EXPLAINING PATIENT SATISFACTION/DISSATISFACTION IN HIGH BLOOD PRESSURE PRESCRIPTION DRUG MARKET: AN APPLICATION OF EQUITY THEORY AND DISCONFIRMATION PARADIGM

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ABSTRACT

The major purpose of this study was to develop and test a conceptual framework in the pharmaceutical industry to measure, understand and explain the post-purchase satisfaction and post-exchange actions (PEA) of elderly (over 55 years) patients who on high blood pressure (HBP) medications. Based on responses to a survey instrument obtained through interviews of 367 elderly HBP patients in Ohio and Florida, it was found that while the respondents reported a high level of satisfaction with every aspect of HBP drug therapy, they also expressed concerns about the costs of the drug therapy and other issues that directly affect their budget. The path analysis results of the model testing indicated that both the disconfirmation theory and equity theory seem to operate concurrently in explaining the variation in satisfaction with the HBP drug therapy.

INTRODUCTION

The Pryor Committee recently reported that the prices of prescription drug products has increased at a rate three times greater than the Consumer Price Index for the period of 1981-1988 (A Majority Staff Report of the Special Committee on Aging 1989 and 1990). This rapid increase in prescription prices has caused concern among both consumers and consumer advocates. These groups are asking questions such as: "Why are prices of pharmaceutical products increasing rapidly?", "Who, if anyone, is profiting from these price increases?", "Is the value of prescription drugs worth the prices we pay for them?", The factors responsible for affecting these price increases that have commonly been mentioned are: pharmacy and drug manufacturer profits, research and development costs, and governmental regulations (Wolfgang et al. 1988).

As can be seen from this brief introduction, prescription drugs are perceived to have some value, but not as much as what may be expected. The gap between the expected and perceived value of prescription drugs has apparently widened to a level that the resulting dissatisfaction now is being examined in a public forum. Unfortunately, most of the discussion regarding this issue, like many other public forum debates, is based on ad hoc studies without any unifying framework that can describe the relationships between various concepts such as "price," "quality," and "value" of prescription drugs and can examine variance in the level of satisfaction (or lack of it) felt by prescription drug purchasers.

The purpose of this study was to develop and test a conceptual framework that can be used by managers in the pharmaceutical industry to measure, understand and explain the post-purchase satisfaction and post-exchange actions (PEA) of elderly patients who are on high blood pressure (HBP) medications. Since the results of consumer complaining behavior in the prescription behavior are already reported elsewhere (Pathak et al. 1993), this paper presents results only as they related to the patient satisfaction/dissatisfaction in the HBP prescription drug market.

A FRAMEWORK FOR ANALYSIS

Due to the peculiarities of the pharmaceutical market, Grebmer recently concluded: "Thus, an analysis of pricing policy activities of this industry - utilizing the usual economic competition-policy instrumentation - is limited. Neither the classical economic theories, i.e., 'non-restricted', 'monopolistic' or 'restricted' competition nor the new concept of 'workable' competition fully take into account the complexity of the pharmaceutical market (von Grebmer 1987)." Because of the multidimensional nature of prices of pharmaceutical products, he suggested that a framework proposed by Weston (1979) be

followed for analyzing pharmaceutical pricing. Weston proposed that the main dimensions of drug product prices are the following:

> Quality = efficacy + safety + clinical evidence + experience + information communicated to doctors and other professionals + reputation manufacturer based on performance of prior products
>
> Nominal Price = price to wholesaler - discounts to wholesaler - discounts and rebates to hospital or other distribution outlets
>
> (Actual) Price = nominal price / quality

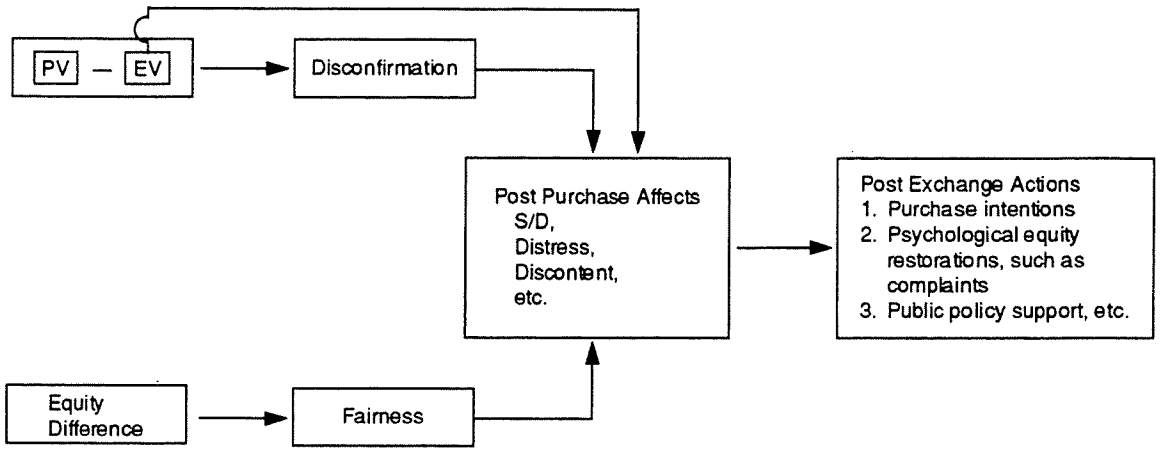
On the basis of this framework, Weston suggested that: "In the analysis of the behavior of prices and the price responsiveness of quantity sold to apparent price changes, it is quality-adjusted prices that need to be taken into account and not just the nominal price (Weston 1979)." Unfortunately, Weston's formula is directly not applicable at the retail level for pharmaceutical studies since it refers to nominal price at the wholesale level. Additionally, marketing and economic research on price and quality indicates that nominal price and perception of quality of a product may be correlated measures (Jacoby et al. 1972; McConnell 1968; Monroe and Krishnan 1985); hence, the ratio measure of (Actual) price may be a confounded measure of perceived value. However, Weston's formula does separate the dimension of quality (both objective and perceived) and price (objective measure only) from the dimension of perceived value (i.e. "Actual" price).

Weston's formula has been evaluated by many marketing analysts in the recent years who view the perceived value (or "actual"" price in Weston's terms) of a product as a function of both perceived quality (consisting of product benefits as opposed to product features) and perceived sacrifice (consisting of combination of perceived monetary and non monetary price) (Zeithaml 1988; Parasuraman et al. 1985). This view of perceived value has guided many marketing research projects in recent years examining relationships between price, quality, value, consumer satisfaction and factors affecting these relationships. The emerging consensus from these studies is that the gap between the expected and the perceived value (as measured by product disconfirmation), resulting in consumer post-purchase affects (as measured by consumer satisfaction and dissatisfaction continuum and/or distress), can be explained by two quite different paradigms: disconfirmation and equity Oliver 1977; Oliver and DeSarbo 1988; Oliver and Swan, 1989a; Swan and Trawick 1981). Furthermore, these studies also indicate that the feeling of satisfaction/dissatisfaction and the feeling of distress may provide explanation of post-purchase outcomes such as purchase intentions, consumer complaints, psychological equity restoration, and support for public policy measures for equity or negative disconfirmation restoration (Day 1977; Day 1984; Oliver and Swan 1989b; Swan and Mercer 1981). A summary of relationships between these variables is provided in Figure 1.

The model as outlined in Figure 1 hypothesize that disconfirmation approach and equity theory are complementary, and not independently competing, explanations of consumer post-purchase affect, as measured by satisfaction/ dissatisfaction (S/D), distress, or discontent in the market place. It is proposed in this study that this model be applied for developing a better understanding of the patient discontent, if any, in the prescription drug market. A brief description of the contribution of both the disconfirmation approach and the equity theory approach in explaining consumer post-purchase affects is first provided, and then a fully extended model for the prescription drug market is outlined.

Finally, it should be noted that the measures of distress and satisfaction and dissatisfaction continuum have used very similar descriptors and scales. Hence, the psychological state of "satisfaction" from disconfirmation paradigm and "distress" from equity theory are viewed as similar constructs and both are considered in this paper as parts of a more global concept of satisfaction and dissatisfaction (S/D) continuum.

