. Other studies (e.g., Ashcraft et al., 1978; Hengst & Roghmann, 1979; Roghmann et al., 1979) have relied on medical records, but used an entire family as the unit of analysis instead of individual patients. For purposes of this review, "utilization" refers to all of these various types of indices.

The most frequently examined hypothesis about utilization and satisfaction is that a direct relationship exists between these two variables. Twenty-two studies published prior to 1976 that examined this relationship were reviewed by Ware, Davies-Avery, & Stewart (1978). They note that in 26 of 30 reported statistical tests significant results indicated that use of services increased as satisfaction increased. Seventeen other investigations published after 1975 do not offer the same level of support (Ashcraft et al., 1978; Attkisson et al., in press; Berkanovic & Marcus, 1976; Fox & Storms, 1981; Gray, 1980; Hengst & Roghmann, 1978; Linn et al., 1982; Pascoe & Attkisson, in press; Pascoe et al., in press; Penchansky & Thomas, 1981; Roberts et al., in press; Roghmann et al., 1979; Shortell et al., 1977; Snider, 1980; Weinberger et al., 1981a, 1981b; Wolinsky, 1976; Zastowny et al., 1983). Only eight of the 41 statistical tests reported in these more recent studies showed a significant relationship between satisfaction and utilization.

Reported effect sizes among the investigations of utilization and satisfaction range from none to quite large (Gray, 1980; Hengst & Roghmann, 1978; Linn et al., 1982; Roghmann et al., 1979; Ware et al., 1975; Zastowny et al., 1983). Of the 39 effect sizes the smallest was zero (Roghmann et al., 1979; Zastowny, 1983), the largest was .609 (Ware et al., 1975), and the average effect size was .028. The large effect reported by Ware et al. (1975) was for self-report of obtaining a dental check-up at least annually.

Examination of the direction of the relationships between satisfaction and utilization in more recent studies reveals that a negative association actually exists in some cases. Significant inverse relationships were reported for male patients at a VA medical center (Linn et al., 1982) and individuals receiving services at a public health center (Pascoe & Attkisson, in press). Also, welfare mothers representing families scoring higher on an index of dental clinic utilization reported significantly higher scores on a dimension labeled as "resentment of provider" (Hengst & Roghmann, 1979).

These inverse relationships fit what would be expected from Hirschman's (1970) propositions regarding response to unsatisfactory service. If a patient has few alternatives for receiving care or services elsewhere, (s)he can not exercise an "exit" response and is therefore left with only the mode of "voice" (lower satisfaction scores) to convey their discontent. Consequently, dissatisfaction would be voiced as a result of a necessity to continue using services that are perceived as unfavorable.

Besides instances of an inverse relationship, the association between utilization and satisfaction is also complicated in terms of the causal direction between these two variables. The multivariate analyses reported in most studies reflect an assumption that level of satisfaction affects subsequent utilization. However, such analyses have almost always relied on cross-sectional data. The results of two longitudinal studies produce conflicting results, one indicating that satisfaction is best conceptualized as an independent variable and the other providing evidence that utilization predicts satisfaction. In the first example (Gray, 1980), initial satisfaction with one's physician was a significant predictor of subsequent utilization over 1 year (effect size=.006) and this utilization index was not signif-

icantly associated with a second report of satisfaction measured at the end of the 12 month study (effect size=.001). The other study (Linn et al., 1982) reported that the number of clinic visits indicated in medical records covering a 1 year period was significantly, and inversely, related to a subsequent satisfaction score for both patients over age 65 (effect size=.10) and patients under age 65 (effect size=.02).

The different findings pertaining to satisfaction and utilization suggest that the relationship between the two may be a complex, reciprocal process (Zastowny et al., 1983). Clarification of this process would be gained by longitudinal studies measuring utilization and satisfaction at multiple time points and basing utilization on clinical records of individual patient behavior. Also, it appears that different patterns of association between utilization and satisfaction may exist depending on the interplay of patient cicumstances and the context of services. If so, it would be important to distinguish patients in terms of their perceived alternatives for obtaining health care as well as comparing types of health care organizations and utilization categories such as preventive services and illness visits.

Switching services.

A different aspect of patient behavior that has been studied is switching health care services, either sporadically or permanently, as a result of dissatisfaction. The focus in this area of research is not on whether dissatisfaction leads to delay in seeking care or a reduction in overall utilization, but whether dissatisfied patients look on their own initiative for alternatives to meet their health care needs. The term "dissatisfied" is used in this respect for convenience, and

refers to relatively low scores on a measure of satisfaction as well as the self-description provided by patients in some research.

Findings consistently indicate that dissatisfaction is associated with intention to switch services and self-report of having terminated services. Dissatisfaction has been related to considering changing dentists (Jenny, Frazier, Bagramian, & Proshek, 1973) and expressing less willingness to return to one's physician (DiMatteo, Prince, & Taranta, 1979; Needle, 1976). Likewise, a study of Finnish patients (Vouri et al., 1972) reported that dissatisfaction was significantly associated with decreased willingness to return to the same physician among both out-patients (effect size=.38) and in-patients (effect size=.24). Research with recently terminating health maintenance organization (HMO) members (Pope, 1978) found that 7.7% of these individuals reported that dissatisfaction was the reason for quitting. A different study of current and former members of another HMO (Sorensen & Wersinger, 1981) indicated that disenrollees were uniformly more dissatisfied than a random sample of current members who had received services during the same time period as the disenrollees and a third of the terminators cited a problem with services as the cause for leaving.

Besides increased intention to change providers and greater likelihood of terminating services, dissatisfaction has been linked to seeking care elsewhere without a referral. With one recent exception, investigations of such "doctor-shopping" have relied on retrospective self-reports. Studies with American samples (Greene, Gillings, & Salber, 1979; Kasteler, Kane, Olsen, & Thetford, 1976) and Israeli samples (Ben-Sira, 1976, 1982) have shown that dissatisfaction with both structural and process aspects of care is significantly related to self-report of changing one's provider. Similar work based on a random sample of Illinois resi-

dents (Ware et al., 1975) indicated an effect size of .136 for the relationship between satisfaction and report of switching providers. A more recent project conducted by Ware and his associates (Marquis et al., in press) utilized a longitudinal design and found that lower satisfaction was a significant predictor of subsequent "shopping," indexed from insurance claims data. While the relationship between dissatisfaction and switching services matches what would be expected, additional research will hopefully address the effect size involved. Such research should build on the example of Ware and his associates by tracking the satisfaction and actual utilization behavior of patients over time.

Compliance.

Three types of compliance have been studied in patient satisfaction investigations: (a) appointment keeping, (b) behavioral intentions to comply with recommended treatment, and (c) use of prescribed medications. Aside from an investigation of 100 low-income families that did not find a difference between satisfied and dissatisfied patients (Hillman & Charney, 1972), studies have reported a positive relationship between satisfaction and appointment keeping (Alpert, 1964; Becker, Drachman, & Kirscht, 1972, 1974; Francis, Korsch, & Morris, 1969; Hertz & Stamps, 1977; Hurtado, Greenlick, & Colombo, 1973; Korsch et al., 1968; Murray & Wiese, 1975). Satisfaction has also been found to be positively related to compliance intent (Wilson & McNamara, 1982) and strongly associated with out-patient (effect size=.42) and in-patient (effect size=.35) self-reports of willingness to follow physician instructions (Vouri et al., 1972).

Other studies have examined actual medication use based on pill counts (Linn et al., 1982; Ludy, Gagnon, & Caiola, 1977) or analysis of urine specimens (Becker

et al., 1972). Satisfaction was reported to be positively and significantly related to these compliance indices, although Linn et al. (1982) found such an association only for patients over age 65. This result suggests that the relationship between satisfaction and compliance may be more dramatic for certain types of patients. Although not addressed in current studies, the severity of a patient's disability and the complexity of his or her treatment regimen may influence the relationship between satisfaction and compliance.

Service Characteristics and Satisfaction

Satisfaction has been viewed as a dependent variable to evaluate different aspects of medical service. The best studies in which satisfaction is treated as a dependent variable are investigations that compared the reported satisfaction of patients who were randomly assigned to different types of treatment interventions. Other studies examined relationships between satisfaction and a variety of health care dimensions. In general, patients report highest satisfaction scores for health care providers and lower satisfaction scores for dimensions of accessibility, availability, convenience, and cost (Aday & Andersen, 1975; Aday, Andersen, & Fleming, 1980; Attkisson et al., in press; Caplan & Sussman, 1966; Pascoe & Attkisson, in press; Pope, 1978; Rivkin & Bush, 1974; Stamps, 1978). The findings pertaining to patient satisfaction as a consequence of services are reviewed below (relationships, except as noted, were orginally reported as statistically significant).

Service delivery comparisons.

Two studies have used true experimental designs to compare standard delivery of pediatric services to either a comprehensive, family-oriented service approach (Alpert et al., 1970) or an improved continuity of care program (Becker et al., 1974). Each study used stratified random assignment of low-income families to programs located within a single facility and controlled for potential validity threats.

The Alpert et al. investigation collected data from 750 families over a 3 year period and found greater indications of satisfaction expressed by the experimental group. The dimension responsible for the largest difference in satisfaction scores, waiting time, was consistent with time-and-motion studies conducted on 50 random patients.

In the Becker et al., project five system performance measures were gained from clinic registers and medical charts and self-report information was collected in the last 4 months of the 1 year study from all medical staff as well as random samples of patients. Staff and patients of the experimental program indicated a pattern of consistently higher satisfaction scores than their control-group counterparts. These self-reports matched the system performance indicators, four of which were more favorable for the experimental clinic: less waiting time, more minutes spent with the physician, higher rate of disclosing behavior problems, and higher appointment-keeping ratio.

Two other controlled trials compared satisfaction with day care versus hospital management of postsurgical conditions. One of these investigations (Shah et al., 1972) involved matched pairs of children who had met initial screening criteria and were randomly assigned to type of postoperative care. Eight medical

complications and four psychological complications were measured as well as assessing parental satisfaction between 7 and 10 days after the surgery. Children in the hospitalized group had a significantly poorer disposition on operation day and children in the day care group had signficantly more coughing both on operation day and on the first postoperative day. Parents of day care children gave more favorable reports on 10 of 11 micro measures of satisfaction.

The other postoperative care study compared the satisfaction of adults undergoing surgery for either hernia or varicose veins as well as measuring the reactions of the individuals who assisted at home with day care (Garraway, Cuthbertson, Fenwick, Ruckley, & Prescott, 1978). Day care received more favorable satisfaction reports than hospital care, did not produce any major criticisms or disadvantages for the "caring person," and responses did not vary depending on patients' demographics, previous surgical experience, or previous care experience.

Other studies have relied on surveys of intact groups to compare the satisfaction associated with differences in health care delivery. Bellin and Geiger (1972) contrasted patients at a neighborhood health center to patients in the same community who used hospital outpatient clinics, emergency room services, and private physicians. The health center showed a 2:1 advantage in reported satisfaction over its nearest rival on all four dimensions that were measured: quality of care, comprehensiveness, convenience, and personal attention.

A more extensive comparative study (Greenley & Schoenherr, 1981) collected data on intraorganizational and interorganizational conditions from administrators and staff of 11 human service organizations as well as gathering information from clients on service performance and satisfaction with humaneness of service. All 11 agencies were located in the same Wisconsin county and four of these or-

ganizations provided either general medical care or specialized, nonpsychiatric medical services. Regression analyses were conducted on data across all agencies, showing that satisfaction with humaneness of care was positively related to organizations characterized as more autonomous, engaging in more interagency communication, and internally structured to allow greater staff discretion in performing their duties. Similar results were obtained in a study of East German hospitals (Kurella, 1979). In this research patient satisfaction with interpersonal aspects of care was greater on wards where staff members had rated their own social integration as high.

All available evidence clearly indicates that improved organization and delivery of health care is met with favorable patient response. Such consistency would seem to enhance the validity of patient satisfaction as an indicator of quality of care. However, the little information that exists regarding effect size actually suggests that satisfaction may be more affected by patient factors than by organizational characteristics. Greenley and Schoenherr (1981) reported that organizational factors accounted for about 12% of the variance in satisfaction with humaneness of care whereas client factors accounted for 28%. Although the other investigations that compared delivery programs did not rely on staff self-reports to index system performance, these studies did not report effect size information. The use of external measures of organizational characteristics and multivariate analyses are necessary to determine whether satisfaction data are more a reflection of patient idiosyncrasies than a measure of organizational effectiveness.

Accessibility, availability, and convenience.

With one exception, studies have reported that satisfaction is related to these dimensions. Wolinsky (1976) found no association between satisfaction and either miles to emergency care source or travel time to one's source of emergency care. Otherwise, increased satisfaction has been demonstrated for lessened appointment difficulties, decreased travel demands to obtain care, and briefer delays in obtaining services (Aday & Andersen, 1975; Aday et al., 1980; Berkanovic & Marcus, 1976; Caplan & Sussman, 1966; Deisher, Engel, Speilholz, & Handfact, 1965; Fox & Storms, 1981; Gray, 1980; Greenly & Schoenherr, 1981; Linn et al., 1982; Ludy et al., 1977; Mechanic, Greenley, Cleary, Hoeper, & Wenzel, 1980; Penchansky & Thomas, 1981; Rising, Baron, & Averill, 1973; Shortell et al., 1977; Tessler & Mechanic, 1975; Weinberger et al., 1981b). Also, the availability of more hours of professional nursing service in hospitals has been positively linked to satisfaction (Abdellah & Levine, 1957). Based on their national survey, Aday et al. (1980) conclude that the two key variables influencing evaluations of convenience are travel time and waiting time in the office and that satisfaction with these convenience factors influences satisfaction with other dimensions of care. The 11 effect sizes reported in the above studies ranged from .019 (Shortell et al., 1977) to .26 (Aday et al., 1981) and averaged .107.

Financial and structural characteristics.

Research exploring the impact of financial and structural variables on satisfaction includes two types of studies. One set of studies has looked at these as separate variables. Other investigations have compared settings in which financial aspects and structural features are combined, especially comparisons of bureaucratic prepaid plans versus smaller, fee-for-service programs.

Studies treating cost as a separate variable indicate, with one exception, that personal health care expenditures are inversely related to satisfaction. Results of a national sample reported that cost was by far the most criticized aspect of care, with 37% of the respondents described as being at least somewhat dissatisfied (Aday et al., 1980). Correspondingly, satisfaction with charges was positively associated with overall clinic satisfaction (Caplan & Sussman, 1966) and reduced costs as a result of changing health care plans has been tied to increased satisfaction (Ashcraft et al., 1978). One study also found patients to be satisfied when they had medical insurance (Hulka et al., 1971).

Contrary to these results, Wolinsky (1976) reported that neither having private insurance nor the degree of insurance coverage were related to satisfaction and that yearly expenditures for physician services were positively related to satisfaction. Besides the fact that Wolinsky measured self-reported expenditures rather than satisfaction with those expenditures, he did not examine the interaction of expenditures and income. It seems likely that the association between expenditures and satisfaction is influenced by a patient's income. Higher income individuals may be able to afford more, or better, care and be more satisfied with that care than lower income individuals.

Regarding structural and environmental factors, satisfaction has demonstrated a positive relationship with the pleasantness of the patient's surroundings (Houston & Pasanen, 1972) and a negative relationship with hospital size (Aday et al., 1980; Brooks, 1973). Fleming (1981) found that patients report less satisfaction with teaching hospitals than non-teaching hospitals (effect size=.02).

Differences in satisfaction between patients in large, prepaid plans and patients in smaller fee-for-service plans has also been investigated. Tessler and

Mechanic (1975) found lower satisfaction at a prepaid group plan, with effect sizes equal to .017 for satisfaction with one's own care and .029 for satisfaction with child care. Similarly, Gray's (1980) longitudinal comparisons showed no initial differences but greater satisfaction at 1 year for patients in a fee-for-service plan (effect size=.036). Mechanic et al. (1980) reported more complex results from comparisons of six practices, each representing a combination from among two locations (clinic vs. nonclinic) and three types of payment (prepaid vs. Medicaid vs. fee-for-service). Analysis of type of payment indicated lowest satisfaction for prepaid patients and results of the effect of location indicated that clinic patients were less satisfied with socioemotional care but more satisfied with the adequacy of facilities.

Quality of care and patient socioeconomic status apparently influence the relationship between level of satisfaction and organization of health care delivery. Ross et al. (1981) found in their comparison of plans that a large prepaid group practice provided better psychosocial care than a solo practice and their prediction equation estimated that over time the satisfaction of patients in the former group would increase. Besides quality of care and how long a therapeutic relationship has existed, patient variables indexing socioeconomic status differentially affect satisfaction with types of health care organization. Large prepaid plans have received lower satisfaction reports from patients who have higher incomes (Bashshur, Metzern, & Worden, 1967; Enterline, Salter, McDonald, & McDonald, 1973) and who have more years of education (Shortell et al., 1977). In another study of socioeconomic factors (Olendzki, Grann, & Goodrich, 1972), welfare recipients were each interviewed three times before the introduction of Medicaid and twice after. Results showed that although significantly more re-

spondents attended private medical practices after Medicaid became available, the preference for such care compared to clinic care dropped significantly.

