ENVIRONMENTAL DIMENSIONS OF CONSUMER CHOICE FOR THE PURCHASE OF PRESCRIPTION DRUGS

by

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ABSTRACT

All members of the channels of distribution for pharmaceutical products and services have sensed changes in the health care environment. Consumers' perceptions of this environment and the way in which their perceptions influence the prescription purchase process are unknown. A model of consumer choice was proposed by which environmental perceptions and individual characteristics motivate consumers and enhance their ability to engage in a comprehensive and systematic decision process. According to the model, heuristics, random choice and decision avoidance are alternative decision strategies which occur in the absence of motivation and ability. The objectives of this research were to characterize the dimensions of the retail market environment for prescription drugs; develop measures of these environmental dimensions; and determine which dimensions are related to measures of consumers' motivation and self-rated ability to select a pharmacy for a prescription purchase.

Scales were developed to rate seven environmental dimensions identified through a review of the literature: diversity, dynamism, concentration, capacity, conflict, interconnectedness and interdependence. Four individual characteristics also believed to affect the purchase decision were measured: product involvement, task familiarity, market familiarity and product knowledge.

Three Wisconsin cities with different pharmacy market conditions were identified. A mail survey of those sites provided data from 461 (62.7%) of 757 households contacted. Factor analysis of the environmental perception items produced seven factors that represented diversity, capacity, conflict and complexity with pharmacists' business role, and conflict, interdependence and interconnectedness associated with their professional role.

Consumers' motivation and ability scores were modeled as a function of their perception of the environment, individual characteristics, and correlated demographic variables. Significant predictors of motivation included: business complexity, task familiarity, income, product involvement, age and annual medical expenditures (R square = 0.20). The predictors of the square of the ability score were: task familiarity, professional interdependence, business complexity, professional conflict and business diversity (R square = 0.17).

The reliability of the environmental measures should be enhanced for further investigation of their role in affecting the consumer choice for the purchase of pharmaceutical services.

I. INTRODUCTION

> Why should it matter how managers view the arena in which they act? Because market environments are not unambiguous realities. They are given meaning in the minds of managers through processes of selective attention and simplification. Otherwise managers could not possibly cope with the myriad of trends and events that must be organized, analyzed for patterns, and acted upon. Managers therefore...simplify their environment and decide what information is to be gathered and how it is to be screened and interpreted. (Day and Wensley 1988, p. 2)

Health care has one of the most complex and dynamic market environments (Enthoven 1987). Within the channels of distribution for pharmaceutical products, the health care environment has affected managers at the manufacturing level (Cocks 1987), and at the level of community and institutional pharmacy practice (Schondelmeyer 1987). The question has been posed, if the environment has affected pharmaceutical manufacturers and pharmacists, has it affected the way end users (i.e., consumers) manage their household purchases of pharmaceutical products (Wiederholt 1987a)? Of all the trends and events in the health care environment that are so evident to the manufacturers and pharmacists, which capture the attention of consumers? How have consumers organized and analyzed their observations, and how will this information influence their future actions?

At least one strategy for the study of consumer behavior proposes that the environment is an important component of consumer behavior (Peter and Olson

1987). According to this approach, an individual's actions should be analyzed as a function of all two-way interactions among environment, cognition and behavior. This strategy is consistent with the interactionist view of human behavior (Bandura 1978; Magnusson 1981).

Cognitive aspects of consumer behavior have been the most frequently studied element of consumer decision-making (see Bettman and Sujan 1987 for a review). There are studies which have considered consumer behavior from a behaviorist perspective (Nord and Peter 1980; Gorn 1982), although these are few in number. Studies that have investigated the impact of the environment on consumers also are few in number (Bonner 1985).

A major impediment to research on the environment is the lack of consensus about how the environment should be conceptualized (Peter and Olson 1987, p. 300). What research has been done considers the environment at the moment of choice, i.e., the study of context, situation, or task effects (Belk 1975; Dickson 1982). The research proposed herein, defines the environment in more general terms than that used for the investigation of situational effects, and in a manner compatible with research streams in other academic disciplines and in other subdisciplines of marketing. Sociologists, social psychologists, political scientists and others have laid the groundwork for characterizing work environments, environments for social interaction, and marketing channels environments (Magnusson 1981; Achrol and Stern 1988). The approach selected

for this research draws upon the description of marketing channels environments developed by Achrol, Reve and Stern (1983), and upon the subsequent empirical study of environmental effects on decision-making uncertainty in channels (Achrol and Stern 1988).

Inasmuch as environmental effects interact with cognition and behavior, a model is needed which incorporates a role for environmental influences as well as the cognitive-behavioral aspects of consumer choice. However, most models of consumer behavior are strictly cognitive-behavioral in nature. From an interactionist perspective, these models have several shortcomings (Aldrich 1979):

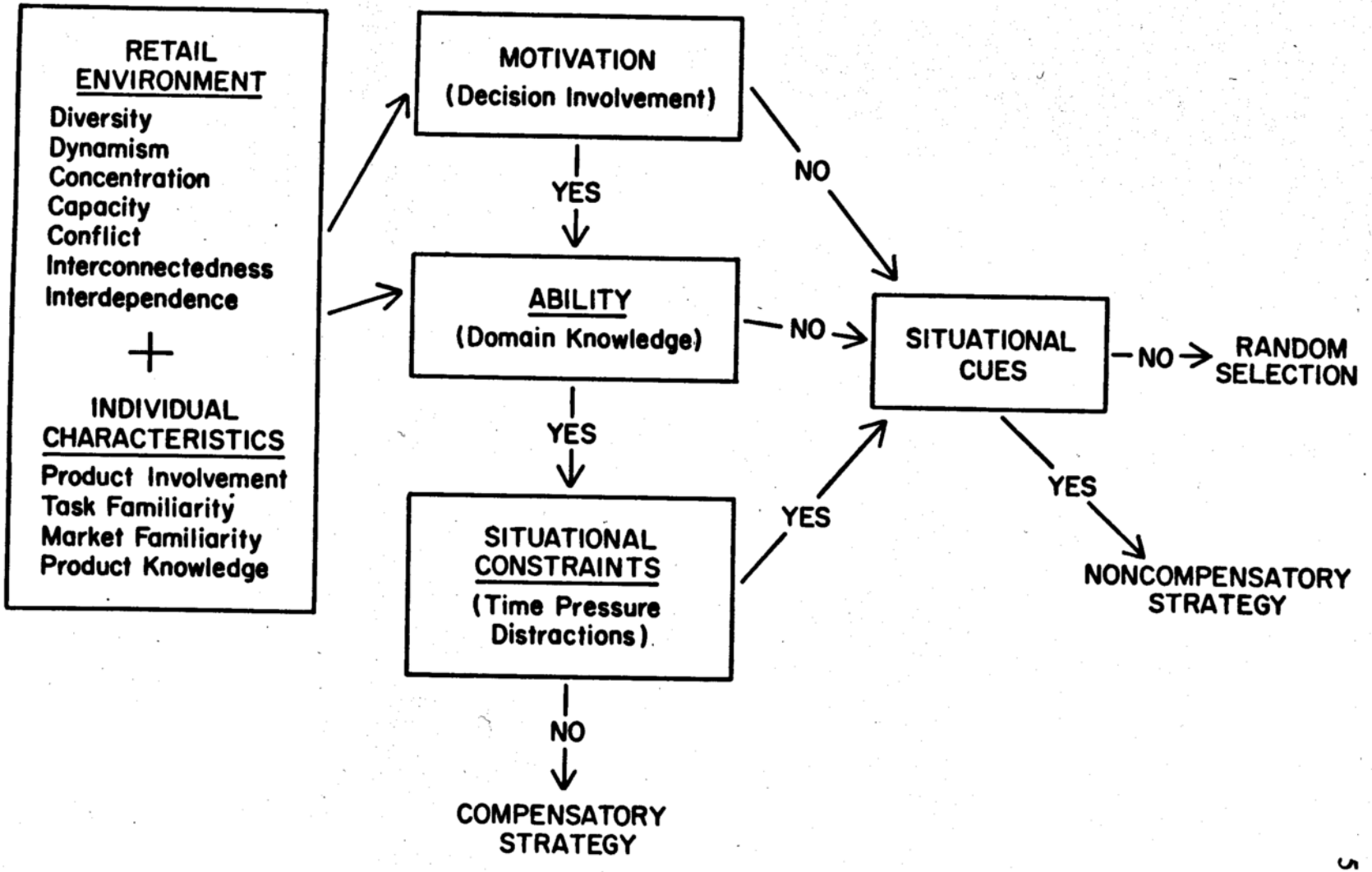
1. They place the focus on the individual rather than the population level of analysis.
2. They consider only choices which are actively sought and ignore unplanned choice.
3. They predict choices based upon the contribution to the individual's goals and fail to consider the impact of external constraints on goals, decision strategy and ultimate choice.
4. They view choice from a short, rather than long term time frame.

The model of consumer decision making used in this research attempts to correct for these shortcomings. It is based upon a model developed by Roedder John and Leong (1985), which in turn is patterned after the Elaboration

Likelihood Model used to describe the process of persuasion (Petty and Cacioppo 1981). The model for this study is shown in Figure 1. As illustrated by the model in Figure 1, a consumer's motivation and ability to engage in purchase decision making are a function of (1) a set of psychological characteristics unique to that consumer, and (2) his or her subjective evaluation of several dimensions of the environment. The set of individual characteristics leading to motivation and ability includes product involvement, task familiarity, market familiarity, and product knowledge. It is proposed that the consumer's perception of the purchase environment, along with individual characteristics, influences the motivation and ability to invest cognitive effort in purchase decision making.

A consumer who has motivation, ability, and who is free from the situational constraints such as time pressure and physical or emotional distractions will invest the greatest amount of cognitive effort in the decision process by using a compensatory strategy, i.e., evaluating each alternative across multiple attributes to maximize utility. Lacking motivation or ability, and in the face of time pressure or distractions, the decision strategy to be employed is determined by the presence of situational cues. When present, situational cues such as a recognizable brand name, product accessibility, or an expert opinion form the basis of a noncompensatory strategy to the purchase decision. Using a noncompensatory approach reduces cognitive effort in exchange for a choice that provides a

Figure 1. Model of the Consumer Choice Process



satisfactory, though not necessarily maximal, level of utility. When situational cues are lacking, the consumer avoids making a decision or resorts to random selection.

The purpose of this study is to investigate the impact of the environment on the decision process used to select a pharmacy for the purchase of prescription drugs. An empirical study is proposed which examines a portion of the model, i.e., the impact of a consumer's subjective impression of dimensions of the environment upon motivation and self-perceived ability to engage in purchase decision-making. In order to conduct the study the following objectives must be met:

1. characterize the dimensions of the retail market environment for prescription drugs
2. develop measures of these environmental dimensions
3. determine which dimensions are related to measures of consumers' motivation and self-perceived ability to make a purchase decision

II. LITERATURE REVIEW

Previous research about situational effects on consumer decisions and behavior was reviewed by Bonner (1985). The empirical research he surveyed and two conceptual articles by Punj and Stewart (1983) and Roedder John and Leong (1985), lead to three observations about previous attempts to study the effects of situations or environments upon consumers.

First, most researchers have sought objective dimensions to characterize purchase situations in the belief that the variability of individual perceptions would prohibit the development of useful generalizations (Belk 1975; Wicker 1975; Dickson 1982). The position adopted in this study is that environments are enacted, i.e., their influence depends upon the degree of attention and comprehension they receive in the minds of individuals (Achrol, Reve and Stern 1983; Day and Wensley 1988).

Second, researchers have studied situations, not environments. A situation comprises a point in time and space. Behavioral settings involve an interval in time and space. The concept of the environment extends the time, place, and behavioral intervals even further; situations and behavioral settings are subunits of the environment (Belk 1975). For example, within the health care *environment*, an individual might be located within the *behavioral setting* of a clinic to obtain care

for a sore throat. Within that behavioral setting, the individual possibly could encounter the *situation* of receiving a prescription order for an antibiotic.

Dealing with narrow temporal and spacial boundaries like those required to define situations has hindered the development of a taxonomy of situations that is applicable across a variety of consumer settings. Without a parsimonious set of situational characteristics, generalizations about situational effects cannot be generated.

The third observation about previous research regarding situational effects is that the term "interaction" has been used in two ways. In one application, interaction refers to the model of behavior developed by psychologist-theorists, i.e., the interactionist model. According to this perspective, behavior is a dynamic process of multidirectional feedback between the individual and the situation. The individual is an active agent, whose behavior depends upon cognitive and emotional factors (the person aspects) and the psychological meaning of the setting (the situation) (Magnusson 1981). Because consumer researchers are more familiar with interaction as a statistical term, several have taken an "interactionist" approach and focused upon the joint effects of person and situational variables (Punj and Stewart 1983; Dickson 1982). Main effects have been neglected. Statistical interactions between person factors and situations, however, cannot be the subject of inquiry until a set of relevant person and situational effects has been identified.

One model of consumer choice that clearly distinguishes among individual, task, and context effects was suggested by Roedder John and Leong (1985). In their scheme, these effects have either a positive or negative effect upon a consumer's motivation or ability to process decision related information. Both motivation and ability are needed to undertake a detailed and careful consideration of issue related arguments. If not willing and able to process attribute related information, an individual will use simple inferences and readily available cues to make a decision. This model of choice is useful for characterizing both initial information search and final selection processes. It takes into account a wide variety of situational and individual factors that have been shown to influence consumer decisions.

Roedder John and Leong note that empirical studies will require further refinement or modification of the proposed framework as well as the development of good operational measures to generate testable propositions. For the study proposed herein, the effect of individual perceptions of environmental variables will be investigated in place of the more narrowly defined situational influences. According to Roedder John and Leong, the most important individual characteristics are involvement, knowledge and experience, and decision importance. These remain essentially intact in this proposal. Roedder John and Leong proposed that individual and situational variables affect either motivation

or ability (but not both). This project will test the effect of individual and situational variables on both motivation and ability.

Scholarly journals from the fields of marketing, consumer behavior and pharmacy were reviewed for articles about the constructs in the model (Figure 1) and the ways in which these constructs are related to one another. Findings relevant to consumer decisions are summarized under the following topics: (1) the environment, (2) environmental dimensions, (3) individual characteristics, (4) motivation and ability, and (5) decision strategies and situational constraints and cues. The same topics then are reviewed as they relate specifically to the decision of interest in this study, selecting a pharmacy for the purchase of prescription drugs.

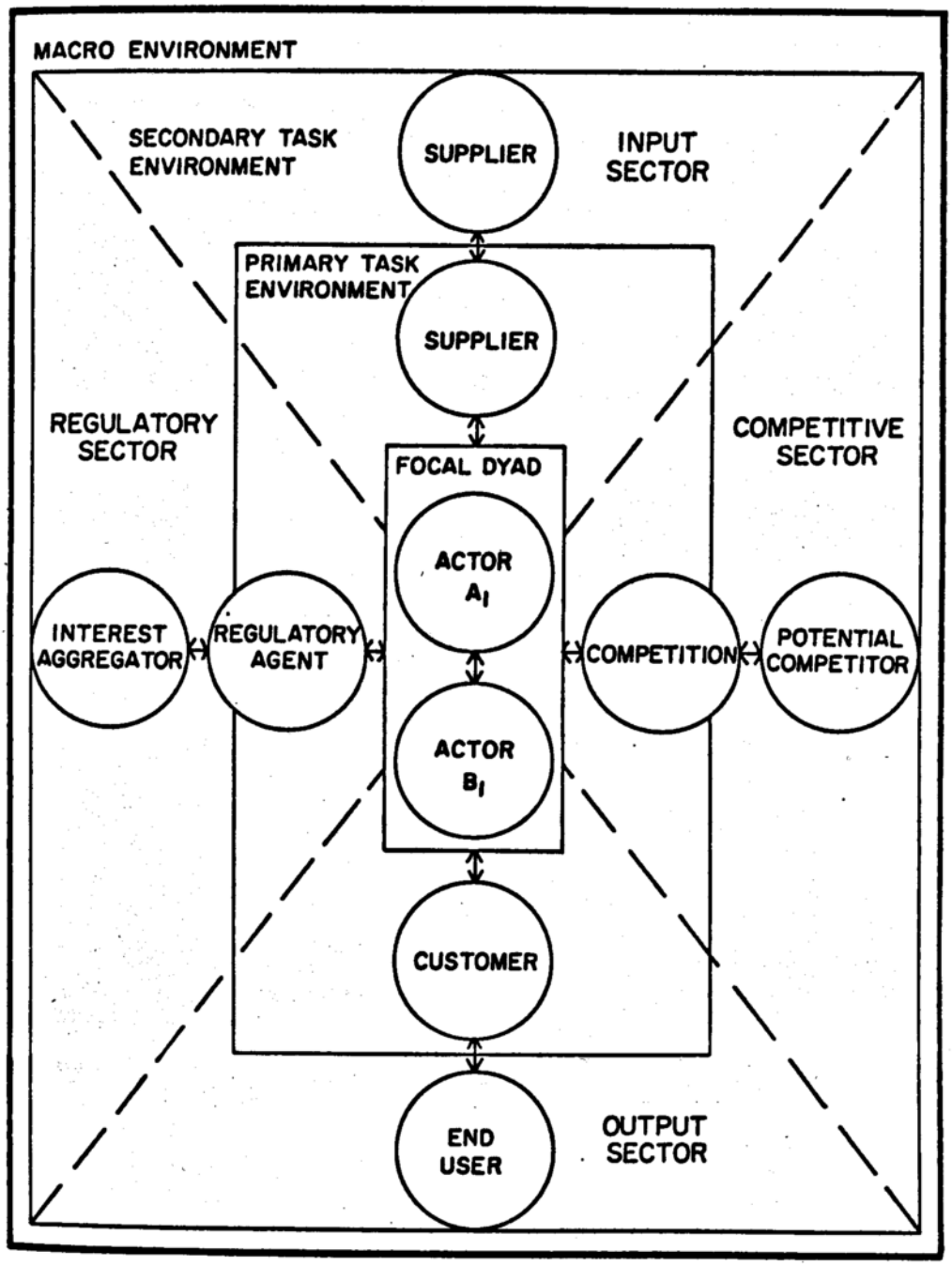
The Environment

The environment is a complex set of circumstances to which consumers are exposed over time. The environment is ubiquitous; no particular individual or group of individuals is exposed selectively. Environmental influences are separate from the combination of life circumstances unique to each person such as age, socioeconomic status and illness episodes. For example, an economic recession is an environmental circumstance which affects an entire community, but the condition of being unemployed is a circumstance which affects specific individuals.

The conceptualization and definition of the marketing environment used in this study are based on the approach taken by Achrol, Reve and Stern (1983). A marketing environment is defined with respect to a two-party unit of exchange called the focal dyad. Exchanges between members of the focal dyad are not limited to physical and monetary resources, but may involve the transfer of information, goodwill, identification, or social legitimacy. Members of the focal dyad constitute one link in the distribution chain extending from producers of raw materials to end users of the finished products.

The environment surrounding the focal dyad is divided into three levels: (1) the primary task environment, (2) the secondary task environment, and (3) the macro environment. Figure 2 depicts the three levels of the environment of a focal dyad in a prototypical marketing channel. The primary task environment of the dyad is comprised of parties with direct exchange relationships to the focal dyad, i.e., immediate suppliers and customers. The secondary task environment is made up of regulatory agents and the interest groups who influence them, direct and potential competitors to the channel dyad, and suppliers to the immediate suppliers. Figure 2 depicts two elements, regulatory agents and competitors, on the border between the primary and secondary environment. An individual actor or organization is categorized as a member of the primary and secondary environments based upon whether there is a direct (primary) or indirect (secondary) interaction with the focal dyad. The macro environment encompasses

Figure 2. Environment of the Marketing Channel Dyad[1]



[1] Reprinted from: Ravi S. Achrol, Torger Reve, and Louis W. Stern, "The Environment of Marketing Channel Dyads: A Framework for Comparative Analysis," *Journal of Marketing*, 47 (Fall 1983), p. 77.

the global social, economic, political, and technological forces which affect activities in the primary and secondary task environments.

The primary task environment, by definition, is comprised of parties with a direct exchange relationship to the focal dyad. The influence of an element of the primary environment on the dyad could be studied in the same way that one might study the relationship between members of the dyad itself. A number of approaches are available for the study of the relationship between two parties which could be expanded to include the influence of a third party. Although studying relationships becomes more complex if the two party interaction is extended to a three-way interaction or higher, the study can be addressed as a series of direct interactions among parties.

The macro environment represents relatively continuous change processes. Its effects on the focal dyad are filtered through, and can be measured by its influence on the secondary task environment.

It is the secondary task environment that is of interest in this research project. Elements of the secondary environment influence the character of the exchange between members of the focal dyad without directly participating in any dyadic transactions. A framework is needed by which the effects of the secondary environment on the focal dyad can be studied.

In order to measure the impact of the secondary task environment in terms that will allow for the development of generalizable theory, the secondary

environment is characterized as a parsimonious set of abstract qualities or dimensions. The set of dimensions provides a taxonomy within which individual observations about the environment can be categorized, and upon which generalizations can be drawn. For empirical studies, measures for each dimension can be developed by tapping items that are germane to the marketing channel under consideration.

This approach to characterizing the secondary task environment is consistent with evidence that consumers form abstractions from summarizing specific information bits (Chattapadhyay and Alba 1988). For example, the observation that an automobile achieves 30 miles per gallon is summarized as "good mileage" and the specifics forgotten. Abstractions are formed at several levels, with each successive level distinguished by increasing degrees of abstraction (Johnson 1984; Cohen and Basu 1987). There is support for the proposition that, after a delay, consumers' abstractions are significant predictors of their attitude (Chattapadhyay and Alba 1988). In the context of this study it is assumed that consumers form abstractions based upon specific events in the environment, and that these abstractions fall within one of the proposed environmental dimensions. Also, it is believed that these abstractions will predict motivation and ability to make consumer decisions.

Sources of influence in the environment come from four sources or sectors: input, output, competitive and regulatory. (Refer to Figure 2.) The influence of

each sector extends across all three environmental levels. The input and output sectors relate to vertical relationships in the marketing channel. The input sector consists of all direct and indirect *suppliers* to the focal dyad, whereas the output sector includes all direct and indirect *customers* of the dyad. The competitive sector involves actual and potential competitors of the dyad, and the regulatory sector includes governmental agencies, trade associations, the courts, and insurance companies which have the power to impose restrictions upon the terms of the dyadic exchange.

Environmental Dimensions

The environmental dimensions proposed for this study are drawn directly from Achrol and Stern's (1988) description of marketing channels environments and indirectly from Aldrich's book (1979) about organizational environments. The seven dimensions are: diversity, dynamism, concentration, capacity, conflict, interconnectedness, and interdependence.

Aldrich proposed six dimensions of organizational environments. Achrol and Stern added one dimension and developed operational definitions for them. They measured the seven dimensions as perceived by members of a retailer-wholesaler dyad, and studied the effect of these dimensions on the perception of environmental uncertainty. Dess and Beard (1984) also proposed operational definitions of Aldrich's environmental dimensions, but in more quantitative and

objective terms. Their aim was to develop a more rigorous definition of organizational task environments.

A definition of each dimension synthesized from these earlier works is given below. Subjective (Achrol and Stern) and objective (Dess and Beard) measures of the dimension are discussed. Some of the dimensions are closely related. Logic and theoretical statements which link one dimension to another are presented where applicable. Table 1 provides a summary of the definitions, and examples of items that have been used to measure them.

Diversity is the degree of similarity or differentiation among elements of a population. In their operational definition Achrol and Stern included items tapping two sources of perceived diversity, the competitors and the customers of the focal dyad. Objective measures of diversity from Dess and Beard consider the extent to which a large portion of an industry output is supplied from, or purchased by, a relatively few customers. It is surmised that a more diverse environment leads to greater uncertainty and additional information processing activities (Dess and Beard 1984; Achrol and Stern 1988). Also, it is commonly thought that organizations facing a diverse environment will have a more complex and more dynamic organizational structure.

Dynamism, according to Aldrich, is the degree of turnover among elements of a population. In operationalizing this dimension, Achrol and Stern limited their measure to the perceived frequency of change and turnover in marketing forces in

Table 1. Definitions and Measures for Dimensions of the Environment

Dimension and Definition	Subjective Measures (Achrol & Stern 1988)	Objective Measures (Dess & Beard 1984)
DIVERSITY degree of similarity or differentiation among elements of a population	variety of product brands/features demographic variability of customers product price-quality combination	Gibbs-Martin Formula diversity of customers by industry
DYNAMISM frequency and predictability of turnover among elements of a population	changes in products/brands carried changes in sales strategies of competitors changes in customer preferences	dispersion about regression line when dependent variable is profitability percentage of employees engaged in research and development
CONCENTRATION extent to which resources are controlled by, or concentrated in, a few or many actors	business resources enjoyed by top 4 dealers level of competitor domination market share of top 4 dealers	geographic concentration of: sales, manufacturers, facilities, and employment specialization ratio
CAPACITY level of resources available to elements of a population due to economic conditions and demand	potential for economic growth demand for brand carried demand for product category	growth in: sales, price-cost margin, value added, total employment, number of establishments industry sales concentration
CONFLICT level of abnormal competitive stress among elements vying for control of resources	price-cutting bait & switch tactics misleading ads competitive severity	
INTERCONNECTEDNESS number and pattern of linkages among relevant actors	number of dealers in local market with same products extent of comparison shopping competing dealers with same supplier	% of output sold as inputs to other industries % assets invested in other industries
INTERDEPENDENCE mutual reactivity and sensitivity to one another's acts among elements competing for resources	reactivity of dealers to sales promotions extent of monitoring reactivity of dealers to changing marketing practices	sum of all/direct/indirect requirements placed on a given industry if every industry increased output by one unit

the output and competitive sectors of the environment. Dess and Beard developed a series of regression equations evaluating the effect of several variables upon an industry's profitability. They used dispersion about the regression lines as an indicant of instability in employment, sales and profit margins within that industry. They used the percentage of employees engaged in research and development as a marker of technological instability. The influence of all sectors of the environment should be included in measures of dynamism. Items which rate the predictability of change as well as to its frequency should be included (Dess and Beard 1984).