Figure 1
Hypothesized Model of Equity and Disconfirmation Effects on the Post Purchase Affect and Action Outcomes



Notes:
1. EV = Expected Value; PV = Perceived Value
2. Equity Difference = (Focal Person's Input-Outcomes) - (Exchnage Partner's Input-Outcomes)
3. S/D = Satisfaction/Dissatisfaction

Disconfirmation Paradigm

Based on the disconfirmation paradigm, the consumer S/D, can be stated as follow:

Satisfaction = B_1 (Disconfirmation) + B_2 (Expectation)

Disconfirmation = $\sum_{-}\Pi\varsigma_i$ - $EV_i)/n$

Where:

PV_i = perceived performance on ith attribute
EV_i = expected value on ith attribute
B_1 = coefficient reflecting the relative importance of disconfirmation as a predictor of satisfaction
B_2 = coefficient reflecting the relative importance of expectation as a predictor of satisfaction
n = number of attributes

The satisfaction equation indicates that both disconfirmation and expectation are causes of satisfaction. The level of initial expectation combines with disconfirmation in a linear additive model to explain satisfaction. As initial expectation increases, satisfaction increases, holding the level of disconfirmation constant. Furthermore, as the prescription products are used, perceived performance of the product on salient attributes is compared by the patient to his/her expectations on these attributes. Perceived ratings above the expected values are termed positive disconfirmation, equality of perceived and expected values are termed simply confirmation, and perceived performances below the expected level are termed negative disconfirmation. The level of satisfaction is a function of the magnitude and sign of the disconfirmation measure.

It should be noted that for repetitive purchase behavior (such as users of refill prescription), the equation of disconfirmation behavior can be reduced to only the second term in the equation since experience with the product may have replaced the initial prior expectations. Since this study was limited to elderly patients' purchase and use experiences of the high blood pressure (HBP)

drugs, the relevant equation for the measurement of satisfaction using disconfirmation as an explanatory variable is as follows:

$$\text{Satisfaction} = B_1 \text{ (Disconfirmation)}$$

Equity Theory

There is a large body of social science literature devoted to the use of equity theory in social exchanges (Messick and Cook 1983; Walster et al. 1978). The brief discussion of equity theory relevant to consumer transactions in this section is based upon the work of Oliver and Swan (1989b), and Swan and Mercer (1981).

The process of equity is applicable to any social exchange (such as a prescription purchase) when a focal person (the patient) invest inputs in a transaction and receives outcomes. If a focal person feels that his relative gains (outcome minus inputs) are unequal to his exchange partner (such as pharmacists for patients), inequity is said to occur. The result of equity process is that the focal person may receive a feeling of fairness (equitable situation) or a feeling of distress if the focal person is a victim of inequity. An inequitable relationship causes a feeling of distress because individuals have internalized norms that prescribe both what is equitable and how one should feel and act if inequity arises. Thus, a patient who has no feeling of disconfirmation from the purchase of a prescription may still be distressed because of the feeling of inequity arising from his/her perception of relative gains of his/her exchange partners such as a pharmacist, physician, or the manufacturer.

While the original equity theory was formulated to account for equity situations in didactic exchanges with exchange partners having single inputs and outcomes, sociologists have extended this interpretation in recent years to institutional exchanges Jasso and Rossi 1977). Camerer and MacCrimmon (1983), for example, have shown that equity analysis can be extended to numerous person-institution relationships, including public transit, night baseball, and car rental companies. Within the marketing literature, the new interpretation of equity theory has been successfully applied to evaluate the equity perceptions in stores and in a hospital setting Huppertz et al. 1978; Swan et al. 1985).

The contemporary equity theory also allows for inclusion of multidimensional inputs, multiple parties, as well as diverse and disparate input and outputs between exchange partners. What is posited now is that "the perceiver of the equity relationship translates these diverse inputs and outcomes into common units. Once this is done, these perceptual units can be integrated into input units, outcome units, and later into equity units (Oliver and Swan 1989)." Finally, the contemporary equity theory also proposes that the relationship of equity perceptions with post-exchange affect is mediated by two different sets of distribution rules: fairness and preference (Brockner and Adsit 1980). However, results from marketing literature indicate that "fairness is a broad concept and may include what is hedonically desirable to the consumer as well as what is fair, thus encompassing both fairness and preference (Oliver and Swan, 1989b)." Hence, in examining the role of equity perceptions in this study, only fairness is proposed as a distribution rule between the patient's equity perceptions and post-purchase affect (see Figure 1).

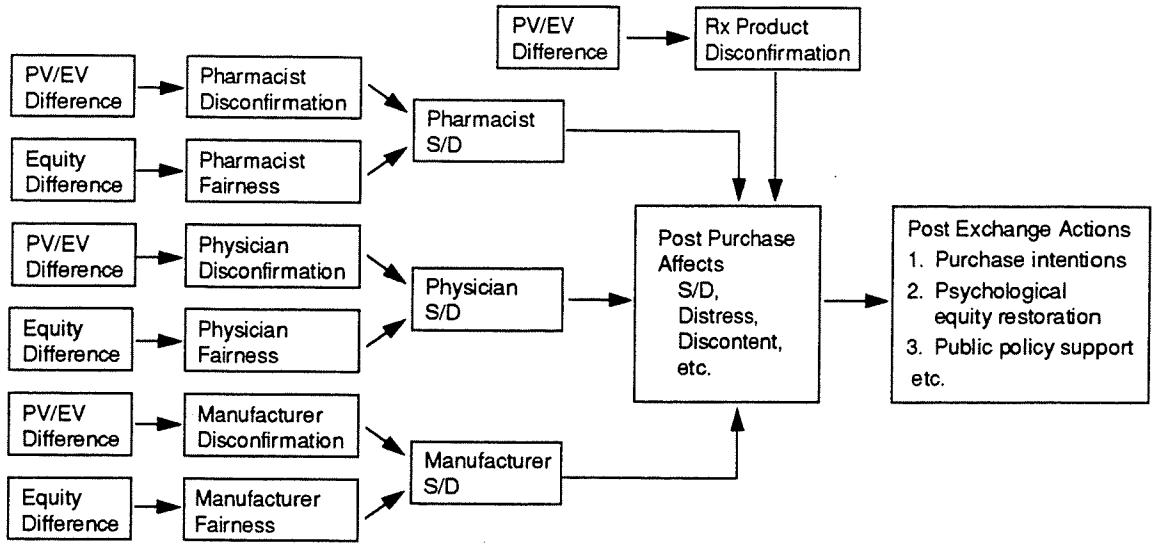
The Role of Equity and Disconfirmation Effects on the Patient's Post Purchase Affect in the Prescription Drug Market

The model proposed in Figure 2, an extension of Figure 1, was investigated in this study. Basically, the model suggests the following:

a. Disconfirmation is affected by the disparity between expected and perceived value received by the patient from the prescription drug purchases. Patient disconfirmation in the prescription drug market may consist of disconfirmations of the product, physician, pharmacist, and manufacturer.

b. Fairness of prescription transactions, from the patient's perspective, is a function of at least three equity differences (comparison of inputs/outcomes (I/Os) involving four parties in the prescription drug market: patient, pharmacist, physician, and the pharmaceutical manufacturer. Thus, "fairness" of a

Figure 2
Hypothesized Model of Equity and Disconfirmation Effects on the Patient's Post Purchase Affect and Post Purchase Action Outcomes in the Prescription Drug Market



Notes:
1. EV = Expected Value; PV = Perceived Value; S/D = Satisfaction/Dissatisfaction
2. Equity Difference = (Patient's Inputs - Patient's Outcomes) - (Appropriate Exchange Partner's Inputs-Outcomes)
3. The arrow from the Disconfirmation to the S/D boxes also includes the direct effects of EV on S/D.
4. Exogenous variables not shown are: involvement, price consciousness, poverty level, out-of-pocket drug cost, Rx insurance, sex and subjective knowledge.