Although general patterns emerge from the literature on financial and structural characteristics, this research shows that the effects may depend on patient circumstances as well as the quality of care involved. Usually the less costly care is, the more satisfactorily it is rated by patients. However, prepaid plans are designed to be low cost and are generally met with relative dissatisfaction compared to private practice care. Interestingly, higher socioeconomic status patients express more than the usual dissatisfaction with prepaid plans, whereas lower socioeconomic patients given an opportunity to receive private medical care showed less preference for such care.

Together these findings suggest that different types of patients use different criteria in judging, or reacting to, financial and structural aspects of health services. Perhaps for higher income patients, paying more for health care is interpreted by them as also receiving better care or as a confirmation of their ability to afford costlier consumer services. Lower income patients who prefer clinics to private practices may find that their psychosocial needs are more adequately met in a clinic setting. An organizational variable that seems to counteract the initial misgivings of different patients toward potential financial and structural problems is the delivery <u>over time</u> of high quality psychosocial care. Therefore, the more experience a patient has with a health care organization, the more his or her satisfaction judgments may reflect the quality of care and the less personal factors may influence such reactions.

Provider-patient interaction.

Provider behavior, how long a patient-provider visit lasts, and degree of continuity with the same provider have been the most commonly investigated aspects of the provider-patient interaction. This type of research has been described as having a static orientation that views the patient as a passive figure in the exchange (Stiles, Putnam, James, & Wolf, 1979; Stiles, Putnam, Wolf, & James, 1979). Studies based on a more dynamic perspective have explored how patient satisfaction is affected by the degree of fit between the provider and the patient in terms of background characteristics and reciprocal behaviors.

1. Technical competence. An aspect of provider behavior that has been linked to patient satisfaction is the provider's technical competence. An index of technical performance based on chart review by physician-judges was positively related to satisfaction (effect size=.012) in a study of hypertension treatment (Shortell et al., 1977), although not in an investigation of pediatric services (Ross et al., 1981).

Needle (1976) found that female students' perception of their gynecologist's competence was positively related to satisfaction, indexed by self-report of willingness to return to that physician (effect size=.04). In another study (Gillette, Byrne, & Cranston, 1982), data from both male and female students indicated that the provider's perceived technical competence was the best predictor of overall satisfaction. Wilson and McNamara's analogue study (1982) found that the level of competence presented in a videotaped vignette was directly related to college students' semantic differential reports of competence as well as being positively linked to satisfaction and compliance intent. Based on content analysis of patient responses to open-ended questions, competence was the category used

most frequently regarding both positive and negative experiences with physicians, and this category was used more in reference to physicians than to other medical personnel (Greene et al., 1980). Studies displaying bivariate correlations without statistical tests (Ben-Sira, 1976, 1982) have shown that patient ratings of physician competence are positively associated with measures of socioemotional satisfaction and technical satisfaction.

2. Interpersonal skills. A provider's interpersonal skills have also been related to patient satisfaction. Although nonpatient ratings of provider interpersonal skills were not associated with satisfaction in one study (Stewart & Wanklin, 1978), a similar rating was positively related to satisfaction in another investigation (Ross et al., 1981). Self-ratings by patients (Berkanovic & Marcus, 1976; DiMatteo et al., 1979; Larsen & Rootman, 1976) and subjects in an analogue study (Wilson & McNamara, 1982) have demonstrated that better physician interpersonal conduct is positively related to satisfaction. One type of interpersonal skill directly tied to satisfaction is clear communication in the form of adequate, comprehensible explanations (Aday et al., 1980; Berkanovic & Marcus, 1976; Blanchard et al., 1977; Francis et al., 1969; Houston & Pasanen, 1972; Kincey, Bradshaw, & Ley, 1975; Korsch et al., 1968; Woolley, Kane, & Wright, 1978; Wriglesworth & Williams, 1975).

Satisfaction has also been related to a provider showing an interest in the patient (King & Goldman, 1975; Linn, 1975). Patient ratings of physician friendliness and warm concern had a large effect size, .25, in Needle's (1976) study, in which willingness to return to the same provider was the dependent measure. Satisfaction has also been associated with affective competence in terms of an ability to decode and encode nonverbal messages (DiMatteo, 1979; DiMatteo & Taranta, 1979; DiMatteo, Taranta, Friedman, & Prince, 1980).

Other research on clinical encounter events employed discriminant analyses to examine the patterns of observable and nonobservable features that characterized greater satisfaction among both patients and physicians (Weinberger et al., 1981b). Several aspects emerged as significant (effect sizes: .371, patients; .401, physicians) with greater satisfaction for both patients and physicians marked by the physician making fewer facilitative remarks, using more nonverbal encouragement, taking less initiative, and not having been on call either the evening of the visit or the night before.

3. Length of health care visit. How long a patient-provider visit lasts is not consistently related to patient satisfaction. Four studies have reported that length of interaction was not related to satisfaction (Korsch et al., 1968; Ross et al., 1981; Stiles, Putnam, Wolf, & James, 1979; Weinberger et al., 1981b). Six other investigations did find a positive relationship between satisfaction and time spent with the provider (Aday et al., 1980; Becker et al., 1974; Caplan & Sussman, 1966; Ludy et al., 1977; Weinberger et al., 1981a). The latter study by Weinberger et al. (1981a) reported an effect size of .079 for perceived interaction time and satisfaction with provider interpersonal quality, one of three satisfaction dimensions measured in their study. Results of another study (Linn, 1975) showed that length of visit was not related to an index of satisfaction with one's physician and was inversely related to a measure of overall satisfaction with the clinic. Other research based on parental satisfaction with pediatric services (Lebow, 1975) consistently found inverse relationships between reports of time spent, both with physician and with staff, and patient perceptions of quality of care, ability of the physician, staff eagerness, and overall satisfaction with services.

4. Continuity of care. Although not all findings concur, the bulk of the research evidence indicates that having a regular source of care and seeing the same provider are directly associated with satisfaction. No relationship emerged from the multivariate analyses in two studies (Mechanic et al., 1980; Weinberger et al., 1981a) and in each of four other investigations one or more indices of continuity were significant whereas others were not (Breslau & Haug, 1976; Weinberger et al., 1981b; Shortell et al., 1977; Wolinsky, 1976).

Eleven studies did report that greater continuity is linked to increased satisfaction (Alpert et al., 1970; Becker et al., 1974; Fleming, 1980; Gray, 1980; Hengst & Roghmann, 1978; Hulka, Krupper, Daly, Cassel, & Schoen, 1975; Hulka, Zyzanski, Cassel, & Thompson, 1971; Linn, 1975; Pope, 1978; Penchansky & Thomas, 1981; Woolley et al., 1978). An additional study reported that the length of time a family had gone to their current pediatrician was positively related to satisfaction for patients of a large prepaid plan but inversely related to satisfaction among patients of solo practitioners (Ross et al., 1981). Seven effect sizes were reported in the above studies for positive associations between satisfaction and continuity. These effect sizes ranged from .01 (Fleming, 1981) to .048 (Gray, 1980) with an average equal to .031.

The effect of the provider-patient interaction on the patient's satisfaction seems to be more a function of the quality of care than how long a visit lasts. The importance of the quality of care probably accounts for the inconsistent results regarding continuity, i.e., having a regular practitioner would be satisfying if that individual provided high quality care, but not if the care was unacceptable. The evidence indicates that quality of care is codetermined by both interpersonal skill and technical competence. The research with college students suggests that

more educated or more informed patients weight technical competence of the provider more heavily than interpersonal skills. Other types of patients may reverse this relative importance, particularly patients with strong needs for socioemotional support.

5. Patient-provider fit. A recent focus of research on satisfaction with the provider-patient interaction is the match between the individuals involved. One example is research on the congruity between physician sociodemographic characteristics and patient sociodemographics. Ross et al. (1982) have found that although satisfaction is generally reduced if a physician with nonnormative sociodemographic characteristics is assigned rather than chosen by the patient, satisfaction is actually increased if the patient's sociodemographics match those of the nonnormative physician.

A different type of matching that has been related to satisfaction involves reciprocity between provider behaviors and patient behaviors. Research in this area has been limited to investigations of initial patient-provider visits. For these "new" patients, satisfaction is increased when physicians are attentive in the initial phase of a medical interview, allowing a patient to convey information in his or her own words, and when the physician provides more information and shares control during the conclusion of a medical interaction (Stiles, Putnam, James, & Wolf, 1979; Stiles, Putnam, Wolf, & James, 1979).

Clinical outcome.

Although clinical outcome is represented by change in a patient's health status, many satisfaction studies have used health status measures that do not account for the patient's condition prior to treatment. Besides not explicitly as-

sessing change in health attributable to treatment, studies using such measures have yielded disparate findings regarding health status and satisfaction. Four studies that have simply measured health status or severity of illness reported positive relationships with satisfaction (Linn & Greenfield, 1982; Pope, 1978; Shortell et al., 1977; Tessler & Mechanic, 1975), six investigations found no such relationship (DiMatteo & Hays, 1980; Fox & Storms, 1981; Pascoe et al., in press; Penchansky & Ashcraft, 1981; Roghmann et al., 1979; Zastowny et al., 1983), and two others reported mixed results (DiMatteo et al., 1979; Linn et al., 1982).

Research that has examined clinical outcome and satisfaction has generally indicated that these are positively linked. Of studies using either patient self-report of improvement or scores obtained in an unspecified way, one reported no relationships between satisfaction and clinical outcome (Stewart & Wanklin, 1978) whereas six others did find a positive association (Caplan & Sussman, 1966; Fleming, 1980; Greenley & Schoenherr, 1981; Greenley et al., 1982; Lebow, 1975; Woolley et al., 1978). The one effect size given in these six investigations was .026 (Fleming, 1980).

A remaining study used nonpatient ratings of clinical outcome which, as a combined score, was not associated with satisfaction. In this investigation, a team of researcher-physicians (Ross et al., 1981) rated health outcome of pediatric treatment from poor to good and this was not related to mothers' response on an ad hoc measure of satisfaction. The lack of a significant relationship may have been due to attenuated variances, as noted by Ross and her colleagues, or to the fact that satisfaction ratings did not come from the same person that clincial outcome was based upon.

Conclusions

The research on patient satisfaction indicates that such information does have a role in evaluating primary health care and explaining health-related behavior. Patient satisfaction can serve as an outcome measure of the quality of health care and provides a consumer perspective that can contribute to a complete, balanced evaluation of the structure, process, and outcome of services. Patient satisfaction is also predictive of such health-related behaviors as compliance and switching providers, and is related to self-reported improvement in health.

Although patient satisfaction data can add to the evaluation of primary health care, the effect sizes are rarely large. One implication of the typically small effect sizes is that patient satisfaction should be considered as one of several sources of information for program planning and evaluation. Another issue stemming from the limited effect sizes is the necessity for careful conceptualization and measurement of satisfaction in order to detect such effects. The remainder of this review is devoted to suggestions for future research concerning patient satisfaction.

Further consideration of the definition and psychological nature of patient satisfaction is necessary. Models of patient satisfaction should account not just for macro versus micro domains and dimensions within each domain, but also address the psychological processes involved in responding to those domains and dimensions.

The measurement of patient satisfaction should follow from well-developed models of satisfaction. Considerable psychometric effort has led to the development of multidimensional macro measures, provider oriented micro measures, and

global micro measures. Additional resources should be invested in refining micro measures that assess the range of both nonprovider and provider dimensions that may determine satisfaction with care.

Increased use of sophisticated indices and research designs will benefit patient satisfaction studies. Longitudinal data is necessary to unravel the relationship between utilization and satisfaction as well as the link between satisfaction and clinical outcome. Important distinctions within types of constructs should be recognized and appropriately indexed. For example, the area of utilization of service may require separate measures of preventive services, seeking care for acute conditions, and obtaining follow-up services or chronic care. Clinical records and other external measures would be useful to augment patient reports of utilization, quality of care, switching services, compliance, and the outcome of treatment.

Patient satisfaction research requires greater attention to the individual psychological differences that may affect reactions to health services. Depending on their psychological needs and outlook, different patients may respond to health services in dissimilar ways. The effects of concern about one's health and sense of opportunity regarding health services as well as other personality variables deserve more consideration in patient satisfaction research.

A final recommendation concerns a need for research on the utilization of satisfaction results. The quality of patient ratings may depend not only on the rigor of evaluators and researchers, but partially on how patients believe their responses are treated by investigators, administrators, and health care providers. Investigators could examine how the feedback of patient satisfaction data affects the organizations where such information was obtained. Also, the perception of

patients regarding how their reports are, or are not, used may have consequences for subsequent attempts to investigate patient satisfaction.

HYPOTHESES

The research was designed to test a model of the determinants of micro satisfaction with health care. In contrast to macro satisfaction, which addresses the health care enterprise and physicians in general, micro satisfaction refers to satisfaction with directly received health services. The hypotheses to be tested are grouped into three areas: (a) patients' perceptions of health services, (b) patients' perceptions and micro satisfaction, and (c) individual differences in micro satisfaction.

Patients' Perceptions of Health Services

Research has shown that the organization and delivery of health care can influence patient satisfaction and that the degree of patient satisfaction is a determinant of subsequent health service seeking behavior. Measurement of patient satisfaction requires indices of satisfaction that address appropriate domains of health care and accurately reflect the psychological processes that underlie a patient's sense of satisfaction. Current measures have generally relied on questions about the macro domain of health care or asked about only a single dimension of the micro domain, e.g., one's practitioner(s). However, pilot work (Pascoe & Attkisson, in press; Pascoe et al., in press; Roberts et al., in press) indicates that the micro domain of health care is apparently perceived as distinct from the macro domain and that both of these domains are multidimensional. Pilot work (Attkis-

son et al., in press) also suggests that patients distinguish the importance, or salience, of micro health care dimensions from the perceived quality of those dimenisons.

Hypothesis I.

Patients reliably discriminate multiple dimensions of the health services that they receive. The major dimensions that are expected to be perceived are the structure, process, and outcome of health services.

Hypothesis II.

Patients' perceptions of their health care include two sets of reactions: (a) a cognitively based evaluation, or grading, of the structure, process, and outcome of services; and (b) an affectively based response, or emotional reaction, to the structure, process, and outcome of services. These sets of reactions, although viewed as related, are not expected to be exactly the same.

Patients' Perceptions and Micro Satisfaction

Some researchers have stated explicitly (Hulka et al., 1970; 1971) or implicitly (Davies & Ware, 1981) that satisfaction with the services one actually receives can be assessed with macro measures of health care opinions. Other investigators (e.g., Linn, 1975; Linn & Greenfield, 1982) express concern that patients' service satisfaction data may be strongly influenced by their current sense of life satisfaction and therefore inappropriate as a barometer of program quality. A patient's general attitudes about the health care enterprise and his or her degree of life satisfaction may have some influence on their evaluation of the

health care they receive. However, micro satisfaction is probably more a function of reactions to directly received health care than a result of either macro health care opinions or life satisfaction.

Hypothesis III.

Overall micro satisfaction is a function of patients' perceptions of the health care they actually receive, and is not substantially related to either macro satisfaction with health care or degree of life satisfaction.

Although certain perceptual dimensions are seen as being positively associated with overall micro satisfaction, the absolute levels of these two measurement approaches may differ. Typically the responses to measures of overall micro satisfaction are negatively skewed. These reports have often been interpreted to mean that patients rarely have misgivings about the health care they receive. However, pilot studies suggest that specific perceptions of dissatisfaction may coexist with high overall satisfaction. An assessment that measures the full range of dimensions should be more likely than an index inquiring only about overall satisfaction to tap any source(s) of relative dissatisfaction.

Hypothesis IV.

A multidimensional response to health services will reveal a lower and more normally distributed reaction than an inquiry about overall micro satisfaction.

Individual Differences in Micro Satisfaction

Certain individual differences may affect judgments of micro satisfaction. One such difference is the level of concern a patient has about his or her health. Some researchers (e.g., Ben-Sira, 1976, 1981, 1982) have suggested that patients are so anxious about their health and so medically unsophisticated that their reports of service satisfaction are guided by emotional rather than cognitive reactions to health care. However, patients probably differ in their level of health concern. The determinants of overall micro satisfaction may be different for health anxious patients compared to the determinants for patients who are less concerned about their health.

Hypothesis V.

Overall micro satisfaction of patients who are anxious about their health will be determined more by their affective responses to dimensions of health care than by their cognitive appraisal of those dimenions, and the micro satisfaction of patients who are relatively less anxious about their health will be determined more by their cognitive appraisal of dimensions of health care than by their affective response to those dimensions.