Concentration is the extent to which resources are perceived to be controlled by, or concentrated in, a few or many organizations. This dimension was measured by Dess and Beard as geographic concentration of resources and outputs, and as the proportion of total sales derived from one or two products. Achrol and Stern had subjects rate their perception of the dominance of top competitors in controlling input, output and competitive sectors. To the extent that the market is controlled by a small number of competitors, concentration is negatively related to diversity.

Capacity is the relative level of resources available to elements of the population within the environment (Aldrich 1979), due to economic and demand conditions characterizing the output market's capacity to absorb resources of the focal dyad (Achrol and Stern 1988). Dess and Beard proposed a number of

objective measures of capacity including growth in sales, profit margin, personnel and material resources. The industry sales concentration or the degree to which sales are concentrated in the hands of a few, relatively large competitors was used as a capacity measure. Previous studies show this variable is a reliable predictor of industry profitability. Although Achrol and Stern limited their measure to the perceptions of potential growth in the output sector, it is not hard to imagine that regulatory and competitive factors also could affect one's perception of market capacity. Favorable market capacity will reduce dynamism and conflict in the environment.

Conflict is the level of abnormal competitive stress characterizing relations among actors vying for control of environmental resources. Aldrich, in writing about work environments, included a similar dimension he referred to as domain consensus. In adapting the dimensions to a market environment, Achrol and Stern included the construct of conflict as distinctive from "normal" competitive activity. Conflict is opponent centered and designed specifically to thwart the goal attainment of the other (Stern, Sternthal and Craig 1973). Achrol and Stern measured the presence of unfair competitive activity as a marker of conflict. In addition, conflict can be measured in terms of its frequency and intensity (Brown and Day 1981), as well as the degree to which specific strategies are perceived as being "unfair." Objective measures of conflict were not included in the study by

Dess and Beard because of "difficulties in applying this dimension to profit-making organizations."

Aldrich had described a sixth dimension called turbulence as the extent to which environments are being disturbed by increasing environmental interaction, and an increasing rate of interconnection. Aldrich proposed measuring the degree of turbulence by assessing trends in number and size of relevant organizations and the linkages among them. Marketing channels research considers dependence to be an important factor. The dependence of X on Y has been described as being directly proportional to X's motivational investment in goals mediated by Y, and inversely proportional to the availability of those goals outside of the X-Y relationship (Brown, Lusch and Muehling 1983). Achrol and Stern created two dimensions: (1) interconnectedness, and (2) interdependence to assess the outcomes of these relationships.

Interconnectedness is the number and pattern of linkages among relevant organizations. To gauge this dimension, Achrol and Stern measured the degree of common sources of input in the market of interest, the similarity of product offerings by competitors, and the degree with which customers were inclined to shop around due to these similarities. Because Dess and Beard did not separate components of turbulence, it is difficult to identify specific objective measures of this dimension in their study. However, their measures included evaluations of interconnections such as the ratio of products sold as inputs to other firms versus

those sold for consumption, the proportion of products sold to firms within the same industrial class and outside, and the percentage of assets invested in related industries. Long term contracts and a rigid management structure are other indicators of market interconnectedness. Interconnectedness among environmental elements creates uncertainty and instability for an organization and leads to interdependence (Pfeffer and Salancik 1978).

Interdependence is the mutual reactivity and sensitivity to one another's acts present among actors competing for output environmental resources. Achrol and Stern rated the extent of monitoring and the degree to which competitors react to various marketing activities in the output sector. Quantitative measures developed by Dess and Beard compute the effect on the requirements (direct, indirect and total) placed on a given industry if every industry increased output by one unit. Channels literature suggests that interdependence often leads to conflict.

These seven dimensions are similar to the types and number of environmental dimensions proposed by researchers studying the environment in other contexts. For example, through the use of multi-dimensional scaling (MDS), Wish and Kaplan (1977) found six dimensions of social situations: friendly/ hostile, cooperative/competitive, intense/superficial, equal/unequal, formal/informal, task-orientated/not task-orientated. In an environmental psychology study, Stokols (1981) identified seven environmental dimensions: complexity, content, heterogeneity, scale, clarity, contradictions and distortions.

James and Sells (1981) studied work environments in terms of autonomy, variety, importance of tasks, and challenge. Nystedt (1981) argued that the most common concepts used to describe how individuals identify and discriminate among situations are differentiation, complexity, unit and organization. Elements of each of these taxonomies are seen in the dimensions presented above.

Nystedt (1981) also described environments (also referred to as situations) as composed of substance, qualities, and relationships among the qualities. Environmental substance is the things, people, events, processes, rules, norms, etc., which define the situation. In this study, the marketing channels for prescription drugs and its constituents are the substance of the situation.

Qualities of the situation are both directly observable and abstract. According to Nystedt, qualities either promote or restrict a person's freedom of choice and thereby are distinguished from individual differences which limit that person's potential to interpret the situation in different ways. The environmental dimensions described above are qualities of the situation which will be investigated in this study.

Individual differences which affect interpretation of the situation are reviewed in the next section. That section is followed by a discussion of individual motivation and ability and suggestions about how individual differences might promote or restrict choice through their effects on motivation and ability. The

mechanism by which environmental dimensions affect motivation and ability form the bases for the research hypotheses and are presented later.

Individual Characteristics

Four individual characteristics have been included in the model as determinants of a subject's motivation and perceived ability to engage in a purchase decision. The four are product involvement, task familiarity, market familiarity, and product knowledge. Although involvement, familiarity, and knowledge are related, they are distinct constructs.

Product involvement is the self-relevance of the product to the individual. It is directly related to the strength of the association between the product of interest and an individual's needs, goals and values (Zaichowsky 1985; Costley 1988).

Involvement has been shown to affect the amount of effort the individual exerts in attention and comprehension of information, as well as the number and types of inferences generated (Burnkrandt and Sawyer 1983; Greenwald and Leavitt 1985; Celsi and Olson 1988; Cooper-Martin 1989). However, the amount of information search generated by product involvement depends upon product type. Mittal (1989) found that for a group of products rated as high involvement products by his subjects, information was sought for functional products, e.g, detergents, headache remedies, and vacuum cleaners, but not for expressive

products that reflected personality or mood, such as perfume, designer clothing, or souvenirs. Under high involvement conditions, consumers are more likely to select products that are compatible with their prestated preferences (Cooper-Martin 1989).

Familiarity is most often defined as the number of product related experiences. In the case of a retail patronage decision, there are two types of relevant consumer experiences. Task familiarity refers to past experiences in purchasing and using the product of interest. Market familiarity refers to experiences with alternative purchase sites. Familiarity is a necessary but not sufficient precursor of consumer knowledge (Guy and Curtis 1989; Alba and Hutchinson 1987; Bettman and Sujan 1987).

Knowledge involves the ability to comprehend, retain and retrieve product information. Although experience may enhance product knowledge, knowledge also may be gained through formal and informal education. Product knowledge involves technical knowledge of the product and implies the consumer can recall, analyze and elaborate upon information about the product. Knowledge has an effect on evaluative processes independent of involvement (Sujan 1985).

The distinction between familiarity and knowledge was not stressed until recently (Alba and Hutchinson 1987). Therefore, it is difficult to determine whether knowledge or familiarity is responsible for the effects reported in earlier consumer studies. The extent of information search, however, clearly is related to

familiarity and knowledge (Johnson and Puto 1987). Other researchers have shown that knowledge influences the types of meaning consumers attach to information bits (Burnkrandt and Sawyer 1983; Geenwald and Leavitt 1985).

In general, experience is found to reduce the amount of information search activity (Bettman and Sujan 1987), although this may imply that search becomes more efficient, e.g., less information is sought for inappropriate alternatives (Brucks 1985). At least two aspects of experience, width and depth, have been investigated separately (Punj and Srinivasan 1989). Depth refers to the total number of purchases in the category of interest, and width refers to the diversity of experience in terms of the number of different brands or alternatives. In at least one experiment depth of experience had a weak effect in determining the size of the evoked set; width of experience was somewhat more important.

It is reasonable to expect that particular demographic variables will be related to involvement, familiarity and knowledge. Slama and Tashchian (1985) found purchase involvement to be associated with gender, education, income, and stage of family life cycle. Knowledge and familiarity presumably are related to education, occupation and age. Task familiarity likely is associated with dollar expenditures, and length of residence in a community probably is related to familiarity with the retail market in a given community. Particular demographic variables will be associated with the degree of consumers' involvement, familiarity and knowledge of particular products. For example, in the case of a health care

product, health status is apt to be related to involvement, experience and knowledge.

Motivation and Ability

McGuire (1976) divided the internal characteristics of consumers involved in purchase decisions into two sets of factors. First there are the dynamic factors, i.e., those motivational forces responsible for initiating, continuing and terminating the decision making process. The motivation to process information has been conceptualized by most researchers in terms of consumers' involvement with informational stimuli (Celsi and Olson 1988). The motivation to consider the retail patronage decision, for example, would be manifested by the consumer's degree of purchase involvement.

According to McGuire, the dynamic aspect of decision making is complemented by a directive aspect of information processing. The directive factors include those characteristics that guide the individual through the steps leading to a purchase decision. After an individual is exposed to and perceives information, the decision process is dependent upon information comprehension, retention and retrieval. Whereas researchers generally agree that the dynamic aspect of information processing is synonymous with involvement, the directive aspect has been described under various terms.

Alba and Hutchinson (1987) defined expertise as the ability to perform product related tasks successfully. In their terminology, expertise is the quality which accounts for ease of comprehension and retention of relevant information, and the ability to retrieve and appropriately weigh specifics. Expertise allows an individual to analyze, elaborate and remember information.

Celsi and Olson (1988) claim that ability to process information is primarily determined by the amount and type of knowledge an individual possesses. Therefore, they choose the term domain knowledge to describe the ability to process information, and infer that relevant knowledge can be retrieved as required in a given decision situation.

Celsi and Olson (1988) argue that domain knowledge is not likely to be activated from memory unless subjects are sufficiently motivated to attend to and comprehend information. If motivated, consumers must retrieve relevant knowledge in order for comprehension to occur. Therefore, domain knowledge becomes increasingly important as the type of information processing progresses from relatively automatic (low involvement) to more controlled and focused comprehension (high involvement) processes (Greenwald and Leavitt 1985; Celsi and Olson 1988). If decision makers do not access information needed to make accurate judgments, they may make judgments based upon inferences (Roedder John, Scott and Bettman 1986). Differences in ability between experts and novices are apparent only if both are motivated to tap those abilities.

Ability to process information also can affect the evaluation of the choice outcome. Klein and Yadav (1989) found when a choice was rated "easy," consumers believed the quality of the outcome was the result of their search effort. For choices that were rated difficult or confusing, consumers' confidence and satisfaction with their decisions were lower.

Note that motivation and ability are characteristics of the decision maker which are developed in advance of the need to choose. Situational cues and constraints become operative when choice is imminent. It is the intent of this study to investigate relatively stable dimensions of the environment which might affect motivation and ability, rather than to dwell upon those circumstances which are proximal to choice.

Decision Strategies and Situational Cues

Different decision strategies are distinguished by the amount and type of effort required of the decision maker (Peter and Olson 1987). Compensatory strategies combine salient beliefs about the choice alternatives in such a fashion that negative attributes or consequences of a choice object can be balanced or compensated by its positive aspects.

Noncompensatory models require somewhat less effort because they do not entail mental manipulations to offset positive and negative features. There are several noncompensatory methods, each characterized by the type of rule used to

reduce the choice set. For example, to remain an active choice, an alternative might be required to meet some minimum level of performance on one or more critical attributes.

Using a cognitive heuristic is another way of reducing decision effort. A heuristic is employed if it is believed to be a good approximation to the conclusions reached by a more complex decision strategy. Using *if..., then* type propositions is an example: *if* this is the most popular brand in this product class, *then* it must be a good product.

The model under consideration here suggests that the consumer's level of motivation and ability govern the level of choice processing he/she is willing to undertake. If either motivation or ability are lacking, the consumer seeks situational cues to use as a basis for the construction of simplifying decision rules. Useful situational cues are tangible, accessible and substantive aspects of the environment at the time a choice must be made (Dickson 1982). If these cues are absent, the decision maker will try to avoid making a choice and maintain status quo. If forced to choose, the consumer will make a random selection. In some instances, the consumer might possess the requisite motivation and ability to engage in a compensatory strategy, but be forced by time pressures or other distractions to depend upon situational cues.

Besides the amount of time or effort required, the selection of a decision making strategy affects attitude formation and change (Roedder John and Leong

1985). Research demonstrates that attitudes formed as a result of detailed assessment of attribute information are more enduring (Petty and Cacciopo 1981). Attitudes formed with little or no cognitive elaboration persist only while the persuasion cues on which they rest are salient.

Pharmacy Selection

The decision of interest in this study is the selection of a pharmacy for the purchase of a prescription drug. Therefore, a brief review of the literature concerning pharmacy choice in terms of the constructs employed in the research model is appropriate.

Most of the literature involving pharmacy patronage decisions is concerned with the inputs to and outcomes of those decisions, and less with how the inputs are combined to reach the decision outcomes. Pharmacy patronage studies often report consumer demographics and pharmacy attributes associated with patronage of a particular pharmacy type (Lipowski 1988). The model proposed for this study is concerned with the choice process and does not generate predictions concerning which pharmacy or pharmacy type a consumer might prefer. Much of the following review required restating previous research findings in terms of the decision process framework being considered.

The Pharmacy Environment

The focal dyad in this study is the pharmacy-patient, or in marketing terms, the retailer-end user dyad. The primary environment of this dyad includes parties with direct links to one or the other member, e.g., the drug wholesaler inputs goods to the pharmacist, and the patient's significant others are impacted by the outcomes of the exchange. The secondary environment includes participants in four sectors: competitive (other pharmacies, dispensing physicians, mail order houses), regulatory (government, insurance companies), inputs (drug manufacturing industry, physicians), and output (consumer advocates and employee groups). General economic conditions, politics, technological advances and scientific discoveries are elements of the macro environment which influence the dyad through their impact on members of the secondary environment.

What follows is a brief description of the community pharmacy market in terms of the previously defined dimensions of the environment. Beyond this descriptive level, the author is not aware of any research which has investigated systematically the community pharmacy environment in comparable terms.

Diversity. Several prototypes have been used to describe the range of community pharmacy operations including: mass merchandisers and grocers which operate pharmacy departments within a larger store; large national and regional pharmacy chains; franchises; small, locally owned chains; single, independently owned pharmacies; and clinics. Eight dimensions of pharmacy image that

consumers could use to compare competitors have been identified, including location, personnel, size, merchandise mix, promotional strategy, reputation, business services and emergency services (Lipowski 1986).

Dynamism. Over the past four decades the number of community pharmacies has remained relatively constant at about 55,000 units, although the number of independent pharmacies has decreased and the number of chain pharmacies has increased (Schondelmeyer 1987). In 1986, 63.8 percent of community pharmacies were independently owned, down from 87.1 percent in 1970 and 92.3 percent in 1950. The increase in chain pharmacies relative to independently owned pharmacies has meant fewer neighborhood locations and more pharmacies in malls and retail centers, greater use of supportive personnel, increased size and greater variety of merchandise, increased promotional activity and reductions in services such as charge accounts, delivery, and prescriptions dispensed after hours in emergency situations.

During the same four decades, the revenue source for prescriptions has changed dramatically. The percentage of payments received directly from customers decreased from 85% in 1970, to 69% in 1986, and is projected to be less than 40% by 1995. The growth of third party payers for prescriptions has in effect added another element to the regulatory segment of the environment. The amount of reimbursement is increasingly determined by third parties, both private

and government, and less by pharmacists' prerogatives (Kushner and Feierman 1987).

Concentration. Approximately 1.5 billion prescriptions were dispensed in 1986. Independent pharmacies dispensed approximately two out of three prescriptions. Recall that the ratio of the number of independent to chain pharmacies is approximately the same, 2:1. Independents supply somewhat more than their share of third party prescriptions, although the gap has been reduced in recent years (Schondelmeyer 1987).

The source of prescription drugs is distributed among a large number of pharmaceutical companies, but patent restrictions and company specialization result in a high degree of concentration for specific therapeutic classes (Fuchs 1974). The drug wholesaling industry is highly concentrated, with the top five firms controlling almost 60 percent of the market nationwide (*Drug Store Market Guide* 1989). Concentration among the prescribers has increased as solo physician practitioners are being absorbed into larger group practices and managed health care institutions, many of which restrict physicians' prescribing options (Cocks 1987).

Capacity. The 1986 expenditures for drugs and medical sundries were $30.6 billion, up from $8.0 billion in 1970. Projections are that drugs will continue to be an important part of medical care in the future with new drug introductions based upon scientific discoveries. There is growth in the elderly segment of the

population which includes the heaviest users of drugs. Estimates are that drug expenditures will amount to $42 billion in 1990; $103 billion in 2000. Drug prices are rising faster than economy-wide inflation. However, the proportion of health care expenditures devoted to drugs will decline as other health care expenditures grow at an even more rapid rate (Schondelmeyer 1987).

The share of the market available to community pharmacies may diminish if alternative sellers of prescription drugs continue to grow as they have in recent years. Alternative sources for prescription products include mail order (about 6% of the market) and direct dispensing by physicians (about 3%) (Schondelmeyer 1987).

Conflict. Conflict in the competitive sector of the environment stems from activities some pharmacists would describe as being "unprofessional." These include discounting co-payments required of patients by insurance companies, insinuations about competitors in advertising, aggressive promotions directed against a specific competitor, and promotions that encourage people to transfer prescriptions and shop at multiple pharmacies which makes monitoring drug use difficult.

Conflicts in the input sector involve reconciling the humanitarian contributions of prescription drug manufacturers against their need to earn a profit, and the use of multi-tiered pricing (Fuchs 1974). The incursion by pharmacists into direct patient care activities once controlled exclusively by

physicians is a source of conflict between the professions (Hepler 1988). Managed care organizations consolidate the prescribers and payers, creating the potential for a conflict of interest between cost and quality (Fuchs 1974). On the regulatory side, pharmacists rebel against what they perceive to be unnecessary restrictions and loss of autonomy to both government and health care insurers (Hepler 1988).

Interconnectedness. Pharmacists traditionally have been linked by professional affiliations, but the competitive sector increasingly has become interconnected through business ties. Single-unit independents have given way to multi-unit operations. Remaining single-unit independents have come together to form cooperatives and service organizations. Other health care institutions such as hospitals have integrated horizontally and are operating outpatient pharmacies.

Interconnections exist in other sectors, too. Physicians have a financial incentive or investment in most managed health care organizations. The prescription purchases of large groups of consumers are linked to their health insurance plan, and pharmacists are linked to the plan by written contracts.

Interdependence. Pharmacists' reaction to third party contracts is a prime example of interdependence. They accept terms with little opportunity for negotiation, and participate because their nearest competitor does. In addition, insurers follow each other's lead in determining benefit levels for enrolles and contract terms to health care providers. Pharmacists are dependent upon physicians to generate demand for their services, and pharmacists react to the

dictates of drug manufacturers and the insurance industry in determining the price for their products and services.

An element of market competition has been fostered to induce changes in the U.S. health care system as a means of reducing costs (Enthoven 1987). These changes have produced changes in the pharmacy marketplace, some of which may be more apparent to consumers than others. It is not known whether consumers' perceptions of the environment are congruent with the more factual description of the pharmacy marketplace.

Characteristics of Pharmacy Patrons

Product involvement. Although there are studies which report that over-the-counter medications such as headache remedies have been classified as moderate to high involvement goods (Zaichkowsky 1985; Mittal 1989), no studies were located in which product involvement with prescribed drugs was evaluated.

Doucette (1988) investigated product perceptions of consumers who require prescription drugs for chronic conditions. Although the ultimate goal was to relate perceptions to consumers' needs, goals and values, a preliminary study was needed to investigate the nature and extent of their perceptions. Through the use of factor analysis the dimensions identified were: safety, efficacy, necessity, convenience, and aesthetics. Future studies are needed to compare perception ratings with consumers' goals and values.

There are several research studies addressing consumers' concerns and risk perceptions with respect to prescription drugs, and with respect to generics (CBS Television 1984; Bearden and Mason 1978; Carroll and Jang 1981). It was found that consumers are concerned about safety, effectiveness, and price. One survey investigated the relationship of perceptions to drug use and discovered that respondents who rated prescription drugs as unsafe used approximately 60 percent fewer prescription drugs than respondents who rated them as somewhat safe or safe (Grahn 1988).

Task familiarity. About 58 percent of the persons in the 14,000 households interviewed for the National Health Care Expenditures Study in 1977 had at least one prescription in the six months prior to the survey (Kasper 1982). Higher frequency of use occurred among the very young (65.5% of children under the age of six), and older age groups (69.1% of persons age 55-64 and 75.2% of persons age 65 and older). About 65 percent of women had prescriptions compared to 51.2 percent of the men. The likelihood of using a prescription medication did not vary by income, education, place of residence (urban or rural), or geographic region.

Among those who used prescribed medication, the number of prescriptions used annually averaged 7.5 per person. The average number for women was 8.3 and for men was 6.4. The number increased with age as persons aged 55 to 64 years old averaged 11.9 and persons over 65 years old averaged 14.2 prescriptions

per year. The number of prescriptions used was inversely related to income and education, and directly related to self-rated health status. There were no differences in the level of use by geographic region or by place of residence (urban or rural).

Market familiarity. The majority of consumers purchase most of their prescriptions at a single pharmacy. This figure increases with age; a large majority of persons over age 65 report having a single pharmacy for the purchase of prescription drugs (Wiederholt 1987b). Therefore, the degree of experience with multiple purchase sites might be lower than with other types of goods such as food and clothing. On the other hand, people may have occasion to shop at multiple pharmacies for other types of merchandise.

Product knowledge. Patient medication knowledge includes awareness of the drug name, purpose, administration schedule, adverse effects, or special administration instructions (Ascione, Kirscht and Shimp 1986). In addition to measuring drug knowledge itself, some investigators have measured drug knowledge as it relates to an understanding of the disease being treated.

One exceptionally thorough study compared reports of patients visiting the University of Michigan outpatient clinics with taped recordings and written reports of physician office visits (Ascione, Kirscht and Shimp 1986). Of 187 persons involved in the study, 82 percent correctly stated the dose, timing and administration instructions of medication they were taking on a chronic basis, 60.8

percent knew the purpose of the drug and and 62.1 percent knew the appropriate action if a dose was missed. Only 9.7 percent accurately provided side effect information. Patients who were correct about one item often were incorrect on another. Knowledge of drug purpose was dependent upon the patient's ability to match the drug with a particular disease. Patients who were willing to ask for clarification and to utilize nonmedical sources of information also were more likely to understand the drug's purpose. These results are consistent with other research.

In most cases it is logical to assume that experience with a product or service increases knowledge. In a study of non-elderly patients, it was determined that persons with more physician visits per year were more knowledgeable about the workings of the health care system, especially the legal, regulatory and certification aspects (Newhouse, Ware and Donald 1981). However, multiple prescriptions may actually confuse patients. As the number of drugs increased, the Michigan study found that patients were less likely to know the dosage regimen (Ascione, Kirscht and Shimp 1986).

Consumers frequently report they want and need more information about prescription drugs (CBS 1984; Shepherd and Crawford 1987). On this basis, one expects that collectively consumers would not rate their subjective knowledge of prescription drugs very high.

Motivation and Ability of Pharmacy Patrons

In a study of husband-wife decision making for the selection of health care providers, Funk (1987) found that couples with newborn infants were likely to expend less effort to select a pharmacy than they would to select other types of health care providers. No other studies were located that directly measured purchase decision involvement or the amount of effort consumers were willing to expend in deciding which pharmacy to patronize.

Ability is characterized by decisions whose outcomes are predictable and adequate, and consumers do report high levels of satisfaction with the pharmacies they patronize (Sandoz 1987). However, consumers who have experienced additional services report improvement in their attitudes toward pharmacy and want these services to continue (Norwood 1975; Shepherd and Crawford 1987). Consumers may lack knowledge of the attributes that could be considered.

Decision Strategies and Situational Cues for Pharmacy Choice

Again, this aspect of pharmacy choice has not been addressed per se. Known studies of pharmacy image do not indicate which factors, if any, are relevant to the choice strategy. Any of the determinant attributes identified by previous research (Wiederholt 1987a) could be construed either as one of many attributes considered in a compensatory strategy, or as the factor upon which the consumer based his noncompensatory strategy or heuristic.

Another possibility is that consumers are not conscious of their decision for pharmacy patronage, and identify as determinants attributes which are not considered. For example, consumers say price is an important factor (Gagnon 1977), but tend to make all purchases at a single pharmacy instead of comparison shopping, and generally do not rely on posted prices (Bernacchi, Gitersonke and Kono 1980). In a nationwide survey, consumers rated their regular pharmacy as higher priced than other pharmacies, yet were satisfied (Sandoz 1987). One explanation for this pattern is that consumers use the price-quality heuristic to choose their pharmacy. Another explanation is that high price is compensated by the presence of favorable and more highly valued attributes considered by the consumer.

Summary of Literature Review

Several conclusions can be drawn from the review of the literature. First, dimensions originally proposed to describe organizational environments have been adapted to describe the environment at the retailer-wholesaler level of a marketing channel. There is some evidence of association among these dimensions and their effect upon perceptions of uncertainty. It is possible that the same dimensions might be useful in describing the consumer's view of the environment and assessing its effects upon decision making.

Second, previous research concerning product involvement, familiarity and knowledge suggests that these attributes affect an individual's motivation and ability to engage in some degree of information processing to reach a purchase decision. However, information about how the seven environmental dimensions affect a decision maker's motivation and self-perceived ability is lacking.

Third, there are data from sources such as government agencies and professional and trade associations about the health care environment and the pharmacy practice environment in particular. Some information is available about consumers' involvement, familiarity and knowledge of prescription drug products, but little is known about consumers' perceptions of the pharmacy practice environment. Even less is known about how perceptions of the environment, involvement, familiarity and knowledge influence motivation and self-perceived ability to reach a pharmacy patronage decision. This study is intended to provide some insights on how the environment affects the decision making process of pharmacy patrons. It may provide clues as to how market environments affect consumers when they are considering other types of purchases.

III. RESEARCH HYPOTHESES

Based upon the literature reviewed prior to the initiation of this study, no known studies have investigated the relationship between environmental dimensions such as those described by Achrol and Stern (1988) and consumer decision making. Therefore, the research hypotheses are based upon two generalizations gleaned from the literature review, and upon the researcher's best judgment. The first principle is that as uncertainty increases, information acquisition priority or motivation increases (Roedder John and Leong 1985; Simonson, Huber and Payne 1988). The second principle is that if the available information is useful for discriminating among alternatives, a decision maker is more likely to recall that information and use attribute based judgment, i.e., motivation and ability are increased (Lynch, Marmorstein and Weigold 1988).