transaction may be affected by the patient'sperceptions of not only his/her I/Os, but by the perceived I/O of at least three other parties in the prescription drug market. While the model presents these four I/Os contributions in terms of three equity differences (patient/pharmacist, patient/ physician and patient/manufacturer), it should be noted that the original Adam's theory of inequity and equity researchers such Walster, Walster, and Berscheid indicate that these differences should be measured in terms of relative comparisons of the patient's I/Os with the three exchange partners' I/Os in the prescription drug market place.

c. Satisfaction with each exchange partner in a prescription drug purchase is hypothesized as a function of the level of disconfirmation and perceived fairness of each transaction. While exchanges with pharmacist and physician are direct in the market place, indirect exchange with the pharmaceutical manufacturer is also included.

d. Post-purchase product affect (S/D, discontent, or distress) is hypothesized to be a function of perceived S/D of pharmacist, physician, and manufacturer as well as the prescription product purchase disconfirmation.

e. Post-exchange actions (PEAs) are hypothesized to be correlated with post-purchase satisfaction. Detail results based on the analysis of this linkage are not reported in this study since they are already reported in the literature elsewhere (Pathak et al., 1993).

Thus, the model as shown in Figure 2 indicates that the present negative post-purchase affect environment allegedly experienced by the elderly patients may be a function of not only the difference of expectations and perceptions of value received, but it may also be a function of the

feeling of inequity and a lack of response to problems in the prescription drug market experienced by the patients. Unfortunately, many comments made in the public arena seem to indicate that there is concern with both of these explanations in the prescription drug market. For example, the question of "Is the value of prescription drugs worth the prices we pay for them?" indicate that disconfirmation may be the explanation of the present public policy debate. However, other questions such as "Who, if anyone, is profiting from these price increases?" shows concern regarding fairness in the market place independent of the issue of perceived value of prescription drugs. A low perceived likelihood of action from the providers in the prescription drug marketplace is viewed as a further corroborating evidence for these questions and for taking some actions by the public policy makers. Finally, this model hypothesizes that problems with post-purchase satisfaction in the prescription drug market may not be a function of only the level of satisfaction with pharmaceutical manufacturers, but also a function of satisfaction with services provided by pharmacists and physicians, and disconfirmation of the value received from the products.

RESEARCH QUESTIONS

All the research questions raised in this study can be categorized into two broad categories: Model Based questions and Model Testing questions.

Model Based Questions

These research questions were derived from the model proposed for the study (see Figure 2).

Question 1. What is the level of knowledge (both subjective and objective) regarding the high blood pressure drug therapy among subjects (elderly patients) with high blood pressure (HBP) condition?

Question 2. What is the level of expectation, performance, and satisfaction of elderly HBP patients in terms of: the HBP medication, pharmacist, physicians, and the pharmaceutical manufacturer?

Question 3. How much disparity exists between the elderly HBP patient's expectations and performance in terms of: the HBP medication, pharmacist, physician, and the pharmaceutical manufacturer? In other words, what is the level and distribution of disconfirmation in the HBP market?

Question 4. Do elderly HBP patients perceive their relationship in dealing with pharmacists, physicians, and manufacturers as equitable?

Question 5. What is the level of fairness as perceived by elderly HBP patients in dealing with the pharmacist, physician, and the manufacturer?

Question 6. What is the level of satisfaction among elderly HBP patients in terms of: the HBP medication, pharmacist, physician, manufacturer, and the overall HBP drug therapy process considering the drug, pharmacist, physician, and the manufacturer?

Question 7. What is the difference between those who are "bothered" vs. "not bothered" by the cost of HBP drugs in terms of their attitude toward government control?

Question 8. Are the post-exchange actions (PEAs) related with the post-purchase satisfaction as specified by the model?

Model Testing Questions

Question 9. Does the proposed hypothetical model adequately fit the reality (i.e., the sample data) in explaining the post-purchase satisfaction of the elderly HBP patients?

Question 10. What linkages specified in the model are significant for explaining the post-purchase satisfaction in the study?

METHODOLOGY

The steps involved in the study methodology consisted of the following: selection of a product

category, identification of the appropriate population and sample selection, design of the survey instrument, data collection, and data analysis.

Product Category Selection

The Pryor committee reports had identified four categories of prescription drugs -- anti-hypertensive, anti-arthritis, anti-ulcer, antibiotic, and antihistamine -- that require further investigation in terms of value and patient satisfaction. After considering various factors including the size of the market and the amount of price variations in this product category, it was decided to limit this study to high blood pressure drugs (anti-hypertensive).

Population and Sample Selection

Four groups of individuals were considered as potential subjects for this study. They were: elderly consumers, low-income consumers, consumer advocates, and pharmaceutical executives. After reviewing various factors, it was decided to limit the this study to a sample of elderly consumers.

In order to calculate the initial sample size, the following assumptions were made: most of the relevant variables will be measured on a seven point scale; estimated standard deviation for these variables will be 1.5 (range/4); the critical effect size for estimating the mean of responses to any scale = .2; type I error = .05; and power = .8 to .9. On the basis of these assumptions, it was calculated that a sample size of 152 (power=.8) to 210 (power =.9) elderly patients will be needed (Kraemer and Thiemann 1987). For the purposes of this study, this number was rounded to 200 patients per state since the study population was to consist of elderly HBP patients residing in the states of Ohio and Florida.

Design of Survey Instrument

The survey instrument design phase consisted of three separate stages: review secondary sources, focus group interviews (see, Krueger 1988; Sirdeshmukh et al. 1991), and design of the survey instrument. Based on the information obtained from the review of secondary sources and four focus groups interviews (two in each state), the first draft of the survey was pre-tested with ten subjects. The pre-test indicated that the survey instrument was not difficult to fill-out in the presence of an interviewer, took an average of 70 minutes to complete the survey, three questions needed to be revised, and self-reporting without the presence of an interviewer could result in a high nonresponse rate. The final survey instrument consisted of twenty pages. There were six parts to the survey instrument. (A copy of the instrument is available from the primary author of this article.)

During the focus group interviews and the pre-test phase of the study, it was found that there were many questions in the study for which respondents had no knowledge or were not sure and hence, could not provide answers to those questions. Thus, instead of asking the respondents to leave those questions blank, the survey instrument provided a choice to respondents to indicate that they could not provide an answer to that question because of the lack of knowledge regarding that item.

Data Collection

Data for this study were collected through group interviews from elderly residing in 23 resident homes: 15 in Ohio and 8 Florida. Thirteen volunteers in Ohio could not attend the group meeting but requested to participate in the study and mailed in responses. There were 205 respondents from Ohio and 166 respondents from Florida. Four responses from Ohio were found unusable. The final sample consisted of 367 responses. Each respondent was paid $10.00 for participating in the study.

Data Analysis

The data base for this study consisted of 458 variables and 367 observations. This data base was analyzed using Statistical Analysis System (SAS), version 6.07. Since many of the constructs in the model consisted of combinations of variables in the data base, additional variables were created using SAS functions and procedures resulting in additional 51 variables.

The reliability analysis of the constructs included in the model was conducted using Cronbach's coefficient alpha. Results of this analysis are reported in Table 1. Although there are no clear guidelines for evaluating the magnitude of internal consistency coefficients, Peter, following Nunnly, presents the following guideline: "In early stages of research, modest reliability in the range of .5 to .6 will suffice. For basic research, it is argued that increasing reliability beyond .8 is unnecessary because at that level correlations are attenuated very little by measurement error (Peter 1979)." Since each of the measured constructs in this study had a reliability coefficient of .5 or better (with the exception of the construct of Price Consciousness which had the alpha coefficient of .492), all the measured constructs were retained in the final analysis.