A final hypothesis is based on an incorporation of economic models of consumer satisfaction and the literature on social-psychological artifacts. Hirschman (1970), an economist/political scientist, views consumers as having two main responses to unfavorable organizational performance. The proposed options are to either "exit" and seek satisfaction with an alternative organization or, if re-

strained from exiting, to "voice" discontent. Hirschman would therefore predict that a patient with few resources for health care would be most likely to voice dissatisfaction. However, social-psychological evidence (Scheirer, 1978) suggests that several factors prevent patients, including those with few resources, from expressing dissatisfaction (e.g., social desirability response bias, tendencies to ingratiate oneself with program staff, the Hawthorne effect, cognitive consistency pressures to make satisfaction ratings congruent with one's continued program praticipation). The economic and social-psychological models, although apparently incompatible, may actually reflect different segments of an underlying curvilinear relationship.

Hypothesis VI.

Patients whose health care resources are either numerous or very restricted will express relatively high levels of overall micro satisfaction whereas patients with moderate resources will express greatest dissatisfaction.

METHODOLOGY

Overview

Patients at an urban health maintenance organization served as subjects. Both overall and multidimensional reactions to service were obtained from each subject. The multidimensional measure included two parts designed to reflect different assessment orientations: (a) feelings about service and, (b) ratings of service quality. Half of the patients were randomly assigned to complete the "feelings" section before the "rating" section and the other half had this sequence reversed. Each patient also was first administered a survey that inquired about demographic characteristics and health-related background information.

Setting

The study was conducted at an urban health center of a federally qualified health maintenance organization. This health center, which has 15,700 members, averages approximately 5300 visits per month. The membership and visitation rate is split roughly evenly between commerical patients and patients on Medi-Cal, a health insurance program funded by the state of California for low income residents. A full range of acute and chronic ambulatory care is provided as well as preventive health services. Primary care services are delivered through four major clinics, located and staffed separately within the health center: (a) family practice, (b) pediatrics, (c) obstetrics/gynecology, and (d) internal medicine/speciality clinics.

Recruitment and Selection

Patients were recruited by the author in October and November, 1983. Individuals were approached while they were waiting to receive clinic services. Following a standard script, each prospective subject was informed that a study of patients' reactions to the health center was being conducted. Persons expressing interest were screened according to selection criteria designed to include those who were at least 13 years old, had previously received services at the health center, were scheduled to see a primary care practitioner that day for their own health care needs, were not employees of the health maintenance organization, and were able to comprehend and complete the self-administered questionnaires. Individuals accompanying minor children and not themselves receiving care were excluded from participation. Selected patients read an information sheet that described the study, explained that they would receive $5 for their participation, and emphasized that all responses would remain anonymous. Any questions were answered and the patient then decided whether or not to participate in the study.

Four hundred and ninety-seven individuals were asked to participate. Of these, 179 did not meet the screening criteria or declined to participate. Individuals screened out included 21 patients making their initial visit, five individuals accompanying a patient but not seeing a practitioner for their own health care needs, three patients who were judged to not sufficiently comprehend English, and two individuals who were employed at the health center. Among the 148 patients who declined to participate, 72 stated they did not have time to stay after seeing their practitioner, 20 indicated that they were too ill to fill out forms, and the remaining patients gave no reason.

Although 318 patients did meet the study criteria and agreed to participate, 18 of these were subsequently not able or willing to provide any service evaluation information. Consequently, 64% of all people approached were eligible and volunteered, with 300 of these providing complete data sets.

Procedure

Participants completed an initial survey while they were waiting to see their practitioner. This survey inquired about demographic characteristics, service use, resources for health care, health, health concerns, macro health care opinions, and life satisfaction. Completion time for this survey ranged from approximately 10 to 20 minutes.

After completing the initial portion of the study procedure, patients met with their practitioner. Following receipt of health services, subjects came to a prearranged room to complete the service evaluation measures. All subjects provided their overall rating of service satisfaction first and then completed a two-part multidimensional measure of perceptions of service. Although the same total information was gained from each participant, subjects were randomly assigned to different sequences of the two multidimensional sections. Completion time for the service evaluation portion of the procedure averaged about 15 minutes. Upon completion, each subject was issued a payment voucher that they redeemed for $5 at the reception desk as they left the health center.

Measures

Background Information: Single-item Measures

The initial survey that participants completed while waiting for services included several single-item measures, which are presented in Appendix A. Most of the single item measures were grouped under the heading "Background Information". As displayed in Appendix A, "Background Information" included sociodemographic items as well as self-reports of health, happiness, main health care need, service utilization, and three items about health care resources. The three items about health care resources were included to test Hypothesis VI, which stated that a curvilinear relationship exists between self-perceived resources for health care and overall micro service satisfaction. The three items used to index self-perceptions of resources for health care asked: (a) what alternative health care settings were available, (b) the convenience of obtaining health care elsewhere, and (c) the affordability of health care. The only other single item measure was a question about overall life satisfaction, which is listed in Appendix A as item 8 under "Self Descriptions".

Background Information: Multi-item Scales

The initial information that subjects provided also included responses to the following multi-item scales (Appendix A).

1. Medical Care Opinions (MCO). This measure, composed of selected factor scales from the Patient Satisfaction Questionnaire (Ware & Snyder, 1975; Ware et al., 1976), was designed to serve in the present study as a brief measure of macro satisfaction with health care. Both the content of most items and em-

pirical analyses indicate that the scales primarily address macro opinions about the health care enterprise rather than satisfaction with directly received care (Pascoe et al., in press; Roberts et al., in press). Second-order factor analysis of all eight of the Ware et al. scales resulted in two factors on which five scales had salient loadings (Pascoe, in press). For the present research, the 32 items comprising these five scales were selected: (a) availability of services, (b) accessibility of services, (c) quality of care, (d) humaneness of care, and (e) general satisfaction with health services. Scale items are balanced regarding positive and negative wording in order to help counteract acquiescent response set (Ware, 1978). Ware and his colleagues have summarized the psychometric properties of these scales (Ware, Davies-Avery, & Stewart, 1978; Ware et al., in press), showing that they are sufficiently reliable for research involving group comparisons.

2. Self Descriptions of Life Satisfaction (SDLS). The SDLS is an abbreviated form of an earlier questionnaire (Roberts et al., in press) that drew upon the work of Andrews and Withey (1976). The present study required a short, reliable measure of satisfaction with the most important dimensions of life experience. Based on their research with national samples, Andrews and Withey (1976) recommend the following criteria for measuring well-being across multiple dimensions of life experience (pp. 342-351): (a) multi-item scales of from two to four items should be used for each dimension, (b) the dimensions, taken jointly, should account for a substantial amount of variance in overall life satisfaction, (c) each dimension should be independently related to overall life satisfaction, (d) the dimensions should be as inclusive as possible, (e) the dimensions should exhibit minimal redundancy, and (f) the dimensions should have substantial interest from a personal or policy decision-making perspective.

The criteria articulated by Andrews and Withey (1976) guided the development of the original Life Dimensions Questionnaire (LDQ-30), 30 items assessing 10 dimensions (Roberts et al., in press). Multiple regression of the Roberts et al. data from patients receiving public health services showed that only two of the 10 LDQ-30 scales were signficantly related to an index of overall life satisfaction (included under the "Self Descriptions" section of Appendix A as item 8). These scales, Self-efficacy and Leisure, had good internal consistency, i.e., Cronbach's alpha of .74 and .81, respectively. The seven items comprising these two scales were therefore selected for the present research. The 7-point response format described by Andrews and Withey (1976) and used with the LDQ-30 was retained for the SDLS. The sequence of response alternatives was balanced across items to reduce acquiescent response set (Ware, 1978).

3. Health Opinions (HO). A measure of concern about one's health was needed to test Hypothesis V, which stated that patients who differ regarding health concern have different determinants that shape their satisfaction with services. Health worry may actually include two aspects, a general predispostion as well as more immediate anxiety. No available scales provided validity information regarding these dispositional versus situational aspects. However, two scales were selected that, based on their respective item content, appeared to address the potentially different types of health worry.

Items 1, 3, 5, and 6 of the HO are the Health Worry scale developed by Ware and Karmos (1976). These four items are worded in terms of dispositional concerns. Psychometric information (Ware, Davies-Avery, & Donald, 1978) indicates that these dispositionally oriented items are a sufficiently reliable scale for re-

search involving group comparisons, with an average alpha across four field tests of .55. The remaining HO items (numbers 2 and 4) were a two-item measure developed by Wolf as the Health Worry scale (Note 2). This two-item scale inquires about current concerns and was reported by Wolf to have an alpha of .71.

Service Evaluation

After seeing his or her practitioner, each subject completed two service evaluation questionnaires. Subjects were instructed to respond to these questionnaires in terms of their overall experience, past and present, with the health center. These questionnaires are presented in Appendices B, C, and D and are described below.

1. Client Satisfaction Questionnaire (CSQ-18B). The measure of overall micro service satisfaction used in this study was Form B of the 18-item Client Satisfaction Questionnaire (LeVois et al., 1981), which is shown in Appendix B. The original, experimental version of the Client Satisfaction Questionnaire (CSQ) contained 31 items intended to reflect nine dimensions of satisfaction with health/human services. Factor analysis of patient responses showed a large overall satisfaction factor that accounted for 43% of the total variance and 75% of the common variance. The second factor accounted for less than 7% of the common variance. The eight items loading highly on the unrotated first factor constitute the CSQ-8 (Larsen et al., 1979).

Additional research drawing on the original pool of 31 items led to development of parallel 18-item versions of the CSQ. These two versions of the CSQ, called the CSQ-18, Forms A and B, correlated .82 in the LeVois et al. (1981)

study. Each form of the CSQ-18 consists of 18 Likert-type items, with the CSQ-8 being a subset of Form B of the CSQ-18. Each item has four response choices that range from "1," indicating the lowest evaluation, to "4" for the most favorable evaluation. The sequence of response alternatives is balanced across items so that for some questions the order runs from low to high, and for the other questions, the order is high to low. The balancing of the direction of response alternatives is designed to reduce acquiescent response set (Ware, 1978). Earlier research with patients receiving public health services indicated that the CSQ-18B has good internal consistency, i.e., alphas equalling .84 (Pascoe et al., in press) and .83 (Roberts et al., in press).

2. **Health Service Questionnaire (HSQ).** The HSQ is an experimental, multidimensional measure of health service perceptions being tested in the current study. The HSQ draws on the empirical results of a series of pilot studies with patients receiving public health services (Attkisson et al., in press; Pascoe & Attkisson, in press; Pascoe et al., in press) and the conceptualization of patient satisfaction described by Pascoe (in press). The pilot research included structured interviews with over 200 patients in which visual card-sorting tasks were used to indicate perceptions of services and micro satisfaction with services. Results indicated that patients can discriminate and rank the importance of separate dimensions of service in shaping their level of overall micro satisfaction, as well as rate the quality of each dimension compared to their own subjective ideal. The findings of Attkisson et al. (in press) suggest that responding in terms of importance, or saliency, of the dimensions is not identical to a patient's ratings of the quality of those dimensions.

Using the pilot results in conjuction with the literatures on consumer satisfaction and patient satisfaction, Pascoe (in press) conceptualized the micro domain of patient satisfaction as a process of comparing salient characteristics of one's health care experience to a subjective standard. The comparative process is assumed to include two interrelated psychological activities: (a) a cognitively based evaluation, or grading, of the structure, process, and outcome of services; and (b) an affectively based response, or emotional reaction, to the structure, process, and outcome of services.

Unlike the visual card-sorting tasks used in pilot work, the HSQ is a self-administered paper-and-pencil questionnaire. The HSQ consists of two sections, one reflecting ratings of service quality (HSQ-Ratings), presented in Appendix C, and the other inquiring about emotional reactions to aspects of service (HSQ-Feelings), displayed in Appendix D. Each section has the same 22 stimulus items, which are brief labels of different aspects of the structure, process, and outcome of primary health care.

Although the item stems for the HSQ-Ratings and HSQ-Feelings are the same, the instructional sets and response alternatives are different for the two sections. The response alternatives for the HSQ-Feelings are drawn from the format for indicating feelings that is described by Andrews and Withey (1976, pp. 211-212): "delighted," "pleased," "unhappy," "terrible," or a fifth alternative of "does not apply to me". For the HSQ-Ratings, subjects were asked how the aspects of health service compared to what they considered to be the ideal service. The response alternatives for the HSQ-Ratings were: "extremely favorable," "mostly favorable," "mostly unfavorable," "extremely unfavorable," or "does not apply to me". Response alternatives for both sections of the HSQ did not in-

clude neutral midpoints in order to eliminate neutral response bias (Nunnally, 1967). Acquiescent response set (Ware, 1978) was minimized by balancing the direction of response alternatives across items within both sections.

The format and content of the HSQ was refined during pilot work with 60 patients at the same setting where data were ultimately collected. These pilot subjects, none of whom were subsequently recruited for the present study, completed a trial version of the HSQ and were interviewed regarding the acceptability of the measure. The information from these pilot subjects suggested that the present form of the HSQ was clear, comprehensive, and not associated with any obvious response burdens.

Data Analysis Plan

The data were analyzed in four main steps. Data verification occurred first. For this initial step, descriptive statistics were calculated for each item and used to confirm that the computer file did not contain any out-of-range values. Also, all multi-item scale scores were checked by randomly selecting subjects, hand calculating their scores, and comparing these values to their corresponding computer-generated values. (Any negatively worded item for which endorsement had originally been scored with a high value was reversed scored; high scale scores therefore reflected positive reactions.) After verifying that the computer file was complete and accurate, the second step was examination of the sample characteristics. Next, the third step focused on the psychometric properties of all multi-item scales except the HSQ. HSQ data were considered at the beginning of the final data analysis step, i.e., the tests of the research hypotheses.

RESULTS

Sample Characteristics

Data on the demographic characteristics of the sample are presented in Table 1. The demographic categories reported in Table 1 are almost identical to those used to describe the sample in four pilot studies (Attkisson et al., in press; Pascoe & Attkisson, in press; Pascoe et al., in press; Roberts et al., in press). The proportions in these categories for the present investigation generally contrast with the pilot research, which involved patients receiving services at a public health center. The most comparable finding is the disproportionate number of female subjects across the studies, i.e., over two-thirds of the participants in each study were women. However, compared to the pilot studies as a group, the present sample had: (a) fewer patients age 60 and older, (b) a reversal of the proportion of nonwhites relative to whites, (c) more individuals in the lowest income bracket, (d) somewhat more patients who were not educated beyond high school, and (e) a greater number of people who had been previously married. Although census data were not available to confirm it, the sample disparities seem in accord with the apparently dissimilar metropolitan settings involved in the pilot research and the present investigation.

Background data on health-related variables are displayed in Table 2. As shown in Table 2, most respondents described themselves as being in good or excellent health and indicated that they had visited the health center two or more

TABLE 1

DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE

	Number of Subjects	Adjusted Percent
SEX		
Female	247	83
Male	51	17
Missing	2	---
	300	100
AGE		
Under 30 years	137	47
30 - 59	140	48
60 and older	16	5
Missing	7	---
	300	100
ETHNOCULTURAL GROUP		
Black	177	60
Hispanic	15	5
White	99	33
Other	6	2
Missing	3	---
	300	100
GROSS ANNUAL FAMILY INCOME		
$10,000 and under	136	47
$10,001 - $20,000	65	23
Over $20,000	86	30
Missing	13	---
	300	100
EDUCATION		
High school or less	92	31
Beyond high school	207	69
Missing	1	---
	300	100
EMPLOYMENT STATUS		
Full time outside home	101	34
Part time or full time at home/school	90	30
Other	108	36
Missing	1	---
	300	100
MARITAL STATUS		
Never married	99	33
Currently married	103	35
Previously married	96	32
Missing	2	---
	300	100

TABLE 2

HEALTH-RELATED CHARACTERISTICS OF THE SAMPLE

	Number of Subjects	Adjusted Percent
SELF-PERCEIVED HAPPINESS		
Not Too Happy	58	19
Pretty Happy	194	65
Very Happy	47	16
Missing	1	---
	300	100
SELF-PERCEIVED HEALTH		
Poor	9	3
Fair	60	20
Good	161	54
Excellent	69	23
Missing	1	---
	300	100
SELF-REPORTED UTILIZATION		
Once Over 6 Months Ago	38	13
Once In Last 6 Months	64	21
2-3 Times In Last 6 Months	91	30
4-6 Times In Last 6 Months	54	18
7 or More Times In Last 6 Months	53	18
	300	100
MAIN HEALTH NEED OR PROBLEM		
General Checkup	49	16.5
Obstetrical Checkup	49	16.5
Gynecological	34	11
Skeletomuscular	28	9
Follow-up Examination	17	6
Respiratory	15	5
Dermatological	12	4
Podiatric	12	4
Allergic	8	3
Cardiovascular	8	3
Outpatient Surgery	8	3
Miscellaneous Infections	6	2
Urologic	6	2
Gastrointestinal	5	2
Neurological	5	2
Opthalmologic	2	1
Other[a]	31	10
Missing	5	---
	300	100

[a]Includes bleeding, discharge, swelling, dizziness, fatigue, and aches.

times in the last six months. Table 2 also indicates that, although patients were seen for a variety of health needs typically treated at a general ambulatory care center, about a third were obtaining either a general checkup or an obstetrical checkup. This pattern of reported utilization and self-perceived health is probably a reflection of: (a) the preventive care orientation of the health maintenance organization and, (b) self-selection on the part of sicker patients who indicated they were too ill to participate in the study.