H1: An individual's perception of the degree of diversity in the environment is positively related to motivation and positively related to ability.

Achrol and Stern (1988) found that diversity leads to increased uncertainty; greater uncertainty leads to increased information processing activity. If consumers are aware that there are differences among pharmacies, they should be motivated to select that outlet which best meets their needs and expectations.

The presence of diversity alerts a consumer to attributes across which pharmacies may be compared. Information which distinguishes alternatives can be recalled and used in attribute based decisions.

Diverse environments are more complex or less structured so that the consumer may find them more difficult to comprehend. Although it may be more difficult to gather information regarding each pharmacy's performance on each of the attributes, consumers will perceive that they could acquire the necessary information to make their selection.

H2: An individual's perception of the degree of dynamism in the environment is positively related to motivation and positively related to ability.

If a factor affecting a choice changes, uncertainty increases and the motivation to evaluate alternatives will increase. Changes are rich in information. They provide an incidental learning experience that constitutes the basis for evaluation. Therefore, a consumer's perception of the dynamism in a market will be positively related to self-perceived ability to choose.

H3: An individual's perception of the degree of concentration in the environment is negatively related to motivation and negatively related to ability.

In a concentrated market, competitive behavior is reduced. The few controlling organizations will be viewed as operating in tacit collusion, with remaining organizations meeting the competition in order to survive. Thus uncertainty decreases and the ability to gather information a decision maker needs to act is reduced. As a result, it is hypothesized that both motivation and ability will be decreased as increases in perceived concentration decrease the size of the choice set.

In that concentration reduces diversity, it is consistent that the effects of increased concentration are opposite of those anticipated for increased diversity.

H4: An individual's perception of the degree of environmental capacity is negatively related to motivation and negatively related to ability.

Consumers' perceptions of the capacity of the environment to sustain further growth will decrease uncertainty. The greater environmental capacity, the less individual pharmacies need to differentiate themselves from the competition to remain profitable, and the less comparative information is available to consumers. The net result is a decrease in motivation and ability to evaluate the market.

Because increased capacity reduces dynamism, it follows that the effects of increased capacity will be opposite those resulting from increases in dynamism.

H5: An individual's perception of the degree of conflict in the environment is positively related to motivation and positively related to ability.

Consumers' perception of aggressive competition among pharmacies will motivate them to consider their shopping alternatives. The information content of these "prescription wars" also provides the consumer with input that will increase their ability to consider the prescription marketplace.

To the extent that a powerful element acts as a market leader, or that a few strong organizations act in tacit collusion, conflict is decreased. Therefore, it is consistent that the expected effects of concentration are opposite the hypothesized effects of conflict.

Because high capacity environments are thought to reduce conflict among competing elements, it is consistent to suspect that the effects of increased capacity will be opposite the effects of conflict.

H6: An individual's perception of the degree of interconnectedness in the environment is negatively related to motivation and negatively related to ability.

As consumers perceive that there are linkages among their health care network, they perceive that their choices are limited or non-existent. Therefore, they will not be motivated to engage in extensive decision strategies, and they will

not have bothered to acquire or mentally elaborate on the information inputs under these circumstances.

Achrol and Stern (1988) postulated that interconnectedness leads to increased uncertainty and reduced stability. However, these hypotheses received little or no support in their study.

H7: An individual's perception of the degree of interdependence in the environment is negatively related to motivation and negatively related to ability.

The perception of interdependence will lead consumers to characterize that particular market as oligopolistic, thereby decreasing their motivation to engage in extensive decision making. Interdependence will make attribution difficult; the consumer will not know which agent is responsible for the outcomes they experience. Their ability to evaluate individual actors is decreased.

Increased interdependence frequently leads to increased conflict. In fact, without interdependence there would be no conflict. The effects of interdependence might be expected to be the same as the effects of increased conflict. However, conflict is not inevitable. Further, Achrol and Stern found that increased interdependence reduces uncertainty. It is this finding which is consistent with the argument above, and leads to the prediction that interdependence will not produce the same effect as increased conflict.

H8: An individual's product involvement is positively related to motivation and positively related to ability.

High involvement goods have been shown to promote increased attention to and comprehension of information. Perceived risk has been shown to increase motivation to process information (Roedder John and Leong 1985), and concern for product safety is known to be a component of consumers' perceptions of prescription drugs. The acquisition of additional information will increase the self-perceived ability to make a better decision (Roedder John and Leong 1985).

H9: An individual's task familiarity is negatively related to motivation and positively related to ability.

People are known to be more likely to process information by attribute for one-time decisions. Over time, as they encounter the same decision task, they are less likely to scrutinize attribute information (Roedder John and Leong 1985). People who experience satisfactory outcomes of their decisions are less likely to engage in further search (Bettman and Sujan 1987).

The reason that experienced consumers are less motivated to process more information may be attributed to increased decision making abilities and

efficiencies in their information search activities. Their perceived ability to make elaborate decisions is thus expected to increase.

H10: An individual's market familiarity is positively related to motivation and positively related to ability.

Unlike task familiarity, market familiarity will increase the motivation to make an attribute based decision when selecting a pharmacy. Because pharmacy services are experience goods, consumers must have experience dealing with several alternatives in order to have the information available upon which to make their decision. The rationale behind the positive association of market familiarity and perceived ability is similar to the association between task familiarity and ability.

H11: An individual's product knowledge is not related to motivation and is positively related to ability.

A directional hypothesis is not generated for the relationship between product knowledge and motivation because previous research reveals that the relationship is complex. Consumers who believe they are knowledgeable about prescription drugs may not believe they are as dependent upon the services of the

pharmacist. There is some evidence that consumers with moderate knowledge are the most apt to seek information, whereas novices rely upon heuristics because of lack of ability, and experts depend upon prior knowledge of key attributes. Therefore, no prediction about the association between product knowledge and motivation will be made.

It is assumed that persons knowledgeable about prescription drugs also will consider themselves capable of evaluating alternative pharmacies.

Table 2 is a summary of the direction of the hypothesized relationships among the study variables.

Table 2. Summary of the Hypothesized Relationships Between the Independent and Dependent Variables[1]

		DIRECTION OF HYPOTHESIZED RELATION	
	INDEPENDENT VARIABLE	MOTIVATION	ABILITY
H1	Diversity	(+)	(+)
H2	Dynamism	(+)	(+)
H3	Concentration	(-)	(-)
H4	Capacity	(-)	(-)
H5	Conflict	(+)	(+)
H6	Interconnectedness	(-)	(-)
H7	Interdependence	(-)	(-)
H8	Product Involvement	(+)	(+)
H9	Task Familiarity	(-)	(+)
H10	Market Familiarity	(+)	(+)
H11	Product Knowledge	(±)	(+)

[1] (+) means a positive relationship; (-) means a negative relationship; (±) means no directional relationship hypothesized.

IV. METHODS

Study Design

Hypotheses will be tested using descriptive data gathered in a cross-sectional field survey of three communities in Wisconsin. To maximize the variability of respondents' perceptions of the environment, a sample of households was selected from three localities with different pharmacy practice environments. Five cities and the counties in which they were located were investigated as potential survey sites. Data about Dane County, the author's home county, were gathered primarily for comparison purposes. Secondary data describing the four sectors of the environment (output, regulatory, input and competitive) were obtained from a variety of government and commercial sources. Based on this information, three sites were chosen for the survey: Green Bay (Brown County), Janesville (Rock County) and La Crosse (La Crosse County). The selections were confirmed after conducting informal telephone interviews with three knowledgeable pharmacists employed in these cities. The interviews were used to: (1) verify impressions gleaned from secondary data sources, (2) obtain more current information, and (3) gather qualitative information. The three survey sites are located in different geographic areas of the state: the west, northeast, and south central. A brief description of each survey site follows. Selection criteria, data and sources of data for all six sites are reported in detail in Appendix A.

Green Bay is the fastest growing community of those examined, having had a six percent increase in population over the last five years. Almost a quarter of employed persons work in manufacturing, primarily in nondurable goods (paper products). Green Bay has the lowest proportion of board certified physicians on its hospital staffs, and physicians there are more apt to maintain independent practices. Only one managed health care plan has been offered to state employees in that area over the past six years, and that is offered by an insurance firm out of the area. There has been some turnover among pharmacies in the past five years with three new, six closed, and one moved. In Brown County, the average sales per pharmacy, and pharmacy sales per capita are the lowest among the potential survey sites, although there are relatively few pharmacies for the size of the population. Only one pharmacy belongs to the state-wide Independent Pharmacists' Cooperative (IPC).

Janesville has a slightly greater proportion of employed persons engaged in manufacturing than does Green Bay. Unlike Green Bay, however, Janesville's manufacturing is largely durable goods (automobiles and trucks) which makes the local economy more sensitive to national economic conditions. Compared to the other cites, Janesville has the lowest proportion of workers engaged in service occupations, including retail trade. The population of Rock County has declined over the past five years. There are two major physician clinics which are affiliated with competing HMOs. In 1989 there were four managed health care plan

options for state employees in Rock County, and none of the four was present five years earlier. There is only one hospital. Whereas La Crosse County has 7.59 hospital beds per 1000 persons, Rock County has 1.50. Pharmacy sales per capita have increased by 82 percent in the last five years and now are the highest among the potential study sites. One pharmacy closed since 1984 and five others have moved to new locations. Four, or 67 percent, of the locally owned pharmacies belong to IPC.

La Crosse has the highest proportion of persons employed in service based businesses (i.e., retail and financial) of all sites considered. A state university campus is located there, and its enrollment is large relative to the population. The city serves as a regional medical center, and its hospitals offer highly technical services. The local clinic is the largest physician clinic in Wisconsin in terms of the number of persons employed. There are three HMOs, two of which are locally owned and operated. One HMO was in existence in 1983 when the HMO option first became available to state employees. The average sales per pharmacy in La Crosse County is highest of all sites examined, although the average sales per pharmacy figure has declined in the past five years. Only one pharmacy belongs to IPC. Over the past five years there has been little turnover among pharmacies. There are only two free-standing national or regional chain pharmacies. However, there are three pharmacies located within mass merchandise stores and three more are planned.

Data Collection Form

Development of form. A mail survey form was designed to gather data including the respondent's: perception of the pharmacy marketplace across the seven dimensions of the environment; product involvement, task familiarity, market familiarity, and product knowledge; motivation and self-perceived ability to engage in a formal decision process to select a pharmacy for the purchase of a prescription drug; and demographic and socioeconomic characteristics. The complete form used in the pretest is presented in Appendix B.

Scales to gauge consumers' perceptions of the pharmacy marketplace were constructed specifically for this study. To generate the items, a two-way table was prepared. The seven dimensions of the environment were listed on one side, the four sectors of influence on the other, thus creating a table with 28 cells. Items used by Achrol and Stern (1988) for evaluating the environment in a marketing channel of distribution provided a starting point. Additional items were generated in an effort to represent each item and sector combination. The resulting measure included 43 statements. The facets of each dimension to be included are presented in Table 3 and are numbered to correspond with the statements in section A of the questionnaire given in Appendix B. Respondents were asked to indicate their degree of agreement or disagreement with each statement using a five point Likert scale.

Table 3. Facets of Environmental Dimensions Selected for Consumer Perception Scale

Capacity	1. economic outlook for growth in local retail pharmacies
	2. future growth in market for prescription drugs
	3. profitability of retail pharmacy
	4. financial investment required for pharmacy
	5. prospects for national health insurance program
	6. job market for pharmacists
Concentration	7. concentration ratio for local retail pharmacy
	8. number of alternative outlets
	9. degree of specialization among retail pharmacies
	10. concentration among pharmaceutical manufacturers
Conflict	11. comparative ads
	12. price competition
	13. aggressiveness of competition
	14. professional bonds among pharmacists
	15. conflict posed by physician dispensing
	16. overuse of drugs
	17. conflict of interest between profit and drug use advice
Diversity	18. geographic dispersion
	19. diversity in price and service
	20. diversity in merchandise mix
	21. differences in degree of confidence placed in pharmacist
Dynamism	22. changes in laws and regulations
	23. new insurance and government regulations
	24. new drugs and treatments
	25. employee turnover among pharmacists
	26. predictability of change
	27. business turnover and change in retail pharmacy
	28. increasing interest of consumers in their health care
	29. difficulty establishing doctor-patient relationship

Table 3 (continued)

Interdependence	30. autonomy of pharmacist employed by chain
	31. promotion as a response to competitors' promotions
	32. government and insurance influence on drug prices
	33. manufacturers influence on price levels
	34. pharmacists' reliance upon goodwill of physicians
	35. consumers' choice a response to insurance incentives
	36. pharmacists' reliance upon goodwill of patrons
Interconnectedness	37. professional bonds among pharmacists
	38. link between pharmacy choice and insurance plan choice
	39. degree of independent ownership of pharmacies
	40. government licensing control over pharmacy
	41. power of consumer groups to change health care system
	42. degree of regulation of pharmacy
	43. power and influence of pharmacy within health care system

In the few years since the distinction among involvement, familiarity and knowledge has been emphasized, several methods of measuring each of these constructs have been proposed. At least two methodologically sound measures of product involvement exist, one is multidimensional (Laurent and Kapferer 1985) and the other, the Personal Involvement Inventory, is unidimensional (Zaichowsky 1985). Several publications attempting to reconcile the two approaches have appeared (McQuarrie and Munson 1987; Mittal 1989; Higie and Feick 1989; Jensen, Carlson and Tripp 1989).

The Laurent and Kapferer scale for product involvement was developed in French and has not been published in its entirety in English. It is debatable whether the multiple facets purportedly tapped by this scale are purely involvement dimensions, or whether they are antecedents and consequences of involvement (McQuarrie and Munson 1987; Mittal 1989). The Personal Involvement Inventory (PII) is a 20-item, seven point semantic differential scale that has proven to be reliable in testing with more than 30 product types including nonprescription analgesics (Zaichowsky 1985; McQuarrie and Munson 1987; Ram and Jung 1989). The PII has been criticized for containing attitudinal items and a tendency to overestimate involvement for "humble but useful" products (McQuarrie and Munson 1987), but it has shown good nomological validity (Ram and Jung 1989; McQuarrie and Munson 1987; Higie and Feick 1989). The

advantages of the PII are its suitability for a wide range of products and its unidimensionality.

The Personal Involvement Inventory (PII) was selected as a measure of product involvement for this study because the PII has been used widely and its psychometric properties are excellent. The descriptors contained in the scale were compared with those used to obtain an assessment of consumers' perceptions of prescription drugs (Doucette 1988). The PII includes at least one word pair that corresponds to each of the eight dimensions described by that research. This scale constitutes Part B on page 5 of the questionnaire contained in Appendix B.

Guy and Curtis (1989) developed two scales for the measurement of product familiarity. One is a 23-item comprehensive inventory, the other a four item global scale. The shorter scale is recommended for manipulation checks, covariate analysis, or when using familiarity as one of a number of variables in a larger model. The short scale is a self-rating instrument designed to capture the total number of product related experiences, familiarity compared to all other products, and familiarity in comparison to other consumers.

The Guy-Curtis Scale could not be used without modification because this study presumes separate effects from consumers' familiarity with product and with purchase site. Thus two measures are proposed. Task familiarity will be gauged by a series of objective questions concerning the frequency with which the respondents shops at a pharmacy and the respondent's experience in purchasing

prescription products, including the number of prescription purchases and whether such use is for an acute or chronic condition. (These items are contained in Parts C and D of the pretest form in Appendix B.) Market familiarity will be measured by asking questions about the number of pharmacies visited, work experience in a pharmacy or an occupation related to prescribing, administering or monitoring drugs, and number of years of residence in the study community (parts C and E of the form in Appendix B.)

Product knowledge has been measured both objectively and subjectively, and the results of the two methods are not necessarily well correlated (Brucks 1985). Generally, objective knowledge scores are obtained by testing the respondent with questions about the product. Reliable tests of this nature are difficult to construct, and must be developed separately for each product or product class. In this study, no one objective test could cover all possible individual drug products or product types, and be suitable for both experienced and inexperienced consumers.

A subjective product knowledge scale was described by Johnson (1984) and used by Celsi and Olson (1988). The scale is anchored with descriptive statements; subjects rate themselves relative to the training and experience of a novice and an expert. Using Johnson's descriptors as a basis, a series of statements regarding subjects' knowledge of the name(s), purpose, and side effects of drugs they are taking now or have taken in the past were developed. A

knowledge rating was devised based upon the number of statements about drug use, technical information and treatment rationale about which respondents agree that they are knowledgeable. These statements form Part D of the survey instrument (Appendix B).

Motivation is considered synonymous with purchase involvement (Celsi and Olson 1988). A five point Likert scale designed by Slama and Tashchian (1985) is available to measure purchase involvement but it taps the state of arousal for shopping in general, as well as for specific purchases. It also includes attitudinal and behavioral correlates of involvement rather than just the state of involvement itself. For example, time spent thinking about the purchase or searching for information are behavioral outcomes of the state of involvement. An attempt was made to avoid attitudinal or behavioral statements, but if these outcome statements are well correlated with involvement, the scale still will demonstrate a high degree of reliability and nomological validity. Also, statements from the Slama-Tashchian shopping involvement scale were rewritten so that the statements specify shopping for prescription drugs. Instead of using 33 items as in the original scale, the number was reduced to 15 by grouping like statements and retaining only representative statements from each grouping. These items are statements number one through 15 of Part C.

Ability could be measured both objectively and subjectively. One way to measure ability objectively might be to count the number of "correct" perceptions

of the environment registered for selected items. Consensus by a panel of experts could be used to determine which responses are correct. For this study, however, a multi-item psychometric scale was developed to measure subjective ability, based on previously identified markers of ability. Persons with ability are able to analyze, elaborate and remember information (Alba and Hutchinson 1987). They have confidence in their decisions, and find the outcomes predictable and acceptable (Achrol and Stern 1988). They are self-reliant in their decision making and less apt to seek the advice of others (Brucks 1985).

There are two difficulties with developing a subjective measure of ability. The first is selecting items that do not overlap with items being used to measure other traits. For example, consumers may not seek advice because they are not motivated to acquire additional information, or alternatively, because they believe they already have adequate information. The second difficulty is raising the level of involvement, for without involvement or motivation, the consumer will make a purchase decision irrespective of ability (Celsi and Olson 1988). To raise involvement, the ability items were framed with respect to giving advice to a new neighbor about selecting a pharmacy. It has been shown that in a gift giving situation, when the product is being judged by someone the purchaser holds in some regard, shopping becomes a high involvement task (Belk 1982). By analogy, it is assumed that being asked for a recommendation will create a higher level of

involvement, even if one's personal decision for the same purchase is not a high involvement decision.

Likert statements to assess perceived ability are items 16, 17 and 19 of Part C, Appendix B. Item number 18 was included as a possible verification item. The phrase, "It is easy to (choose a pharmacy)," has been used previously as a way to rate perceived ability (Klein and Yadav 1989).

The final section of the pretest questionnaire (Part E, Appendix B) included several demographic and socioeconomic variables useful for determining the representativeness of the sample and comparing subsamples of respondents. These variables included: respondent's gender, age, educational attainment, employment status, past or current occupation, household income, household size, health status, out-of-pocket health care and prescription expenditures. Finally, respondents were invited to give their comments about pharmacies, health care services or the survey itself in the space at the end of the questionnaire.

Six graduate students and four faculty members in pharmacy administration screened the form for typographical errors and commented upon the content, organization, and readability. The question sequence began with the environmental perception statements in order that the subject be thinking about the environment in general, not a specific personal shopping experience. Within the first section, statements were grouped by dimension. Although there was the risk that respondents would develop a response set, this order provides continuity

of thought according to the persons who screened the form. The PII followed the environmental perception ratings. This provided a change of pace and it was presumed that subjects would more likely respond to this relatively difficult section before they became bored or fatigued. The motivation and ability measures were next, and demographic questions last.

The questions were typed on ten pages. The pages were reduced in size, copied onto buff colored paper and assembled as a booklet measuring 8 1/2 by 6 inches. The cover page of the booklet was self-addressed and stamped for return mail; the back cover was blank.

A cover letter was drafted stating that health care providers and policy makers are interested in how consumers have been affected by recent changes in the provision of health care services. Potential respondents were told they were one of a small number of randomly selected households being asked to submit their opinion on this important topic. They were assured of confidentiality and given a telephone number to call in case of questions. (See Appendix B for complete text of the cover letter.) Respondents were asked to complete the form, staple or tape it closed and drop it in the mail.

Pretest. Seventy-five names were selected by systematic random sample from the telephone directories in the three study communities. The mailing was hand stamped and addressed to respondent by [name]/or current resident. Each envelope contained a $1 incentive. They were mailed on Monday, 16 October

1989. Two (2.7%) were returned as undeliverable. One week later, a bright gold postcard was sent thanking those who had already responded and requesting a reply from those who had not.

Thirty-six responses were received, 49.3 percent of those presumed delivered. Because this response rate was lower than desired, ten of the sampled households were selected at random and contacted by telephone. Three persons declared they had returned the survey form. Two persons stated they did not respond because of age-related difficulty in completing the form, and one had not responded due to lack of time and interest. Most interesting, however, were the four persons who claimed that neither they nor any other member of the household remembered receiving the form. In view of this information, it was decided to send a postcard announcement prior to the survey, which would alert potential respondents and pique their curiosity. Past research has found that notifying respondents in advance can be expected to increase response rates by about ten percent on average (Linsky 1975).

A new cover letter was composed, requesting input on how pharmacy educators could teach their students to serve better the needs of the public. This appeal was brief and congruous with the University letterhead. Use of a similar appeal had produced a good response rate in a previous survey on pharmacy image (Lipowski 1986).

Survey responses were coded and descriptive statistics computed. Several changes in the questionnaire resulted from the pretest analyses. The revised questionnaire is reproduced in Appendix C.

Four items were removed from the environment scale: item numbers 3, 28, 35, and 40 in Part A of the environmental perception scale. These items appeared to be difficult for respondents because there was either a higher rate of missing responses or responses which were inconsistent with similar statements. One item, number 15, was removed from the motivation scale (Part C) for the same reasons. Other items were reworded to improve clarity: numbers 9, 11, 20, and 26 in the environmental perception scale (Part A), and items 7, 9, and 12 of the motivation scale (Part C). The items comprising the capacity dimension were moved from the beginning to the end of Part A because item nonresponse suggested they were the most difficult for consumers to answer. Items used to assess ability were rearranged.

The scoring system for task and market familiarity shown in Tables 4 and 5 respectively was tested. To determine a task familiarity score, subjects received from zero to four points for the frequency of pharmacy shopping, two points for chronic use of a prescription medication or one point for short term use, and zero to four points based upon the average amount of monthly prescription expenditures. The market familiarity score was weighted. Those factors which were judged to be more important to the development of familiarity were given

Table 4. Components of Task Familiarity Index

Variable	Points
Frequency of pharmacy shopping	
Less than once a year	0
Once or twice a year	1
More than once or twice a year but no more than once a month	2
More than once a month	3
Prescription drug use	
None	0
Short term use expected	1
Long term use expected	2
Average monthly expenditures for prescription drugs	
None	0
$1-9	1
$10-24	2
$24-49	3
$50 or more	4

Table 5. Components of Market Familiarity Index

Variable	Points
Number of pharmacies shopped in past year	
None	0
One	2
Two	4
Three	6
Four or more	8
Length of residence in community	
Less than 1 year	1
At least 1 year but less than 5 years	2
At least 5 years but less than 10 years	3
10 years or more	4
Occupation licensed to prescribe, dispense or administer drugs to humans	
No	0
Yes	2
Work experience in a pharmacy	
No	0
Yes	4

added weight in the scoring (weighted items are in italics). The score was assigned by awarding *two* points for each different pharmacy visited, one to four points depending on their length of residence in the community, *two* points for an occupation involving prescribing or administering drugs, and *four* points for work experience in a pharmacy. The frequency distributions of the scores for task and market familiarity were fairly evenly distributed about the mean.

For items intended to measure product knowledge, most respondents strongly agreed that they knew the name, purpose and side effects of their medication, and that they could determine when it was appropriate to consult with a physician about changes in the drug regimen. Because this approach was not a good discriminator, the items were replaced with a thermometer scale upon which respondents were asked to rate their drug knowledge relative to a physician or pharmacist. Separate questions were added to determine the number of prescription drugs currently taken, and whether long term use was anticipated.

The medical expense and educational attainment categories were condensed as few persons used the response categories at the higher ranges. Two demographic items, household size and pharmacy work experience of a family member, were dropped to reduce the length of the survey.

The revised versions of the data collection form and the cover letter were professionally typeset. Both pieces were printed on buff colored, 70 pound vellum paper. The form was assembled as a booklet measuring 8 1/2 by 6 inches, with

return address and return postage on the front cover. The cover letter also measured 8 1/2 by 6 inches and was signed by hand with blue ink. The cover letter, survey form and a $1 incentive were placed in white envelopes with the University logo, and were hand stamped and addressed.

Sample Design

The sampling frame was the telephone directories for the selected cities. Household addresses from communities whose boundaries are contiguous with the city were included, those from outlying communities were not. An equal number of households was to be drawn from each city.

Households were selected by systematic random sampling using procedures described by Dillman (1978). In order to determine a sampling interval in each telephone directory, the length of listings (omitting large blocks of commercial and government listings) was divided by the desired sample size. The listings in the first interval were counted, and a random number table was used to determine a starting point. Subsequent selections were made at the predetermined interval. Whenever a non-residential listing was encountered, a replacement was chosen, alternating either one centimeter above or below the original selection. In order to avoid over representation of those with two-line listings such as professionals, particular ethnic groups or husband/wife listings, an alternative also was chosen if the interval did not fall upon the line containing the telephone number itself.

There were three considerations relevant to computing the sample size for this research. First, a sufficient number of persons must be studied so that sampling error is a minor consideration (Nunnally 1978). In order to estimate measurement error precisely, large sampling errors cannot be tolerated. Nunnally (1978) recommends a representative sample of 300 or more persons be employed.