Table 1
Reliability Coefficients for Sections of Survey Instrument

Section Descriptions	n*	# of Items	Alpha Coefficients
A. Drug			
1. Expectations about features	210	7	.776
2. Performance rating of features	221	7	.785
3. Satisfaction with features	239	7	.836
B. Pharmacist			
1. Expectations	136	7[a]	.881
2. Performance rating	129	7[a]	.910
3. Satisfaction	158	7[a]	.915
4. Fairness in dealings	309	2	.595
C. Physician			
1. Expectations	215	8	.813
2. Performance rating	209	8	.856
3. Satisfaction	237	8	.885
4. Fairness in dealings	313	2	.613
D. Manufacturer			
1. Expectations	66	5	.820
2. Performance rating	42	5	.921
3. Satisfaction	111	5	.884
4. Fairness in dealings	254	2	.505
E. General			
1. Involvement	327	4	.803
2. Subjective knowledge	293	2	.841
3. Price consciousness	192	3	.492
4. Attitude toward generics	213	3	.838
5. Attitude toward government control	307	6	.938
6. Overall satisfaction	322	3	.926
7. Likelihood of action on complaint	304	7	.881

* Number of responses vary due to missing responses for each question.

[a] Due to low response on item 8 for expectation, performance and satisfaction for the pharmacist's evaluation, this item was dropped.

It was recognized in the early phases of this study that many of the research questions require multiple tests of significance for two group comparisons and hence, increase the probability of rejecting the null hypothesis of no differences between two groups for any one comparison by the formula of $[1 - (1 - \alpha)^k]$. In order to avoid this problem, an approach suggested by Feild and Armenakis (1974) was used in this study. Using this approach, it was that at least 2 independent tests must be significant out of a total of seven or less multiple independent tests to conclude that the two groups compared are different at the .05 level. Similarly, at least three tests must be significant out of a total of 9 to 16 tests and four tests must be significant out of total of 17 to 20 tests before overall difference between any two groups can be considered to be significant at the .05 level. This approach of analyzing the results will allow both comparison wise and experiment wise errors to be .05 or less. For more than two group comparisons, using ANOVA, Scheffe's test was used since it is considered to be conservative in identifying significant differences between any two groups in the multiple comparisons.

Even after the statistical problem of equating experiment wise errors and comparison wise error to .05 is resolved for multiple tests of significance for two group comparisons, the problem of deciding when a statistical difference should be considered operationally significant remains. For a large sample size, a very small difference between a sample mean and a hypothesized mean

(or a small difference between means of two groups) could be found statistically significant which may not be "operationally" significant. Thus, the statistical difference between two means could be an artifact of the sample size. One approach to address this dilemma is to compare any statistical difference with the "effect size". Effect size is calculated as the differences between two means divided by the standard deviation (and not the standard error of the mean of differences) and thus, effect size becomes a standard unit of measurement for describing the magnitude of difference between two means in terms of standard deviation of differences (or pooled standard deviation of the two variables) regardless of the scale used to measure the variables. Using Cohen's guidelines (1977), it was decided that all the statistically significant differences, meeting the multiple test of significance criteria, will be compared against two effect size criteria: "small" (.2) and "moderate (.5) to determine the operational significance of differences between two group means or a single mean and a pre-hypothesized mean.

RESULTS AND DISCUSSION

The results and discussion section is divided into four sections: Background information, Model Based Questions, Additional Questions, and Model Testing Questions.

Background Information

The chi-square analysis indicated that there was no relationship between the respondents' resident status and having prescription insurance or hospital insurance. Additionally, no differences were found between the two groups in terms of overall satisfaction with the HBP drug (mean of satisfaction with the HBP drug therapy: Florida=5.99, Ohio=6.16, T=-1.11, p=.268). Since there were no differences in the insurance status or satisfaction with the HBP drug, responses received from both states were combined in one data base.

Since no comparative data base of demographic information for elderly HBP drug therapy patients was available for comparing our data base, it is difficult to make a judgment regarding the generalizability of this data base. The demographic characteristics of all subjects, however, do meet the criteria established for the selection of subjects for the study, i.e., subjects should be elderly (55 and over) who are on high blood pressure drug therapy.

Model Based Questions

Question 1. What is the level of knowledge (both subjective and objective) regarding the high blood pressure drug therapy among elderly HBP patients with a high blood pressure (HBP) condition?

The major reason for asking this question was based on the assumption that the validity of the evaluation of any object is a function of the amount of knowledge the subject possesses about the object. This assumption was tested through measures of subjective and objective knowledge of

Table 2
Knowledge about High Blood Pressure Drug Therapy

A. Subjective Knowledge

Item*	n	nmiss	Mean**	SD
1. I am very knowledgeable about my drug therapy	323	44	5.59	1.77
2. Compared to the average HBP patients, I am more knowledgeable about my HBP drug therapy.	298	69	5.38	1.75

* Measured on a 7-point scale: 7 = Strongly Agree to 1 = Strongly Disagree.

** All means were significantly higher than median value of 4.0 at the .05 level.

B. Objective Knowledgeability

	Know		Don't Know		Missing	
	n	%	n	%	n	%
1. Name of drug	359	(97.8)	1	(0.3)	7	(1.9)
2. Name of pharmacy	362	(98.6)	1	(0.3)	4	(1.1)
3. Name of pharmacist	89	(24.2)	227	(61.9)	51	(13.9)
4. Name of physician	356	(97.0)	5	(1.4)	6	(1.6)
5. Name of manufacturer	90	(24.5)	226	(61.6)	51	(13.9)
6. Dosage	347	(94.6)	2	(0.5)	18	(4.9)
7. Drug type: Brand vs. Generic	317	(86.4)	37	(10.1)	13	(3.5)
8. Number of days supply	322	(87.7)	16	(4.4)	29	(7.9)

the respondents regarding the HBP medication therapy (see Table 2). The average perceived subjective knowledgeability score about HBP drug therapy was 5.59. Respondents also reported knowledge of their HBP drug therapy as higher than the average HBP patients (mean=5.38). Both of these means were higher than the median value of 4.0 for these questions.

The objective knowledge of the respondents regarding their HBP drug therapy was measured by asking them questions regarding the name of the drug, pharmacy, pharmacist, physician, and manufacturer; dosage of the drug; drug type; and the number of days supply they obtained for their last prescription (Table 2). Most of the respondents (86.4% to 97.8%) were able to provide answers to these questions with the exception of two items: name of the pharmacist (24.2%) and the name of the manufacturer (24.5%). It is recognized that this could be because the name of the pharmacist and the manufacturer are identified only by the initials of these two exchange partners.

The lack of ability to recall the name of the pharmacist who dispensed the HBP drug or the pharmaceutical manufacturer does not indicate that respondents do not have a knowledge of various attributes associated with the pharmacist or the manufacturer. The study methodology, however, addresses this issue. If the respondent did not have the knowledge to answer questions regarding the drug, pharmacist, physician, or the manufacturer, he/she was given a choice to either leave the answer blank or to circle N, i.e., don't know.

Table 3 reports those questions regarding the HBP drug, pharmacist, physician, and manufacturer where 50% or more respondents answered "Don't Know" and/or "Missing." There were no questions related to the HBP drug or the physician where the majority of answers were missing. Also, even though only 24.2% of the respondents could recall the name of the pharmacist, a majority of the respondents were able to evaluate the pharmacist on all the specific attributes associated with the pharmacist with the exception of the "profit made by the pharmacy." This attribute, however, is associated with the pharmacy and not the pharmacist.