The two experimental groups were compared on the attributes shown in Table 1 and Table 2. No significant differences were found, indicating that the randomization procedure was successful in generating equivalent groups.

Psychometric Qualities of the Measures

This section describes the psychometric results (Tables 3 and 4) of four measures that had been developed in previous research: (a) Medical Care Opinions, which assessed macro opinions about health services; (b) Self Descriptions of Life Satisfaction, the measure of life satisfaction; (c) Health Opinions regarding self-perceived concern about one's health; and (d) the Client Satisfaction Questionnaire-18B, which patients used to indicate their overall micro service satisfaction. These measures were examined by focusing on the same multi-item subscales developed in previous research. This approach was chosen to allow direct comparison of the performance of subscales in the present study to what had been obtained in pilot research and other investigations using the same subscales. Rather than including description of the Health Service Questionnaire in this section, psychometric properties of this experimental measure are detailed as part of the section on results of the hypotheses tests.

1. Medical Care Opinions (MCO)

Data on the interrelationship and internal consistency of the MCO subscales are presented in Table 3. Correlations ranged from a low of .00 to a high of .75, with the higher correlations generally occurring between the General Satisfaction subscale and all others. The measure of internal consistency, Cronbach's alpha, ranged from a low of .66 for Availability to a high of .84 for Humaneness. These reliabilities compare favorably with Helmstadter's (1964) recommended minimum of .50 for making group comparisons as well as Nunnally's (1967) suggested standard of at least .50 in early research on construct measurement.

Reliability of difference scores (Cohen & Cohen, 1983; Magnusson, 1967) were calculated to assess the extent to which each of the five MCO subscales, when compared to all others, measures the same construct (Table 3). The larger the difference score, or coefficient, the more likely the subscales are measuring different dimensions. Following the recommendation of previous researchers (Dohrenwend et al., 1980; Vernon & Roberts, 1981), a difference score of .50 or greater was considered evidence of subscale distinctness.

Only four of the 10 pairwise comparisons had difference coefficients of .50 or greater, suggesting that for this sample most of the MCO subscales were not distinct. All four of the difference scores above the criterion were for Availability. These results are similar to a study of patients receiving public health services (Pascoe et al., in press). In this earlier investigation, General Satisfaction was only distinct from Availability and Availability was distinct from all of the same MCO scales used in the present research. Based on the current psychometric results, Availability and General Satisfaction were the two MCO subscales selected for use in the test of Hypothesis III, which required measures of macro satisfaction with the health care enterprise.

TABLE 3

MEDICAL CARE OPINIONS (MCO) SUBSCALES:

CORRELATIONS,[a] CRONBACH'S ALPHA,[b] & RELIABILITY OF DIFFERENCE[c]

	Access	Availability	Humaneness	Quality	General Satisfaction
n^d =	300	300	300	300	300
$\underline{n}^e$ =	280	293	284	281	287
Access	{.68}	.27	.54	.57	.60
Availability	(.55)	{.66}	.00	.08	.18
Humaneness	(.48)	(.75)	{.84}	.75	.71
Quality	(.27)	(.65)	(.06)	{.69}	.71
General Satisfaction	(.30)	(.65)	(.31)	(.05)	{.76}

[a]Upper off-diagonal values.
[b]Diagonal values in brackets.
[c]Lower off-diagonal values in parentheses.
[d]Sample size for correlations; based on full sample.
[e]Sample size for Cronbach's alpha; based on subjects providing complete data for all items of a subscale.

2. Self Descriptions of Life Satisfaction (SDLS)

Analysis of the SDLS subscales showed high internal consistencies, but also a strong association between the two subscales. The coefficient alpha for Leisure was .81 and Efficacy had an alpha of .75. Although the subscales each had high internal consistency, their correlation was .70. The reliability of difference between the scales was therefore only .27. These psychometric characteristics parallel almost exactly the results from earlier research with patients receiving public health services (Roberts et al., in press). Since the subscales did not appear to be distinct in the present study, all seven items were averaged to produce a composite score. This overall SDLS scale had a high coefficient alpha (.87) and was used in the current study as the index of life satisfaction.

3. Health Opinions (HO)

The HO included two sets of items, one worded in terms of dispositional concerns about health and the other set referring to current health concerns. Internal consistency reliability of these sets was lower than had been reported in previous studies (Ware, Davies-Avery, & Donald, 1978; Wolf, Note 2). The dispositionally oriented subscale had an alpha of .45 and the subscale inquiring about current health concerns had an alpha equal to .57. These two subscales were correlated .34 and had a low reliability of difference score (.26). Lacking apparent distinctness, the sets of items were combined. As shown in Table 4, this single mean HO score was normally distributed and had an alpha of .58. HO mean scores were used in later analysis as the measure of health concern.

TABLE 4

PSYCHOMETRIC PROPERTIES OF:

MEDICAL CARE OPINIONS (MCO) SUBSCALES,[a] SELF-DESCRIPTIONS OF LIFE SATISFACTION (SDLS),

HEALTH OPINIONS (HO), & CLIENT SATISFACTION QUESTIONNAIRE-18B (CSQ-18B)

	MCO		SDLS	HO	CSQ-18B
	Availability	General Satisfaction			
ITEM ANALYSIS n^b =	293	287	297	294	279
Mean of item means	3.07	3.03	4.74	2.80	3.16
Mean of item variances	.96	1.04	1.75	1.52	.56
Coefficient alpha	.66	.76	.87	.58	.91
Median item-total correlation[c]	.41	.55	.63	.32	.59
Minimum item-total correlation[c]	.33	.53	.51	.15	.19
Maximum item-total correlation[c]	.52	.58	.76	.45	.76
Mean inter-item correlation	.28	.44	.48	.18	.36
Minimum inter-item correlation	.06	.39	.30	-.06	.02
Maximum inter-item correlation	.59	.55	.66	.41	.73
SCALE CHARACTERISTICS n^d =	300	300	300	300	300
Scale mean	3.06	3.02	4.74	2.78	3.15
Standard deviation	.65	.78	.98	.70	.46
Range	3.60	4.00	5.43	3.50	2.50
Skewness	-.06	-.16	-.56	.07	-.51
Kurtosis	.16	-.09	.05	-.43	.10
Probability of normality[e]	.01	.12	.02	.12	.39

[a]Only the MCO subscales used in subsequent analyses are displayed.
[b]Sample size for item analysis is based on subjects providing complete data for all items of a scale.
[c]Item-total correlations are corrected for the presence of the item being evaluated.
[d]Sample size for scale characteristics is based on full sample.
[e]p values are based on Kolmogorov-Smirnov Z.

4. Client Satisfaction Questionnaire-18B (CSQ-18B)

Analysis of the CSQ-18B data indicated that this is a highly reliable measure. Table 4 shows that coefficient alpha was .91, corrected item-total correlations ranged from .19 to .76, and the median corrected item-total correlation was .59. These findings match previous research on patients receiving public health services (Pascoe et al., in press; Roberts et al., in press) and suggest that the CSQ-18B is an internally consistent index of overall micro satisfaction with health services.

Tests of Hypotheses

Hypothesis I

The first hypothesis stated that patients reliably discriminate multiple dimensions of the health services that they receive and that these perceived dimensions reflect the structure, process, and outcome of health care. All patients completed the two sections of the Health Service Questionnaire (HSQ-Feelings and HSQ-Ratings) to indicate their perceptions of health services. However, each patient had been randomly assigned to one of two groups that completed these sections in different orders. Initial analyses for Hypothesis I involved comparing the two experimental group's HSQ-Feelings data and HSQ-Ratings data to determine if similar patterns within each section of HSQ items existed for both patient groups. If patients in the groups had similar response patterns to a HSQ section, this would provide evidence of stability and lack of an order effect. Such evidence would allow data from both groups to be combined for the test of Hypothesis I, i.e., the dimensionality of the HSQ-Feelings and the dimensionality of the HSQ-Ratings.

Preliminary analyses. HSQ data were partitioned into four sets according to the sections of the measure and the subjects' experimental groups. This resulted in the following HSQ data sets: (a) F1, the 22 Feelings items for the 151 subjects who completed this section of the HSQ first; (b) F2, the 22 Feelings items for the other 149 patients who responded to this HSQ section second; (c) R1, the 22 Ratings items for these 149 people; and (d) R2, the 22 Ratings items for the 151 patients who completed this section second.

Both correlation matrices and covariance matrices were computed for each of the four HSQ data sets. In these calculations, and in all other analyses, any HSQ items marked "does not apply" were coded as missing. ("Does not apply" occurred for 5.7% of the HSQ responses and another .1% of the HSQ responses had been omitted.) All correlation matrices were based on pairwise deletion of cases with missing data. The statistical package used in the present analyses, SPSS (Hull & Nie, 1981), does not have a pairwise option for tests of covariance structures. Consequently, covariance matrices were computed by substituting a variable's mean score for any missing cases (Cohen & Cohen, 1983).

Initial checks of the four matrices, F1, F2, R1, R2, were made by testing each correlation matrix against the omnibus null hypothesis (Steiger, 1980). Cohen and Cohen (1983) advocate performing such tests, which simultaneously check whether all associations in a matrix are zero, to determine if further analyses involving such matrices would be simply "garbage processing". The results of these tests were: (a) F1 chi-square (231) = 1842.15, $p < .001$; (b) F2 chi-square (231) = 1918.41, $p < .001$; (c) R1 chi-square (231) = 1164.52, $p < .001$; and (d) R2 chi-square (231) = 1215.94, $p < .001$. These findings show that, within each matrix, at least some of the relationships are significantly different from zero.

Independent matrices: covariance structures. The next step was to compare the independent matrices of Feelings data as well as comparing the independent matrices of Ratings data. Steiger (Note 4) suggests that current statistical procedures for handling matrices as large as 22 X 22 are highly prone to Type I errors, i.e., such tests are based on the null hypothesis that matrices are identical and are overly sensitive to very minor differences. Indeed, Bartlett's Test for Homogeneity of Covariance Matrices (Morrison, 1976) was significant for each of the two comparisons in the current study: (a) F1 compared to F2, chi-square (253) = 344.21, $p < .001$; and (b) R1 compared to R2, chi-square (253) = 397.34, $p < .001$. Although the two sets of independent matrices were not found to be identical, they were examined further to determine their respective degrees of similarity.

Similarity between the F1 matrix and the F2 matrix and between the R1 and R2 matrices was checked by correlating the variance-covariance structures. Applying the approach described by Huba and Hamilton (1976), each member of a pair of matrices was treated as a "variable" and the positions in the respective matrices were arrayed as if they were "subjects" in the usual correlational analysis. The same matrices used for the Bartlett Tests were used in these comparisons. The Pearson correlation between F1 and F2 was .85 ($p < .001$) and R1 correlated .81 with R2 ($p < .001$). These findings demonstrate that, even though the independent matrices are not identical, they are very similar. Thus, for each section of the HSQ, both groups of patients had similar response patterns.

Independent matrices: factor structures. Besides testing the similarity of the independent matrices, the factor structures of these matrices were

compared. A recommended strategy for examining factor structure similarity is to: (a) compare loadings on the same number of vectors that have been extracted with the same method (Cureton & D'Agostino, 1983; Rummel, 1970); and (b) compute more than one test index for each comparison (Levine, 1977). This approach of independently rotating factors from each matrix is conservative compared to joint rotation or target rotation. Similarity indices based on the latter procedures capitalize on the fact that such Procrustean routines force an alignment of solutions (Huba & Hamilton, 1976).

Levine (1977) notes that factor comparisons are enhanced by using multiple types of tests to cross-validate findings. The test favored by Levine is s, the salient variable similarity index (Cattell & Baggaley, 1960; Cattell, Balcar, Horn, & Nesselroade, 1969). A major advantage of the s index is that it is the only measure of factor congruence that has an approximate test of significance. The s index, which was one of two used in the present study, is based on classifying factor loadings as either positive salient, negative salient, or nonsalient. The loadings of the two factors being compared are so classified and then cross-tabulated by comparing the cell frequencies of the resulting 3 X 3 table. Following the recommendation of Cattell et al. (1969), loadings in the current study that ranged from -.1 to +.1 were counted as nonsalient.

The other index used to check factor similarity was the coefficient of congruence, cc (Wrigley & Neuhaus, 1955). The cc index is calculated by summing the products of the paired loadings and dividing this sum by the square root of the product of the two sums of squared loadings. Although not a correlation coefficient because the two sets of loadings are unstandardized, cc can range from a low of -1.0 to a high of 1.0.

Even though different factor solutions from correlation matrices of nontrivial size typically yield highly convergent results (Jackson & Chan, 1980), method comparisons were made in the present study prior to testing factor structure similarity. The results of principal factor analysis, a least squares approach, were checked against the results produced by Rao's canonical factoring, a maximum likelihood method (Kim & Mueller, 1978). For each matrix, the two methods produced the same number of factors with eigenvalues greater than 1.0 and the loadings on these factors were virtually identical for the two methods. An advantage of the Rao method is that it provides goodness-of-fit tests that can serve as guidelines for deciding on the number of factors to retain (Kim & Mueller, 1978). Given the similar results of the two methods and the additional goodness-of-fit information of the Rao method, the Rao results were used for calculating similarity indices and subsequent factor-based scores used in testing other study hypotheses. All of these factor analyses employed varimax rotation.

The calculation of s and the calculation of cc each requires that the same number of factors be extracted from two independent matrices. Factor analyses of the two HSQ-Ratings matrices showed that the number of factors having eigenvalues greater than 1.0 was seven for R1 and six for R2. The minor factors that emerged in each analysis were not clearly interpretable. Also, goodness-of-fit tests suggested that the R1 and R2 matrices were each best fit with a two-factor solution, i.e., the results were not significantly different from a two-factor model (R1 chi-square = 217.33 with 188 df, and R2 chi-square = 194.85 with 188 df). Based on the goodness-of-fit information and the interpretive problems with the minor factors, each HSQ-Rating matrix was submitted to an analysis in which two factors were extracted and rotated. Similarity indices were then

computed for these two-factor solutions. For the first Ratings factor the s index was .76 ($p < .001$) and cc equaled .67. The second Ratings factor had an s of .71 ($p < .001$) and cc of .58.

The goal of this stage of analysis was to ascertain whether the two groups of patients had similar enough responses to warrant being pooled and then analyzed and interpreted. Although substantive interpretation of the initial factor analyses was therefore peripheral, a brief description is provided. Factor interpretation was based on loadings with absolute values of .5 or greater (Comrey, 1973; Nunnally, 1976). The first factor of the R1 matrix loaded with items addressing access to health services, such as appointment making procedures and waiting time. For R1, the second factor was a general factor with loadings reflecting the structure, process, and outcome of health services. An access factor and a general factor also emerged from the R2 data, but the general factor emerged first. The reason, even though reversed, these factors achieved high similarity coefficients is probably that similarity computations and substantive interpretation are not based on the same classification of saliency; similarity indices were calculated using absolute loadings above .1 as salient whereas substantive meaning was based on absolute values of .5 or higher. Therefore, although statistically similar, interpretation of the R1 and R2 factor indicates that they did not emerge in the same order.

Initial factor analyses of the two HSQ-Feelings matrices showed that F1 and F2 each had six factors with eigenvalues greater than 1.0. Goodness-of-fit results indicated that a three-factor model was not significantly different from the data of F1 (chi-square = 157.50, df 168). The best fit for F2 appeared to be a four-factor solution (chi-square = 166.74, df 149).

A comparable number of factors was desired in order to calculate indices of factor similarity. Using the more conservative number suggested by the goodness-of-fit tests, the results of three-factor solutions were checked for factor interpretability. Clear interpretation was possible for each HSQ-Feelings matrix by using the three-factor model. The interpretation and order of the three factors was the same for both F1 and F2. In each case, factor one loaded with items pertaining to access and urgent care services, factor two represented the practitioner and the outcome of services on patients' health, and factor three reflected structural and environmental characteristics. Similarity indices for these three factors were, in order of extraction, as follows: (a) $\underline{s}$ = .82 ($\underline{p}$ < .001), $\underline{cc}$ = .94; (b) $\underline{s}$ = .74 ($\underline{p}$ < .001), $\underline{cc}$ = .85 and; (c) $\underline{s}$ = .77 ($\underline{p}$ < .001), $\underline{cc}$ = .89.

Total sample: factor structure. The evidence indicated that patients in the two independent groups had very similar reactions to the HSQ-Feelings items as well as having convergent responses to the HSQ-Ratings items. Data from both groups were therefore pooled to determine what dimensions underlied each section of the HSQ and the reliability of those dimensions.