The second consideration is the need for an adequate number of responses relative to the number of items in the scales. Nunnally recommends a minimum of ten subjects per item before conducting a factor analysis to investigate scale structure. The scale with the greatest number of items in this study is the environmental perception ratings containing 39 items. Therefore, by this criterion, the minimum number of subjects needed is 390.

The third consideration regarding sample size is obtaining a sufficient number of subjects to provide the statistical power to detect the effect of interest. In this case we would like to detect an R^2 equal to or greater than 0.10 in a regression analysis involving 11 predictor variables (four individual characteristics and seven environmental dimensions) at a power of 95 percent. The null hypothesis is: H_o: $R^2 = 0$. The appropriate F test of the null hypothesis has degrees of freedom, $\nu_1 = P$ (the number of predictors), and $\nu_2 = N - P + 1$. From published tables, one determines the N required to detect a significant F at $\alpha = 0.5$ at the desired level of power (Marasculio and Serlin 1988, pp. 748-750).

In this case, 264 subjects are needed to detect a significant F at $a = 0.5$, $P = 11$ with power of 0.95.

The number of subjects needed to conduct the factor analysis is greater than that required by the other criteria. To meet the minimum of ten subjects per item, 390 responses were needed to investigate factor structure of the environmental perception scale. This number must be adjusted for the expected response rate. Although the pretest achieved only a 49 percent response, the advance postcard conservatively might be expected to increase the response to 55 percent. At 55 percent response, 709 surveys would be needed to provide 390 responses. However, because approximately three percent of the pretest mailing was undeliverable, this figure was adjusted upward once again. Conservatively allowing for undeliverable and unusable responses combined at a rate of five percent, 750 names were selected to help assure 390 usable responses.

Data Collection

The previously described sampling procedure resulted in the selection of 760 households. Three were dropped because the addressee was a registered pharmacist who was about to receive a similar survey as part of a companion study. This left a sample of 757: 250 households in Green Bay, 250 in La Crosse and 257 in Janesville.

A bright yellow postcard announcing the survey was hand stamped and addressed, and mailed on Thursday, 23 November 1989. (See Appendix C for text of the message on the postcard.) The questionnaire followed on Tuesday, 28 November and the reminder/thank you postcard was mailed one week later on 4 December.

Data Analysis

Responses were edited, coded and entered into a computer data base. All but one of the descriptive and statistical analyses were conducted on a personal computer using SPSS-PC Plus, Version 2.0. Because of limited capacity of the personal computer, factor analysis was conducted on a VAX 8600 series computer using SPSS-X, Release 3.1. All results are reported as significant if $p \leq 0.05$, unless otherwise stated.

Respondents' current or former occupations were assigned a three digit occupation group code using the Standard Occupational Classification used by the U.S. Census Bureau. The codes allowed the formation of various occupational groups to control for relationships between occupation and independent or dependent variables. For example, persons employed in health related fields or in retail businesses may have a unique set of perceptions as a result of their occupation.

There were three major steps in the data analysis. The first task was to examine the quality of the survey data. Descriptive statistics for all variables were used to check for outliers and distribution of the responses. The nature and extent of item nonresponse was evaluated. Age and occupation code variables were recoded to form comparison groups. Respondent's demographic characteristics were compared with expected distribution of those characteristics within the sampling frame. Late respondents were compared with early respondents to estimate possible differences between respondents and nonrespondents regarding interest and experience in the purchase of prescription drugs.

The second part of the analysis was an investigation of scale reliability and validity. Scale reliability was judged through internal consistency and unidimensionality assessment. Designated items in each scale were reverse scored and individual scores were computed for the environmental perception scales, PII, task familiarity, market familiarity, shopping motivation and ability. Reliability assessment included examination of the interitem correlation coefficients, item to total score statistics, and Chronbach's alpha, and comparison of the results to previously published results where possible.

One of the study objectives was to characterize the environment and develop measures of the same. Therefore, for the scale measuring perceptions of

the environment, a factor analysis was used to explore the scale structure, and eventually restructure the scale for subsequent analysis.

The discriminant validity of the scales was evaluated by examining the correlations among scale scores. They ought not be too highly correlated if they measure distinct constructs. The nomological validity was assessed by determining that previously demonstrated relationships held, and that variables thought not to be related were not. A one-way analysis of variance was used to measure the strength of the association among scale scores and demographic and socioeconomic variables. Logical relationships between scores and particular segments of the population provides additional confidence in the scores.

The third and final phase of the analysis tested the research hypotheses by fitting a regression model to the data. Environmental perceptions, individual characteristics and demographic variables with statistically significant relationships to either dependent variable were considered potential predictors. Main effects models were fitted through forward selection, backward elimination and stepwise selection procedures. Interaction terms were not tested because of the exploratory nature of the analysis. Hypotheses were supported by the determination that an independent variable had the capability of explaining a significant portion of the variation in the dependent variable.

Limitations

Limitations arise in all three phases of this study. First, there were limitations associated with sampling and survey procedures that affect external validity. The use of telephone directories eliminated households with unlisted numbers and those with no telephones. The demographic profile of the respondents may have differed from that of the population. Nonrespondents may have varied from respondents in characteristics important to the study such as in the degree of experience and interest in shopping for prescription drugs. Although potentially nonrepresentative responses would not preclude a test of the research hypotheses, any generalizations based upon the results must be made with these limitations in mind.

The quality of the responses including careless or missing responses to items is another source of difficulty in mail surveys. In this survey, it is necessary to check for response set due to grouping of items by construct (Linsky 1975). Carelessness or confusion, if randomly distributed, will reduce correlations among the study variables. However, if the carelessness is systematic, results will depend upon the correlation of the carelessness with the traits in question (Nunnally 1978). For example, if persons with less experience with prescription purchases were more likely to fall into a response pattern, the true correlation of experience with the scale scores will be obscured. The presence of a monetary incentive also could bias responses.

A second set of limitations concerned the internal validity of the study, that is, the reliability of the measurement scales. If a reliability coefficient is small, measurement error will attenuate the correlation of the score with other variables, so that an investigation of that variable in a correlational study is futile (Nunnally 1978). In developing a predictive model, the reliabilities of the predictors place a limit on the ability to forecast. Despite reliabilities that are less than optimal, one may proceed with the analysis. If significant correlations among study variables are discovered, it is possible to estimate how much the correlation will increase if additional time and effort are invested in improving the reliabilities of the measures (Nunnally 1978, p. 238).

In this study, the reliability and validity of the environmental perceptions are of particular concern. Subjective impressions are being solicited rather than objective information about the pharmacy market. Not all consumers are aware of all sectors participants in pharmacy channels. Some items which have been included may address unfamiliar aspects of the environment, causing the respondent to guess or report perceptions which are not well formed.

A factor analysis was planned to verify the presence of the seven a priori dimensions of environmental perceptions. The data must be evaluated through the use of procedures which demonstrate that the items are drawn from a homogenous set. If these procedures suggest the item pool is not suitable for factor analysis, confidence in the results is diminished. Also, the number of

subjective judgments by the researcher including personal interpretation of the outputs, are inherent limitations of factor analysis.

A third group of limitations was associated with the use of regression analysis for the purposes of testing the research hypotheses. First, the variables must be normally distributed, with equal variance and randomly distributed errors if the sample is to provide unbiased estimates of the population parameters (Mendenhall and McClave 1981). Second, is the problem of neglecting important predictor variables. If an explanatory variable is omitted from the equation, remaining variables that are correlated with the excluded variable, will account for some of the effect of the excluded variable. If this occurs, one erroneously may conclude that a predictor variable has a significant effect when, in fact, it does not. Partial regression coefficients will not be affected if *uncorrelated* variables are omitted from the regression model (Berry and Feldman 1985).

The consumer choice model under consideration has not been tested before. Previous studies have related age, gender, education, income and health status to pharmacy selection, customer loyalty and satisfaction (Lipowski 1988). Presumably the individual characteristics of product involvement, task and market familiarity, and product knowledge incorporated in the model are cognitive outcomes of various socioeconomic circumstances. However, their relationships to the demographic variables have not been demonstrated empirically.

For example, age and health status may increase product involvement and task familiarity, and thereby affect motivation and ability. Age and health status also may affect motivation and ability through their effect on other variables that have not been included in the choice model. Including demographic variables in the model will prevent correlated independent variables from exhibiting a significant relationship to the dependent variable if part of that relationship is due to the demographic factor or a second unidentified correlate. Therefore, all demographic variables that are correlated with motivation or ability will be considered for inclusion in the regression model.

Third in the group of regression related limitations occurs with the use of a large number of variables and computer algorithms to build models. Since the outcome rests upon a large number of *t* tests, the probability is high that one or more errors will be made in including or excluding variables. Some unimportant variables may be incorporated in the model due to Type I errors, and some important variables may be eliminated because of Type II errors (Mendenhall and McClave 1981).

A fourth limitation of the regression analysis is the effect of measurement error upon the regression results. When measurement error is present in an independent variable, the partial slope coefficient for that variable will be attenuated. In the event that independent variable is correlated with another independent variable in the model, their respective partial slope coefficients will

be biased, although the direction and magnitude of the bias is difficult to predict. In addition, measurement error definitely will decrease the goodness-of-fit of the regression. Measurement error is a source of random variation that is not related to other variables and consequently it will not account for variance in the dependent variable (Berry and Feldman 1985).

V. RESULTS

The results are presented in three sections. The first section contains information about the quantity and quality of the response to the mail survey and characteristics of the respondents. This information is relevant to evaluating sources of measurement error and the external validity of the study. The second section addresses issues of internal validity, i.e, the reliability and validity characteristics of the measures that were used to evaluate environmental perceptions and aspects of individual experience and expertise. Results of the procedures undertaken to improve the reliability of the measures are included. The final section presents the results of regression analyses whereby the research hypotheses were tested.

Survey Respondents and Responses

There were 757 surveys mailed, of which 735 were presumed delivered. Table 6 displays data about the response rate by study site. There were 467 questionnaires returned but six were blank, leaving 461 (62.7%) available for analysis. The response rate to the survey was within the range previously attained by consumer surveys about pharmacy services (Wiederholt 1987a; Lipowski 1986). The number of usable responses, 461, was more than the 390 calculated as the acceptable minimum. Changes in the cover letter and the use of a postcard to

Table 6. Mail Survey Response.

	Green Bay	Janesville	La Crosse	Total
Surveys Mailed	250	257	250	757
Presumed Delivered	242	252	241	735
Surveys Returned	161	138	160	467[1]
Response Rate	66.5%	54.8%	66.4%	63.5%
Usable Responses	158	136	159	461[1]
Usable Response Rate	65.3%	54.0%	66.0%	62.7%

[1]Includes 8 responses which had illegible or missing postmark.

announce the survey were the changes primarily credited with increasing the response rate by 13.4 percent over the pretest.

The response rates from Green Bay and La Crosse were nearly equal, both about 12 percent higher than the response rate from Janesville. Table 7 gives the demographic and socioeconomic characteristics of respondents by city. When evaluated by the appropriate nonparametric statistic the only significant difference found among respondents from the three sites was the years of residence in the community.[1]

A series of comparisons was made to investigate the possible bias of respondents compared to nonrespondents in regard to their experience and interest in prescription drug purchases. The premise for these analyses is that persons who respond later or after a reminder, are more like the nonrespondents than those who answered promptly and spontaneously. First, 292 persons (63.3% of all respondents) who responded before the reminder postcard were compared to the 169 individuals who replied after the postcard. There were no significant differences between the two groups with regard to the categorical variables of health status, frequency of pharmacy shopping and annual medical expenses, or with regard to the quantitative variables of number of prescription drugs used, number of pharmacies visited, level of product involvement, product knowledge,

[1] Tests used to detect differences among communities included Kendall's tau for categorical variables and eta squared for qualitative variables.

Table 7. Characteristics of Survey Respondents[1]

	Green Bay n=158	Janesville n=136	La Crosse n=159	Total n=461
Gender				
Female	91 (58.0%)	84 (61.8%)	97 (61.4%)	277 (60.1%)
Male	66 (42.0%)	52 (38.2%)	61 (38.6%)	182 (39.5%)
Missing	1	0	1	2
Age (years)				
0-24	7 (4.5%)	5 (3.7%)	5 (3.2%)	17 (3.7%)
25-34	44 (28.2%)	32 (23.9%)	32 (20.5%)	111 (24.4%)
35-44	29 (18.6%)	36 (26.9%)	36 (23.1%)	101 (22.2%)
45-54	31 (19.9%)	15 (11.2%)	25 (16.0%)	72 (15.9%)
55-64	12 (7.7%)	12 (9.0%)	26 (16.7%)	51 (11.2%)
65-74	26 (16.7%)	23 (17.2%)	19 (12.2%)	69 (15.2%)
75 or more	7 (4.5%)	11 (8.2%)	13 (8.3%)	33 (7.3%)
Missing	2	2	3	7
Education (years)				
$\leq$ 12	53 (33.8%)	47 (34.6%)	49 (31.2%)	152 (33.2%)
> 12 but < 16	59 (37.6%)	53 (39.0%)	64 (40.8%)	176 (38.4%)
$\geq$ 16	45 (28.7%)	36 (26.5%)	44 (28.0%)	130 (28.4%)
Missing	1	0	2	3

[1] Totals include 8 responses which had an illegible or missing postmark.

Table 7 (continued)[1]

	Green Bay n=158	Janesville n=136	La Crosse n=159	Total n=461
Income				
less than $10,000	12 (8.3%)	9 (6.8%)	19 (12.8%)	42 (9.7%)
$10,000 - 19,999	32 (22.1%0	31 (23.5%)	30 (20.1%)	96 (22.2%)
$20,000 - 34,999	44 (30.3%)	41 (31.1%)	49 (32.9%)	134 (30.9%)
$35,000 - 49,999	31 (21.4%)	36 (27.3%)	29 (19.5%)	97 (22.4%)
$50,000 or more	26 (17.9%)	15 (11.4%)	22 (14.8%)	64 (14.8%)
Missing	13	4	10	28
Occupation				
Rx Related	4 (2.6%)	4 (3.0%)	5 (3.2%)	13 (2.9%)
Health Related	11 (7.3%)	8 (5.9%)	18 (11.7%)	37 (8.3%)
Marketing/Sales	20 (13.2%)	17 (12.6%)	19 (12.3%)	58 (13.0%)
Services	73 (48.3%)	54 (40.0%)	60 (39.0%)	189 (42.3%)
Manual Labor	31 (20.5%)	43 (31.9%)	42 (27.3%)	116 (26.0%)
Homemaker/ Student	12 (7.9%)	9 (6.7%)	10 (6.5%)	33 (7.4%)
Missing	7	1	5	14
Yrs of Residence				
<1	3 (1.9%)	0 (0.0%)	1 (0.6%)	6 (1.3%)
≥1 but <5	18 (11.5%)	11 (8.1%)	24 (15.2%)	53 (11.5%)
≥5 but <10	7 (4.5%)	11 (8.1%)	20 (12.7%)	39 (8.5%)
≥10	129 (82.2%)	114 (83.8%)	113 (71.5%)	361 (78.6%)
Missing	1	0	1	2

[1] Totals include 8 responses which had an illegible or missing postmark.

motivation or ability. The average monthly household expenditures for prescription drugs was $22.44 in the first group and $17.40 in the second. When tested by one-way analysis of variance this difference was not significant.

Next, those who responded within the first two weeks (85.2% of all respondents) were compared with individuals who responded after that time. The trend toward lower monthly expenditures for prescription drugs continued, $22.06 on average for the first group, $11.75 for the remainder. A final comparison between those who responded in the first three weeks (95.6% of all respondents) and those who answered even later, confirmed the trend. The earlier group reported $21.15 average monthly prescription expenses, whereas the average in the later group was $6.38. This difference was tested by one-way analysis of variance and found to be significant at $p=0.09$. Because the level of prescription expenditures was a component of the task familiarity score, the task familiarity scores of early and late respondents also differed significantly. No other differences were found. The response frequency distributions for categorical interest and experience variables are given in Table 8 and descriptive statistics for continuous variables can be found in Table 9.

The number of missing responses was counted for all items in the questionnaire. Two of the demographic and socioeconomic items were left blank by more than five percent of the respondents. Twenty-eight (6.1%) left the income question unanswered. Thirty (6.5%) did not answer the open ended

Table 8. Survey Response to Categorical Variables (N=451)

	Response Frequency	% Valid Responses
Health Status		
Poor	10	2.2%
Fair	60	13.1%
Good	242	52.7%
Excellent	147	31.9%
Missing Responses	2	
Annual Household Medical Expenses		
Less than $500	141	31.3%
$500 - 999	108	24.0%
$1000 - 1999	110	24.4%
$2000 or more	91	20.2%
Missing Responses	11	
Frequency of Pharmacy Shopping		
Weekly or more	74	16.2%
Not weekly but at least monthly	265	58.1%
Not monthly but at least 1-2 a year	93	20.4%
Less than once a year	24	5.3%
Missing Responses	5	

Table 9. Respondent Characteristics: Descriptive Statistics for Independent and Dependent Variables Measured as Continuous Variables

Variable	Mean Response	Standard Deviation	Median	Mode	Range	Missing Responses
Number of Current Rxs	1.42	1.60	1	0	0 - 10	4
Monthly Rx Expenditures	$20.60	$33.98	0	6	0 - 250	30
No. of Pharmacies Shopped Last Yr	2.6	1.3	2	2	0 - 10	6
Task Familiarity	4.40	2.47	5	5	0 - 9	37
Product Involvement	84.16	12.20	86	90	36 - 105	64
Product Knowledge	4.53	2.53	5	5	0 - 10	6
Motivation	41.52	7.68	44	43	24 - 61	6
Ability	11.43	1.96	12	12	4 - 15	37

question asking them to estimate the average monthly prescription expenditures for their household, although only 11 (2.4%) skipped a question about their annual medical expenses for which response categories were provided. Nonresponse for items which are part of a measurement scale will be presented in the following section as a component of the scale reliability analyses.

Nearly 40 percent (183) of the respondents took advantage of the space at the end of the questionnaire to offer comments. Of those making comments, almost three quarters (133) wrote about their attitudes and experiences in purchasing prescription drugs. The subject and number of the remaining comments included: remarks about drugs or drug use (16), suggestions about the survey (11), expressions of appreciation (10), personal information about the respondent (8), or some combination thereof (5).

Responses to Scale Items and Reliability of Scores

Of the scales that were incorporated in the survey form, some were developed specifically for this study, others were adapted from previously published scales known to be reliable. For example, perception of the environment was assessed by a group of 39 items generated by the author as a means to tap the seven a priori dimensions. The ability scale also was created specifically for this study using four Likert-type items (statements 15 through 18 of Part C, Appendix C). Task and market familiarity were not attitude measures.

Rather, they were indices based upon self-reports of respondents' experiences with prescription purchases and the extent of their exposure to a variety of pharmacy practice sites. Product involvement and motivation were adapted from published scales.

The initial evaluation for all the multi-item scales included an examination of the univariate descriptive statistics and histogram frequency for each individual item and for the scale score computed by summing the item ratings. Interitem correlation coefficients, item to total score correlations and Chronbach's alpha were calculated for each scale. Product knowledge was measured by a single item and thus its reliability could not be addressed by the use of these techniques.

Environmental Dimensions. The results of the reliability analysis were discouraging for the predicted dimensional structure of the environmental perception portion of the survey. Chronbach's alpha ranged from a low of 0.06 on the concentration scale and 0.08 on the interconnectedness scale, up to 0.40 for the interdependence and 0.45 for the conflict measures. Because of this result, an exploratory factor analysis was conducted to determine the existence and nature of the dimensions among the responses to the 39 statements about the pharmacy market environment.

Several criteria were used to decide that the data were suitable for factor analysis. First, there were a sufficient number of cases. By using a pairwise rather than listwise deletion of missing values, there were 461 subjects available for

analysis, nearly a 12:1 ratio of subjects to items. Second, based upon the Bartlett test of sphericity, the hypothesis that the correlation matrix came from a population of independent variables was rejected at a level of significance less than 0.00000. Third, the KMO Measure of Sampling Adequacy was 0.69. Two additional criteria useful for evaluating the adequacy of the data are the scree plot and the communality estimates. These were examined upon completion of the analysis.

A principal component analysis produced 14 factors which explained 56.7 percent of the variance. A scree plot of the eigenvalues revealed two breaks, one after factor six and another after factor seven. Because there were seven a priori dimensions, and because the remaining factors had eigenvalues of 1.27 or lower, only seven factors were carried into the varimax rotation. Together the seven factors accounted for 36.5 percent of the variation.

The item composition of the rotated factors is presented in Table 10. Only four factors had factor loadings greater than 0.3 on two factors. In each case, the item was judged to be conceptually related to the factor with the higher loading.

Individual items that tapped professional aspects of pharmacy practice appeared to load on factors separate from those items that tapped aspects of retail business. Factor one and factors three through seven represented dimensions of business conflict, professional interdependence, business diversity, professional conflict, business capacity, and professional interdependence. Factor

Table 10. Factor Analysis of the Environmental Perceptions Ratings

Factor	Pct of Var	Variable	Loading	Item Statement
Business Conflict	9.3%	CONFPRIC	.81297	pharmacies in our community offer to meet or beat Rx prices of competitors
		CONFAGRS	.76255	there is aggressive competition in our community for Rx business
		CONFCMPR	.74033	ads in our community suggest you compare prices with other pharmacies
		DEPCOMP	.56307	if one pharmacy starts a sales promotion, others soon make same offer
Business Complexity	6.4%	DYNPRED	.53710	pharmacists often deal with business changes they could not predict
		DIVMIX	.50726	there is a big difference among pharmacies when your consider the number of different products they sell
		DEPCHAIN	.41440	chain pharmacists manage their pharmacies by decisions from headquarters
		CAPRXGRO	.40807	use of Rx drugs as a form of medical treatment will increase in the future
		CONCMFTR	.40005	small number of large companies manufacture most Rx drugs used in this country
		CONCNICH	.38728	some pharmacies tend to specialize in serving certain types of health care needs
		DYNBUS[1]	.38678	compared to retail business, pharmacies seem to move, change owners and close less frequently
		DYNDRUGS[1]	.37402	pharmacists constantly learning about new drugs & medical treatments
		DYNINS	.33508	insurance rules and policies for Rx drugs constantly change
		DEPINS	.31616	insurance companies and government programs influence market prices for Rxs
		CONCEVEN[2,3]	-.29489	Rx business evenly divided among all pharmacies in our community
Professional Interdependence	5.1%	DEPMD	.61710	pharmacists must have good working relationship with physicians
		DEPSERV	.60623	pharmacy that fails to give good service soon will be out of business
		DYNJOBS[2]	-.49783	pharmacists seem to change jobs frequently
		CONFPROF	.42989	pharmacists in our community seem to have professional regard for their fellow pharmacists
		INCONREG	.42897	many rules control the practice of pharmacy
		INCONRPH[1]	.38260	their profession gives all pharmacists something in common

Table 10 (continued)

Factor	Pct of Var	Variable	Loading	Item Statement
Business Diversity	4.6%	CONCLOC	.68244	many conveniently located pharmacies from which to choose in our community
		DIVLOC	.64247	no matter where you live there is a pharmacy short distance from your home
		DIVPRIC	.61155	no matter what level of price, service or convenience there is a suitable pharmacy
		DEPMFTR[3]	.32506	Rx prices to consumers depend mostly upon prices charged by drug manufacturers
		DIVTRUST[2,3]	-.29455	I would not be comfortable having an Rx dispensed at some pharmacies
Professional Conflict	4.0%	CONFDRUG	.54023	physicians prescribe too many drugs
		CONFMD	.52007	physicians should not dispense; may be tempted to prescribe to increase profit
		DYNMD	.50608	way the system operates hard to establish a relationship with one physician
		CONFADVC[2]	-.46903	pharmacist put interest of patient ahead of profit when offering advice
		INCONADM[3]	.43897	pharmacists have little influence in the health care system and are forced to accept decisions made by government and insurance
Business Capacity	3.6%	CAPSTART	.53436	compared to retail business, you need more money to open a pharmacy
		CAPECON	.52485	given business conditions now, a new pharmacy is likely to be successful
		INCONNET	.43016	most pharmacies are locally owned and independently operated
		DYNREGS	.37436	laws and regulations affecting pharmacy change constantly
Professional Interconnectedness	3.6%	INCONCSR	.50832	consumer groups have power to force changes in health care system
		CAPJOBS	.50779	it is not difficult for a pharmacist to find a job
		CAPNHINS	.50255	eventually government will adopt program to provide health care for all
		INCONINS	.37088	most people willing to shop at pharmacy picked by insurance company in exchange for lower premium

[1] Dual loadings: DYNREGS 0.36543 Factor 2, DYNDRUGS 0.30800 Factor 3, INCONRPH 0.35433 Factor 4, DYNBUS 0.32687 Factor 6.

[2] Item was reverse scored.

[3] Item was dropped from final form of scale.

two was comprised of items relating to the business aspects of dynamism, concentration, capacity, and interdependence. It was labeled business complexity. Items were reverse scored where necessary to support the conceptual nature of the factor of which they were a part. Then a reliability analysis was conducted using procedures described above. Four items, noted in Table 10, were dropped from the scales because of poor item to total score correlations. Because the business capacity and professional interconnectedness dimensions had few items and the scales demonstrated little reliability they were excluded from further analyses. Scale statistics are given in Table 11.

Product Involvement. Responses to items 2, 4, 6, 7, 9, 10, 12, and 14 were reversed and then responses for all 15 items were summed. As shown in Table 9, the mean sum, or scale score, was 84.16. Although the scores ranged from 36 to 105, the distribution was skewed to the left with a skew of -0.78. Item to total score correlations for this scale ranged from 0.42 to 0.72, and displayed no sharp breaks when plotted. Chronbach's alpha was 0.88. By comparison, Zaichowsky (1985) achieved an alpha of 0.98 with the original 20 item scale, and a mean response of 89.55 on data collected from 751 subjects over 13 product categories. The mean involvement score was 91 when headache remedies was the product class being rated. Scores on Zaichowsky's scale are not directly comparable because her scale had five additional items. If her results are reduced proportionately, then comparable values for the mean of involvement with

Table 11. Scale Statistics for Environmental Dimension Factors

Scale	Number of Items	Mean Score	Standard Deviation	Range	Chronbach alpha
Business Conflict (BUSCONF)	4	13.67	2.84	5 - 20	0.73
Business Complexity (BUSCMPLX)	10	35.25	3.68	21 - 48	0.54
Professional Interdependence (PROFDEP)	6	23.00	2.31	16 - 30	0.52
Business Diversity (BUSDIV)	3	11.98	1.61	5 - 15	0.58
Professional Conflict (PROFCONF)	4	11.45	2.74	4 - 19	0.40
Business Capacity (BUSCAP)	4	12.21	1.82	9 - 20	0.29
Professional Interconnectedness (INTERCON)	4	13.29	2.13	7 - 20	0.26

headache remedies and the overall mean involvement would be approximately 68 and 67, respectively. The average involvement score found in this study, 84.16, would imply that on average consumers have an involvement with prescription drugs that is higher than the involvement with nonprescription products and with consumer goods in general.