Table 3
Items on which the Majority of Respondents Demonstrated Lack of Knowledge Regarding Pharmacist/Pharmacy, Physician, and Manufacturer in the HBP Drug Channel of Distribution

	Don't Know		Missing	
	n	%	n	%
A. HBP Drug				
None				
B. Pharmacist/Pharmacy				
1. Expectations regarding:				
* Profits made by pharmacy	162	(46.6)	34	(9.3)
2. Rating of:				
* Reasonableness of profit made by pharmacy	175	(47.7)	26	(7.1)
C. Physician				
None				
D. Manufacturer				
1. Expectations regarding:				
* Promotion of drug	190	(51.8)	69	(18.8)
* Emphasis on quality control	150	(40.9)	72	(19.6)
* Reasonableness of prices charged by the manufacturer	137	(37.3)	73	(19.9)
* Profits made by the manufacturer	175	(47.7)	74	(20.2)
* Overall rating of the manufacturer of HBP drugs	142	(38.7)	76	(20.7)
2. Rating of:				
* Promotion of drug	225	(61.3)	59	(16.1)
* Efforts toward developing new drugs	230	(62.7)	61	(16.6)
* Quality control	199	(54.2)	62	(16.9)
* Reasonableness of prices charged	189	(51.5)	64	(17.4)
* Profits made by the manufacturer	219	(59.7)	60	(16.3)
* Overall performance	185	(50.4)	64	(17.4)

Finally, while respondents were able to evaluate the pharmacist who dispensed their drug, that was not the case for the pharmaceutical manufacturer. A majority of the respondents in the study could not evaluate the manufacturer on any of the attributes associated with the manufacturer nor could they articulate their expectations regarding these attributes. Thus, on the basis of the data on the subjective and objective knowledge regarding

manufacturers, it can be concluded that a majority of the elderly on the HBP medication therapy do not have knowledge regarding the various attributes reported as associated with the pharmaceutical manufacturers, including items such as efforts toward developing new drugs, emphasis on quality control, reasonableness of the prices charged by the manufacturer, profits made by the manufacturer, and the overall performance of the pharmaceutical manufacturers. Because of this, the relationship between all linkages between the manufacturer and the overall satisfaction with the HBP drug therapy were dropped from the final testing of the model (see Figure 3).

Question 2. What is the level of expectations. performance, and satisfaction of elderly HBP patients in terms of: the HBP medication, pharmacist, physicians, and the pharmaceutical manufacturer?

This question provided an exploratory answer to the level of expectation, rating of performance and satisfaction of elderly HBP patients with the drug as well as the pharmacist , physician , and the manufacturer. Marketing studies report that the elderly (and other vulnerable customers) on an average are likely to report a higher satisfaction with purchases of products and services. Results obtained in this study substantiate the results that are already reported in the marketing literature. These tables indicate that the elderly on HBP medication therapy have higher than average expectations, performance rating, and satisfaction of all the attributes included in this study for the HBP drug, pharmacist, physician, and the manufacturer. All the reported means have a value of 5.5 or higher (on 7-point scale) with the exception of two attributes: "prices of the drug charged by the manufacturer" and "profits made by the manufacturer." Even for these two items, the means were 4.63 and 4.44 respectively and statistically significant at the .05 level as compared to the theoretical median value of 4.0 on a 7-point scale. Additionally, the differences between the means for all comparisons were larger than the "moderate" effect size criteria of .5 with the exception of the "price of the drug charged by the manufacturer" and "profit made by the manufacturer". These two items met the "small" effect size criteria of .2.

Question 3. How much disparity exists between the elderly HBP patient's expectations and performance in terms of: the HBP medication, pharmacist, physician, and the pharmaceutical manufacturer? In other words, what is the level of disconfirmation among elderly in the HBP market?

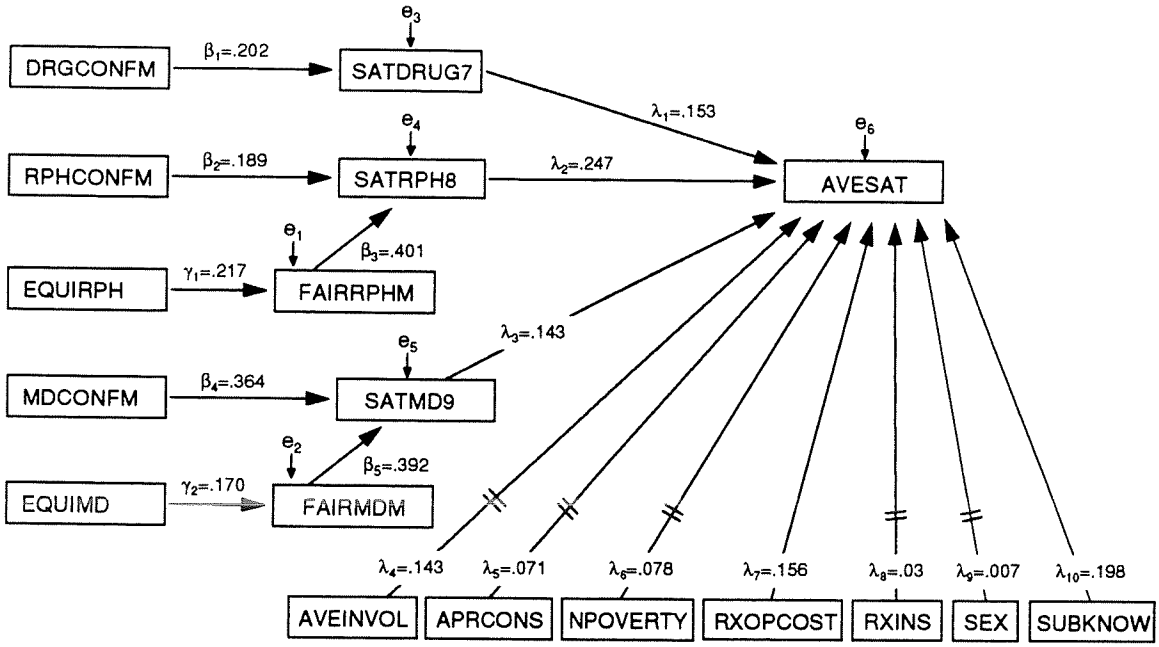
Since the construct of disconfirmation has not been studied in pharmaceutical literature, an answer to this exploratory question provides an insight into the level and distribution of disconfirmation (i.e., are the expectations met by the performance?) among the elderly in the HBP market. The average disconfirmation with attributes of an objects is posited as an explanatory variable for satisfaction with an object in this study. Further, based on vulnerable consumer hypothesis, it was expected that elderly consumers are likely to report higher than average satisfaction with their purchases. Thus, it was hypothesized that the disconfirmation mean of any attribute investigated in this study regardless of the object (i.e., the HBP drug, the pharmacist, the physician, or the manufacturer) will be equal to zero. The test results of this hypothesis can be summarized as follows:

1. Disconfirmation means were not significantly different from zero for any of the seven HBP drug attributes investigated in this study.

2. Although disconfirmation means for five out of seven attributes were found to be equal to zero, two disconfirmation means were found to be statistically significant for the pharmacist. One of these was significant at the .05 level and the other one at the .1 level. These two attributes were: "Explanation of differences between generic and brand name drugs (mean = -.26)" and "Counseling of me about my drug therapy (mean=-.22)". Neither of these statistically significant results met the effect size criteria of .2 and hence, were not considered operationally significant.

3. Disconfirmation means for seven out of eight attributes associated with the physician were found to be significantly different from zero: six at the .05 level and one at the .1 level. Each statistically significant

Figure 3
Path Analysis of Model of Equity and Disconfirmation Effects on the Patient's Post Purchase Satisfaction in the High Blood Pressure Drug Market



Abbreviations and Notations:

DRGCONFM	=	Average disconfirmation score for the HBP drug (1 to 7)
RPHCONFM	=	Average disconfirmation score for the pharmacist
MDCONFM	=	Average disconfirmation score for the physician (1 to 7)
EQUIRPH	=	Equity ratio for respondent less equity ration for RPh
EQUIMD	=	Equity ratio for respondent less equity ratio for MD
FAIRPHM	=	Fairness in dealing with pharmacist (1 to 7)
FAIRMDM	=	Fairness in dealing with physician (1 to 7)
SATDRUG7	=	Satisfaction with value received from HBP drug (1 to 7)
SATRPH8	=	Satisfaction with pharmacist in terms of HBP drug therapy (1 to 7)
SATMD9	=	Satisfaction with physician in terms of HBP drug therapy (1 to 7)
AVESAT	=	Satisfaction with the HBP drug therapy considering the HBP drug, pharmacist, physician and the manufacturer (1 to 7).
AVEINVOL	=	Involvement in HBP drug therapy (1 to 7)
APRCONS	=	Price consciousness (1 to 7)
NPOVERTY	=	Poverty level (1=Yes, 0=No)
RXOPCOST	=	Out-of-pocket prescription cost ($ value per month)
RXINS	=	Prescription insurance (1=Yes, 0=No)
SEX	=	Sex (1=Male, 0=Female)
SUBKNOW	=	Subjective knowledge (1 to 7)
γ, β, λ	=	Coefficients in appropriate equations
e	=	Error term

disconfirmation mean had a negative sign indicating that performance was lower than expectation. The only disconfirmation mean that was not significantly different from zero was "Personality (i.e., friendliness, etc.)". Also, six out of the seven statistically significant disconfirmation means did not meet the effect size criteria of .2 and hence, they were not considered operationally significant. The only attribute which can be considered as statistically and operationally significant was " The physician's counseling about my drug therapy." Even this difference was "small" and did not reach the "moderate =.5" value of the effect size.