Analysis of the pooled HSQ-Ratings data showed that a three-factor model produced factors with eigenvalues greater than 1.0 and these results were virtually at the critical chi-square value (critical chi-square for 168 $\underline{df}$ = 198.90 and obtained value = 199.48). A three-factor solution was therefore rotated to check factor interpretability. Using absolute loadings of .5 or greater (underlined values shown in Table 5), the three-factor model did provide interpretable results. The initial factor (R-General Evaluation) was a general factor that included loadings for the structure, process, and outcome of services. This R-General Evalua-

TABLE 5

ROTATED FACTOR LOADINGS:[a]

HEALTH SERVICE QUESTIONNAIRE-RATINGS (HSQ-RATINGS)

ITEMS (Abbreviated)	FACTOR	R-General Evaluation I	R-Access II	R-Personal Manner III
1.	Medical performance of practitioner	.59	-.05	.30
2.	Location of services	.06	.07	.14
3.	Number of practitioners	.52	.37	.15
4.	Effect of preventive services	.58	.11	.32
5.	Choice of practitioner	.63	.04	.25
6.	Accounting and billing	.41	.16	.02
7.	Wait between asked appointment and appointment given	.09	.64	.14
8.	Wait at clinic	.07	.60	.25
9.	Appearance of buildings	.54	.02	.01
10.	Hours of operation	.20	.24	.25
11.	Waiting areas	.49	.17	.00
12.	Nurses	-.03	.11	.58
13.	Pharmacists	.04	.26	.42
14.	Personal manner of practitioner	.12	.04	.57
15.	Quality of urgent care	.13	.48	.40
16.	Office personnel	.47	.16	.02
17.	Arrangements for urgent care	.47	.44	.12
18.	Effect of treatment	.63	.14	.22
19.	Kinds of services offered	.26	.14	.39
20.	Telephone personnel	.10	.50	.30
21.	Appointment making	.38	.57	-.06
22.	Examination rooms	.27	.24	.24
EIGENVALUES		5.68	2.02	1.51
TOTAL VARIANCE (Percent)		25.8	9.2	6.9
COMMON VARIANCE (Percent)		62.1	21.5	16.4

Note. n=300 with pairwise deletion of missing data. Aside from item 6 (n=157), n ranged from 251 (item 15) to 300 (item 1).

[a]Rao's factor analysis with varimax rotation.

tion factor was large, accounting for almost two-thirds of the common variance. The second factor (R-Access) loaded with items addressing access to services, such as appointment-making procedures and waiting time. The remaining factor (R-Personal Manner) was composed of items concerning the interpersonal behavior of health care providers.

Rao's factor analysis of the pooled HSQ-Feelings data resulted in five factors with eigenvalues greater than 1.0 Goodness-of-fit tests showed that the model including all five of these factors provided the best solution for these data (chi-square = 151.33, 131 df). Rotation of these five factors resulted in clearly interpretable factors (Table 6). Absolute loadings of .5 or higher, which are underlined in Table 6, were used for factor interpretation. Factor one (F-Access) accounted for just over half of the common variance. The three salient items loading on F-Access had the same referents as three of the four items that comprised R-Access. The only referent not common to F-Access and R-Access was "waiting time at the clinic." The second factor (F-Urgent Care) involved urgent care and the third factor (F-Physical Plant) reflected structural aspects such as appearance of the clinic building, waiting areas, and examination rooms. Factor four (F-Outcome) loaded with items addressing the outcome of services on patients' health. The final factor (F-Practitioner) was composed of the items concerning the personal manner and medical performance of the patient's main practitioner.

The final step in testing Hypothesis I was to construct scores representing the HSQ factors and examine the reliability of those scores. Several procedures are available for computing factor scales. A major distinction is whether to use all items loading on a factor and compute a complete factor score or use only salient

TABLE 6

ROTATED FACTOR LOADINGS:[a]

HEALTH SERVICE QUESTIONNAIRE-FEELINGS (HSQ-FEELINGS)

ITEMS	FACTOR (Abbreviated)	F-Access I	F-Urgent Care II	F-Physical Plant III	F-Outcome IV	F-Practitioner V
1.	Appointment making	.61	.33	.15	.23	.01
2.	Hours of operation	.29	.24	.27	.28	.13
3.	Accounting and billing	.27	.13	.08	.17	.03
4.	Choice of practitioner	.12	.19	.28	.28	.36
5.	Effect of preventive services	.13	.22	.18	.67	.19
6.	Wait at clinic	.49	.27	.30	.03	.16
7.	Telephone personnel	.55	.37	.16	.15	.05
8.	Medical performance of practitioner	-.01	.19	.08	.32	.69
9.	Office personnel	.49	.02	.27	.10	.18
10.	Nurses	.29	-.03	.20	.24	.27
11.	Appearance of buildings	.14	.10	.57	.16	-.02
12.	Arrangements for urgent care	.28	.79	.13	.18	.07
13.	Location of services	.27	.10	.28	.28	.08
14.	Wait between asked appointment and appointment given	.55	.31	.23	.14	.04
15.	Number of practitioners	.34	.25	.43	.26	.18
16.	Waiting areas	.26	.15	.63	.09	.03
17.	Effect of treatment	.19	.23	.10	.60	.25
18.	Personal manner of practitioner	.16	-.01	.05	.09	.78
19.	Kinds of services offered	.37	-.02	.14	.47	.23
20.	Pharmacists	.12	.23	.20	.19	.00
21.	Examination rooms	.15	.08	.66	.07	.24
22.	Quality of urgent care	.25	.76	.17	.14	.12
EIGENVALUES		7.06	1.77	1.41	1.20	1.07
TOTAL VARIANCE (Percent)		32.1	8.0	6.4	5.5	4.9
COMMON VARIANCE (Percent)		55.7	16.4	11.9	8.4	7.7

Note. n=300 with pairwise deletion of cases with missing data. Aside from item 3 (n=151), n ranged from 248 (item 22) to 299 (item 8).

[a]Rao's factor analysis with varimax rotation.

items and compute a factor-based score (Comrey, 1973; Kim & Mueller, 1978). Complete factor scores weight each variable, producing scores from an orthogonal rotation that are uncorrelated but have greater error variance than factor-based scores. Factor-based scores are likely to be correlated even if the factor solution is orthogonal and, if a raw score sum is used, give disproportionate weight to items with more variability. Research comparing the two approaches has shown that factor-based scores outperform complete factor scores. Wackwitz and Horn (1971) found that factor-based scores were superior on five distinct kinds of tests of accuracy of estimation. More recently, Morris (cited in Jackson & Chan, 1980) conducted an extensive Monte Carlo study comparing a variety of complete factor scores and factor-based scores for predicting criteria with various statistical properties. In every case, Morris found that factor-based scores performed significantly better than did complete factor scores. In fact, the best type of scoring procedure proved to be simple unit weighting of salient variables.

Given the demonstrated performance of unit-weighted factor-based scores, such scales were computed and used in the present analyses. The same criterion used in factor interpretation, an absolute loading of .5 or greater was used to select the variables. As the underlined values in Table 5 and Table 6 indicate, the selected variables all had positive loadings. Subjects' eight factor-based scores were computed separately as mean scores. Cronbach's alpha was computed for each of the resulting factor-based scores. Table 7 presents the alphas and other psychometric properties of HSQ factor-based measures, including a mean HSQ-24 index computed from the 24 items of the eight separate subscales (see Figure 1 for the items of the HSQ-24). The alphas ranged for the five HSQ-Feelings scores from .71 to .84 and the three HSQ-Ratings scores had alphas ranging from .51 to .79.

TABLE 7

PSYCHOMETRIC PROPERTIES OF:

HEALTH SERVICE QUESTIONNAIRE (HSQ) SUBSCALES

	HSQ-FEELINGS					HSQ-RATINGS			HSQ-24
ITEM ANALYSIS n^i =	F-A[a] 286	F-UC[b] 244	F-PP[c] 283	F-O[d] 267	F-P[e] 297	R-GE[f] 242	R-A[g] 290	R-PM[h] 295	188
Mean of item means	2.55	2.74	3.06	3.06	3.33	3.08	2.57	3.22	2.95
Mean of item variances	.63	.60	.28	.30	.38	.42	.68	.54	.49
Coefficient alpha	.76	.85	.71	.72	.72	.79	.70	.51	.89
Median item-total correlation[j]	.59	.74	.54	.57	.57	.55	.47	.34	.48
Minimum item-total correlation[j]	.51	.74	.50	.57	.57	.47	.45	.34	.26
Maximum item-total correlation[j]	.71	.74	.57	.57	.57	.60	.57	.34	.63
Mean inter-item correlation	.52	.74	.45	.57	.57	.39	.37	.34	.26
Minimum inter-item correlation	.39	.74	.40	.57	.57	.29	.29	.34	-.03
Maximum inter-item correlation	.64	.74	.51	.57	.57	.48	.48	.34	.75
SCALE CHARACTERISTICS n^k =	300	267	299	297	300	300	300	300	300
Scale mean	2.56	2.79	3.06	3.04	3.33	3.06	2.58	3.21	2.92
Standard deviation	.66	.73	.42	.47	.55	.47	.60	.61	.37
Range	3.00	3.00	2.67	3.00	3.00	2.67	3.00	3.00	2.13
Skewness	-.35	-.53	-.28	-.51	-.56	-.44	-.24	-.93	.09
Kurtosis	-.06	.06	2.36	2.30	.76	1.08	-.13	1.46	.23
Probability of normality[l]	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	.76

[a]F-Access.
[b]F-Urgent Care.
[c]F-Physical Plant.
[d]F-Outcome.
[e]F-Practitioner.
[f]R-General Evaluation.
[g]R-Access.
[h]R-Personal Manner.
[i]Sample size for item analysis is based on subjects providing complete data for all items of a scale.
[j]Item-total correlations are corrected for the presence of the item being evaluated.
[k]Sample size for scale characteristics is based on subjects providing sufficient data to compute a mean score.
[l]p values are based on Kolmogorov-Smirnov Z.

FIGURE 1

ITEMS OF THE HEALTH SERVICE QUESTIONNAIRE-24 (HSQ-24)

HSQ-FEELINGS

1. Appointment making procedures
5. Effect of preventive services on your health
7. Telephone personnel
8. Medical performance of the main practitioner you've seen (doctor, nurse-practitioner, or physician-assistant)
11. Appearance of the clinic buildings
12. Arrangements for getting urgent care (emergencies)
14. Waiting time between asking for an appointment and the appointment date given
16. Waiting areas in the clinic
17. Effect of treatment on your health
18. Personal manner of the main practitioner you've seen (doctor, nurse-practitioner, or physician-assistant)
21. Examination rooms
22. Quality of urgent care (emergencies)

HSQ-RATINGS

1. Medical performance of the main practitioner you've seen (doctor, nurse-practitioner, or physician-assistant)
3. Number of practitioners that are available (doctors, nurse-practitioners, and physician-assistants)
4. Effect of preventive services on your health
5. Opportunity, or lack of opportunity, to choose which practitioner you see (doctor, nurse-practitioner, or physician-assistant)
7. Waiting time between asking for an appointment and the appointment date given
8. Waiting time at the clinic
9. Appearance of the clinic buildings
12. Nurses
14. Personal manner of the main practitioner you've seen (doctor, nurse-practitioner, or physician-assistant)
18. Effect of treatment on your health
20. Telephone personnel
21. Appointment making procedures

Note. Item numbers refer to items on the full form of the Health Service Questionnaire, displayed in Appendices C & D.

Collectively, the analyses for Hypothesis I confirmed that two independent groups of patients in this sample had very similar response patterns to the health care they receive and that these patients reliably perceived multiple dimensions of their health care. Five factors emerged regarding feelings about health services whereas ratings of service quality were well represented by three factors. The differing number of factors suggested that feelings about health services are not identical to ratings of service quality. This issue was explored further in the analyses for Hypothesis II.

Hypothesis II

Hypothesis II stated that patients' feelings about their health services are not exactly the same as how they rate the quality of those services. This hypothesis was examined by exploring the distinctness between, and among, the HSQ-Feelings factor-based scales and the HSQ-Ratings factor-based scales.

Correlations and reliability of difference coefficients were computed for all pairwise combinations of the eight HSQ factor-based scores (Table 8). The correlation coefficients did show that the indices were not orthogonal. Correlations among the Feelings measures ranged from .21 to .59, the range among the Ratings indices was from .25 to .37, and comparisons between the Ratings and Feelings scales ranged from .11 to .75. With the sample size of this study, there was a power of .94 (probability level = .05) of detecting a correlation as low as .20 (Cohen & Cohen, 1983). Not surprisingly, all pairwise HSQ correlation coefficients except the lowest one of .11 were found to be statistically signficant.

Even though the indices were clearly associated, the reliability of difference coefficients indicated that the measures were basically more distinct than they

TABLE 8

HEALTH SERVICE QUESTIONNAIRE (HSQ) SUBSCALES:

CORRELATIONS,[a] CRONBACH'S ALPHA,[b] & RELIABILITY OF DIFFERENCE[c]

	HSQ-FEELINGS					HSQ-RATINGS			HSQ-24
	F-A[d]	F-UC[e]	F-PP[f]	F-O[g]	F-P[h]	R-GE[i]	R-A[j]	R-PM[k]	
n^l =	300	267	299	297	300	300	300	300	300
n^m =	286	244	283	267	297	242	290	295	188
HSQ-FEELINGS									
F-Access	{.76}	.59	.41	.39	.21	.36	.75	.21	.79
F-Urgent Care	(.51)	{.84}	.33	.44	.26	.33	.51	.20	.68
F-Physical Plant	(.55)	(.66)	{.71}	.30	.21	.34	.31	.11	.55
F-Outcome	(.57)	(.61)	(.59)	{.72}	.41	.52	.29	.25	.62
F-Practitioner	(.67)	(.70)	(.64)	(.53)	{.72}	.49	.22	.39	.55
HSQ-RATINGS									
R-General Evaluation	(.65)	(.72)	(.62)	(.49)	(.52)	{.79}	.37	.29	.74
R-Access	(-.08)	(.53)	(.57)	(.59)	(.63)	(.60)	{.70}	.25	.78
R-Personal Manner	(.54)	(.59)	(.56)	(.49)	(.37)	(.51)	(.47)	{.51}	.46
HSQ-24	(.17)	(.58)	(.56)	(.49)	(.57)	(.38)	(.07)	(.44)	{.89}

[a]Upper off-diagonal values.
[b]Diagonal values in brackets.
[c]Lower off-diagonal values in parentheses.
[d]F-Access.
[e]F-Urgent Care.
[f]F-Physical Plant.
[g]F-Outcome.
[h]F-Practitioner.
[i]R-General Evaluation.
[j]R-Access.
[k]R-Personal Manner.
[l]Sample size for correlations; based on subjects providing sufficient data to compute a mean score.
[m]Sample size for Cronbach's alpha; based on subjects providing complete data for all items of a subscale.

were similar. All 10 of the difference coefficients for the Feelings measures were greater than .50. Two of the three difference values for the Ratings indices were greater than .50, with the coefficient for R-Access and R-Personal Manner at .47.

The 15 other difference coefficients compared the Ratings measures to the Feelings scales, the focus of Hypothesis II. Eleven of these 15 difference coefficients were greater than .50. Two of the other four coefficients for comparisons of Feelings and Ratings were at .49, just below the criterion for distinctness of construct measures. The two lowest difference coefficients were not surprising: (a) F-Access and R-Access both measure access to services, and (b) F-Practitioner and R-Personal Manner both index provider-oriented aspects of health services. Therefore, despite some instances of overlap, the bulk of the evidence regarding factor structure and factor-based scales indicated that feelings about health services and ratings of those services are represented by sets of dimensions differing in number and content and indices of these sets are not identical.

Hypothesis III

The determinants of overall micro service satisfaction were addressed in this hypothesis. In particular, overall micro service satisfaction was hypothesized to be a function of patients' perceptions of the health care they actually receive rather than a reflection of either macro satisfaction with the health care enterprise in general or degree of life satisfaction.

Hierarchical regression that employed mean substitution for missing data was used to test Hypothesis III. The index of overall micro satisfaction, the CSQ-18B, was the dependent variable in this analysis. Preliminary analyses yielded no sig-

nificant bivariate relationships between the CSQ-18B and any of the sociodemographic variables assessed in this study. Consequently, none of these sociodemographic variables was used as a covariate in the regression analysis.

Three sets of predictor variables were entered in the regression equation. The first set comprised the variables indexing opinions about the macro domain of health care, MCO General Satisfaction (MCO-GS) and MCO Availability (MCO-A), as well as the measure of life satisfaction (SDLS). The second set included the eight factor-based measures of health care perceptions. The final set was composed of 24 variables representing the two-way interactions between the measures in the first step and the measures in the second step.

Regression results, shown in Table 9, demonstrated that the first step accounted for 31% of the variance in CSQ-18B scores. Univariate tests for the variables at this step showed that MCO-GS, the index of overall macro service satisfaction, was the only statistically significant variable. The second step of the equation was also statistically significant, explaining an additional 30% of the outcome variance. Univariate tests for all variables in the equation at the second step indicated that the F-Practitioner scale was the most important of the statistically significant variables (squared semi-partial correlation of .04). Other significant measures of health perceptions were R-General Evaluation, F-Urgent Care, and F-Outcome. The interactions entered as the third step of the equation were not statistically significant. Together these results indicate that indices of health care perceptions, in addition to being statistically significant, account for a large amount of variance (30%) in the measure of overall micro service satisfaction beyond what is explained by indices of life satisfaction and macro service satisfaction.