Item nonresponse was high for this scale, with each item having between 20 and 33 missing responses. There were 64 respondents who did not answer one or more items. Whenever product involvement scores were to be included in subsequent analyses, those 64 cases were dropped from the analysis unless otherwise noted. The same approach, listwise deletion, was used for all other scales wherever item nonresponse was encountered.

Task Familiarity. The three items comprising task familiarity (shopping frequency, prescription expenditures and chronic medication use) had item to total score correlations ranging from 0.56 to 0.36. However, since this measure is an index of personal experience and not an attitude scale, there is no reason to expect that the items necessarily would be correlated. Scores were broadly distributed over the entire range of scores from zero through nine.

Market Familiarity. There were four items to be combined as a measure of market familiarity: number of pharmacies shopped in the past year, pharmacy work experience, an occupation related to prescribing, dispensing or administering medication, and categorical response value for years of residence in the

community. There was little response variability on the last three variables. Only 22 persons had ever worked in a pharmacy, only 13 had a medication related occupation and 78.6% checked the same "years of residence" category (ten years or more). The items displayed little if any correlation to one another or to their sum. The interitem correlations ranged from -0.0003 to 0.0966, and the item to total score correlations ranged from -0.0134 to 0.0813. Therefore, the number of pharmacies visited was selected as a single item measure of market familiarity. Responses to this open ended question were distributed between zero and ten, with a peak response of two.

Product Knowledge. Descriptive statistics for the responses to this item scale are shown in Table 9. The histogram frequency showed responses rather evenly distributed over the entire scale range, though nearly half (48.8%) of the responses were in the lower range from one through four. A score of five was the modal response (18.4%), while 32.7 percent rated their product knowledge from six through ten. Only six respondents did not give a response.

Motivation. Items 1, 2, 3, 4, 8, 10, 12 and 14 were reverse scored before the responses were summed to obtain the motivation score. After dropping one item with an item-total score correlation of 0.17 (item 15, Part C; see Appendix B), fourteen items with item-total correlations ranging from 0.36 to 0.72 were retained. Chronbach's alpha was 0.84 and the histogram frequency of scores resembled a normal distribution. Because statements in the original scale were

reworded, a direct comparison of results between this scale and the one after which it was patterned is not appropriate (Slama and Tashchian 1985).

There were fewer than 3 percent of the responses missing for any item in the motivation scale. Twenty-three respondents omitted one or more items, and thus were dropped from further analysis involving the motivation score.

Ability. Items 15-18, in Part C of the questionnaire in Appendix C were the elements used to measure self-perceived ability to evaluate a pharmacy. Responses to the statement, "It is easy to choose a pharmacy," (item 18) exhibited virtually no correlation with responses to the three items. Item correlations between this statement and the other three items were 0.0763, 0.0632, and -0.0670; the item to total score correlation was 0.0169. Once this item was removed, the scale displayed an alpha of 0.88, and item to total score correlations between 0.7731 and 0.8026. However, the ability score varied little among respondents. There were 263 persons with a score of twelve.

Measures of association among study variables were computed including: one way analyses of variance between each scale score and the demographic and socioeconomic characteristics (Table 12), one way analyses of variance between each scale score and survey sites (Table 13), and the correlation matrix for scale scores (Table 14).

Table 12 shows those scores which varied within certain socioeconomic groups. Professional conflict ratings of men were higher than the ratings of

Table 12. F Statistics for One-Way Analysis of Variance Tests Between Individual Characteristics and Environmental Perceptions and Categorical Variables[1]

	BUSCONF	BUSCMPLX	PROFDEP	BUSDIV	PROFCONF	PII	TSKFAM	MKTNMBR	KNOW
GENDER	3.67*	1.36	0.07	1.24	4.21**	0.33	0.49	0.03	6.74***
AGE GRP	1.54	2.04	3.59**	0.04	0.86	0.40	25.26***	2.04	2.42*
EMPLOYED	2.11*	1.18	4.52***	0.27	0.87	1.35	14.49***	0.31	0.53
SOC GRP	2.70**	1.57	2.22*	0.70	1.45	0.34	0.56	2.28**	14.46***
SCHOOL	0.77	0.41	2.10*	1.07	0.68	1.89	1.77	1.24	10.37***
HLTHSTAT	0.95	0.82	2.79**	1.69	0.86	2.31	24.00***	1.09	2.46*
INCOME	0.92	1.10	2.07*	0.95	2.35*	4.29***	1.38	0.70	4.35***
MED EXP	0.22	2.11*	0.47	1.60	0.60	2.19*	25.95***	0.71	0.98
USE Rx	0.44	0.54	0.10	0.74	1.06	5.37***	149.14***	0.56	5.23***
WK PHARM	1.68	1.57	0.36	0.00	0.01	0.39	0.02	1.17	0.14

[1] * $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$

Table 13. One Way Analyses of Variance of Individual Characteristics and Environmental Perceptions with Study Sites[1]

	Mean Score				
Variable	Green Bay	Janesville	La Crosse	Total Pop	F
PII	83.64	83.79	85.08	84.18	0.55
TSK FAM	4.54	4.26	4.41	4.41	0.43
MKT FAM	2.34	2.76	2.59	2.56	3.84**
KNOW	4.45	4.46	4.59	4.50	0.16
BUS CONF	13.83	13.17	14.04	13.71	3.42**
BUS CMPLX	34.87	35.65	35.34	35.26	1.52
PROF DEP	22.78	23.15	23.06	22.99	0.96
BUS DIV	11.62	12.01	12.32	11.98	7.98***
PROF CONF	11.19	11.21	11.93	11.45	3.49**
MOTIVATN	40.66	41.50	42.47	41.54	2.07
ABILITY	11.27	11.54	11.51	11.44	0.83

[1] * $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$

Table 14. Correlation Matrix for Individual Characteristics and Environmental Perceptions[1]

	BUSCONF	BUSCMPLX	PROFDEP	BUSDIV	PROFCONF	PII	TSKFAM	MKTNMBR
BUSCONF								
BUSCMPLX	.2524*							
PROFDEP	.0662	.2116*						
BUSDIV	.1546*	.0440	.1944*					
PROFCONF	.0674	.1538*	-.1250*	-.0906*				
PII	.0208	.1702*	.1248*	.0571	-.2311*			
TSKFAM	.0630	.1439*	.0981*	-.0244	-.0448	.2839*		
MKTNMBR	.0624	.1588*	.0091	-.0085	.0513	.0330	.0725	
KNOW	.0819*	.1622*	.0163	.0869*	-.1134	.1469*	.1847*	.2133*

[1] * $p \leq 0.05$.

women. Business conflict was rated highest by persons with health related occupations that do not involve prescribing, administering or dispensing medication (e.g., physical therapists or medical technologists). But the lowest business conflict ratings were given by those who are in a health care occupation with responsibility for medication use. Business conflict ratings higher than the mean rating came from persons in marketing, retail sales or other service occupations. Professional interdependence ratings increased with age and thus were higher among retirees. Professional interdependence was most apparent to persons in service orientated occupations, and least apparent to housewives and students.

Table 13 shows that there were a greater number of significant relationships among socioeconomic variables and individual characteristics than were found among socioeconomic variables and environmental measures. The mean PII score was 86.18 for the highest income group and 75.78 for the lowest, 88.12 for those who were taking three or more prescription medications at the time of the survey, and 81.72 for those were taking none. Task familiarity increased with prescription use, total medical expenses, age and retired status. Task familiarity was highest among those who rated their health status as fair or poor. Those in health occupations reported visiting more pharmacies than other occupational groups and they rated their product knowledge higher than other groups. Product knowledge ratings were lowest among manual laborers. Women

rated their product knowledge higher than men. The knowledge ratings also increased with educational attainment, income and number of medications taken.

As mentioned earlier, the only demographic difference across survey sites was in the years of residence reported. (See Table 13.) The only individual characteristic to vary by site was the number of pharmacies visited. There were no differences in motivation or ability based upon the community in which the respondent lived. There were significant differences for three of the environmental factors as shown in Table 13.

Regression Analysis and Research Hypotheses

Because the reliability of some scale scores was less than optimal, the regression analysis was considered exploratory. Two separate regression models were built to determine if individual characteristics and environmental perceptions contribute to (1) motivation and (2) ability scores.

Correlation matrices among the independent and dependent variables were examined before conducting the analysis. (See Table 14.) There were statistically significant correlations among a number of the independent variables, but none of the correlations exceeded 0.3, well below the 0.8 level of concern (Berry and Feldman 1985). This observation reduces the likelihood that multicollinearity will be a serious impediment to the development of a regression model.

One way analysis of variance was employed to identify statistically significant relationships between the demographic variables and the dependent variables of motivation and ability. (See Table 15.) Significant correlations between the independent variables and the dependent variables were reviewed. (These data are presented in Table 16.) All individual characteristics and environmental perceptions, and the correlated demographic variables were entered into the analysis as predictor variables. If a demographic variable was significantly correlated with other predictor variables in the model, omitting the demographic variable would shift some of the explanatory power to its correlate, thereby mistakenly increasing the significance of the correlate.

Models were constructed by three methods: forward selection, backward elimination and stepwise elimination. Subjects with one or more missing responses were dropped from the analysis. The three methods generated one model for motivation and one for ability; the final form did not vary by the method of construction.

The dependent variable in the first model was motivation. The dependent variable in the second model was the square of the ability score. The ability scores were squared in an effort to spread the variability across a greater range because the scores were so closely clustered about the mean.

After the models were generated by the computer software, residuals were inspected to detect possible violations of the regression assumptions. The

Table 15. F Statistics for One-Way Analysis of Variance Tests Between Motivation, Ability and Categorical Variables[1]

	MOTIVATION	ABILITY
GENDER	6.38**	3.98**
AGE GRP	1.81	4.68***
EMPLOYED	0.81	0.77
SOC GRP	0.88	1.48
SCHOOL	1.04	0.31
HLTHSTAT	3.97***	3.54**
INCOME	4.52***	0.61
MED EXP	7.38***	1.84

[1] * $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$.

Table 16. Correlation of Individual Characteristics and Environmental Perceptions with Motivation and Ability[1]

	MOTIVATION	ABILITY
BUSCONF	.1613*	.0580
BUSCMPLX	.1870*	.1896*
PROFDEP	.1436*	.2484*
BUSDIV	-.0524	.1664*
PROFCONF	-.0408	-.1185*
PII	.2250*	.1847*
TSKFAM	.2264*	.2867*
MKTFAM	.1769*	-.0065
KNOW	.1124*	.1620*
MOTIVATION		.2780*
ABILITY	.2780*	

[1] * $p \leq 0.05$.

distribution of residuals should be normally distributed with mean of zero and variance s^2. The residuals, plotted against each independent variable, or against the predicted value of the dependent variable, should display no trends, no dramatic increases or decreases in variability, and only a few residuals (no more than five percent) greater than two standard deviations above or below zero. A value of the Durbin-Watson *d* statistic near two is evidence that all pairs of error terms are uncorrelated. Graphs and plots of the residuals are contained in Appendix D.

Final form of the models for motivation and ability are found in Tables 17 and 18, respectively. Those variables which did not enter the model also are given in the table, along with regression statistics. The steps by which the final regression model was built and the sign of the coefficient for each variable in the model provide the information needed for testing the research hypotheses. Because of the exploratory nature of the analysis, interaction terms were not tested for either model.

Motivation. The model of motivation explained nearly 20 percent of the variance in scores. The standard null hypothesis for regression analyses (that the predictor variables are unrelated to motivation) was rejected ($F = 12.37$ with df of 6, 305; $p < 0.0000$). The first variable significantly related to motivation was business complexity ($F = 23.81$, df 1, 310; $p < 0.0000$). This variable was positively related to motivation and explained 7.1 percent of the variation in

Table 17. Final Statistics for Regression Model Fitted to the Motivation Score (N=322)

Variables in the Equation

Variable	B	S.E. B	Beta	T	Sig T
BUSCMPLX	0.485	0.117	0.218	4.16	0.000
TSK FAM	0.593	0.203	0.179	2.92	0.004
INCOME	-1.583	0.362	-0.232	-4.37	0.000
PII	0.106	0.036	0.160	2.93	0.004
AGE	-0.738	0.029	-0.146	-2.55	0.011
MED EXP	0.910	0.402	0.127	2.26	0.024
(Constant)	19.080	4.842		3.94	0.000

Multiple R	0.443
R Square	0.196
Adjusted R Square	0.180
Standard Error	7.156

Variables NOT in the Equation[1]

Variable	Beta In	Partial	Min Toler	T	Sig T
MKT NMBR	0.961	0.105	0.697	1.84	0.067
KNOW	-0.005	-0.006	0.682	-0.11	0.913
BUS CONF	0.085	0.086	0.697	1.50	0.135
PROF DEP	0.065	0.068	0.701	1.20	0.233
BUS DIV	-0.052	-0.057	0.702	-0.99	0.322
PROF CONF	0.014	0.015	0.694	0.26	0.791
GENDER	0.094	0.100	0.681	1.74	0.082
HLTH STAT	-0.022	-0.022	0.689	-0.38	0.070

[1] Regression statistics that would be achieved if each variable were the next variable entered into the regresssion.

Table 18. Final Statistics for Regression Model Fitted to the Square of the Ability Score (N=373)

Variables in the Equation

Variable	B	S.E. B	Beta	T	Sig T
TSK FAM	4.544	0.953	0.251	4.77	0.000
PROF DEP	2.152	1.016	0.118	2.12	0.035
BUS CMPLX	1.892	0.661	0.156	2.86	0.004
PROF CONF	-2.461	0.889	-0.146	-2.77	0.006
BUS DIV	2.746	1.384	0.105	1.98	0.048
(Constant)	-8.265	32.285		-0.26	0.798

Multiple R	0.418
R Square	0.174
Adjusted R Square	0.161
Standard Error	39.459

Variables NOT in the Equation[1]

Variable	Beta In	Partial	Min Toler	T	Sig T
PII	0.059	0.060	0.863	1.07	0.287
MKT NMBR	-0.079	-0.084	0.863	-1.48	0.140
KNOW	0.074	0.078	0.855	1.37	0.172
BUS CONF	-0.006	-0.006	0.842	-0.10	0.920
GENDER	0.095	0.103	0.861	1.81	0.071
HLTH STAT	-0.007	-0.007	0.849	-0.13	0.900
INCOME	0.054	0.058	0.854	1.03	0.306
MED EXP	0.012	0.012	0.833	0.21	0.836
AGE	0.036	0.035	0.785	0.62	0.539

[1] Regression statistics that would be achieved if each variable were the next variable entered into the regresssion.

motivation scores. Because complexity was not one of the a priori dimensions of the environment, there was no research hypothesis about its effect on motivation.

At step two, the addition of task familiarity increased the variation explained by 4.1 percent, a significant improvement in fit ($F = 14.25$). The research hypothesis projected that task familiarity would have a negative effect on motivation. The effect was positive. The next variable added to the model was income. The R square statistic improved by 3.0 percent ($F = 10.87$) by this addition. The income coefficient was negative and indicates an inverse relationship between income and motivation. There were no research hypotheses for the effects of the demographic and socioeconomic variables.

The addition of product involvement at step four explained an additional 2.6 of variation ($F = 9.74$). The positive relationship between product involvement and motivation was predicted by the research hypothesis. Age was the next variable which could be added to improve the equation. Age provided an additional 1.3 percent of explained variation ($F = 5.07$; $p = 0.025$). Like income, age was inversely proportional to motivation. The final variable added was medical expenses, which explained 1.3 percent of variation ($F = 5.11$; $p = 0.02$).

The research hypotheses regarding a relationship between motivation and market familiarity, product knowledge, and the environmental dimensions of diversity, capacity, and conflict were not supported; none of these variables made a significant contribution to the explanation of the variation in motivation.

Ability. Five variables formed the predictor set for the square of the ability scores. They explained 17.4 percent of the variation in those scores. An examination of the residuals (Appendix D) revealed that this model did not fit the data as well as the model for the motivation scores. After examining the residuals, transformations of the dependent and independent variables were employed in an effort to improve the fit of the model. Because a plot of the standardized residuals was S-shaped, the ability score was regressed against the logs of the independent variables, and the log of the ability score was regressed against the sum of the logs of the independent variables. Neither of these transformations produced a better distribution of the residuals. Analysis of variance for the selected model had an F statistic of 13.10 (df 5, 310) which is significant with p less than 0.0000.

The first variable, task familiarity, explained 8.5 percent of the variation. The research hypothesis that task familiarity would have a positive effect on ability was supported. Four of the five environmental perception variables entered the regression in the next four steps. The change in R square was 0.04 when professional interdependence was added (F = 14.35). However, the relationship was positive and thus the opposite predicted by the research hypotheses. Business complexity added 1.7 percent improvement in R square (F = 6.35). The dimension of business complexity is not one of the a priori dimensions for which hypotheses had been generated. Professional conflict entered the equation at the

fourth step, improving R square by 2.2 percent (F = 8.01). Again, however, the effects of professional conflict were in the opposite direction from the hypothesized effect. Business diversity was both the last environmental dimension and the last variable to be incorporated into the regression equation. It added 1.0 percent to the variation explained, with F = 3.94 and p = 0.048. The sign of the coefficient was positive as predicted by the research hypotheses.

Research hypotheses about the effects of product involvement, market familiarity, product knowledge and business conflict upon ability were not supported by the results of the regression analysis. Table 19 compares the hypothesized relationships and the results of the regression analyses for both motivation and ability measures.

Table 19. Comparison of the Hypothesized Relationships With Results of the Regression Analysis[1]

INDEPENDENT VARIABLE	MOTIVATION		ABILITY	
	Hypothesis	Regression Results	Hypothesis	Regression Results
Diversity	(+)	NS	(+)	(+)
Dynamism	(+)	.[2]	(+)	.[2]
Concentration	(-)	.[2]	(-)	.[2]
Capacity	(-)	.[3]	(-)	.[3]
Conflict	(+)	NS	(+)	(-)
Interconnectedness	(-)	.[3]	(-)	.[3]
Interdependence	(-)	NS	(-)	(+)
Product Involvement	(+)	(+)	(+)	NS
Task Familiarity	(-)	(+)	(+)	(+)
Market Familiarity	(+)	NS	(+)	NS
Product Knowledge	(±)	NS	(+)	NS

[1] A (+) denotes a positive relationship, (-) a negative relationship, (±) no directional relationship hypothesized, and NS no relationship.

[2] Relationship not tested. Factor analysis failed to confirm the presence of this dimension.

[3] Relationship not tested. Analysis indicated poor reliability of scale score.

VI. DISCUSSION

The first objective of this research was to characterize the market environment for the purchase of prescription drugs. The foundation for the environmental description used in the study was provided by a review of the literature. Seven a priori dimensions of this environment were proposed. The viability of this proposition was evaluated by the degree to which the second and third objectives of the study were achieved. That is, reliable and valid measures of these dimensions should be feasible, and those measures should demonstrate a relationship to the consumer choice process as predicted by the model of consumer choice.

Measurement of the Environmental Dimensions

A sufficient number of representative respondents was needed to evaluate the measures of the environment. Having such a group reduced the potential for problems associated with measurement error. Overall, the respondents were cooperative and interested in the topic under study.

It is not possible to know with precision whether there were differences between the respondents and the general population. Current population values are not available in comparable groupings for all of the measured variables. The proportion of female respondents, 60.3 percent, was higher than the reported

proportion of female residents in Wisconsin, 50.9 percent (U.S. Bureau of the Census 1988). According to 1980 figures, 69.6 percent of the state population had a high school education and 14.8 percent had 16 years or more of formal education. Among survey respondents, 28.4 percent reported having 16 years or more. Part of the difference between the respondents and data for the population might be due to the fact that the population figures are nearly a decade old. However, it is likely that the respondents were more highly educated group. The age distribution of the respondents was similar to that of the state overall, with the possibility of a skew in the direction of higher age groups. The 1979 median household income in Wisconsin was $17,680. Considering that income has increased with inflation, the modal response of $20-35,000 income implies that respondents' household incomes were representative of Wisconsin households.

When the responses were grouped according to the time elapsed before the form was returned, a difference in the estimated monthly prescription expenditures was found. Apparently, those who failed to answer are less apt to routinely purchase prescription medications. However, there were no differences between early and late responders for other items included in the survey.

Responses to individual items which were part of an environmental perception scale displayed differences among individual perceptions. The responses to all but two of the statements about the environment covered the full range from one to five. Respondents clearly had opinions about the role of the

pharmacist with respect to conflicts and diversity among members of the health system; no responses had more than five percent missing. Six items with five percent or more responses missing indicated that consumers are less well acquainted with the job prospects, legislative constraints, financial requirements and economic potential associated with pharmacy practice. No response patterns were detected, either by visual inspection of the mean and standard deviations of item sequences nor by the Durbin Watson statistic.

Factor analysis of statements about the environment confirmed presence of five of seven a priori dimensions: diversity, capacity, conflict, interconnectedness, and interdependence. A sixth factor was comprised of eleven items from a variety of the original a priori dimensions: four from dynamism, three from concentration, two from interdependence, and one each from diversity and capacity. It was decided that this factor represented the range of actors and forces in the environment which act as change agents in the pharmacy marketplace. The difference between this factor and the a priori dimension of dynamism is in the distinction between potential and actualized change. Whereas dynamism implies that change is occurring, the response pattern did not indicate a perception that all influences were forcing changes at this time. The factor was labeled complexity because of the breadth of influential forces identified: competitive, managerial, technological, economic, medical, financial and

regulatory. Also, there is consensus in the literature that dynamism and diversity often are present in complex environments.

The seventh and final factor was a second conflict factor. The first of the two conflict dimensions represented conflicts arising from business rivalry among pharmacies. The other represented the conflict originating from professional concerns including appropriateness of drug use, the opportunity to profit from treatment recommendations, lack of personal relationships, and the struggle of the professional with political or economic influences.

In fact, all seven of the factors identified through the factor analysis procedure, represented either the professional or business facets of that particular dimension. Conflict, complexity, diversity and capacity were represented from the business (profit and loss) perspective of pharmacy practice. Interdependence, conflict and capacity were represented by items describing professional functions in which the health of the consumer or patient was the primary focus. Note that conflict was the one dimension that was represented in both the professional and business contexts. The professional/business dichotomy is consistent with a previous study about the public's perception of the pharmacist (Dichter Institute 1973).

Unfortunately, analysis revealed that the reliabilities achieved by the subjects' ratings of the seven factors were marginally acceptable even for

exploratory analysis. Because of low reliability, two scales (business capacity and professional interconnectedness) were omitted from further analysis.

There were significant correlations among the environmental perception scores (Table 12). All of the correlations were less than or equal to 0.25, thus the perceptions likely measure different facets of the environment. It was expected that there would be relationships among the dimensions. Because business complexity likely is related to environmental uncertainty, the correlations of business complexity with business conflict, professional conflict and professional interdependence were not unexpected. By similar reasoning, the correlations between business diversity and the measures of business conflict and professional interdependence are reasonable. However, the inverse relationships of professional conflict with professional interdependence and business diversity are the opposite of what previous studies have found. Though statistically significant, these correlations were weak, -0.1250 and -0.0906 respectively. The finding may be an artifact due to the substandard reliabilities for these three dimensions.

Differences in the environmental perceptions of consumers residing in different market environments provides evidence of the validity of the environmental measures. At the same time, there should be no differences across sites for those scales measuring individual characteristics, because there were no significant differences by site in the demographic and socioeconomic characteristics of respondents. As shown in Table 13, there were significant

differences in the environmental scores for three of the five dimensions: business conflict, business diversity and professional conflict. Business conflict was rated highest in La Crosse where independent pharmacists recently had sponsored a series of advertisements in response to the threat of physician dispensing, and where several new mass merchandisers were opening new pharmacies. The mean rating for professional conflict was highest in La Crosse, possibly for the same reasons. The contrast between the older, independent pharmacies and the newer influx of mass merchandise pharmacies in La Crosse also might explain why business diversity was rated highest in that community. Business diversity was rated lowest in Green Bay. Business conflict was rated lowest in Janesville, possibly because the high proportion of persons who have insurance coverage for prescription drugs causes pharmacists to direct their competitive energies toward the third party carriers rather than the consumers. Professional conflict ratings for Green Bay and Janesville were quite similar.

On one hand the overall findings are encouraging because the environmental dimensions obtained by factor analysis parallel the a priori dimensions. The relationships between the measures and other study variables are reasonable, and measures did vary among respondents from the different study sites. On the other hand, the lack of reliability precludes a strong test of the relationship of environmental perception to the consumer choice process.

Other measures in the study need improvement including market familiarity, product knowledge, and ability. The concept of market familiarity needs to be reconsidered in terms of the traits or attitudes that could be tapped to represent the construct. The surrogate measure, number of pharmacies visited in the last year, could be an outcome of environmental influences rather than an input to motivation or ability. Product knowledge scores were related as logically expected to respondents' education, income, occupation and prescription drug use. However, the reliability and validity of a single-item is in doubt until alternative measures are available for comparison. The problem with the ability score was its lack of variability across respondents. It is not known whether the lack of variability was due to insensitivity of the measure or to the fact that consumers vary little in their perceived ability to select a pharmacy. Thus, corroborating measures are needed.

In general the performance of psychometric scales can be improved by using items from the original data collection and adding new items that are thought to be related to the factors uncovered in the analysis (Nunnally 1978). Then responses from a new sample of subjects are obtained and the new scales re-evaluated. It would not be unusual to repeat this process several times in order to understand the factor structure and obtain reliable measures of each factor. With each round there should be a better understanding of constructs to be measured. The most convincing evidence for the existence of the dimensions

would be obtained by developing multiple measures for the same dimension and finding that the measures correlate well with one another.