4. Disconfirmation means for three out of five attributes associated with the manufacturers were found to be significantly different from zero. Thus, while performance ratings of manufacturers in terms of "Promotion of the drug" and "Efforts toward developing new drugs" were reported meeting expectation, the following attributes were rated as having not met expectations: "Emphasis on quality control in manufacturing for sale of effective HBP drugs," "Price of the drug charged by the manufacturer," and "Profits made by the manufacturer." The effect size for each of these attributes was "small."

An overview of the distribution of confirmation scores also indicate that the combined frequency of "confirm" and "positive confirmation" groups was greater than 80% for all of the attributes investigated in this study with the exception of two attributes: "Price of the drug charged by the manufacturer" and "Profit made by the manufacturer from the drug." These results combined with the result that these two attributes do meet the effect size criteria of .2 (although not .5) indicate there is some concern about these two items among the elderly who are on HBP drug therapy. It should be noted, however, that responses for calculating disconfirmation means were available from less than one-third of the respondents for any of the attributes associated with the pharmaceutical manufacturer.

Question 4. Do elderly HBP patients perceive their relationship in dealing with pharmacists, physicians, and manufacturers as equitable?

Walster et. al. (1978) describe two major approaches for measuring the equity relationships between exchange partners: attribute specific and global. This study used the global measure of relative gain perceived by the respondent in dealing with his/her exchange partners - the pharmacist, the physician, and the manufacturer - in the HBP drug therapy process. Results are reported in Table 4. Means of the relative gain or the equity experienced by the respondents in this study were significantly higher at the .05 level in terms of dealing with all exchange partners; however, positive equity experienced with the manufacturer and the physician met only the "small" effect size criteria and did not reach the level of "moderate" effect size criteria. An overview of frequency distribution of negative, equal, and positive equity (Table 4) indicate that while only 14.1% and 16.7% of the respondents felt negative equity relation with physician and manufacturer, 20.7% reported a negative equity relationship with the pharmacist.

Table 4
Frequency Analysis of Perceived Equity

Exchange Partner:	n (%)	Equity[a] Negative n (%)	Equal n (%)	Positive n (%)	Total Mean (SD)
1. Pharmacist	299	62 (20.7)	119 (39.8)	118 (39.5)	.37[b] (2.47)
2. Physician	311	44 (14.1)	146 (46.9)	121 (38.9)	.67[b] (2.37)
3. Manufacturer	246	41 (16.7)	90 (36.6)	115 (46.7)	1.23 (3.05)

a. Equity = [(Received - Invested)/(Invested)] by respondent LESS [(Received - Invested)/(Invested)] by the exchange partner

b. All means are significantly different from zero at the .05 level.

Question 5. What is the level of fairness as perceived by elderly HBP patients in dealing with the pharmacist, physician, and the manufacturer?

Based on recent equity theory literature, this study has posited "fairness" as an intervening variable between equity and satisfaction. Table 5 reports how the respondents responded to the question of fairness in dealing with the pharmacist, physician, and the manufacturer. The average rating of fairness in dealing with any of the three exchange partners, as reported by the respondents, was significantly higher, statistically as well as in terms of the "moderate" effect size criterion, than the median value of 4.0. This result corroborates the viewpoints expressed by the focus groups respondents that the elderly using HBP drugs evaluate their exchange partners positively in terms of "fairness."

Table 5
Fairness in the HBP Drug Therapy Process

A. Fairness[a]

Fairness in dealing with:	n	Mean[b]	SD
A. Pharmacist	348	6.29	1.14
B. Physician	340	6.49	1.03
C. Manufacturer	274	5.61	1.39

[a] Values ranging from 1 = minimum to 7 = maximum.

[b] All means significantly higher than median value of 4.0 at the .05 level.

Question 6. What is the level of satisfaction among elderly HBP patient in terms of: the HBP medication, pharmacist, physician, manufacturer, and the overall drug therapy process considering the drug, pharmacist, physician, and the manufacturer?

As hypothesized, it was expected that the elderly will report a higher level of satisfaction with all aspects - tangible and intangible - of their drug therapy process . Results reported in Table 6 show that this hypothesis is confirmed statistically as well as in terms of the "moderate" effect size criterion. The value of means of overall satisfaction range from 5.83 (for the manufacturer) to 6.51 (for the pharmacist and the physician). Again, it should be noted that "vulnerable" consumers commonly report a lower level of dissatisfaction with the purchases of goods and services.

Table 6
Overall Satisfaction

In terms of HBP drug therapy:	n	Mean*	SD
1. Satisfaction with drug	302	6.09	(1.34)
2. Satisfaction with pharmacist	293	6.51	(0.98)
3. Satisfaction with physician	343	6.51	(1.09)
4. Satisfaction with physician	220	5.83	(1.41)
5. Satisfaction with the overall drug therapy process considering the drug, pharmacist, physician, and manufacturer	355	6.15	(1.21)

* All means significantly higher than median value of 4.0 at the .05 level.

Question 7. What is the difference between those who are "bothered" vs. "not bothered" by the cost of HBP drugs in terms of attitude toward government control?

Results reported in Table 6 were further analyzed in terms of frequency distribution on satisfaction/dissatisfaction scale. The results showed that the percentage of dissatisfaction was as follows: dissatisfaction with the HBP drug , 4.4%; the pharmacist, 2.0%; the physician, 2.3%; the manufacturer, 3.2%; and the overall drug therapy process, 1.7%. One wonders as to why there would be any questions by the Pryor Committee or any consumer advocacy group regarding the cost of pharmaceuticals in this country with such a small percentage of elderly reporting dissatisfaction with the HBP drug therapy process! Four, explanations can be provided for such a result since it seems to run contrary to the reality check. The first explanation is based on the Andreasen and Hirschman thesis that vulnerable consumers are in fact more loyal and hence, report a lower level of dissatisfaction Hirschman 1970; Andreasen 1985,1991; Andreasen and Manning 1990; Andreasen and Best 1977). Second explanation is that such low level of dissatisfaction reporting is an artifact of the scale and the anchoring of the scale with the words

"very satisfied -- very dissatisfied" leads consumers to answer on the more positive end of the scale. Third, it is possible that a consumer may report satisfaction with an object in terms of a global measure of consumer satisfaction, but may not be satisfied with various attributes of the object. Finally, the focus group results indicated that there were many consumers who were satisfied but "bothered" and these bothered consumers were more likely to take action. In other words, the self-reported construct of "bothered" may be more indicative of consumers' feelings about the market performance in the prescription drug market than the researcher generated construct of "satisfied/dissatisfied."