TABLE 9

HIERARCHICAL REGRESSION OF

CLIENT SATISFACTION QUESTIONNAIRE-18B (CSQ-18B) ON:

SELF-DESCRIPTIONS OF LIFE SATISFACTION (SDLS),

MEDICAL CARE OPINIONS (MCO) SUBSCALES,

& HEALTH SERVICE QUESTIONNAIRE (HSQ) SUBSCALES

PREDICTOR VARIABLE	BETA	S.E. BETA	SEMI-PARTIAL CORRELATION	p
STEP 1:				
SDLS	.04	.05	.04	NS
MCO-A[a]	.02	.05	.02	NS
MCO-GS[b]	.55	.05	.53	<.0001
R^2=.31 (F=45.34, df=3,296)				<.0001
STEP 2:				
F-Access	.07	.06	.04	NS
F-Urgent Care	.12	.05	.09	.02
F-Physical Plant	.02	.04	.02	NS
F-Outcome	.11	.05	.09	.02
F-Practitioner	.25	.05	.20	<.0001
R-General Evaluation	.24	.05	.17	<.0001
R-Access	.04	.06	.03	NS
R-Personal Manner	.05	.04	.05	NS
R^2 total=.61 (F=41.08, df=11,288)				<.0001
R^2 change=.30 (F=27.37, df=8,288)				<.0001
STEP 3: Interactions between variables in Steps 1 & 2				
R^2 total=.66 (F=14.51, df=35,264)				<.0001
R^2 change=.05 (F=1.52, df=24,264)				NS

[a]MCO-Availability.
[b]MCO-General Satisfaction.

The hierarchical regression model was a conservative test of Hypothesis III. In hierarchical regression the variables entered first have the opportunity to account for as much variance as possible in the dependent measure. The statistical significance of a later step depends upon explaining whatever residual outcome variance remains after earlier steps have captured the maximum possible amount of variance. With less outcome variance available to be explained, predictors at a later step are generally less likely to achieve statistical significance than if those same variables had been included in the initial step. Likewise, the initial variables in a hierarchical model generally account for less outcome variance when all predictors are considered simultaneously rather than in hierarchical steps. The hierarchical model, though conservative, was chosen as the main test of Hypothesis III because it was consistent with theoretical concerns, i.e., whether or not indices of health service perceptions held any explanatory power beyond the effect of measures of more dispositional variables such as general opinions about life and the macro domain of health services.

The results from simultaneous entry of the 11 main effects were also examined as a comparison to the hierarchical test of Hypothesis III. Since the predictors were the same as those at the second step of the hierarchical equation, the simultaneous R-square was identical to the R-square at the second step of the hierarchical equation (.61). Simultaneous entry did not modify the significance or semi-partial correlations of the variables that had been entered at the second step of the hierarchical model. Also, the simultaneous results showed that MCO-A and SDLS remained nonsignificant and MCO-GS was still statistically significant. The only difference between the two regression results was the relative predictive strength, indexed by squared semi-partial correlations, of the variables

that had been in the first step of the hierarchical model. Of these three variables, the one that remained statistically significant (MCO-GS) had a squared semi-partial correlation of .03 in the simultaneous analysis. The squared semi-partial correlation of MCO-GS in the hierarchical equation had been .28. This contrast shows that, despite remaining statistically significant, the index of overall macro service satisfaction had less predictive strength when all main effects were provided an equal opportunity to account for outcome variance.

Hypothesis IV

This hypothesis stated that a multidimensional response to health services would reveal a reaction that is less favorable and more normally distributed than an inquiry about overall micro service satisfaction. Testing this hypothesis required comparing scales that were on the same metric, which was the case with the 4-point range used for both the CSQ-18B items and the items of the HSQ. To provide the single score representing a multidimensional response, a mean HSQ score was computed from the 24 items used to construct the eight HSQ factor-based scores.

The mean of the CSQ-18B was 3.15 and the standard deviation was .46 (Table 4). The mean and standard deviation of the HSQ-24 were, respectively, 2.92 and .37 (Table 7). Results of a one-tailed, paired-sample t test showed that the HSQ-24 mean was significantly lower than the CSQ-18B mean (299 df, $p < .001$). Correlation of the two indices demonstrated a strong, statistically significant relationship ($r = .82$, $p < .001$).

The distributions of CSQ-18B scores and HSQ-24 scores were also compared (displayed for the CSQ-18B and the HSQ-24 in, respectively, Table 4 and Table 7).

Kolomogorov-Smirnov $\underline{Z}$ was calculated for each distribution to test whether it departed from a normal curve. Contrary to Hypothesis IV, results indicated that each was normally distributed (CSQ-18B $\underline{Z}$ = .91, $\underline{p}$ = .39 and HSQ-24 $\underline{Z}$ = .67, $\underline{p}$ = .76). Although the patterns of scores for the two measures both approximated a Gaussian curve, the CSQ-18B distribution was negatively skewed (skewness = -.51) whereas the HSQ-24 distribution had hardly any skew (skewness .09).

Hypothesis V

This hypothesis addressed the effect of health concern on patients' overall micro service satisfaction. In arriving at a sense of service satisfaction, patients who were anxious about their health were hypothesized to rely more on their feelings about health services than on how they rated the quality of those services. The relative influence of quality ratings versus feelings was thought to be reversed for patients who were less anxious about their health.

The interplay between health concern and perceptions of health services was tested with a hierarchical regression analysis. The CSQ-18B served as the dependent measure. Independent variables entered at the first step were the HO index of health anxiety and the eight HSQ factor-based indices of health perceptions. The second set of predictors included eight variables representing the interactions between the HO measure and each of the HSQ measures. The test of interest for Hypothesis V was the effect of the second step. Results showed that this second step accounted for only 1% of the outcome variance and was not statistically significant. Post hoc examination of the univariate test of the HO index indicated that this also was not related to the dependent measure. Hypothesis V was therefore rejected and no evidence was obtained linking health anxiety to overall micro service satisfaction.

Hypothesis VI

The effect of self-perceived resources for obtaining health care was the final hypothesis examined. A curvilinear relationship was hypothesized to exist such that the patients expressing the greatest micro service satisfaction would be individuals who were at the extremes on health care resources whereas those people with self-described moderate resources for health care would be the most dissatisfied with services.

Three separate quadratic regression analyses were conducted to test Hypothesis VI. The CSQ-18B was the dependent variable in these analyses. Each analysis used hierarchical entry of an index of health care resources and, at the second step, the square of that particular measure. The indices used in the separate anaylses as predictors were the single items that patients used to indicate: (a) the number of alternative health care settings available to them, (b) the convenience of obtaining health care elsewhere, and (c) the affordability of health care. These items were not treated as a composite index because reliability analysis indicated that such an index lacked internal consistency (coefficient alpha = .27). While there was no missing data for the "settings" variable, mean substitution was used for the one case of missing data involving affordability and the two missing cases involving convenience.

In each of the three analyses the second step of the equation was not significant, which disconfirmed Hypothesis VI. Not only was there no evidence of a curvilinear relationship, results from the first steps of the analyses provided only weak support for a linear relationship. The only significant association in any of the analyses was a negative relationship between the variable indexing convenience of obtaining care elsewhere and service satisfaction (R-square = .017, p =

.02). When these analyses were repeated using the HSQ-24 as the dependent measure, this relationship and all others were nonsignificant. Hypothesis VI was therefore rejected, with post hoc tests suggesting that the inconvenience of obtaining service elsewhere may have a slight tendency to increase satisfaction with the services a patient receives.

DISCUSSION

A model of the determinants of overall micro satisfaction with health services was proposed and tested in this study. Research hypotheses covered three main areas. Two of these areas concerned reactions to health services regardless of individual differences: (a) patients' perceptions of the health services that they receive, and (b) the role of these perceptions in predicting overall micro service satisfaction. The third research area dealt with selected psychological distinctions that were hypothesized to differentially affect overall micro service satisfaction, viz., health anxiety and perceived resources for health care.

Virtually no prior research on consumer satisfaction with primary health care services has been based on an explicit model of the psychological determinants of service satisfaction. The one previous effort to model psychological predictors of patient satisfaction used a value-expectancy attitude approach (Linder-Pelz, 1982b), which was not supported by the results of a field test (Linder-Pelz, 1982a). The values in the Linder-Pelz model apparently referred to general attitudes about the macro domain of health care. An emphasis on generalized values is shared by other researchers who imply that satisfaction with directly received health services is either the same as satisfaction with the macro domain of health services (Hulka et al., 1970; 1971) or perhaps an expression of satisfaction with life in general (Linn, 1975; Linn & Greenfield, 1982).

Drawing on pilot research and marketing-based models of consumer satisfaction, the current study conceptualized the main determinants of overall micro

service satisfaction to be multidimensional perceptions of directly received health care. These perceptions were assumed to include cognitively based reactions and affectively based reactions that, although related, were not viewed as identical. This proposed model therefore assumed that: (a) patients can discriminate multiple dimensions of the structure, process, and outcome of health services; (2) feelings about health care are not necessarily the same as ratings of the quality of health care; and (3) overall micro service satisfaction is determined more by these perceptions of directly received health services than by either general attitudes about the macro domain of health services or a patient's general satisfaction with life. In order to test the proposed model of overall micro service satisfaction, existing scales were used and a new measure was developed.

Psychometric Properties of the Measures

Previously Used Measures

The psychometric properties of most previously used scales compared favorably to their earlier performance. The best example was the CSQ-18B, which had a coefficient alpha surpassing its already high performance in two pilot studies (Pascoe et al., in press; Roberts et al., in press). Also, internal consistency of the CSQ-18B in the present investigation, .91, was one of the highest reliabilities ever reported for a patient satisfaction scale in a primary care setting (Pascoe, in press). In terms of the macro domain of health care, the MCO subscales of Availability and General Satisfaction matched their earlier performance (Pascoe et al., in press; Roberts et al., in press) of alphas and a reliability of difference all in excess of the recommended minimum of .5 (Helmstadter, 1964). The measures of two dimensions of life satisfaction, Leisure and Efficacy, had alphas and a

correlation that were almost identical to those demonstrated in the initial development of the indices (Roberts et al., in press).

The previously used measures that failed in this study to at least equal their earlier psychometric performance were the separate indices of health concern. Items addressing dispositional concerns about one's health had a low internal consistency and were not reliably distinct from items worded in terms of more immediate health anxiety. The lack of distinctness suggests that patients may not discriminate different types of health anxiety. When both sets of items were treated as a single measure, this composite index did achieve a level of reliability that was acceptable for making group comparisons and these scores were normally distributed.

The Health Service Questionnaire (HSQ)

Analyses of the experimental measure fielded in this study, the HSQ, produced evidence of good psychometric characteristics and support for the first two research hypotheses. Factor-based scores were derived from two sets of inquiries about the same aspects of health services: (a) affectively based reactions to services, represented by five subscales; and (b) cognitively based evaluations of the quality of those service aspects, indexed by three subscales. These subscales achieved suitable levels of internal consistency for making group comparisons, demonstrated a fairly good degree of intersubscale distinctness, and confirmed the hypothesized multidimensionality of patients' perceptions of their health services. The general pattern of subscale distinctness suggests that patients' responses are not only multidimensional regarding aspects of health service but also that cognitively oriented reactions to health services are distinct from the affectively oriented reactions to those services.

Determinants of Overall Micro Service Satisfaction

Perceptions of Health Service

The relationship between the CSQ-18B and the HSQ subscales addresses what investigators have increasingly cited as a major need in patient satisfaction research, viz., clarification of the psychological determinants of satisfaction (Fox & Storms, 1981; Gutek, 1978; Locker & Dunt, 1978). The regression results for the test of Hypothesis III showed that overall micro service satisfaction is mainly a function of specific perceptions of directly received health services. Half of the HSQ dimensions emerged as significant predictors in the regression analysis: (a) patients' general perception of health services quality, which incorporated separate ratings of the structure, process, and outcome of care; (b) patients' feelings about their main practitioner; (c) feelings about the effect of services on one's health; and (d) feelings about urgent care.

Of the four significant HSQ indices, each measure but R-General Evaluation was computed by averaging a different pair of items. Even with a small number of items per subscale, F-Practitioner, F-Outcome, and F-Urgent Care all had alphas above .70. The only other HSQ subscale composed of two items, R-Personal Manner, did have only a moderate alpha (.51). If especially for R-Personal Manner there had been additional appropriate items, the reliability and, ideally, predictive strength of the index would have been enhanced.

Previous researchers have differed on the nature of satisfaction, some speculating that satisfaction is primarily affective (e.g., Linder-Pelz, 1982a; 1982b) and others suggesting that satisfaction must be quasi-cognitive (Hunt, 1977a; 1977b). The four dimensions of health services that emerged as significant predictors in the current study included three affectively oriented dimensions and one cogni-

tively oriented dimension. Squared semi-partial correlations showed that the single cognitively oriented dimension (R-General Evaluation) had the second largest unique effect of these four signficant predictors. Thus, overall micro service satisfaction apparently involves a mix of cognitive and affective reactions but seems to be based more on the latter type of reaction.

Macro Service Satisfaction

With one exception, all of the indices of general life circumstances and opinions used in these analyses were unrelated to overall micro service satisfaction. This lack of relationship between micro service satisfaction and either demographics, perceived health, or life satisfaction matches the general findings of patient satisfaction research in primary care settings (Pascoe, in press).

The one general opinion measure that did make a unique contribution to explaining the variance in CSQ-18B scores was the MCO subscale of General Satisfaction. Some positive relationship between micro and macro service satisfaction had been anticipated and seems reasonable. A person's actual experience with a health care organization can certainly be one basis for formulating general opinions about health care delivery and health practitioners. This overlap may be stronger for regular utilizers of an agency's service, such as the patients in this sample tended to be, since continued direct experience might increasingly shape general opinions about the health care enterprise. However, relative to the collective indices of health service perceptions, macro service satisfaction did not have a large effect on overall micro service satisfaction. This difference in explanatory strength was particularly evident when the indices of health service perceptions and the measure of overall macro service satisfaction were consid-

ered simultaneously, allowing each predictor an equal opportunity to account for outcome variance.

The fact that the relationship between macro satisfaction and micro satisfaction was not large is probably one reason it had not been detected in earlier pilot research. That pilot study (Pascoe et al., in press) used only a single item to index micro service satisfaction and had a sample that was half the size of the current study. It is very likely that the 18-item outcome measure used in the present study was much more reliable than the single-item index. Less error variance and the greater statistical power of a larger sample size probably enhanced the detection in the current investigation of overlap between macro and micro service satisfaction.

Parallels with a Model of Life Satisfaction

Regression analysis did not reveal significant interactions among the indices of perceptions of health services. Consequently, health care perceptions apparently operate independently as predictors of overall micro service satisfaction. This lack of interactions, as well as the amount of outcome variance accounted for, is similar to research on determinants of overall life satisfaction (Andrews & Withey, 1974; 1976). Andrews and Withey found that semi-independent dimensions of life experience accounted for 50%-60% of the variance in overall life satisfaction and that there were no significant interactions among the predictors. Also, like the Andrews and Withey analyses of life satisfaction, the current study found that selected dimensions were responsible for the predictive strength.

Alternative Types of Micro Service Satisfaction Dimensions vs. Overall Satisfaction

Dimensions of health service perceptions that did not demonstrate significant, unique relationships with overall micro service satisfaction included separate indices of: (a) access and structural characteristics (F-Access, R-Access, and F-Physical Plant); and (b) interpersonal aspects of care (R-Personal Manner). R-Personal Manner had also been the least important dimension to emerge from the factor analysis of HSQ-Ratings data and was not reliably different from F-Practitioner. However, the two indices of access, F-Access and R-Access, were among the first dimensions to emerge from the factor analyses. These access-oriented dimensions received the least favorable responses of the eight dimensions. Certain dimensions therefore seem to be important as perceived aspects of care that, although not as favorably evaluated, are not important determinants of overall micro service satisfaction.

Even though some perceived dimensions may not shape overall micro service satisfaction, they are probably the basis of separate aspects of service satisfaction. For example, perceptions about appointment making procedures are the likely determinant of how satisfied a patient is with appointment making. Additional research could examine this possible link between specific perceptual dimensions and corresponding aspects of satisfaction. Future research should also test the relative predictive validity of specific dimensions of micro service satisfaction and overall micro service satisfaction. It remains to be seen how well compliance, switching services, and other service utilization behaviors are predicted by overall micro satisfaction and how well these behaviors are predicted by particular aspects of service satisfaction.