Relationship of the Environment to Consumer Choice

Regression analysis revealed that a consumer's perception of the pharmacy market environment is related to his or her motivation and ability to select a pharmacy using a systematic choice strategy. Because all the measures did not meet recommended reliability standards for theory testing (Nunnally 1978), statements based on the regression results must be tempered with caution. However, evidence of environmental effects on consumer choice invites further efforts to improve the measures.

Only one environmental dimension, business complexity, contributed to the prediction of the motivation score. However, this variable explained more of the variation than any of the other significant variables. Although there was no research hypothesis which postulated the direction of the relationship between complexity and motivation, complexity is often positively related to diversity and dynamism in organizational theory (Aldrich 1979; Dess and Beard 1984). Both diversity and dynamism were expected to have a positive relationship to motivation.

Task familiarity was related to motivation, but in the opposite direction of the research hypothesis. The research hypothesis was based upon the assumption

that motivation to process information decreases as the purchase becomes routinized, and that increased domain knowledge allows the consumer to formulate accurate and efficient decision rules. However, this argument did not distinguish between tangible goods and intangible services. Since there are few tangible aspects of pharmacy service that can be compared by the novice in advance of purchase, some experience must be gained before the need to evaluate alternatives is apparent. Product involvement was positively related to involvement as predicted.

Three demographic variables contributed to motivation. Income was negatively related to motivation. As income decreases, consumers are more motivated to consider carefully their choice of pharmacy. Aside from income, increases in medical expenses also motivate more complex consumer decision making. Age was negatively related to motivation. This is consistent with previous observations about pharmacy shopping patterns of the elderly. Older patrons are loyal to a single pharmacy (Wiederholt 1987b) and will forgo convenience to shop at their preferred pharmacy (Shannon, Cromley and Fink 1985). It is not surprising that aberrations in the environment have less impact upon their motivation to consider alternatives.

It was thought that the individual characteristics and environmental perceptions were factors that would account for the relationships between certain demographic characteristics and motivation. Since there is no reason to believe

that the physiology of aging affects motivation for decision making, there must be other unspecified variables which account for the relationship between age and motivation. Likewise, there must be economic or value related constructs that account for the effects of income and medical expenses upon motivation.

No demographic variables were among the significant predictors in the regression model of ability. Task familiarity had a positive impact as anticipated. All four of the remaining predictors of the square of the ability measure were environmental perception variables. Business diversity was positively related to ability as theorized. Because business complexity was not one of the a priori dimensions, its contribution had not been forecast. It was positively related to ability, similar to the anticipated effect of the two closely related constructs of diversity and dynamism.

The relationships of professional interdependence and professional conflict to ability were opposite of the hypothesized effects. Professional interdependence was positively related and professional conflict negatively related. It was anticipated correctly that the effects of interdependence and conflict would be opposite. A possible explanation for these results may be associated with the fact that both dimensions were viewed as professional and intangible services rather than typical retail business products. Whereas tangible products are evaluated independently from other products in the consideration set, service providers may

be judged by those with whom they associate. Interdependence may allow one to use knowledge of one provider to make attributions about an associate, thereby creating the perception of an increase in decision making ability. Whereas conflict in a market for consumer goods increases the information available for inputs to the decision process, conflict among professional service providers may create discomfort and uncertainty among consumers. This uncertainty may be reflected in a reduction in self-perceived ability to make a choice.

In this study, hypotheses were generated for effects of each variable on both motivation and ability. Roedder John and Leong (1987) suggested that some variables primarily would affect motivation and others primarily would affect ability. Direct evidence to support Roedder John and Leong's conjectures about task and situation having primary effects is not possible since this study used a broader concept of the environment instead. They did suggest that similarity of alternatives, an aspect of diversity, preferentially would affect ability rather than motivation. This proved to be the case. Task familiarity and business complexity were the only variables that were significant predictors in both regression models.

Regarding individual characteristics, Roedder John and Leong correctly predicted that product involvement would be related to motivation and not to ability. They did not consider separate variables for task and market familiarity. In fact, they considered the concepts of task frequency and experience separately rather than combine them as aspects of familiarity. They speculated that

frequency would influence motivation and that experience would influence ability, Task familiarity did affect both motivation and ability. The effect they predicted for product knowledge upon ability was not supported.

Some of the research hypotheses in this study could not be tested either because there was no evidence of their existence (dynamism and concentration) or the measures were not sufficiently reliable (capacity and interconnectedness). Aside from those hypotheses which could not be tested, hypotheses about market familiarity and product knowledge were not supported. When univariate measures of association were computed, market familiarity was significantly correlated with motivation, and product knowledge was correlated with both motivation and ability (Table 16.) However, when considered in a multivariate analysis, a portion of that relationship was subsumed by other independent variables.

The proportion of variance explained by either regression model was less than 20 percent. This is often the case in studies of human behavior. One should not be discouraged by such results since, "effects accounting for as little as 1.0 percent of explained variance may well be considered either theoretically or practically important" (Peterson, Albaum and Beltramini 1985).

The proportion of variation explained may be low due to the fact that independent variables with poor reliability can limit the proportion of variation explained. Because there are a number of variables in the regression model the magnitude of the impact upon the coefficient of determination cannot be

calculated (Berry and Feldman 1985). Correlations among variables of interest can be examined and a correction for attenuation computed (Nunnally 1978, p. 238). Table 20 shows the maximum correlation coefficients that could be achieved if the reliability of the significant predictor variables and those of the dependent variables were improved to an alpha of 0.9. In this case, the corrected correlation coefficients represent nearly a 50 percent improvement over the correlation achieved with the less reliable scores.

Much of this discussion centered on issues of reliability and validity. Content, discriminant and nomological validity are all necessary for construct validity. Stronger evidence for the validity of the construct of environmental perception and its dimensional structure depends upon the success in relating the construct to a broad theoretical network. The study reported herein involves only one part of one model. There is a need to assess the validity of the entire model. At least one other study has tested a similar construction of environmental perceptions in another theoretical context (Achrol and Stern 1988). However, additional models of environmental effects must be developed that draw upon other theoretical frameworks. Such a series of studies eventually will determine whether this approach to study of environment is useful for better understanding of consumer behavior.

Table 20. Correction for Attenuation of Correlation Between Predictor Variables and Motivation and Ability

		MOTIVATION Alpha = 0.84		ABILITY Alpha = 0.88	
Variable	Chronbach's Alpha	Achieved Correlation	Corrected Correlation	Achieved Correlation	Corrected Correlation
BUSCMPLX	0.54	0.19	0.25	0.19	0.25
PROFDEP	0.52	.[1]	.[1]	0.25	0.33
BUSDIV	0.58	.[1]	.[1]	0.17	0.21
PROFCONF	0.40	.[1]	.[1]	-0.12	-0.18
PII	0.88	0.22	0.23	.[1]	.[1]
TSKFAM	0.64	0.23	0.28	0.29	0.35

[1] These variables were not significant predictor variables in the respective regression models.

Implications for Future Research

While there has been an implicit agreement that the environment has an influence on consumer behavior, there has been no agreement about how environmental effects might be investigated systematically. This study tested one approach along dimensions which have been identified, or are analogous to, those identified by several other disciplines in other behavioral contexts. The approach appears to have some potential at least with regard to decisions about prescription purchases. The results of this investigation encourage additional efforts to improve the measures and to investigate ways to incorporate these influences in models of consumer behavior. If it is shown that the environment has a systematic effect upon consumer choice for prescription purchases, it may be possible to extend the study of environmental influences to other providers of health care or in other market environments.

If it can be demonstrated that the environment has influence upon the dyad comprised of consumer and pharmacist, possible direction for future research might be to study the impact of the environment upon relationships at other levels of channels of distribution of pharmaceutical goods and services. At least one study has provided evidence that environmental dimensions affect the perception of uncertainty in marketing channel relationships (Achrol and Stern 1988). Within pharmaceutical channels the same product, pharmaceutical service, is sold as a consumer product to individual patients and as an industrial product to employee

benefit specialists or managed health care plans. There is an opportunity to compare choice processes and influences at the two levels.

Implications for Pharmacy Practice

As a descriptive study, this research is of interest to pharmacy practitioners. It provides an opportunity to view the practice of pharmacy from the vantage point of the consumer or patient. It provides an assessment of whether the changes in pharmacy practice that are of concern to the pharmacists and other members of the health care system have had any impact upon the consumer. Descriptive studies are needed as automation and technicians shoulder the dispensing functions and pharmacists reevaluate their role in the drug use process (Hepler 1988). It is important to identify public perceptions that may encourage or impede the evolution of the profession. They may address those changes which could impede these changes. Once pharmacists develop an appreciation of relevant environmental influences, they may begin to anticipate how future changes in environment will affect consumers and their decision process.

This study also has implications for pharmacy practice which are based upon the model of consumer choice process. It may provide pharmacists with a better understanding of consumer decisions with respect to prescription purchases. Use of the model helps understand the intermediate variables that link demographic characteristics with pharmacy patronage. This may assist

pharmacists with designing effective promotional strategies. For example, if consumers view the market as complex, the results show that consumers will be more motivated to consider methodically alternative pharmacies. Promotions could be designed to increase or reinforce the perception of business complexity. Promotional efforts which increase perceived ability will boost the confidence of consumers and increase their satisfaction with their decision (Klein and Yadav 1989). Making pharmacy choice a more rational and conscious process may be beneficial since attitudes, and likely decision, too, are more enduring if formed through more cognitive elaboration (Petty and Cacioppo 1981).

VII. SUMMARY AND CONCLUSIONS

The objectives of this research were to (1) characterize the dimensions of the retail market environment for prescription drugs, (2) develop measures of these environmental dimensions, and (3) determine which dimensions are related to measures of consumers' motivation and self-perceived ability to make a purchase decision. A review of the literature about environmental effects was conducted, in search of a viable approach to characterizing the market environment for pharmaceutical products. The concept of a multi-level environment within which members of a marketing distribution channel function was selected (Achrol, Reve and Stern 1983). A model of the consumer choice process was identified which proposes that the environment as well as individual characteristics affect consumers' choice strategies (Roedder John and Leong 1985). According to the model, consumer characteristics and the environment affect an individual's motivation and ability to engage in a comprehensive and systematic decision process.

The seven environmental dimensions which Achrol and Stern (1988) had operationalized to study the effect of the environment upon retailer-wholesaler relationships were adapted to investigate consumers' perceptions of the pharmacy market in their communities. The seven dimensions were: diversity, dynamism, concentration, capacity, conflict, interconnectedness, and interdependence.

Measures were adapted or developed to measure other constructs in the model: product involvement, task familiarity, market familiarity, product knowledge, motivation and ability.

A mail survey provided data from a representative group of 461 consumers from three different communities in Wisconsin. Factor analysis of the environmental perception scale items supported the presence of seven dimensions. The resulting factors were conceptually similar to six of the seven proposed dimensions, but items loaded on the factors such that business and professional aspects of pharmacy practice were separated. The seven factors were labeled: business conflict, business complexity, professional interdependence, business diversity, professional conflict, business capacity and professional interconnectedness.

A single item, the number of pharmacies shopped in the past year was used as an indicator of market familiarity. There was little variability in ability scores, although it is not known whether the measure was poor or whether consumers are very similar in their perceived ability to select a pharmacy for the purchase of prescription drugs. Because some of the remaining scale scores exhibited marginal reliability, the subsequent analyses were considered exploratory.

According to results of a multiple regression analysis, six variables explained about 20 percent of the variation in consumers' motivation scores. Perception of business complexity had the greatest effect, followed by task

familiarity, income, product involvement, age and medical expenses. Six variables entered the regression equation which explained 17 percent of the variation in the squared ability scores. Task familiarity had the greatest influence, followed by four of the five environmental perception scores: professional interdependence, business complexity, professional conflict and business diversity.

Future research is needed to develop better measures of consumers' perceptions of the pharmacy market environment. Results of the regression analysis admittedly are preliminary due to the limitations of the measures. However, the regression results would encourage the additional research efforts because several of the environmental perception measures were related to consumers' motivation and ability.

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APPENDIX A

Selection of the Study Sites

Six potential study sites within Wisconsin were evaluated across the seven environmental dimensions in each of the four sectors of influence. Three sites, Green Bay, Janesville and La Crosse, were selected for the survey because they exhibited differences in environments among them. The factors that were considered and observations about the selected sites are described in this appendix.

Output Sector Analysis

The diversity within the output or consumer sector of each community is reflected in the mix of employment types; the change in employment types is one indication of dynamism. The proportion of employees who work for one or two large employers represents concentration. Low unemployment and population growth are measures of environmental capacity. Pharmacy practice is interconnected to the output sector by the percentage of persons engaged in retail trade and in other health and service related industries, as well as whether a few large employers control the health care benefits of a significant proportion of the population.

Information about the output sector is given in Table A1. According to census data Rock County had the lowest percentage of nonfarm labor. The proportion of persons engaged in manufacturing durable products outweighed nondurables at a ratio of 2.65:1. This imbalance could produce swings in the local economy since the purchase of durable manufactured goods is more sensitive to national economic situation than nondurable purchases. The proportion of persons employed in retail trade is some indication of the extent to which the county serves as a center of trade, and Janesville was the lowest of all sites. The proportion of persons employed in some type of service-related occupation, i.e., trade, financial, government and other services, was low in Rock County, approximately half the proportion in La Crosse. In fact, La Crosse County contrasted with Rock County in several other ways. La Crosse had the highest percentage of nonfarm labor of all counties studied. The ratio of durable to nondurable manufacturing was more nearly even (0.82) in La Crosse. La Crosse had the highest percentage of employed persons working in retail trade (even greater than Dane County). Data for Brown County fell between that of La Crosse and Rock counties for percentage of nonfarm labor, and in retail and service occupations. Unlike the other two communities, Green Bay's manufacturing sector was skewed toward nondurable commodities. Brown County also had experienced the greatest growth in population while Rock County's population decreased. Another estimate of economic capacity from 1981 to 1986, annual payroll divided by the number of employees in the county, found the increase in La Crosse to be well above, in Rock well below, and in Brown at about the same level as the statewide increase of 18.1%.

Table A1. Characteristics of Potential Survey Sites

	COUNTY					
	Brown	Eau Claire	Fond du Lac	Rock	La Crosse	Dane
Population, 1989[1]	192,275	86,588	90,650	134,900	97,263	355,350
Pop. Change, 1984-89	+ 6.0%	+ 3.5%	- 1.6%	- 4.8%	+ 2.3%	+ 5.8%
Unemployment, 12/88[2]	3.8%	4.2%	4.0%	3.6%	3.5%	2.8%
Educational Attainment, 1980[3]						
% 12 Yrs or More	73.9	75.0	68.1	71.1	73.5	83.7
% 16 Yrs or More	14.5	16.3	11.3	12.4	17.3	30.9
Place of Employment						
Nonfarm Labor	89.8%	83.3%	81.7%	63.5%	98.8%	94.3%
Manufacturing	23.9%	15.2%	20.9%	25.6%	19.8%	10.7%
Service Occupations	57.0%	60.4%	50.1%	38.2%	70.8%	77.2%
Retail Trade	19.2%	20.9%	16.7%	16.0%	21.0%	18.9%
Ratio of Durable:Nondurable Manufacturing	0.34	0.91	2.06	2.65	0.82	0.97

[1] Source: *Drug Store Market Guide*, 1984; 1989.

[2] Source: *Employment Review*, Wisconsin Department of Industry, Labor and Human Relations, January 1989.

[3] *City County Data Guide*, U.S. Bureau of the Census, 1988.

Input and Regulatory Sectors

Many elements of the input and regulatory sectors will not vary within the State. For example, pharmaceutical industry and drug wholesalers operate throughout the state, and government regulation and professional and trade association activities are statewide regulatory influences. Prescribers are an element of the input sector which varies, and they are closely associated with a variable element of the regulatory sector, the third party payers. Although it might be argued that third party payers are part of the input sector, they have been assigned to the regulatory sector since they frequently set the terms by which the patient-pharmacist exchange occurs but have no direct role in the decision to prescribe or select a particular chemical entity.

The diversity of the input and regulatory sectors across the survey sites can be assessed by the variety and intensity of health services offered in the community. Changes in recent years are a reflection of dynamism, especially if the changes were frequent and unexpected. Differences in concentration are seen in the number and relative size of clinics, hospitals and other health care institutions. The degree to which the site serves as an area medical center, occupancy rates and the growth (or lack thereof) of the existing organizations gives a sense of the capacity dimension. The health care networks, vertical and horizontal integration of services, and existence of long-term contracts taps the degree of interconnection. The proportion of third party prescriptions dispensed specifically shows interconnection of pharmacy to the insurance system. Conflicts of interest are manifested by competition among practitioners, shifts in affiliation, degree of cooperation with managed health care policies, and activities such as physician dispensing. The interdependence is judged by how all concerned have reacted to changes in their environments.

Table A2 provides the information for a comparison of the input and regulatory sectors at the study sites. Janesville has only one hospital with a occupancy rate that was low in relation to the number of beds per capita. The number of nursing home beds per person over age 65 was relatively high and the occupancy rate low, suggesting a surplus of long term care beds. Rock County had the greatest percentage of physician offices employing fewer than 5 people according to employment data. Four HMOs were offered to state employees in Rock County which is a large number considering the population. None of the four HMOs operating there had been present for more than 5 years. Green Bay has three hospitals with moderate number of beds per capita. There was a relatively low number of nursing home beds and the occupancy rate was high, suggesting a shortage of nursing home beds may exist. Over the past five years the number of physician offices decreased due to a reduction in the number of offices with fewer than 20 employees, and an increase in the number of larger office practices. Only one managed health care plan has been offered to state

Table A2. Characteristics of Health Care Institutions in Potential Study Sites

	COUNTY					
PHYSICIANS	Brown	Eau Claire	Fond du Lac	Rock	La Crosse	Dane
No. Physicians per 10,000 Pop.[1]	130	214	119	107	322	422
No. Physician Offices, 1986[2]	82	43	31	34	27	134
Change, 1981-86	- 6.8%	- 11.0%	+ 29.2%	+ 5.2%	- 10.0%	+ 13.4%
Employees per Office (Ave)[2]	11.3	15.3	12.1	19.8	50.0	16.0
Distribution by No. Employees						
1-5 employees	43.9%	44.2%	54.8%	62.5%	44.4%	47.0%
5-9 employees	26.8%	25.6%	16.1%	20.6%	22.2%	20.9%
10-19 employees	6.8%	23.3%	19.4%	8.8%	14.8%	14.9%
20-49 employees	11.0%	4.7%	6.5%	2.9%	7.4%	12.7%
50-99 employees	2.4%	-	-	-	3.7%	1.5%
100-249 employees	1.2%	-	3.2%	8.8%	3.7%	2.2%
250-499 employees	-	2.3%	-	-	-	0.7%
500+ employees	-	-	-	-	3.7%	-

[1] Source: *City County Data Guide*, U.S. Bureau of the Census, 1988.

[2] Source: *County Business Patterns* 1981; 1989, U.S. Bureau of the Census.

Table A2 (continued)

	COUNTY					
HOSPITALS[3]	Brown	Eau Claire	Fond du Lac	Rock	La Crosse	Dane
No. Hospitals	3	2	1	1	2	4
Beds per 1000 Population	4.36	7.15	4.58	1.50	7.59	4.51
Occupancy Rate	59%	48%	71%	63%	59%	69%
Board Certified Staff	68%	84%	81%	81%	76%	84%
NURSING HOMES[4]						
No. Nursing Homes	16	7	10	10	8	27
Beds per 1000 Pop. 65+	76.56	80.54	87.19	94.46	102.14	75.19
Occupancy Rate	95.8%	91.2%	94.7%	82.5%	95.7%	93.3%
HMOs[5]						
No. Fully Operational	1	3	0	4	3	4
No. Locally Owned	0	3	0	3	2	4
No. Operated ≥6 Yrs	1	2	0	0	1	2
Total No. Offered 1983-89	1	7	3	5	4	7

[3] Source: *Medicare Hospital Mortality Information 1987, Region V*, U.S. Department of Health and Human Services, 1988.

[4] Source: *Nursing Home Utilization 1987*, Center for Health Statistics, Wisconsin Division of Health.

[5] HMOs were counted as fully operational if they had hospital, primary physician and chiropractor (plus dental and pharmacy services, if applicable) all physically located in the county. Other HMOs may have some providers located in the county.
Source: *It's Your Choice* 1983; 1984; 1985; 1986; 1987; 1988; 1989, Wisconsin Department of Employee Trust Funds.

employees in Brown County over the past 6 years, and this plan is operated by a large insurance company, not a local clinic. La Crosse has Wisconsin's largest physician clinic, which significantly raised the figure obtained for the "average number of employees per physician office." There are two hospitals which offer a complete range of specialized services (such as organ transplants) not available in the other sites. Because it serves as a medical center for a large area of the state, La Crosse hospitals and nursing homes are able to maintain a occupancy rate equal to that of Green Bay despite having almost 60 percent more beds per capita. There were three HMOs, two of which were locally operated, and including one which had been offered to state employees since 1983.

Competitive Sector

The competitive sector is comprised of all existing and potential competitors for the prescription drug market. Other community pharmacies are the primary competitors, although mail order and physician dispensing are a small but growing source of competition. Pharmacies exhibit diversity in size, merchandise mix, and type of location. New businesses, business failures and changes in merchandising and promotion are part of their dynamism, as well as employee turnover and changes in financial position. Growth in sales, employees, and population served indicate capacity. The degree to which a small number of pharmacies control prescription sales is indicative of concentration. Conflict is generated by activities other pharmacists perceive to be "unfair" or "unprofessional" and include: discounting patient copayments, mentioning competitors by name in advertising, guaranteed lowest prices and coupons to encourage prescription transfers. The formal and informal interprofessional relations likely reflect the presence or absence of conflict. Pharmacies can be interconnected by being part of a chain or cooperative, either local, regional or national. The degree of interconnectedness determines the autonomy each manager has in operating an individual pharmacy. Other interconnections exist to other institutions in the health care system, such as nursing home contracts and contracts with third parties. Interdependence is evaluated by the how pharmacists react to threats, and by the degree to which they rely upon the actions of other members of the health care system.

Table A3 has information for comparison among the pharmacies in the study sites. The percentage of mass merchandiser pharmacies was lower and the percentage of chains higher in Janesville than the other two sites. La Crosse had large clinic pharmacies. Green Bay has experienced the most change through new pharmacies and those which have closed. In contrast, changes in Janesville involved changing names and addresses, no new pharmacies and only one closed. La Crosse has been relatively stable. The population per pharmacy was lowest in Rock County and highest in Brown County. Curiously, sales per capita were

Table A3. Characteristics of Community Pharmacies For Potential Study Sites

	COMMUNITY					
	Green Bay	Eau Claire	Fond du Lac	Janesville	La Crosse	Madison
No. Pharmacies in City[1]	26	17	12	13	15	51
No. Pharmacies in County[2]	31	18	17	32	20	81
Turnover, 1984-89 (City)[1]						
New Pharmacies	3	4	1	0	1	5
Closed	6	2	2	1	1	4
New Name or Location	1	3	1	5	1	4
Type of Pharmacy (City)[1]						
Mass Merchandiser	19.2%	5.9%	16.7%	15.4%	20.0%	15.7%
Pharmacy Chain	19.2%	11.8%	25.0%	30.8%	13.3%	25.5%
Locally Owned	42.3%	52.9%	33.3%	38.5%	40.0%	41.2%
Clinic	19.2%	29.4%	25.0%	15.4%	26.6%	17.6%
Distribution by No. Employees, 1986 (County)[3]						
1-9 employees	58.3%	35.7%	41.2%	53.1%	44.4%	54.1%
10+ employees	41.7%	64.3%	58.8%	46.9%	55.5%	45.9%

[1] Source: *Hayes Druggist Directory*, 1984; 1989.

[2] Source: *Drugstore Market Guide*, 1984; 1989.

[3] Source: *County Business Patterns*, 1986, U.S. Bureau of the Census.

Table A3 (continued)

		COMMUNITY					
		Green Bay	Eau Claire	Fond du Lac	Janesville	La Crosse	Madison
No. IPC Members (City)[4]		1	6	1	4	1	14
% Local Independents		7%	43%	17%	66%	11%	52%
Distribution by Credit Rating (City)[5]	A	38.5%	11.8%	83.3%	53.8%	40.0%	45.1%
	B	34.6%	11.8%	16.7%	15.4%	20.0%	25.5%
	C	15.4%	35.3%	-	23.1%	13.3%	15.7%
	unknown	11.5%	41.2%	-	7.7%	26.7%	13.7%
Sales $/Pharmacy (County) in thousands[6]		845	980	1030	937	1049	893
Change 1984-1989		+ 34.9%	+11.0%	+ 17.8%	+ 67.3%	- 15.6%	+ 10.2%
Physicians/Pharmacy		7.8	9.9	6.4	4.6	15.2	17.8
Persons/Pharmacy (County)[6]		6202	4810	5332	4216	4863	4387
Sales $/Person (County)[6]		136	204	193	222	216	204
Change 1984-89		+ 40.2%	+ 60.6%	+ 7.2%	+ 82.0%	+ 18.0%	+ 36.0%

[4] Source: Personal communication from John Pike, Executice Director of Independent Pharmacists Cooperative (IPC), 1 August 1989.

[5] Source: *Hayes Druggist Directory*, 1984; 1989.

[6] Source: *Drugstore Market Guide*, 1984; 1989.

lowest in Brown County and highest in Rock County, and this figure has been increasing in Rock at twice the rate of increase in Brown County. The sales per capita increase in La Crosse has not increased sufficiently to keep pace with inflation. Average sales per pharmacy were lowest in Brown County and highest in La Crosse, but over the past 5 years this figure has increased in Brown County and decreased in La Crosse. Rock County had the highest per capita sales of all and has seen the greatest rate of increase in sales per pharmacy. Membership in the Independent Pharmacists Cooperative was highest in Janesville, and much lower in La Crosse and Green Bay.

Report on Personal Interviews

Telephone interviews with pharmacists in the study communities supplemented information from published sources. Admittedly this information incorporated the personal biases of the individuals who were contacted. However, nothing was uncovered which contradicted impressions gained from studying secondary data.