In order to test these explanations, the respondents were presented with 15 specific issues related to various aspects of the HBP drug therapy process. These issues were identified as "bothersome" by the members of the focus group interviews. These issues were: the cost of HBP drug; manufacturer's profit; physician's fee; pharmacy's profit; difficulty in using drug; side effects of the drug; lack of effectiveness of the drug; price variability between pharmacies; price variability between generic and brand name drugs; waiting time at the physician's office ; waiting time at the pharmacy; lack of counseling about drug therapy by the physician; lack of counseling by the pharmacist; behavior of the physician; and behavior of the pharmacist. For each of these issues, respondents were asked to answer three questions: Did this issue bother them (as opposed to how satisfied are they with these issues)? Did they complain? To whom? Results of these three question are reported in the literature and will not be repeated in this paper. However, these results indicated that the top five issues that "bothered" greater than 20% of the respondents were:

- cost of the HBP drug (40.0%);
- price variability between pharmacies (32.9%);
- waiting time at the physician's office (29.0%);
- manufacturer's profit (28.3%); and
- price variability between generic and brand name HBP drugs (27.3%).

Four out of five of these issues are related to cost or price of the HBP drugs. The next six issues with greater than 10% of the respondents reporting being bothered by these issues were: physician's fees (17.7%), pharmacy's profit (17.5%), side effects of the drug (12.7%), lack of counseling about the drug therapy by the physician (11.4%) , lack of counseling by the pharmacist (10.6%), and waiting time at the pharmacy (10.3%).

The type of results are commonly used by public policy advocates to intervene in the market place. Do consumers who are bothered by the cost of the HBP drugs prefer government control? The answer to this question is provided in Table 7. Respondents were directly asked whether they feel that the government should control: charges of physician office visits, pharmacy profit margin, insurance premiums for prescription drugs, prescription prices, differences in prices between pharmacies, and manufacturer's price. Each response was obtained on a 7-point scale (7 = Strongly Agree to 1 = Strongly Disagree). When the attitude scores toward government control on these items are compared between those who are bothered and those who are not bothered by the cost of the HBP drug therapy, no statistical differences were found (Table 7). Additionally, all the means are higher than the median value of 4.0 but are lower than 5.0 with the exception of the means of items on prescription prices and manufacturer's profit margin. In other words, the results reported in Table 8 indicate that elderly HBP patients participating in this study do not indicate a strong support for government control or public policy intervention; however, the results do not indicate a strong opposition either.

Question 8. Are the post-exchange actions (PEAs) related with the post-purchase satisfaction as specified by the model?

The last link of the model hypothesizes that satisfaction is negatively correlated with the post-exchange evaluations (PEAs). An intercorrelation matrix of the average satisfaction with the HBP drug therapy, the number of issues that bothered each elderly respondent and the number of issues about which each respondent complained is reported in Table 8. As hypothesized in Figure 2, satisfaction with the HBP drug therapy process is negatively correlated with both the number of

issues "bothered" (-.44) and the number of issues "complained" (-.243). As compared to these two correlations, the large positive correlation of .613 between the number of issues bothered and the number of issues complained, however, provides a support to our original hypothesis, based on Westbrook's work (1987), that post-exchange emotions, such as being bothered, may have higher explanatory power than the traditional measures of satisfaction in explaining post-exchange actions of consumers.

Table 7
Comparison of Attitude Toward Government Control: "Not Bothered" vs. "Bothered" by the Cost of HBP Drugs

	Group						
	Not Bothered			Bothered			
	n	Mean[b]	SD	n	Mean	SD	T[c]
I feel that the government should control[a]:							
1. charges for physician office visits.	204	4.41	2.41	136	4.73	2.33	-1.22
2. pharmacy profit margins.	208	4.59	2.26	132	4.90	2.28	-1.24
3. insurance premiums for Rx drugs	195	4.82	2.28	127	4.95	2.17	-0.52
4. prescription prices	207	4.90	2.29	133	5.00	2.32	-0.36
5. differences in prices between pharmacies	205	4.79	2.29	130	4.86	2.38	-0.30
6. manufacturer's profit margin	203	4.87	2.25	129	5.04	2.28	-0.70

[a] Each item measured on a 7-point scale: 7 = Strongly Agree to 1 = Strongly Disagree.
[b] All means significantly different from median value of 4.0.
[c] No differences were found to be significant at the .05 level.

Model Testing Questions

One of the major objectives of this study was to develop and test a theoretical model that may explain the variation in overall satisfaction in the HBP drug therapy process by incorporating two different research traditions: equity theory and disconfirmation theory. The operationalization of the theoretical model (Figure 2) is shown in Figure 3. Because of the large number of missing data for the variables included in the linkage involving the manufacturer, this linkage had to be dropped from the model. Thus, a path analysis of the model, using the covariance structure modeling approach, can mathematically be described by the following six equations:

$$1.\text{FAIRPHM} = \Upsilon_1 (\text{EQUIRPH}) + e_1$$

$$2.\text{FAIRMDM} = \Upsilon_2 (\text{EQUIMD}) + e_2$$

$$3.\text{SATDRUG7} = \beta_1 (\text{DRCONFM}) + e_3$$

$$4.\text{SATRPH8} = \beta_2 (\text{RPHCONFM}) + \beta_3 (\text{FAIRPHM}) + e_4$$

$$5.\text{SATMD9} = \beta_4 (\text{MDCONFM}) + \beta_5 (\text{FAIRMDM}) + e_5$$

$$6.\text{AVESAT} = \lambda_1 (\text{SATDRUG7}) + \lambda_2 (\text{SATRPH8}) + \lambda_3 (\text{SATMD9}) + \lambda_4 (\text{AVEINVOL}) + \lambda_5 (\text{APRCONS}) + \lambda_6 (\text{NPOVERTY}) + \lambda_7 (\text{RXOPCOST}) + \lambda_8 (\text{RXINS}) + \lambda_9 (\text{SEX}) + \lambda_{10} (\text{SUBKNOW}) + e_6$$

Explanations of each of the abbreviated terms and model parameter are provided in Figure 3. Proc Calis program from the SAS routines was used to test these equations.

Table 8
Intercorrelation of Satisfaction with the HBP Drug Therapy Process, Number of Issues Bothered, and Number of Issues Complained

		Satisfaction with the HBP drug Therapy Process	Number of Issues Bothered
Number of Issues Bothered	r	-.427	
	p	.0001	
	n	355	
Number of Issues Complained	r	-.243	.617
	p	.0029	.0001
	n	148	153

Table 9
Model Statistics Based on Path Analysis Using Covariance Structural Modeling
Maximum Likelihood Estimation
(N = 277)

I. Model Statistics

Model Statistics	
1. Goodness of Fit Index	.9263
2. GFI Adjusted for Degrees of Freedom	.8200
3. Root Mean Square Residual	.0762
4. Null Model Chi-Square	659.99
5. Bentler and Bonett's Normed Index	.6943
6. Bollen Non-Normed Index	.7767

II.

Dependent	Variable Independent	Parameter	Estimates Standardized	Raw	Error	Standard t-value
FAIRRPHM	EQUIRPH	γ_1	.217	.217	.059	3.70
FAIRMDM	EQUIMD	γ_2	.170	.170	.059	2.86
SATDRUG7	DRGCONFM	β_1	.202	.202	.059	3.43
SATRPH8	RPHCONFM	β_2	.189	.188	.053	3.53
	FAIRRPHM	β_3	.401	.398	.053	7.48
SATMD9	MDCONFM	β_4	.364	.352	.049	7.19
	FAIRMDM	β_5	.392	.379	.049	7.75
AVESAT	SATDRUG7	λ_1	.153	.145	.052	2.85
	SATRPH8	λ_2	.247	.237	.053	4.60
	SATMD9	λ_3	.143	.141	.053	2.66
	AVEINVOL	λ_4	.094	.090	.053	1.72[a]
	APRCONS	λ_5	-.071	-.068	.052	-1.39[a]
	NPOVERTY	λ_6	.078	.074	.053	1.43[a]
	RXOPCOST	λ_7	-.156	-.149	.053	-2.80
	RXINS	λ_8	-.029	-.028	.054	-0.53[a]
	SEX	λ_9	-.007	-.007	.052	-0.14[a]
	SUBKNOW	λ_{10}	.198	.189	.052	3.59

[a] Not significant at the .05 level. All other t-values are significant at the .05 level.

Question 9. Does the proposed hypothetical model adequately fit the reality in explaining the post-purchase satisfaction of the elderly HBP patients?