Specific vs. Generalized Referents

The CSQ-18B and the HSQ-24 reflect different ways of measuring overall micro service satisfaction and these two approaches produced somewhat different results. CSQ-18B items, especially the eight composing the CSQ-8 subset, ask about services in a generalized way. A benefit of these generalized referents is that the CSQ-18B is appropriate for a variety of health and human service programs. In contrast, the HSQ-24 is a composite of items that each focus on a discrete aspect of primary health care services. Scores on the two measures were highly correlated and both the CSQ-18B and the HSQ-24 were normally distributed. However, the specific-referent approach of the HSQ-24 produced lower reported levels than the generalized-referent approach of the CSQ-18B.

The difference in magnitude between the CSQ-18B and the HSQ-24 is probably because the HSQ-24 more directly integrated evaluations of service aspects that patients viewed least favorably, i.e., appointment making and waiting time. Incorporating relatively dissatisfying facets of services would also explain why the HSQ-24 scores did not exhibit a negative skew. The specific-referent approach therefore appears promising as a way to gain evaluative information about different aspects of services and as a way of constructing an overall score that is normally distributed and unskewed.

Individual Differences

Health Worry

Apart from the support for the main model of overall micro satisfaction, the hypothesized individual differences were not demonstrated. It had been expected that patients who were more worried about their health would respond emotionally to services whereas less worried patients would use cognitively based ratings of service quality to formulate an overall sense of micro satisfaction. However, no evidence was found to support the hypothesized interaction of health concern and perceptions of health services.

Possible explanations for the findings regarding health anxiety are: (a) health anxiety may not have been measured with sufficient accuracy, (b) this ambulatory sample may not have included many patients who were truly worried about their health, and/or (c) there may simply be key determinants of overall micro satisfaction regardless of how health anxious a patient is. Although the first possibility can not be discarded, internal consistency of the index of health worry exceeded the recommended minimum for comparing groups and scores were normally distributed. In regard to the second alternative explanation, scores on the HO measure included responses indicating the maximum possible level of anxiety. Further research with inpatients experiencing more severe medical disorders might provide a good check on the replicability of these results.

Perceived Health Care Resources

Differences in perceived health care resources were not substantially related to overall micro service satisfaction. Perceived health care resources were indexed with three items that had not been fielded previously. The only evidence

of any association was the weak linear relationship suggesting that the more inconvenient it would be to go elsewhere, the more satisfied patients are with their health care. The effect size was small (1.8% of the variance explained) and was not obtained when the same analysis was repeated using the HSQ-24 as the dependent variable (less than 1% of the variance explained). Another measure that can be viewed as indexing perceived health care resources is the MCO subscale labeled Availability. This MCO subscale was not a signficant predictor of CSQ-18B scores in the regression analysis testing Hypothesis III. Research with alternative measures or different samples might demonstrate a stronger relationship between perceived health care resources and overall service satisfaction. However, it may be that patients, including those with few resources for alternative health care, evaluate their health care primarily on its own merits.

Conclusion

In sum, the bulk of the evidence is consistent with pilot research and the main hypotheses regarding service satisfaction. Patients do apparently discriminate several dimensions of the health services they receive and use a subset of these dimensions as the foundation for their overall micro satisfaction. At least for consumers of routine ambulatory health care services, overall micro service satisfaction can be modeled as largely a function of key perceptions of the services actually received and, to a lesser extent, satisfaction with the macro domain of health service delivery.

The model tested in the present study may not be generalizable across all types of consumers receiving primary health care services. This model seems most applicable to patients who can take a somewhat detached, analytical stance

toward their health services. Such an orientation is probably appropriate for patients, like many in the current study, who are basically healthy and are receiving preventive and routine care. However, patients in more extreme health circumstances may not respond as did the individuals in the present study. A person faced with a medical problem that is life threatening or seriously debilitating would probably have at least a temporarily diminished ability to make multiple discriminations regarding the structure, process, and outcome of care. Also, an individual with a severe, chronic health condition is likely to be so psychologically dependent on his or her health care that they can not easily assume a pragmatic consumer orientation toward those health services.

Replication of the current results should be attempted by using specific referents and multidimensional assessment with other samples of patients. Such work could employ an expanded pool of HSQ items and compare different types of subjective standards for rating service quality. Contrasting patterns and levels of service ratings might emerge if, rather than the ideal, patients are asked to use the deserved level or some other standard to judge services. Finally, future research should address the relatively unexamined area in patient satisfaction research of predictive validity. Hopefully, prospective study of the HSQ approach to assessing patient satisfaction would provide subscales that are clear, significant predictors of clinical outcome and health-related behaviors such as compliance, utilization, and switching health services.

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APPENDICES

APPENDIX A:

PATIENT SURVEY OF

BACKGROUND INFORMATION

PATIENT SURVEY

ALL INFORMATION PROVIDED BY YOU IS STRICTLY CONFIDENTIAL.
PLEASE DO NOT WRITE YOUR NAME ON THIS FORM.

BACKGROUND INFORMATION

Please check or write in the appropriate answer

1. **Your current age:** ☐☐

2. **Sex:**
   - ☐ 1 Female
   - ☐ 2 Male

3. **Ethnocultural group:**
   - ☐ 1 American Indian/Alaskan Native
   - ☐ 2 Black/Afro-American
   - ☐ 3 Chicano/Mexican-American
   - ☐ 4 Latino/Other Latin-American
   - ☐ 5 Chinese/Chinese-American
   - ☐ 6 East Indian/Pakistani
   - ☐ 7 Japanese/Japanese-American
   - ☐ 8 Korean
   - ☐ 9 Pilipino/Filipino
   - ☐ 10 Polynesian
   - ☐ 11 Other Asian
   - ☐ 12 White/Caucasian
   - ☐ 13 Other, please specify_____

4. **Education: (check highest level achieved)**
   - ☐ 1 Grade 8 or less
   - ☐ 2 Some high school
   - ☐ 3 High school graduate
   - ☐ 4 Some college
   - ☐ 5 College graduate
   - ☐ 6 College past BA or BS

5. **Current marital status:**
   - ☐ 1 Never married
   - ☐ 2 Married/living with someone as married
   - ☐ 3 Separated
   - ☐ 4 Divorced
   - ☐ 5 Widowed
   - ☐ 6 Other, please specify_____

6. **Current employment: (check one)**
   - ☐ 1 Employed full-time
   - ☐ 2 Employed part-time
   - ☐ 3 Housewife, full-time
   - ☐ 4 Full-time student
   - ☐ 5 Unemployed
   - ☐ 6 Retired
   - ☐ 7 Other, please specify_____

7. **Gross family income: (last year)**
   - ☐ 1 $5,000 or under
   - ☐ 2 $5,001 -- $10,000
   - ☐ 3 $10,001 -- $15,000
   - ☐ 4 $15,001 -- $20,000
   - ☐ 5 $20,001 -- $25,000
   - ☐ 6 $25,001 -- $30,000
   - ☐ 7 $30,001 -- $35,000
   - ☐ 8 $35,001 -- $40,000
   - ☐ 9 Over $40,000

8. **All in all, would you say that your health is generally:**
   - ☐ 1 Excellent
   - ☐ 2 Good
   - ☐ 3 Fair
   - ☐ 4 Poor

9. **Taking all things together, how would you say things are these days — would you say that you're:**
   - ☐ 1 Very happy
   - ☐ 2 Pretty happy
   - ☐ 3 Not too happy

10. What health need or physical symptom is the main reason for today's visit?

_____

_____

11. How many times have you visited this health service for treatment or preventive care?

- ☐ 1 Never visited before today
- ☐ 2 Once before, but over 6 months ago
- ☐ 3 One visit in the last 6 months
- ☐ 4 Two to three visits in the last 6 months
- ☐ 5 Four to six visits in the last 6 months
- ☐ 6 Seven or more visits in the last 6 months

12. Besides this health service, where else could you go for care? (check all that apply)

- ☐ 1 Emergency room
- ☐ 2 Hospital clinic
- ☐ 3 Prepaid health clinic
- ☐ 4 Private doctor
- ☐ 5 Public health clinic
- ☐ 6 School clinic
- ☐ 7 VA or military clinic
- ☐ 8 Other, please specify_____

13. If you had to go to some other health service to get care, getting there would be: (check one)

- ☐ 1 Very convenient
- ☐ 2 Mostly convenient
- ☐ 3 Mostly inconvenient
- ☐ 4 Very inconvenient

14. If you had to pay all the charges for your health care, those charges would be: (check one)

- ☐ 1 Very unaffordable
- ☐ 2 Mostly unaffordable
- ☐ 3 Mostly affordable
- ☐ 4 Very affordable

MEDICAL CARE OPINIONS [1]

The following statements refer to **medical care in general, not just to this health service.** Please read each statement and then circle the number of the answer that best describes your opinion. Even if you are not entirely certain about your answers, your best impression is important for each statement. **CIRCLE ONLY ONE NUMBER FOR EACH STATEMENT.**

	STRONGLY AGREE	AGREE	UNCERTAIN	DISAGREE	STRONGLY DISAGREE
1. I'm very satisfied with the medical care I receive.	1	2	3	4	5
2. Parking is a problem when you have to get medical care.	1	2	3	4	5
3. Doctors aren't as thorough as they should be.	1	2	3	4	5
4. If I have a medical question, I can reach someone for help without any problem.	1	2	3	4	5
5. Doctors always do their best to keep the patient from worrying.	1	2	3	4	5
6. In an emergency, it's very hard to get medical care quickly.	1	2	3	4	5
7. Most people are encouraged to get a yearly exam when they go for medical care.	1	2	3	4	5
8. More hospitals are needed in this area.	1	2	3	4	5
9. The care I have received from doctors in the last few years is just about perfect.	1	2	3	4	5
10. Sometimes doctors take unnecessary risks in treating their patients.	1	2	3	4	5
11. Doctors are very careful to check everything when examining their patients.	1	2	3	4	5
12. Doctors always treat their patients with respect.	1	2	3	4	5
13. There are enough family doctors around here.	1	2	3	4	5
14. It's hard to get an appointment for medical care right away.	1	2	3	4	5
15. It takes me a long time to get to the place where I receive medical care.	1	2	3	4	5

	STRONGLY AGREE	AGREE	UNCERTAIN	DISAGREE	STRONGLY DISAGREE
16. Sometimes doctors make the patient feel foolish.	1	2	3	4	5
17. Doctors always avoid unnecessary patient expenses.	1	2	3	4	5
18. Places where you can get medical care are very conveniently located.	1	2	3	4	5
19. Doctors cause people to worry a lot because they don't explain medical problems to patients.	1	2	3	4	5
20. Most people receive medical care that could be better.	1	2	3	4	5
21. Doctors ask what foods patients eat and explain why certain foods are best.	1	2	3	4	5
22. The medical problems I've had in the past are ignored when I seek care for a new medical problem.	1	2	3	4	5
23. Doctors respect their patients' feelings.	1	2	3	4	5
24. Office hours when you can get medical care are good for most people.	1	2	3	4	5
25. There are enough doctors in this area who specialize.	1	2	3	4	5
26. Doctors never recommend surgery (an operation) unless there is no other way to solve the problem.	1	2	3	4	5
27. Doctors don't advise patients about ways to avoid illness or injury.	1	2	3	4	5
28. There are things about medical care I receive that could be better.	1	2	3	4	5
29. There are enough hospitals in this area.	1	2	3	4	5
30. Doctors hardly ever explain the patient's medical problems to him.	1	2	3	4	5
31. People are usually kept waiting a long time when they are at the doctor's office.	1	2	3	4	5
32. There is a big shortage of family doctors around here.	1	2	3	4	5

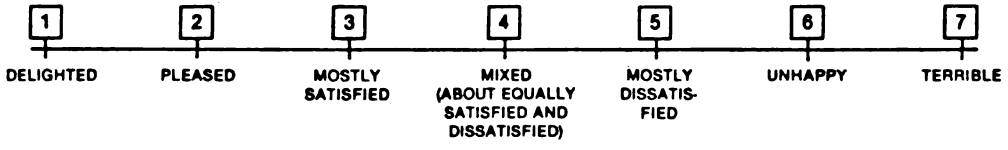
SELF DESCRIPTIONS [2]

Please read each statement and then circle the number of the answer below it that best describes how you feel. The answers range from "delighted" to "terrible."

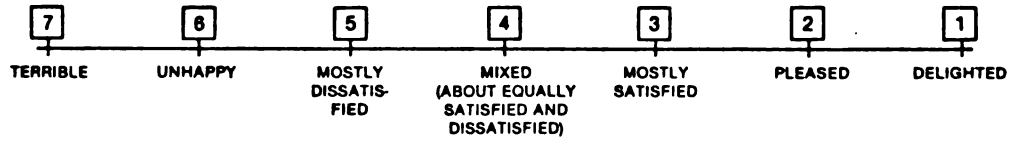
REMEMBER – CIRCLE THE ANSWER THAT BEST DESCRIBES HOW YOU FEEL

How do you feel about...

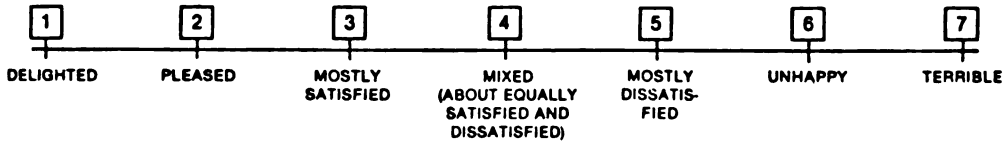
1. The way you spend your spare time, your nonworking activities



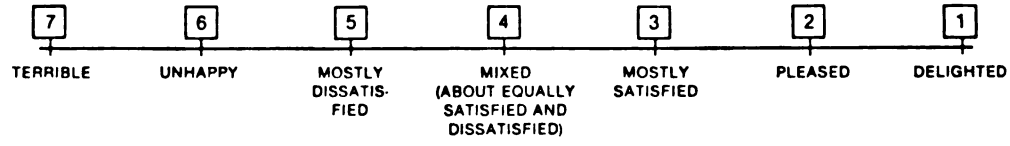
2. The way you handle problems that come up in your life



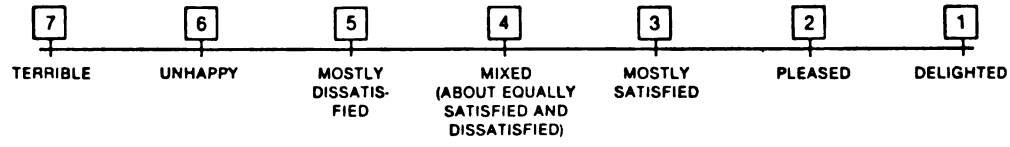
3. What you are accomplishing in life



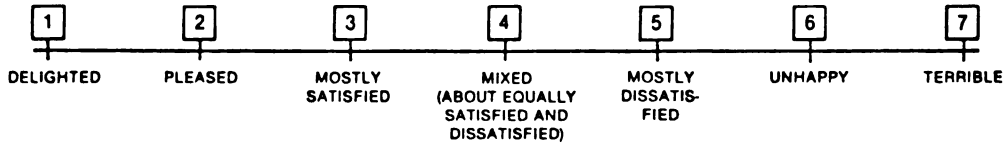
4. The amount of fun and enjoyment you have



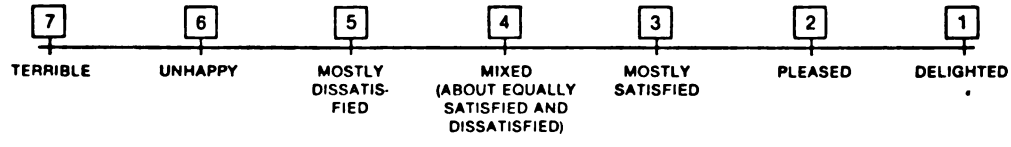
5. Yourself



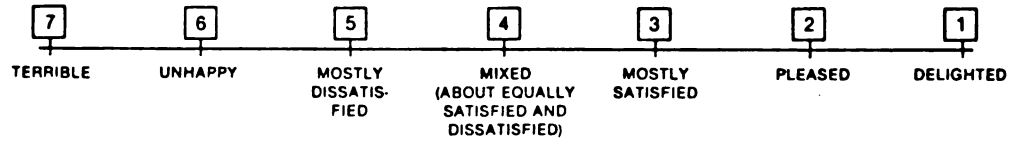
6. The amount of relaxation in your life



7. The amount of time you have for doing the things you want to do



8. Your life as a whole



HEALTH OPINIONS [3, 4]

Please read each of the following statements and then circle one of the numbers on each line to indicate how true or false the statement is for you. There are no right or wrong answers. Some of the statements may look or seem like others, but each statement is different, and should be rated by itself.

	DEFINITELY TRUE	MOSTLY TRUE	DON'T KNOW	MOSTLY FALSE	DEFINITELY FALSE
1. I never worry about my health	5	4	3	2	1
2. I am worried about my health at the moment	5	4	3	2	1
3. I worry about my health more than other people worry about their health	5	4	3	2	1
4. The doctor may find that I have a serious illness	5	4	3	2	1
5. Others seem more concerned about their health than I am about mine	5	4	3	2	1
6. My health is a concern in my life	5	4	3	2	1

1. Ware, J.E., et al. *Development and validation of scales to measure patient satisfaction with health care services: Volume I of a final report. Part B: Results regarding scales constructed from the Patient Satisfaction Questionnaire and measures of other health care perceptions.* Carbondale, Illinois: Southern Illinois University of Medicine, 1978.