Green Bay. On August 15, 1989 I spoke with MM a pharmacist who works in a Green Bay clinic pharmacy. MM was on the Board of Directors of the Wisconsin Pharmacists Association (WPhA) and active in the Brown County Pharmacists organization. Two of three major employers in Green Bay offer prescription coverage which includes a patient co-payment. Other employers offer coverage with a deductible, but the employee files for reimbursement, not the pharmacy. At the pharmacy where MM was employed about 50 percent of all prescriptions dispensed were covered by insurance which MM believed to be the local norm. Counting all PCS plan variants as one, they dealt with about six different plans. HMOs have not been a factor; the County Medical Society successfully discouraged physician participation. MM confirmed that six pharmacies had gone out of business in the past five years because of ill health, loss of lease, retirement, effects of competition, and an unexpected purchase offer from a local hospital. The hospital venture into community pharmacy was unsuccessful and the pharmacy had closed.

MM was not aware of any pharmacies that offer discounts on patient co-payment nor prescription coupons. One chain pharmacy guaranteed lowest price in their ads. Although the chains watch each others' prices closely, they do not monitor the independents. The independents are not price-checking each other. Physician dispensing has been limited and was not a problem to local pharmacists. At least half of the local nursing homes are operated by a national chain and their medications are delivered from Milwaukee. The remaining, smaller nursing homes were served by one of three or four local pharmacies. One pharmacy had

acquired a laminar flow hood for preparing IVs, including those for nursing homes owned by the national chain.

The Brown County Pharmacists are active with about 95% of their efforts being continuing education programs. They offer two social events each year. Attendance was good and improving, especially among the younger pharmacists. Intraprofessional relations were good; if a pharmacist is out of a product, the patient likely is referred to a nearby pharmacy after confirming that pharmacy has the drug in stock. MM said there are job openings for pharmacists but he would not characterize the situation as a shortage. There is a "fair amount" of turnover among pharmacists, primarily from chain to chain.

Janesville. On August 18, 1989 I spoke with RS at his clinic pharmacy. RS was the district representative to the WPhA Board of Directors and had worked in Janesville for 30 years.

The *Drugstore Market Guide* reported Rock County had decreased in population and households over the past five years. RS disagreed. Although community growth has slowed, he maintained that things have been stable. At a recent Chamber of Commerce dinner, he said the enthusiasm and optimism over the economic future was infectiously high. Of course, said RS, everything in town rides upon the decisions made by GM. Some GM, and all Accudyne and city/county employees have first dollar prescription coverage, with patient co-payments varying from nothing up to $10. Third party accounts for 40-50 percent of the prescription volume and involves eight to 10 plans.

There are two clinics in town and "that's everybody" according to RS. One clinic has 50 physicians and is part of the DeanCare system. Another clinic on the other end of town is affiliated with CompCare. Despite initial resistance from both clinics, CompCare eventually won their affiliation and the other clinic joined DeanCare in response. The physicians are not happy about the situation but are going along with it. RS noted that in recent years the clinics have broadened their services by bringing new specialists into the groups. There has been no physician dispensing.

RS hesitated when I asked him if he thought Janesville was more competitive than other communities around the state. He answered that there is competition because there are chains. Until this last January all the chains and some of the independents were discounting co-payments. One chain heavily promoted price in their ads, and a new Wal-Mart pharmacy offered some grand-opening specials. The chain pharmacists at least are price-checking. No pharmacy is in the IV business. Three pharmacies contract with nursing homes, but a large provider from Madison takes some of that business.

There is a county pharmacists group whose level of activity cycles with presence or absence of common threats in the environment. At the time of the

interview city pharmacists were meeting to learn more about proposals by third parties to base reimbursement on discounts from published wholesale prices (AWP). If there are no major problems, get-togethers are purely social activities. It is tough for an employer to find a pharmacist, particularly a "good" pharmacist, and occasionally a pharmacist jumps chains. RS does not perceive a shortage.

La Crosse. On August 15, 1989 I spoke with RB at a clinic pharmacy in La Crosse. RB regularly attends the Coulee Valley Pharmacists meetings and is familiar with the pharmacy market in the La Crosse area. RB did not perceive HMOs as a problem for local pharmacists at this time. Patients who are members of managed health care plans are free to choose a pharmacy and the plans pay AWP and a fixed dispensing fee. Although the fee could be higher, there are no major problems. Pharmacists are concerned about proposals to discount reimbursement from published AWP prices. RB's pharmacy averages about 40 percent third party prescriptions, and currently deals with four providers plus Medical Assistance. He believes this is typical. Local pharmacists were responding to physician dispensing at a local clinic by running cooperative ads about the importance of shopping at your local pharmacy. Although few prescriptions were dispensed by the MDs, pharmacists were upset that they take the best customers, i.e., those who pay cash.

Pharmacy competition was "average" but about to get worse as three large "corporate" pharmacies are planned. RB was skeptical that the area could support more pharmacies. Competitors' prices were definitely being monitored closely, and although discounting co-payments had disappeared, that practice has been replaced by dollars-off coupons that encourage patients to switch pharmacies or bring in new prescriptions. The one pharmacy that RB could recall having closed, now sells durable medical equipment from another location.

The Coulee Valley pharmacists meet monthly from September through May with a "good turnout." RB perceives three cliques operating within the organization: "professional, retail and corporate." There has been a rash of job switching, some from chain to chain, a few from hospital and independent to chain, primarily for substantial increase in salaries. RB observed that new corporate pharmacies always bring a pharmacist-manager from the outside, one who has been indoctrinated in company policy. They hire a staff pharmacist locally, and apparently offer good salaries, because they never have trouble filling the position. Despite job openings, RB does not sense a shortage.

APPENDIX B

Pretest Data Collection Form

University of Wisconsin Madison

CENTER FOR HEALTH SCIENCES
School of Pharmacy
425 North Charter Street
Madison, Wisconsin 53706
Telephone: 608/262-1416

September 1989

Dear Sir or Madam:

These days it seems health care organizations behave more and more like competitive businesses. Advertisements for clinics and hospitals are common on television and in the newspapers. New services like urgent care centers and day surgery compete with hospitals. Insurance companies watch their costs carefully and pass on cost increases by restricting services and asking patients to pay part of the bill. Many of these changes were designed to decrease the cost of medical care, however, not much is known about how individual consumers are affected. Your impressions are valuable to us, particularly those regarding the most common form of medical treatment, prescription drugs.

Your household is one of a small number in your community being contacted. It was drawn at random. In order that the results will truly represent the opinions of people in your area, every response is important. Your answers are completely confidential. The enclosed form takes about 15 minutes to complete. The booklet is self-addressed and stamped for your convenience in returning it to us.

This project is part of ongoing study about consumers' experiences with medical care. Results are shared with other health personnel, educators and government policy makers so that your needs can be better served.

We would be happy to answer any questions you might have. Please write to us at the address above or call (608) 262-0452.

Your help is greatly appreciated.

Sincerely,

Pharmacist Earlene Lipowski
Graduate Student in Pharmacy

Pharmacist Joseph B. Wiederholt
Associate Professor of Pharmacy

P.S. Please enjoy a refreshment of your choice.

SURVEY ABOUT THE MARKET FOR PHARMACY

AND OTHER HEALTH SERVICES

A. Health care organizations including pharmacies are like retail businesses in some ways. In some ways they are different. Here are some opinions about pharmacies and about prescription drugs. Please circle the number that describes whether you agree or disagree with each statement.

	STRONGLY DISAGREE	DISAGREE	NEITHER	AGREE	STRONGLY AGREE
1. With business conditions in our community what they are, a new pharmacy likely would be financially successful.....	1	2	3	4	5
2. The importance of prescription drugs as a form of medical treatment will increase in the future.....	1	2	3	4	5
3. Operating a pharmacy is more profitable than most retail businesses.....	1	2	3	4	5
4. Compared to retail businesses, you need more money to open a pharmacy.....	1	2	3	4	5
5. Eventually the government will adopt a program to provide health care for everyone.....	1	2	3	4	5
6. It is not difficult for a pharmacist to find a job.....	1	2	3	4	5
7. The prescription business is evenly divided among all the pharmacies in our community.....	1	2	3	4	5
8. If I need to go to a pharmacy to obtain a prescription drug, there are plenty of conveniently located pharmacies from which to choose.....	1	2	3	4	5
9. The pharmacies in our community tend to specialize in serving particular types of patients or particular health care needs.....	1	2	3	4	5

	STRONGLY DISAGREE	DISAGREE	NEITHER	AGREE	STRONGLY AGREE
10. A small number of large companies manufacture most of the prescription drugs used in this country.....	1	2	3	4	5
11. Prescription advertisements in our community make direct comparisons to their competitors.....	1	2	3	4	5
12. Pharmacies in our community offer to meet or beat the prescription prices of their competitors.....	1	2	3	4	5
13. There is aggressive competition among the pharmacies in our community for prescription business.....	1	2	3	4	5
14. Pharmacists in our community seem to have a professional regard for their fellow pharmacists.....	1	2	3	4	5
15. Physicians should not dispense prescription drugs because they might be tempted to prescribe unnecessary drugs in order to increase their profit.....	1	2	3	4	5
16. Physicians prescribe too many drugs.....	1	2	3	4	5
17. Pharmacists put the interests of the patient ahead of profit when they offer advice on drug use.....	1	2	3	4	5
18. No matter where you live in this community, there is a pharmacy a short distance from your home.....	1	2	3	4	5
19. No matter what level of price, service, and convenience you are seeking, there is a pharmacy in this community to suit you.....	1	2	3	4	5
20. There is quite a difference among pharmacies when you consider the kinds of other merchandise they carry.....	1	2	3	4	5

	STRONGLY DISAGREE	DISAGREE	NEITHER	AGREE	STRONGLY AGREE
21. There are some pharmacies in my community where I would not be comfortable having a prescription dispensed.....	1	2	3	4	5
22. Laws and regulations affecting pharmacists are changing constantly.....	1	2	3	4	5
23. Insurance rules and policies for prescription drugs are changing constantly.....	1	2	3	4	5
24. Pharmacists are constantly learning about new drugs and medical treatments.....	1	2	3	4	5
25. Pharmacists seem to change jobs frequently.....	1	2	3	4	5
26. Changes affecting pharmacy owners and managers often are quite predictable.....	1	2	3	4	5
27. Compared to retail businesses, pharmacies seem to move, change ownership, and close less frequently.....	1	2	3	4	5
28. People today are taking a more active interest in their health care than ever before.....	1	2	3	4	5
29. The way our health care system operates, it is difficult to establish a relationship with a single physician.....	1	2	3	4	5
30. Pharmacists who work for chains manage their pharmacies according to decisions made at corporate headquarters.....	1	2	3	4	5
31. If one pharmacy starts a particular sales promotion, the other pharmacies in town soon make the same offer....	1	2	3	4	5
32. Insurance companies and government programs influence the market prices for prescription drugs.....	1	2	3	4	5

	STRONGLY DISAGREE	DISAGREE	NEITHER	AGREE	STRONGLY AGREE
33. Prescription prices to consumers depend mostly upon the prices charged by drug manufacturers.....	1	2	3	4	5
34. Pharmacists must have a good working relationship with physicians in the community.....	1	2	3	4	5
35. Most people are willing to go to a pharmacy selected by their insurance plan in order to get prescriptions paid by their insurance.....	1	2	3	4	5
36. A pharmacy that fails to give good service will soon be out business..	1	2	3	4	5
37. Their profession gives all pharmacists something in common.....	1	2	3	4	5
38. Most people are willing to shop at a pharmacy selected by their insurance company in exchange for lower premiums.....	1	2	3	4	5
39. Most pharmacies are locally owned and independently operated.....	1	2	3	4	5
40. Government licensing and regulatory agencies control the practice of pharmacy.....	1	2	3	4	5
41. Consumer groups have the power to force changes in the health care system.....	1	2	3	4	5
42. There are many rules controlling the practice of pharmacy.....	1	2	3	4	5
43. Pharmacists have little influence in the health care system and are forced to accept decisions made by government agencies and large insurance companies.....	1	2	3	4	5

8. This section is a set of rating scales. After reading the words at each end of the scale, mark the space that describes your feelings about prescription drugs. In the example shown below, if you thought of prescription drugs as quite unpleasant, you would place a mark in the space closer to unpleasant and under the word "quite."

PRESCRIPTION DRUGS RATING SCALE

		Extremely:	Quite	: Slight	: Neither	: Slight	: Quite	:Extremely	
Example:	pleasant						X		unpleasant
1.	important								unimportant
2.	of no concern to me								of concern to me
3.	irrelevant								relevant
4.	means a lot to me								means nothing to me
5.	useless								useful
6.	valuable								worthless
7.	trivial								fundamental
8.	beneficial								not beneficial
9.	matter to me								don't matter to me
10.	uninterested								interested
11.	significant								insignificant
12.	vital								superfluous
13.	boring								interesting
14.	unexciting								exciting
15.	appealing								unappealing
16.	mundane								fascinating
17.	essential								nonessential
18.	undesirable								desirable
19.	wanted								unwanted
20.	not needed								needed

C. An important part of this study is learning how people go about purchasing prescription drugs. Circle the number which best describes whether you agree or disagree with each of the statements.

	STRONGLY DISAGREE	DISAGREE	NEITHER	AGREE	STRONGLY AGREE
1. On most prescription purchases, the pharmacy you choose is of little consequence.....	1	2	3	4	5
2. I have little or no interest in comparison shopping for prescription drugs.....	1	2	3	4	5
3. The pharmacy where you buy prescription drugs makes little difference.....	1	2	3	4	5
4. I am not interested in bargain hunting when it comes to pharmacies.....	1	2	3	4	5
5. You can save a lot of money on prescription prices by shopping around.....	1	2	3	4	5
6. I take advantage of discounts and coupon offers for prescription drugs.....	1	2	3	4	5
7. It would be annoying to discover you could buy some prescriptions cheaper at another pharmacy.....	1	2	3	4	5
8. The purchase of prescription drugs is a rather routine activity, not a main shopping concern.....	1	2	3	4	5
9. It is important to be aware of all the alternatives before selecting a pharmacy.....	1	2	3	4	5
10. There are more important concerns than worrying about where to purchase your prescriptions.....	1	2	3	4	5
11. I regularly read pharmacy advertisements in the newspapers....	1	2	3	4	5

	STRONGLY DISAGREE	DISAGREE	NEITHER	AGREE	STRONGLY AGREE
12. It doesn't make much sense to be concerned about over choosing a pharmacy since most pharmacies are about the same.....	1	2	3	4	5
13. I am willing to spend a little extra time or effort to shop at the pharmacy of my choice.....	1	2	3	4	5
14. Above all else, the pharmacy where you shop must be conveniently located.....	1	2	3	4	5
15. You can save more money on prescription purchases by asking for generic drugs than by switching pharmacies.....	1	2	3	4	5
16. I am able to recommend a pharmacy to a new neighbor.....	1	2	3	4	5
17. I am confident anyone would receive satisfactory service at the pharmacy I would recommend.....	1	2	3	4	5
18. It is easy to choose a pharmacy.....	1	2	3	4	5
19. If asked, I could explain why I recommended that particular pharmacy.....	1	2	3	4	5

20. How often do you shop at a pharmacy for all types of purchases, not just prescriptions? (Circle the number of your answer)

1 AT LEAST ONCE A WEEK
2 AT LEAST ONCE A MONTH
3 ONCE OR TWICE A YEAR
4 LESS THAN ONCE A YEAR

21. How many different pharmacies in this community have you shopped at in the past year?

_____

D. Read all the statements below and circle the number of all the statements that describe your experience with prescription drugs. Several may apply.

1. Other members of my family use prescription drugs, but not me.
2. I have never used a prescription drug.
3. I am not taking a prescription drug now but I have taken one or more in the past.
4. I currently am taking a prescription drug for limited period of time.
5. I routinely use a prescription drug and expect to continue its use for the foreseeable future.
6. I routinely use more than one prescription drug.
7. I know the names of all or most of the prescription drugs I take.
8. I understand the reasons why my doctor prescribed all or most of the drugs I take and how they might affect me.
9. I check to see how well the drugs are working and watch out for side effects.
10. If necessary I would not hesitate to call my doctor and ask about making changes in the drugs I take.

E. Finally, we would like to ask you a few questions about yourself.

1. How many years have you lived in this community? (Circle the number of your answer)

1 LESS THAN 1 YEAR
2 AT LEAST 1 BUT LESS THAN 5 YEARS
3 AT LEAST 5 BUT LESS THAN 10 YEARS
4 10 YEARS OR MORE

2. Your gender. (Circle the number of your answer)

1 MALE
2 FEMALE

3. Your age: _____ YEARS

4. Are you presently: (Circle the number of your answer)

1 EMPLOYED
2 UNEMPLOYED
3 RETIRED
4 FULL-TIME HOMEMAKER

5. Please describe your current or most recent occupation. (If retired, describe your occupation before retirement.)

TITLE: _____

KIND OF WORK: _____

6. How many persons currently live in your household on a full-time basis including yourself?

_____

7. Have you ever worked in a pharmacy? (Circle the number of your answer)

1 NO
2 YES

8. Has any member of your immediate family every worked in a pharmacy?

1 NO
2 YES

9. Which is the highest level of education you have completed?

1 GRAMMAR SCHOOL
2 SOME HIGH SCHOOL
3 GRADUATED HIGH SCHOOL
4 SOME POST HIGH SCHOOL
5 GRADUATED 4 YEAR COLLEGE
6 MASTERS OR 5 YEAR PROFESSIONAL DEGREE
7 PH.D. OR 6-7 YEAR PROFESSIONAL DEGREE

10. What was your approximate annual household income from all sources, before taxes, in 1988? (Circle number)

1 LESS THAN $10,000
2 $10,000 TO 19,999
3 $20,000 TO 34,999
4 $35,000 TO 49,999
5 $50,000 OR MORE

11. How would you rate your current health status?

1 EXCELLENT
2 GOOD
3 FAIR
4 POOR

12. Please estimate the amount you have personally paid for health services in the past year for all members of your household. Include insurance premiums and physician, dental, pharmacy charges, etc.

1 LESS THAN $500
2 $500-999
3 $1000-1999
4 $2000-2999
5 $3000-3999
6 $4000 OR MORE

13. If you or other members of your household use prescription drugs regularly, how much do you personally pay for these drugs in an average month?

_____

Is there anything else you would like to tell us about pharmacies in your community? If so, please use this space.

Any comments you think might help us in future studies to learn about consumers' reactions to changes in acquiring health care and treatment will be appreciated.

Reminder Postcard

Last week a form was mailed to you asking for your impression of the health care market in your community, especially the market for prescription drugs.

If you have completed and mailed the form, THANK YOU VERY MUCH FOR YOUR HELP. If not, please do so today. Because it has been sent to only a small sample of residents, it is extremely important that your response be included if the results are to be representative.

If you did not receive the form or it got misplaced, please call (608) 262-0452.

Pharmacist Earlene Lipowski
Graduate Student in Pharmacy Administration
University of Wisconsin-Madison

APPENDIX C

Data Collection Form

Advance Postcard
Informing Respondent of Survey

In the next few days you will receive a form in the mail that asks about health care services in your area and about pharmacy services in particular. Your address was picked at random from a list of households in your community.

Your opinion is important to us. When you receive the form, please complete and return it. Thank you.

Sincerely,

Joe Wiederholt

Pharmacist Joe B. Wiederholt, Ph.D.

Earlene Lipowski

Pharmacist Earlene E. Lipowski, M.S.

University of Wisconsin  **Madison**

Sonderegger Center for Research in Pharmacy Administration
School of Pharmacy
425 North Charter Street
Madison, Wisconsin 53706
Telephone: 608/262-1416

Dear Sir or Madam,

Never before have consumers been so involved with decisions about obtaining health care. Here at the University of Wisconsin in Madison, future pharmacists are learning to serve the health care needs of the public in many settings, including retail pharmacy. It is important for pharmacists to know how their services can best meet the changing needs of the community. Your impression of pharmacy practice will provide valuable information about how pharmacists can serve you better.

Your household is one of a small number in your community being asked about their image of retail pharmacy. Please answer the questions in this booklet. Even if you do not purchase presciption drugs very often, your input is important.

You may be assured of complete confidentiality since your name will not be placed on the form. If you wish to comment on any of the questions, please do so on the last page. The form takes about 15 minutes to complete. The booklet is self-addressed and stamped for your convenience in returning it to us.

We would be happy to answer any questions you might have. Please write to us at the address above or call (608) 262-0452.

Thank you for your time and cooperation. Your help is greatly appreciated.

Sincerely,

Earlene Lipowski

Pharmacist Earlene Lipowski
Research Assistant

Joe Wiederholt

Pharmacist Joe Wiederholt
Associate Professor of Pharmacy Administration

P.S. Please enjoy a refreshment of your choice while completing the form.

A. Here are some opinions about pharmacies and about prescription drugs. Please circle the number that describes whether you agree or disagree with each statement. Do not worry or puzzle over individual items. It is your first impression that is of interest.

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
1. The prescription business is evenly divided among all the pharmacies in our community	1	2	3	4	5
2. If I need to go to a pharmacy for a prescription drug, there are plenty of conveniently located pharmacies from which to choose	1	2	3	4	5
3. Some pharmacies in our community tend to specialize in serving certain types of patients or certain health care needs	1	2	3	4	5
4. A small number of large companies manufacture most of the prescription drugs used in this country	1	2	3	4	5
5. Pharmacy ads in our community often suggest that you compare their prices to other pharmacies	1	2	3	4	5
6. Pharmacies in our community offer to meet or beat the prescription prices of their competitors	1	2	3	4	5
7. There is aggressive competition among the pharmacies in our community for prescription business	1	2	3	4	5
8. Pharmacists in our community seem to have a professional regard for their fellow pharmacists	1	2	3	4	5
9. Physicians should not dispense prescription drugs because they might be tempted to prescribe unnecessary drugs in order to increase their profit	1	2	3	4	5

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
10. Physicians prescribe too many drugs	1	2	3	4	5
11. Pharmacists put the interests of the patient ahead of profit when they offer advice on drug use	1	2	3	4	5
12. No matter where you live in this community, there is a pharmacy a short distance from your home	1	2	3	4	5
13. No matter what level of price, service, and convenience you are seeking, there is a pharmacy in this community to suit you	1	2	3	4	5
14. There is a big difference between pharmacies when you think of the number of different products they sell ..	1	2	3	4	5
15. There are some pharmacies in my community where I would not be comfortable having a prescription dispensed	1	2	3	4	5
16. Laws and regulations affecting pharmacists are changing constantly	1	2	3	4	5
17. Insurance rules and policies for prescription drugs are changing constantly	1	2	3	4	5
18. Pharmacists are constantly learning about new drugs and medical treatments	1	2	3	4	5
19. Pharmacists seem to change jobs frequently	1	2	3	4	5

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
20. Pharmacy owners and managers often deal with business changes they could not have predicted	1	2	3	4	5
21. Compared to retail businesses, pharmacies seem to move, change ownership, and close less frequently	1	2	3	4	5
22. The way our health care system operates, it is difficult to establish a relationship with a single physician	1	2	3	4	5
23. Pharmacists who work for chains manage their pharmacies according to decisions made at company headquarters	1	2	3	4	5
24. If one pharmacy starts a sales promotion, the other pharmacies in town soon make the same offer	1	2	3	4	5
25. Insurance companies and government programs influence the market prices for prescription drugs	1	2	3	4	5
26. Prescription prices to consumers depend mostly upon the prices charged by drug manufacturers	1	2	3	4	5
27. Pharmacists must have a good working relationship with physicians in the community	1	2	3	4	5
28. A pharmacy that fails to give good service will soon be out of business ..	1	2	3	4	5
29. Their profession gives all pharmacists something in common	1	2	3	4	5

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
30. Most people are willing to shop at a pharmacy picked by their insurance company in exchange for lower premiums	1	2	3	4	5
31. Most pharmacies are locally owned and independently operated	1	2	3	4	5
32. Consumer groups have the power to force changes in the health care system	1	2	3	4	5
33. There are many rules controlling the practice of pharmacy	1	2	3	4	5
34. Pharmacists have little influence in the health care system and are forced to accept decisions made by government agencies and large insurance companies	1	2	3	4	5
35. Given the business conditions in our community now, a new pharmacy is likely to be financially successful ...	1	2	3	4	5
36. The use of prescription drugs as a form of medical treatment will increase in the future	1	2	3	4	5
37. Compared to retail businesses, you need more money to open a pharmacy	1	2	3	4	5
38. Eventually the government will adopt a program to provide health care for everyone	1	2	3	4	5
39. It is not difficult for a pharmacist to find a job	1	2	3	4	5

B. This scale is made up of words people might use to describe their attitude toward prescription drugs. After reading the words at each end of the scale, mark the space that describes your feelings. In the example shown below, if you think of prescription drugs as quite unpleasant, you would place a mark in the space closer to unpleasant and under the word "quite."

PRESCRIPTION DRUGS RATING SCALE

		Extremely:	Quite	Slightly	Neither	Slightly	Quite	Extremely	
Example:	pleasant						X		unpleasant
1.	irrelevant								relevant
2.	mean a lot to me								mean nothing to me
3.	useless								useful
4.	valuable								worthless
5.	trivial								fundamental
6.	beneficial								not beneficial
7.	matter to me								don't matter to me
8.	uninterested								interested
9.	significant								insignificant
10.	vital								superfluous
11.	boring								interesting
12.	essential								nonessential
13.	undesirable								desirable
14.	wanted								unwanted
15.	not needed								needed

C. An important part of this study is learning how people go about purchasing prescription drugs. Circle the number which best describes whether you agree or disagree with each of the statements.