Results of the path analysis are provided in Table 9. The overall fit of the model is indicated by model statistics. Each of the model statistics and its meaning is described below.

1. The null model chi-square value of 659.999 indicates that the null hypothesis of the lack of fit of the model can be rejected.

2. Goodness of fit index (GFI) value of .9263 meets the commonly used minimum criteria of .9 and thus, indicates a good fit between the hypothesized model and the sample data.

3. GFI adjusted for degrees of freedom is

.82. Although this value is acceptable after adjusting the degrees of freedom, it is lower than the norm of .85 to .95. Thus, the model can be improved with additional modifications.

4. Root mean square residual value should be as close to .05 for concluding that the model is a good fit. The reported value of .0762 for the root mean square residual provides another indication of a good fit; however, it also indicates that the existing model can be improved since it did not reach the norm.

5. Finally, Bollen's non-normal index value of .7767 indicates the population fit and the Bentler and Bonett's normal index value of .7767 indicates a sample fit to the data. The norm for both of these indices is .8; hence, it can be concluded that while the model is a good fit, it can be improved by changing some of the paths.

In general, it can be concluded that the model does provide a "good" or reasonable overall fit; however, it can be improved.

Question 10. What linkages specified in the model are significant for explaining the post-purchase satisfaction in the study?

The estimated raw and standardized values of the model parameters associated with each equation are provided in Table 9.

All of the model parameters values in Equations 1 through 5 are significant at the .05 level indicating that each of the hypothesized linkages should be kept in the model. The results of the testing of these five linkages can be summarized as follows:

1. Fairness construct is a function of equity measure and hence, can be viewed as a variable intervening between satisfaction and equity experienced with each exchange partner.

2. Fairness in dealing with the pharmacist (beta=.401) in the HBP drug exchange plays a larger role than the disconfirmation measure (beta=.189). This result further substantiates results obtained from the focus groups interviews. Both the constructs have a positive relationship with the construct of satisfaction with the pharmacist as hypothesized.

3. Both disconfirmation (beta=.364) and fairness in dealing with the physician (.392) play an important role in explaining satisfaction with the physician.

4. Disconfirmation measure (beta=.202) provides a positive contribution in explaining the construct of satisfaction with the HBP drug.

Equation 6, however, has five parameters that are not significant. These parameters are associated with the following variables: involvement (AVEINVOL), price consciousness (APRCONS), poverty level (NPOVERTY), having Rx insurance (RXINS), and the respondent's sex (SEX). These results indicate that linkages from these variables to the overall satisfaction with the HBP drug therapy process (AVESAT) should be dropped since these variables do not contribute toward explaining the variation in the dependent variable. Interestingly, all of these variables are exogenous to the model. The model parameters kept in the model and their respective standardized values indicate a relative importance of contribution made by these variables in the model. These variables in the order of importance are:

1. Satisfaction with the pharmacist (SATDRUG7) has the largest positive coefficient (lambda=.247) of the five variables retained in the model. Thus, this result indicates that higher satisfaction with the pharmacist, which in turn is affected by the pharmacist's fairness and equity in dealing with the elderly HBP drug therapy patients, results in increasing the overall satisfaction with the HBP drug therapy.

2. Subjective knowledge of the respondents regarding their HBP drug therapy had the second largest (positive) parameter value (lambda=.198). This result indicates that providing increased knowledge of the HBP drug therapy could result in a higher level of

satisfaction among these patients with their HBP drug therapy.

3. Out-of-pocket cost (RXOPCOST) had the third highest standardized coefficient value (lambda=-.156); however, the sign for this coefficient is negative. Thus, increased out-pocket-cost of prescription drugs does seem to reduce elderly patients' satisfaction with the HBP drug therapy.

4. Satisfaction with drug (SATDRUG7) has a positive coefficient value (lambda=.153).

5. Finally, satisfaction with the physician has a positive coefficient value of .143.

The results of the path analysis, thus, suggest that both disconfirmation and equity theories make independent contributions to the satisfaction with the HBP drug therapy among elderly through satisfaction with the pharmacist and satisfaction with the physician. The increased out-of-pocket cost does have a negative impact on the overall satisfaction of the elderly with the HBP drug therapy. Finally, the increased subjective knowledge of the patients regarding their therapy indicates the value of the patient education.

There are many approaches that can be taken to improve the explanatory power of the model. Some of them are: measurement of the construct of "equity" at the attribute level as opposed to the global measure used in this study; incorporating disaggregate measures of disconfirmation for each attributes associated with pharmacists and physicians instead of using the average disconfirmation measure; adding indirect effect of the construct of expectation as suggested by Swan and Trawick 1981); and including measures of emotions in the model as proposed by Westbook (1987).

SUMMARY OF FINDINGS

The findings of this study can be summarized as follows:

1. Respondents reported a high degree of subjective and objective knowledge of their drug therapy; however, a majority of respondents did not have sufficient knowledge about manufacturers to provide information regarding various attributes commonly associated with pharmaceutical manufacturers. Lack of elderly patients' awareness of the pharmaceutical manufacturer's efforts to the value added dimensions of HBP drug therapy of the elderly needs to be examined closely in terms of its implications.

2. Elderly HBP patients have high expectations associated with the value received from the HBP drugs, and exchange relationships with pharmacists and physicians.

3. Respondents provided high ratings to performance of drugs, pharmacists, and physicians on all the attributes investigated in this study.

4. While disconfirmation analysis indicated that perceived performance rating met the expectations for the HBP drug, and for most of the attributes in exchange relationships with pharmacists, physicians, and manufacturers, there were "small" to "moderate" effect size differences on the following items: A. For physicians- physician's counseling of drug therapy; and C. For manufacturers - emphasis on quality control in manufacturing for sale of effective HBP drugs, price of the drug charged by the manufacturer, and profits made by the manufacturer.

5. Focus group interview results of "fairness" and "trust" in the exchange relationship with pharmacists and physicians were confirmed by the results. Over 80% of the respondents reported equitable or positive equity and fairness in dealing with their exchange partners.

6. The 'vulnerable' consumer hypothesis was partially confirmed since those below poverty level, less than college education, and lower income demonstrated higher level of satisfaction with pharmacists, manufacturers, and the overall HBP drug therapy process.

7. Although elderly HBP patients reported a

high degree of satisfaction, five major issues that were 'bothersome' to them were: cost of the HBP drug, price variability between pharmacies, price variability between generic and brand names drugs, manufacturer's profit, and waiting time at the physician's office. With the exception of the waiting time at the physician's office, the four other issues directly affect the budget of elderly patients.

8. Although the elderly respondents in this study did not report a high likelihood of action on their complaints regarding the drug prices, they neither agreed nor disagreed with government control of prescription prices, differences in prices between pharmacies, profit margins of pharmacists and manufacturers, insurance premium for prescription drugs, or charges for physician office visits.

9. The path analysis results of the model testing indicated that both the disconfirmation theory and equity theory seem to operate concurrently in explaining the variation in satisfaction with the HBP drug therapy.

10. While the overall satisfaction with HBP drug therapy among the elderly in this study are a positive function of satisfaction with the HBP drug, pharmacist, and the physician, it should be noted that two exogenous variables also play an important role. They are: out-of-pocket cost of prescription drugs and subjective knowledge of the elderly of their HBP drug therapy.

CONCLUSION

In general, the elderly respondents in this study reported a high level of satisfaction with every aspects of HBP drug therapy but they also expressed concerns about the costs of their HBP drug therapy. The study respondents, however, do not seem to be convinced that government control of the market mechanism will resolve their concerns. Improving the knowledge base of the elderly regarding their HBP drug therapy, counseling for patients from their pharmacists and physicians about their HBP drugs and their effects, communicating the steps taken by the pharmaceutical manufacturers to improve the HBP drug therapy for elderly patients, and emphasizing "fair" and "equitable" dealings with the elderly patients by pharmacists and physicians exemplify some of the steps that can be taken toward maintaining positive sentiments of the elderly patients on the HBP drug therapy toward their exchange partners.

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