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APPENDIX B:

CLIENT SATISFACTION QUESTIONNAIRE-18B

(CSQ-18B)

CLIENT SATISFACTION QUESTIONNAIRE
CSQ — 18B

ALL INFORMATION PROVIDED BY YOU IS STRICTLY CONFIDENTIAL.
PLEASE DO NOT WRITE YOUR NAME ON THIS FORM.

C. Clifford Attkisson, Ph.D.
Gregory Pascoe

University of California
San Francisco, CA 94143

FALL 1983

PART A[1,2]

Please help us improve our program by answering some questions about the services you have received. We are interested in your honest opinions, whether they are positive or negative. *Please answer all of the questions.* We also welcome your comments and suggestions. Thank you very much, we really appreciate your help.

CIRCLE YOUR ANSWERS

1. When you first came to our program, were you seen as promptly as you felt necessary?

4	3	2	1
Yes, very promptly	*Yes, promptly*	*No, there was some delay*	*No, it seemed to take forever*

2. In general, how satisfied are you with the comfort and attractiveness of our facility?

1	2	3	4
Quite dissatisfied	*Indifferent or mildly dissatisfied*	*Mostly satisfied*	*Very satisfied*

3. Did the characteristics of our building detract from the services you have received?

1	2	3	4
Yes, they detracted very much	*Yes, they detracted somewhat*	*No, they did not detract much*	*No, they did not detract at all*

4. How satisfied are you with the amount of help you have received?

1	2	3	4
Quite dissatisfied	*Indifferent or mildly dissatisfied*	*Mostly satisfied*	*Very satisfied*

5. Considering your particular needs, how appropriate are the services you have received?

4	3	2	1
Highly appropriate	*Generally appropriate*	*Generally inappropriate*	*Highly inappropriate*

6. Have the services you received helped you to deal more effectively with your problems?

4	3	2	1
Yes, they helped a great deal	*Yes, they helped somewhat*	*No, they really didn't help*	*No, they seemed to make things worse*

7. When you talked to the person with whom you have worked most closely, how closely did he or she listen to you?

1	2	3	4
Not at all closely	*Not too closely*	*Fairly closely*	*Very closely*

8. Did you get the kind of service you wanted?

1	2	3	4
No, definitely not	*No, not really*	*Yes, generally*	*Yes, definitely*

9. Are there other services you need but have not received?

1	2	3	4
Yes, there definitely were	*Yes, I think there were*	*No, I don't think there were*	*No, there definitely were not*

10. How clearly did the person with whom you worked most closely understand your problem and how you felt about it?

4	3	2	1
Very clearly	*Clearly*	*Somewhat unclearly*	*Very unclearly*

11. How competent and knowledgeable was the person with whom you have worked closely?

1	2	3	4
Poor abilities at best	*Only of average ability*	*Competent and knowledgeable*	*Highly competent and knowledgeable*

12. How would you rate the quality of the service you have received?

4	3	2	1
Excellent	*Good*	*Fair*	*Poor*

13. In an overall, general sense, how satisfied are you with the service you have received?

4	3	2	1
Very satisfied	*Mostly satisfied*	*Indifferent or mildly dissatisfied*	*Quite dissatisfied*

14. If a friend were in need of similar help, would you recommend our program to him or her?

1	2	3	4
No, definitely not	*No, I don't think so*	*Yes, I think so*	*Yes, definitely*

15. Have the people in our program generally understood the kind of help you wanted?

1	2	3	4
No, they misunderstood almost completely	*No, they seemed to misunderstand*	*Yes, they seemed to generally understand*	*Yes, they understood almost perfectly*

16. To what extent has our program met your needs?

4	3	2	1
Almost all of my needs have been met	*Most of my needs have been met*	*Only a few of my needs have have met*	*None of my needs have been met*

17. Have your rights as an individual been respected?

1	2	3	4
No, almost never respected	*No, sometimes not respected*	*Yes, generally respected*	*Yes, almost always respected*

18. If you were to seek help again, would you come back to our program?

1	2	3	4
No, definitely not	*No, I don't think so*	*Yes, I think so*	*Yes, definitely*

PLEASE WRITE YOUR COMMENTS

The thing I like best about this agency is: _____

_____

_____

_____

If I could change one thing about this agency, it would be: _____

_____

_____

_____

[1] [illegible]

[2] [illegible]

APPENDIX C:

HEALTH SERVICE QUESTIONNAIRE-RATINGS

(HSQ-RATINGS)

HEALTH SERVICE QUESTIONNAIRE

(Form B)

Some of the statements in this questionnaire may look or seem similar, but each statement is different and should be answered by itself.

All information provided by you is strictly confidential.

Please do not write your name on this form.

PART A

Please read each statement and then circle the number of the answer below it that best describes your rating. Make your ratings by comparing this health service to what you would expect at the ideal health service--the best possible that you can imagine. Answer in terms of your overall experience, past and present, with this health service.

REMEMBER--FOR EACH STATEMENT, CIRCLE THE ANSWER THAT BEST DESCRIBES HOW THIS HEALTH SERVICE COMPARES TO THE IDEAL HEALTH SERVICE

Compared to the ideal, what is your overall rating of the . . .

1. Medical performance of the main practitioner you've seen (doctor, nurse-practitioner, or physician-assistant)

4	3	2	1	na
Extremely Favorable	Mostly Favorable	Mostly Unfavorable	Extremely Unfavorable	does not apply to me

2. Location of services

1	2	3	4	na
Extremely Unfavorable	Mostly Unfavorable	Mostly Favorable	Extremely Favorable	does not apply to me

3. Number of practitioners that are available (doctors, nurse-practitioners, and physician-assistants)

4	3	2	1	na
Extremely Favorable	Mostly Favorable	Mostly Unfavorable	Extremely Unfavorable	does not apply to me

4. Effect of preventive services on your health

4	3	2	1	na
Extremely Favorable	Mostly Favorable	Mostly Unfavorable	Extremely Unfavorable	does not apply to me

Compared to the ideal, what is your overall rating of the . . .

5. Opportunity, or lack of opportunity, to choose which practitioner you see (doctor, nurse-practitioner, or physician-assistant)

4	3	2	1	na
Extremely Favorable	Mostly Favorable	Mostly Unfavorable	Extremely Unfavorable	does not apply to me

6. Accounting and billing procedures

4	3	2	1	na
Extremely Favorable	Mostly Favorable	Mostly Unfavorable	Extremely Unfavorable	does not apply to me

7. Waiting time between asking for an appointment and the appointment date given

1	2	3	4	na
Extremely Unfavorable	Mostly Unfavorable	Mostly Favorable	Extremely Favorable	does not apply to me

8. Waiting time at the clinic

1	2	3	4	na
Extremely Unfavorable	Mostly Unfavorable	Mostly Favorable	Extremely Favorable	does not apply to me

9. Appearance of the clinic buildings

4	3	2	1	na
Extremely Favorable	Mostly Favorable	Mostly Unfavorable	Extremely Unfavorable	does not apply to me

10. Hours of operation

1	2	3	4	na
Extremely Unfavorable	Mostly Unfavorable	Mostly Favorable	Extremely Favorable	does not apply to me

Compared to the ideal, what is your overall rating of the . . .

11. Waiting areas in the clinic

4	3	2	1	na
Extremely Favorable	Mostly Favorable	Mostly Unfavorable	Extremely Unfavorable	does not apply to me

12. Nurses

1	2	3	4	na
Extremely Unfavorable	Mostly Unfavorable	Mostly Favorable	Extremely Favorable	does not apply to me

13. Pharmacists

1	2	3	4	na
Extremely Unfavorable	Mostly Unfavorable	Mostly Favorable	Extremely Favorable	does not apply to me

14. Personal manner of the main practitioner you've seen (doctor, nurse-practitioner, or physician-assistant)

1	2	3	4	na
Extremely Unfavorable	Mostly Unfavorable	Mostly Favorable	Extremely Favorable	does not apply to me

15. Quality of urgent care (emergencies)

1	2	3	4	na
Extremely Unfavorable	Mostly Unfavorable	Mostly Favorable	Extremely Favorable	does not apply to me

16. Office personnel (receptionists, clerks)

4	3	2	1	na
Extremely Favorable	Mostly Favorable	Mostly Unfavorable	Extremely Unfavorable	does not apply to me

Compared to the ideal, what is your overall rating of the . . .

17. Arrangements for getting urgent care (emergencies)

4	3	2	1	na
Extremely Favorable	Mostly Favorable	Mostly Unfavorable	Extremely Unfavorable	does not apply to me

18. Effect of treatment on your health

4	3	2	1	na
Extremely Favorable	Mostly Favorable	Mostly Unfavorable	Extremely Unfavorable	does not apply to me

19. Kinds of services offered

1	2	3	4	na
Extremely Unfavorable	Mostly Unfavorable	Mostly Favorable	Extremely Favorable	does not apply to me

20. Telephone personnel

1	2	3	4	na
Extremely Unfavorable	Mostly Unfavorable	Mostly Favorable	Extremely Favorable	does not apply to me

21. Appointment making procedures

4	3	2	1	na
Extremely Favorable	Mostly Favorable	Mostly Unfavorable	Extremely Unfavorable	does not apply to me

22. Examination rooms

1	2	3	4	na
Extremely Unfavorable	Mostly Unfavorable	Mostly Favorable	Extremely Favorable	does not apply to me

APPENDIX D:

HEALTH SERVICE QUESTIONNAIRE-FEELINGS

(HSQ-FEELINGS)

PART B

Please read each statement and then circle the number of the answer below it that best describes your feeling. Answer in terms of your overall experience, past and present, with this health service.

REMEMBER--FOR EACH STATEMENT, CIRCLE THE ANSWER THAT BEST DESCRIBES YOUR FEELING

What is your overall feeling about the . . .

1. Appointment making procedures

4	3	2	1	na
Delighted	Pleased	Unhappy	Terrible	does not apply to me

2. Hours of operation

4	3	2	1	na
Delighted	Pleased	Unhappy	Terrible	does not apply to me

3. Accounting and billing procedures

4	3	2	1	na
Delighted	Pleased	Unhappy	Terrible	does not apply to me

4. Opportunity, or lack of opportunity, to choose which practitioner you see (doctor, nurse-practitioner, or physician-assistant)

1	2	3	4	na
Terrible	Unhappy	Pleased	Delighted	does not apply to me

What is your <u>overall feeling</u> about the . . .

5. Effect of preventive services on your health

1	2	3	4	na
Terrible	Unhappy	Pleased	Delighted	does not apply to me

6. Waiting time at the clinic

4	3	2	1	na
Delighted	Pleased	Unhappy	Terrible	does not apply to me

7. Telephone personnel

4	3	2	1	na
Delighted	Pleased	Unhappy	Terrible	does not apply to me

8. Medical performance of the main practitioner you've seen (doctor, nurse-practitioner, or physician-assistant)

1	2	3	4	na
Terrible	Unhappy	Pleased	Delighted	does not apply to me

9. Office personnel (receptionists, clerks)

4	3	2	1	na
Delighted	Pleased	Unhappy	Terrible	does not apply to me

10. Nurses

4	3	2	1	na
Delighted	Pleased	Unhappy	Terrible	does not apply to me

What is your overall feeling about the . . .

11. Appearance of the clinic buildings

4	3	2	1	na
Delighted	Pleased	Unhappy	Terrible	does not apply to me

12. Arrangements for getting urgent care (emergencies)

1	2	3	4	na
Terrible	Unhappy	Pleased	Delighted	does not apply to me

13. Location of services

1	2	3	4	na
Terrible	Unhappy	Pleased	Delighted	does not apply to me

14. Waiting time between asking for an appointment and the appointment date given

1	2	3	4	na
Terrible	Unhappy	Pleased	Delighted	does not apply to me

15. Number of practitioners that are available (doctors, nurse-practitioners, and physician-assistants)

1	2	3	4	na
Terrible	Unhappy	Pleased	Delighted	does not apply to me

16. Waiting areas in the clinic

1	2	3	4	na
Terrible	Unhappy	Pleased	Delighted	does not apply to me

What is your overall feeling about the . . .

17. Effect of treatment on your health

1	2	3	4	na
Terrible	Unhappy	Pleased	Delighted	does not apply to me

18. Personal manner of the main practitioner you've seen (doctor, nurse-practitioner, or physician-assistant)

4	3	2	1	na
Delighted	Pleased	Unhappy	Terrible	does not apply to me

19. Kinds of services offered

1	2	3	4	na
Terrible	Unhappy	Pleased	Delighted	does not apply to me

20. Pharmacists

4	3	2	1	na
Delighted	Pleased	Unhappy	Terrible	does not apply to me

21. Examination rooms

4	3	2	1	na
Delighted	Pleased	Unhappy	Terrible	does not apply to me

22. Quality of urgent care (emergencies)

1	2	3	4	na
Terrible	Unhappy	Pleased	Delighted	does not apply to me

Do you have any comments or suggestions about this health service?

****

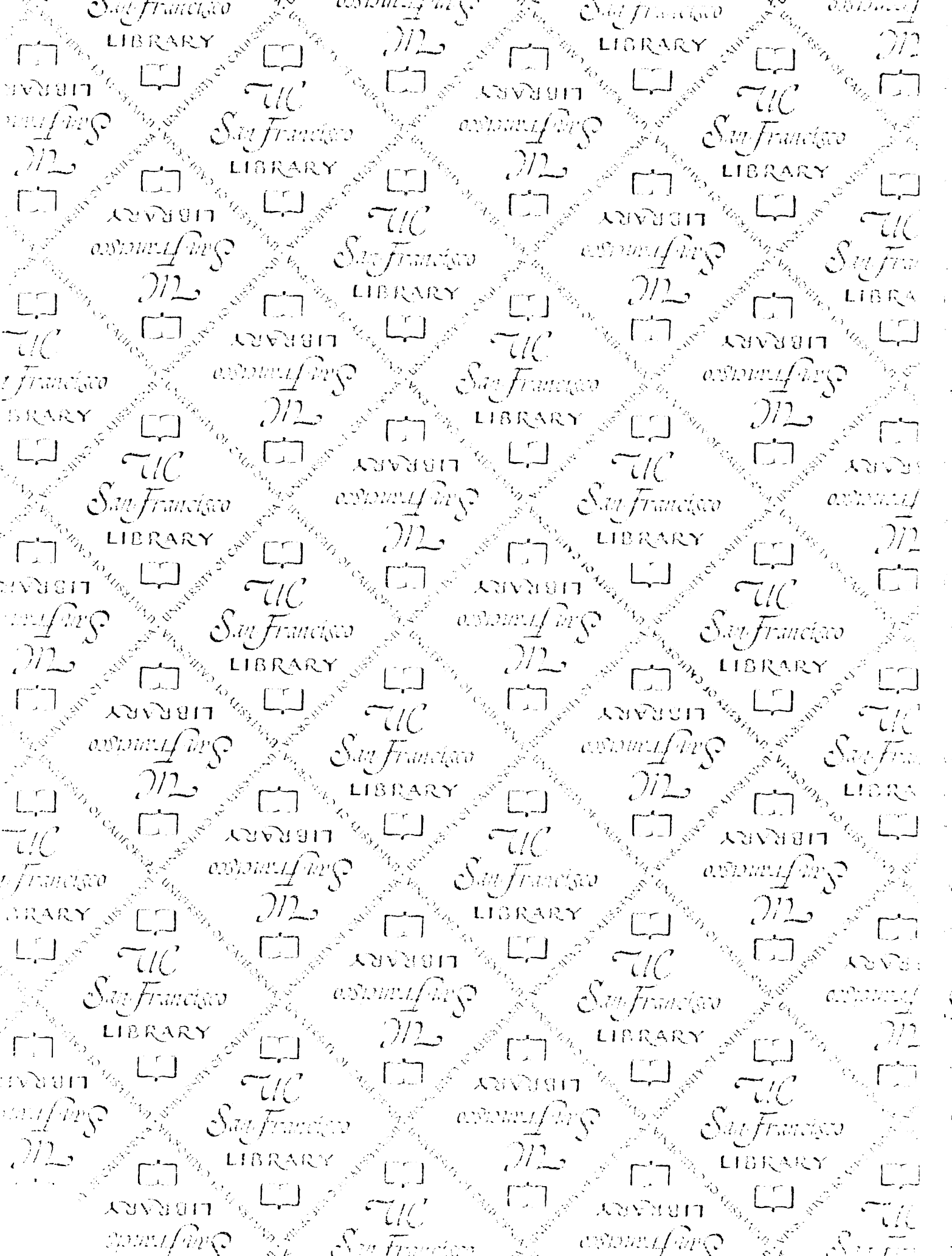
OPTIONAL:

What is the name of the main practitioner you saw today for your health care needs?

_____

What is the name of the main practitioner you usually see for your health care needs?

_____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