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
1. On most prescription purchases, the pharmacy you choose is of little consequence	1	2	3	4	5
2. I have little or no interest in comparison shopping for prescription drugs	1	2	3	4	5
3. The pharmacy where you buy prescription drugs makes little difference	1	2	3	4	5
4. I am not interested in bargain hunting when it comes to pharmacies	1	2	3	4	5
5. You can save a lot of money on prescription drugs by shopping around ..	1	2	3	4	5
6. I take advantage of discounts and coupon offers for prescription drugs ..	1	2	3	4	5
7. It would upset me to know that prescription prices are much lower at another pharmacy	1	2	3	4	5
8. The purchase of prescription drugs is a rather routine activity, not a main shopping concern	1	2	3	4	5
9. It is important to know something about the pharmacies in the community before selecting one	1	2	3	4	5
10. There are more important shopping concerns than worrying about where to buy your prescriptions	1	2	3	4	5
11. I regularly read pharmacy advertisements in the newspapers	1	2	3	4	5

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
12. You don't need to be too concerned about choosing a pharmacy since most pharmacies are about the same	1	2	3	4	5
13. I am willing to spend a little extra time or effort to shop at the pharmacy of my choice	1	2	3	4	5
14. Above all else, the pharmacy where you shop must be conveniently located	1	2	3	4	5
15. If asked, I would be able to recommend a pharmacy to a new neighbor	1	2	3	4	5
16. I could give several reasons why I recommended a particular pharmacy ..	1	2	3	4	5
17. I am confident someone would be satisfied with the pharmacy I would recommend	1	2	3	4	5
18. It is easy to choose a pharmacy	1	2	3	4	5

19. How often do you shop at a pharmacy for all types of purchases, not just prescriptions? (Circle the number of your answer)

1 AT LEAST ONCE A WEEK
2 AT LEAST ONCE A MONTH
3 ONCE OR TWICE A YEAR
4 LESS THAN ONCE A YEAR

20. How many different pharmacies in this community have you shopped at in the past year?

_____

D. Most people learn about prescription drugs when they, or someone they know well, takes them. Some people may have an occupation that includes prescribing or giving drugs. Things to know about drugs include the chemical name, how it works and how it affects the body.

1. Please rate how much you know about prescription drugs you, or someone you know well, has taken. A 10 means you know as much as a doctor or pharmacist about these drugs; a 1 means you know very little. (Circle the number.)

   1. 2 3 4 5 6 7 8 9 10

2. How many different prescription drugs have you taken in the past month? If you have not taken any, enter 0.

   _____

3. If you are taking prescription drugs now, do you think you will continue taking at least one of them indefinitely?

   1 NO
   2 YES

E. Finally, we would like to ask you a few questions about yourself.

1. How many years have you lived in this community? (Circle the number of your answer)

   1 LESS THAN 1 YEAR
   2 AT LEAST 1 BUT LESS THAN 5 YEARS
   3 AT LEAST 5 YEARS BUT LESS THAN 10 YEARS
   4 10 YEARS OR MORE

2. Your gender? (Circle the number of your answer)

   1 MALE
   2 FEMALE

3. Your age? _____

4. Are you presently: (Circle the number of your answer)

   1 EMPLOYED
   2 UNEMPLOYED
   3 RETIRED
   4 FULL-TIME HOMEMAKER

5. Please describe your current or most recent occupation. (If retired, describe your occupation before retirement.)

   TITLE: _____

   KIND OF WORK: _____

6. Have you ever worked in a pharmacy? (Circle the number of your answer.)

   1 NO
   2 YES

7. Which is the highest level of education you have completed?

   1 GRAMMAR SCHOOL
   2 SOME HIGH SCHOOL
   3 GRADUATED HIGH SCHOOL
   4 SOME POST HIGH SCHOOL STUDY
   5 GRADUATED 4 YEAR COLLEGE
   6 POSTGRADUATE OR PROFESSIONAL DEGREE

8. How would you rate your current health status?

   1 EXCELLENT
   2 GOOD
   3 FAIR
   4 POOR

9. What was your approximate annual household income from all sources, before taxes, in 1988? (Circle number)

   1 Less than $10,000
   2 $10,000 to 19,999
   3 $20,000 to 34,999
   4 $35,000 to 49,999
   5 $50,000 or more

10. Please estimate the amount you have personally paid for health services in the past year **for all members of your household.** Include insurance premiums and physician, dental, pharmacy charges, etc.

    1 Less than $500
    2 $500–999
    3 $1000–1999
    4 $2000 or more

11. If you or other members of your household use prescription drugs regularly, how much do you personally pay for these drugs in an average month?

    _____

Is there anything else you would like to tell us about pharmacies in your community? If so, please use this space.
Any comments you think might help us in future studies will be appreciated.

_____

_____

_____

_____

_____

_____

_____

_____

_____

DIRECTIONS FOR RETURNING THE BOOKLET

Please **staple** or **tape** the form shut and drop it in the mail. It is already addressed and stamped for your convenience.

THANK YOU

APPENDIX D

Computer Output: Regression Residuals

****** MULTIPLE REGRESSION ******

Equation Number 1 Dependent Variable.. MOTIVATN

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
BUSCMPLX	.49103	.11644	.22103	4.217	.0000
TSKFAM	.57430	.20205	.17348	2.842	.0048
INCOME	-1.59792	.36148	-.23413	-4.420	.0000
ZPII	.10720	.03597	.16265	2.980	.0031
AGE	-.06969	.02873	-.13891	-2.426	.0158
MEDEXP	.88293	.40174	.12320	2.198	.0287
(Constant)	18.77646	4.83444		3.884	.0001

---------- Variables not in the Equation ----------

Variable	Beta In	Partial	Min Toler	T	Sig T
MKTNMBR	.09442	.10301	.70024	1.809	.0715
KNOW	-5.748E-03	-.00607	.68569	-.106	.9156
BUSCONF	.07315	.07790	.69904	1.365	.1734
PROFDEP	.06604	.06974	.70497	1.221	.2230
BUSDIV	-.05684	-.06158	.70564	-1.078	.2821
PROFCONF	.01206	.01275	.69824	.223	.8239
GENDER	.09731	.10353	.68598	1.818	.0701
HLTHSTAT	-.02796	-.02845	.69431	-.497	.6195

End Block Number 1 PIN = .050 Limits reached.

**** MULTIPLE REGRESSION ****

Equation Number 1 Dependent Variable.. MOTIVATN

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	32.1287	49.2468	41.2159	3.5212	322
*RESID	-16.8731	20.0355	.0823	7.1460	322
*ZPRED	-2.6057	2.3038	.0005	1.0099	322
*ZRESID	-2.3574	2.7993	.0115	.9984	322

Total Cases = 461

Durbin-Watson Test = 1.82515

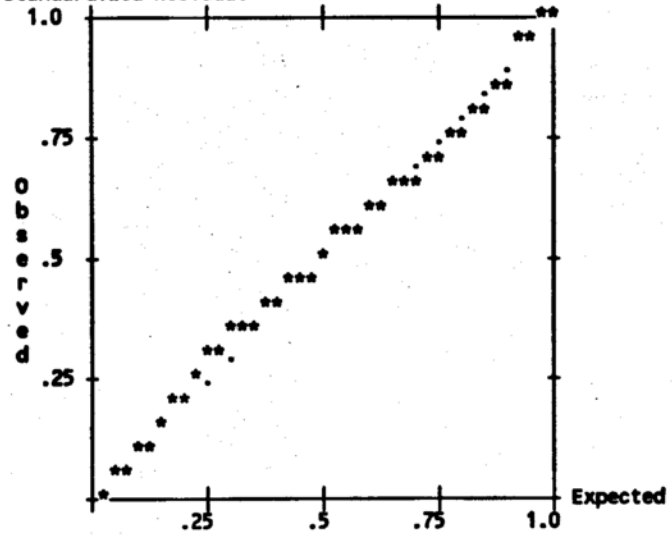
Outliers - Standardized Residual

Case #	*ZRESID
146	2.79929
70	2.60926
420	-2.35744
450	-2.25942
182	-2.15531
315	-2.10862
385	2.08152
330	-2.05847
132	-1.98754
336	-1.91045

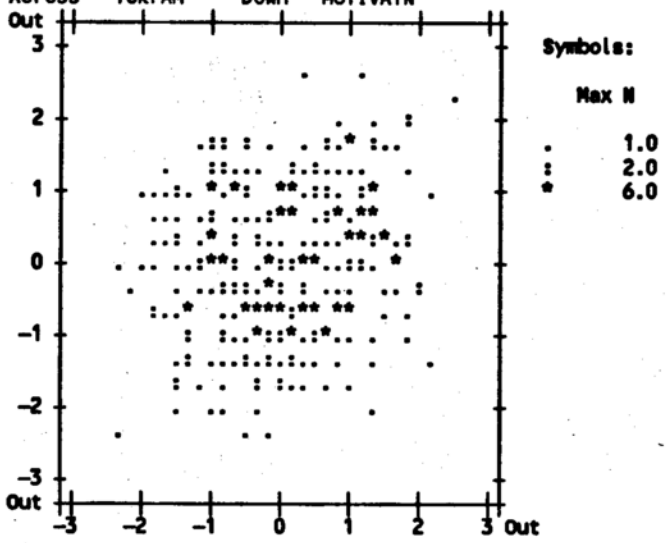
Histogram - Standardized Residual

```
NExp N      (* = 1 Cases,    . : = Normal Curve)
0  .25   Out
0  .49  3.00
2 1.26  2.67 :*
0 2.87  2.33   .
3 5.88  2.00 ***  .
* 10.8  1.67 **********:****
* 17.7  1.33 ****************:********
* 26.0  1.00 **************************:****
* 34.2   .67 ******************************
* 40.3   .33 ********************************.
* 42.6   .00 ********************************************.
* 40.3  -.33 **************************:**
* 34.2  -.67 ******************************.
* 26.0 -1.00 **************************:**********
* 17.7 -1.33 ****************:****
* 10.8 -1.67 **********:
7 5.88 -2.00 *****:*
2 2.87 -2.33 **.
0 1.26 -2.67 .
0  .49 -3.00
0  .25   Out
```

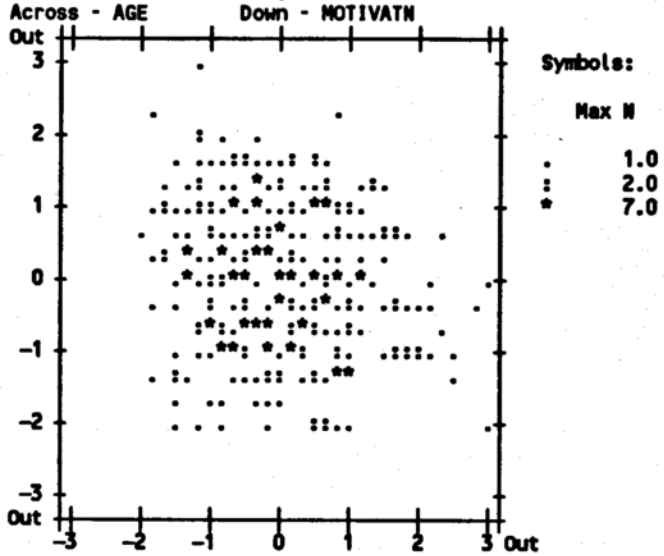
Normal Probability (P-P) Plot
Standardized Residual



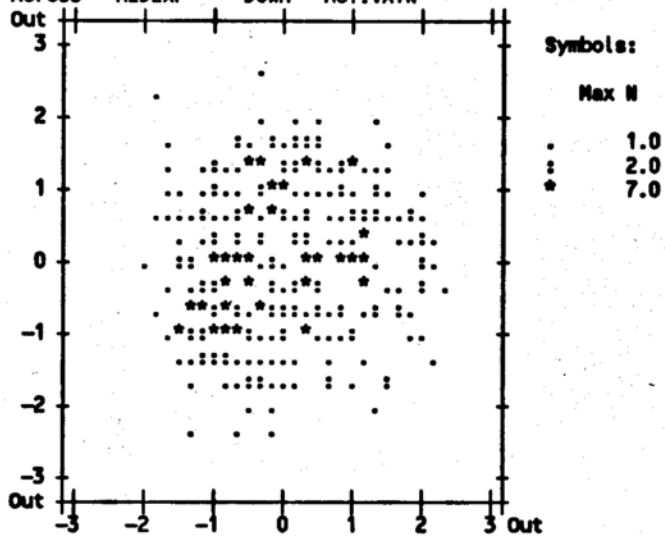
Standardized Partial Regression Plot
Across - TSKFAM Down - MOTIVATN



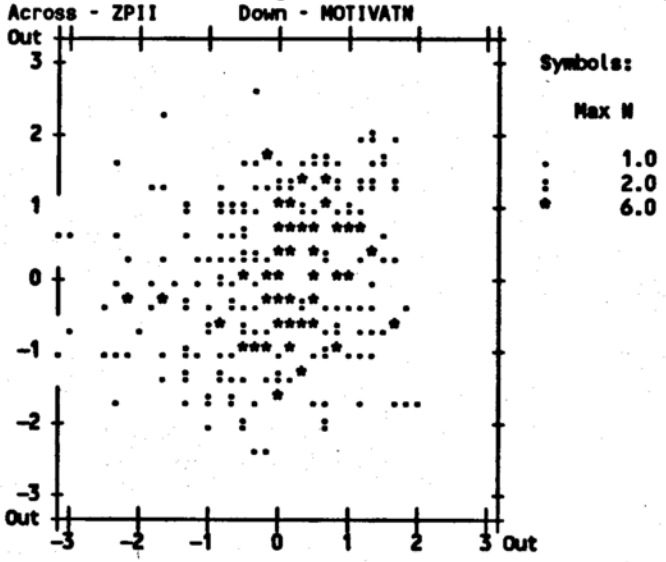
Standardized Partial Regression Plot
Across - AGE Down - MOTIVATN



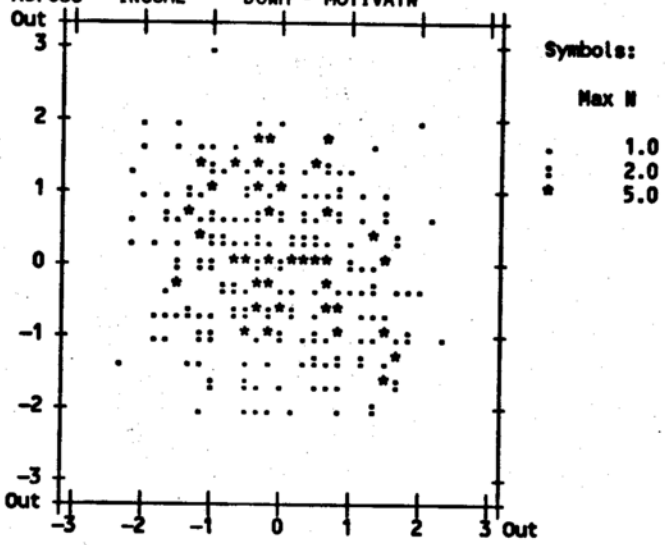
Standardized Partial Regression Plot
Across - MEDEXP Down - MOTIVATN



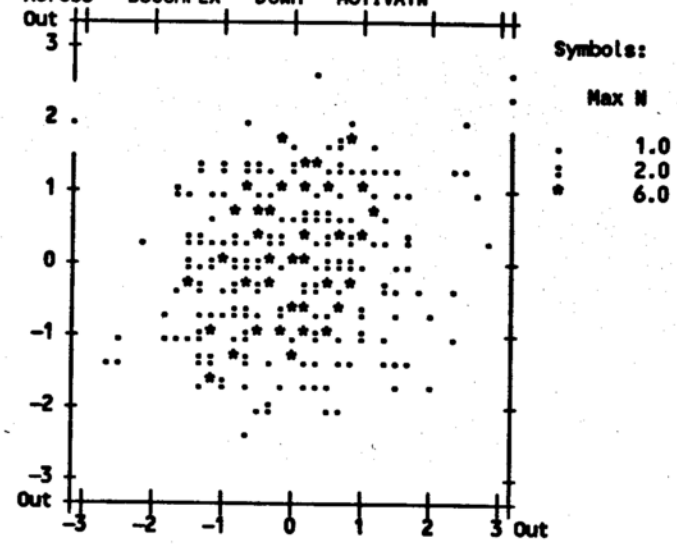
Standardized Partial Regression Plot
Across - ZPII Down - MOTIVATN



Standardized Partial Regression Plot
Across - INCOME Down - MOTIVATN



Standardized Partial Regression Plot
Across - BUSCMPLX Down - MOTIVATN



****** MULTIPLE REGRESSION ******

Equation Number 1 Dependent Variable.. ABILITY2

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
TSKFAM	4.54407	.95315	.25131	4.767	.0000
PROFDEP	2.15179	1.01553	.11768	2.119	.0349
BUSCMPLX	1.89250	.66112	.15621	2.863	.0045
PROFCONF	-2.46137	.88912	-.14628	-2.768	.0060
BUSDIV	2.74581	1.38444	.10485	1.983	.0482
(Constant)	-8.26503	32.28499		-.256	.7981

---------- Variables not in the Equation ----------

Variable	Beta In	Partial	Min Toler	T	Sig T
ZPII	.05888	.06060	.86316	1.067	.2867
MKTNMBR	-.07781	-.08377	.86299	-1.478	.1405
KNOW	.07437	.07767	.85470	1.370	.1718
BUSCONF	-5.552E-03	-.00574	.84167	-.101	.9196
GENDER	.09515	.10257	.86106	1.813	.0709
HLTHSTAT	-6.886E-03	-.00718	.84914	-.126	.8996
INCOME	.05387	.05829	.85381	1.026	.3055
MEDEXP	.01171	.01177	.83308	.207	.8362
AGE	.03587	.03497	.78453	.615	.5389

End Block Number 1 PIN = .050 Limits reached.

**** MULTIPLE REGRESSION ****

Equation Number 1 Dependent Variable.. ABILITY2

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	90.2267	187.0713	131.8699	17.7403	373
*RESID	-122.9870	108.6709	.7816	37.7093	373
*ZPRED	-2.2778	3.1044	.0366	.9859	373
*ZRESID	-3.1168	2.7540	.0198	.9557	373

Total Cases = 461

Durbin-Watson Test = 2.05245

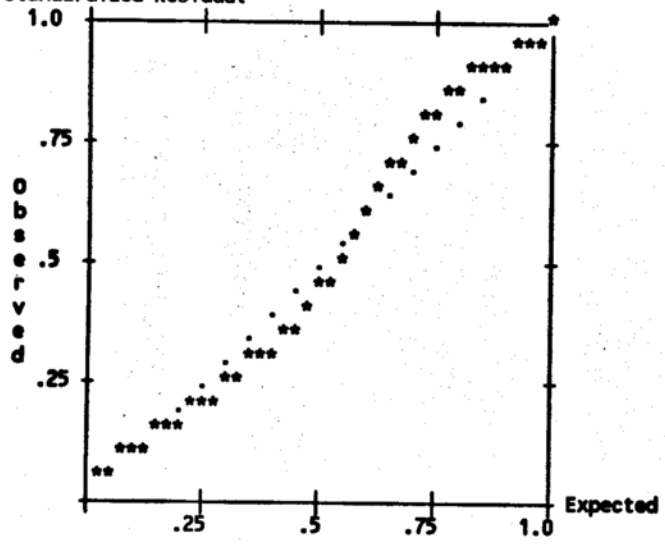
Outliers - Standardized Residual

Case #	*ZRESID
437	-3.11682
29	2.75401
460	2.66955
452	-2.64610
202	-2.62151
404	2.44881
90	-2.44148
382	-2.41866
352	-2.37698
448	-2.36475

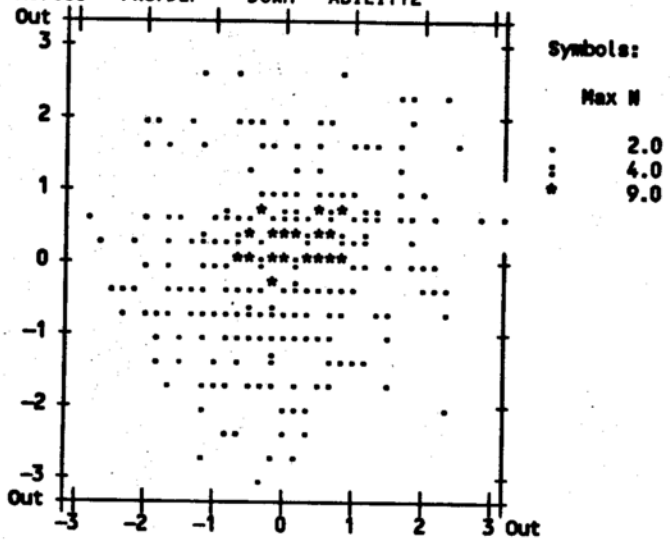
Histogram - Standardized Residual

```
NExp N      (* = 1 Cases,    . : = Normal Curve)
0  .29   Out
0  .57  3.00 .
2 1.46  2.67 :*
3 3.33  2.33 **:
* 6.81  2.00 ******:*****
9 12.5  1.67 *********  .
6 20.5  1.33 ******
* 30.1  1.00 ****************  .
* 39.6   .67 ****************************************:**********
* 46.7   .33 ************************************************:************************
* 49.4   .00 ************************************************:************************
* 46.7  -.33 ************************************************ .
* 39.6  -.67 **********************
* 30.1 -1.00 ***********************
* 20.5 -1.33 **************  .
* 12.5 -1.67 ************:
5 6.81 -2.00 *****  .
7 3.33 -2.33 **:****
2 1.46 -2.67 :*
1  .57 -3.00 :
0  .29   Out
```

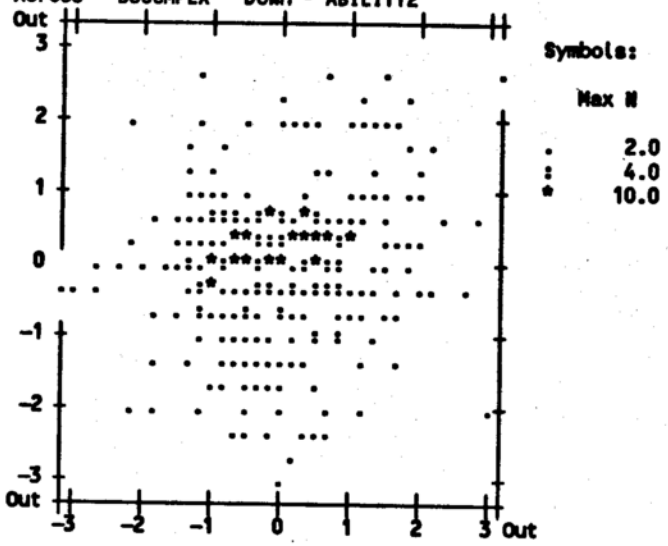
Normal Probability (P-P) Plot
Standardized Residual



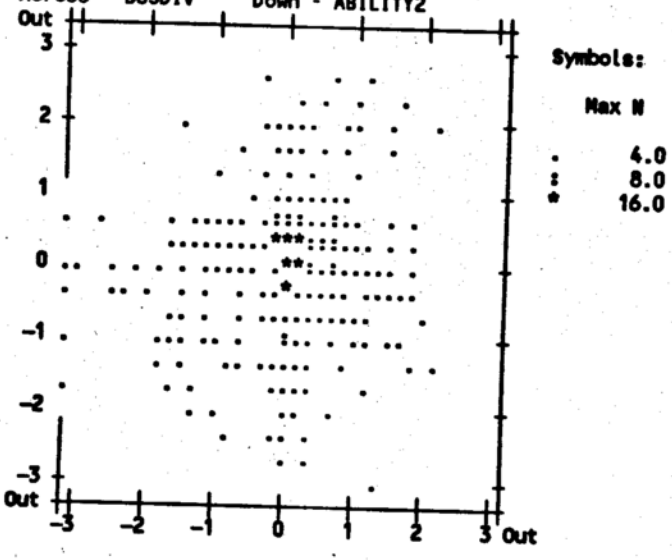
Standardized Partial Regression Plot
Across - PROFDEP Down - ABILITY2



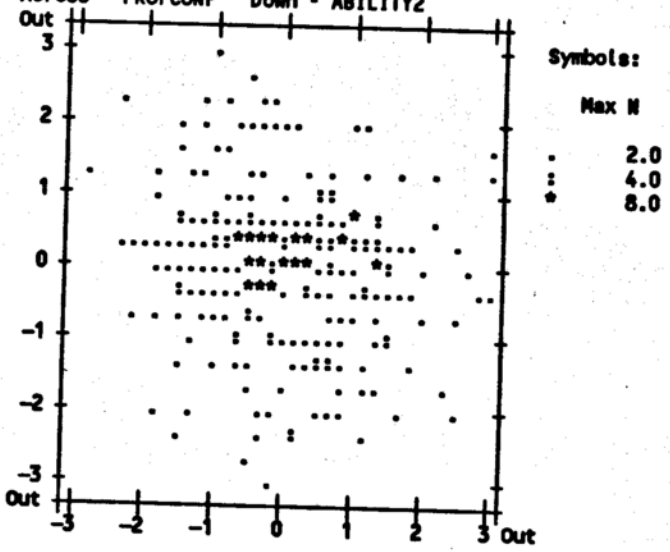
Standardized Partial Regression Plot
Across - BUSCMPLX Down - ABILITY2



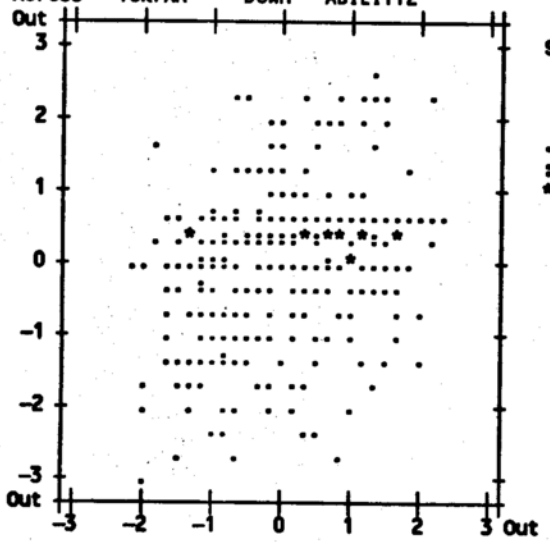
Standardized Partial Regression Plot
Across - BUSDIV Down - ABILITY2



Standardized Partial Regression Plot
Across - PROFCONF Down - ABILITY2



Standardized Partial Regression Plot
Across - TSKFAM Down - ABILITY2



Symbols:

	Max N
.	3.0
:	6.0
*	12.0

TITLE OF THESIS Environmental Dimensions of Consumer Choice for the Purchase of Prescription Drugs

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PUBLICATIONS Lipowski, Earlene E., Steven F. Bauwens and Theodore M. Collins, "An Examination of Histamine-2 Receptor Antagonist Use by Medicaid Recipients in Wisconsin Long Term Care Facilities," Journal of the American Geriatrics Society, 36 (June 1988): 531-6.

Lipowski, Earlene E. and Joseph B. Wiederholt, "Developing a Measure of Retail Pharmacy Image," Journal of Pharmaceutical Marketing & Management 1 (Spring 1987): 149-57.

CURRENT DATE May 14, 1990