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No. 385

RETAIL CROWDING: IMPACT OF  
MERCHANDISE DENSITY ON  
STORE IMAGE

DISSERTATION

Presented to the Graduate Council of the  
University of North Texas in Partial  
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Nita L. Paden, B.S., M.B.A.

Denton, Texas

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Store image research has attempted to identify factors contributing to formation of positive or negative perceptions of stores by consumers. These factors include tangible and intangible elements. Of the tangible factors, store atmosphere (including store layout and congestion level) is often identified as contributing to store image.

Intangible factors influencing store image include emotional or psychological reactions that consumers have in response to various tangible store factors. One of these emotional responses is retail crowding. Retail crowding is a state of psychological stress occurring in consumers in response to perceived high density levels in stores. Crowding literature suggests that environmental cues, including layout and density level, contribute to this stress level.

The overall purpose of this study was to expand on current research by incorporating the concept of retail crowding with store image research. This research focused on the need to understand the influence of specific environmental cues on crowding and the resulting store image

by empirically testing the importance of merchandise density on retail crowding. A second purpose of the study was to explore the importance of retail crowding in the formation of store image by testing the proposition that perceived crowding has considerable impact on store image.

Subjects were shown a series of slides depicting various merchandise density levels in store settings, and measurements of crowding and store image were recorded. ANOVA, adjusted for repeated measures on each subject, was used to analyze the data relating merchandise density and retail crowding, and merchandise density and store image. ANCOVA adjusted for repeated measures was used to analyze the data relating retail crowding and store image.

The findings support the hypothesized relationships and suggest that perceived crowding is different at different levels of merchandise density, and store image is impacted by experienced crowding. These findings have implications for store management in terms of merchandise layout and creation of store image, and contribute to store image and retail crowding theory by confirming the proposed relationship.

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## CHAPTER ONE

### INTRODUCTION

#### The General Problem Area

The store environment that surrounds a retail shopper is not neutral (Markin, et al. 1976). Rather, elements of the store environment produce positive or negative perceptions in the consumer and may manifest themselves in an image formation about the store, as well as in possible changes in buying behavior. If the perception of the environment is positive, i.e. the shopping experience is pleasant, then that aspect of the store projects a positive or high image in the mind of the consumer. Conversely, if the environment is perceived in a negative light, the resulting image of the store is likely to be negative or low. The high or low images that are formed may result in either continuation of current shopping behavior or in a change in that behavior.

Researchers focusing on store image research have attempted to define the concept of store image and, in doing so, have identified many factors in the store environment that contribute to the formation of positive or negative perceptions by consumers. These factors have included both tangible and intangible characteristics that a consumer

perceives to be present in the store (Jenkins and Forsythe 1980).

One tangible factor that has been repeatedly identified as contributing to store image is store atmosphere (Lindquist 1980). In a study of department store image components, store atmosphere was identified as one of the most important components contributing to store image (Berry 1969). Store atmosphere typically includes physical store layout and congestion levels created by architectural dimensions including ceiling height, partitions and walls, as well as more flexible elements such as fixturing, displays and merchandise arrangement. Retailers design and arrange these elements of store environment and that arrangement of space in turn affects and shapes consumer behavior (Markin, et al. 1976).

Because consumers respond to them, the tangible elements in the store environment are often referred to as environmental cues. Mazursky and Jacoby (1986) examined the role of environmental cues in store image formation. Their study proposed that the consumer is exposed to realities (environmental cues) that are partly controlled by the retailer. Retailers manipulate cues in an attempt to enhance sales and create an atmosphere that supports an image. From these cues or realities, perceptions and beliefs about the store are formed and image formation is initialized.

Intangible elements have also been identified as contributing to store image as perceived by the consumer. This type of psychological or emotional response has typically included such elements as a sense of belonging, friendliness of the store, and other subjectively judged perceptions of the store (Mazursky and Jacoby 1986). Store image has also been referred to as being "in the mind" of the consumer as opposed to being a property of the store (Villanova, et al. 1990). One emotional response to store environments that has been identified is retail crowding (Harrell, et al. 1980). Research on crowding has suggested that tangible environmental cues contribute to a "state of psychological stress" to which consumers respond. Like store image research, retail crowding research has suggested that environmental factors or cues, including layout and congestion, contribute to an emotional response and result in some sort of outcome including postpurchase evaluation of the store or behavior modification (Eroglu and Harrell 1986). Situational factors, including physical surroundings, have been shown to play a role in the response and behavior of consumers (Belk 1975). Response may take the form of a positive or negative evaluation of the store or satisfaction/dissatisfaction with the shopping experience and a corresponding general perception of the store. These responses may be moderated by a number of factors including the predisposition or mood of the consumer (Herrington and

Capella 1991), time constraints or the consumers shopping motives (Eroglu 1985).

The condition of crowding has been investigated in the psychology discipline, usually in relation to high density population conditions or in terms of physical space requirements. Crowding often occurs in response to the negative perception of high density (Rapoport 1976; Stokals 1972; Stokals, et al. 1973). That is, when individuals perceive themselves to be in a dense environment, this feeling of stress, called crowding, may occur. In retail stores, crowding may be related to density in terms of numbers of people, or may be in response to other, more controllable, tangible elements in the store setting such as density of fixturing and merchandise arrangement.

There are two major types of density. First, perceived density is the subjective estimate of the space available and its organization. Most prior research has been in the area of social psychology and has investigated density in terms of the number of people in the available space. The second type of density, affective density, is the evaluation of perceived density against subjective standards and against desired levels of information and interaction (Rapoport 1976). Individuals observe the environment and evaluate the environment in terms of density levels that they judge to be acceptable. Thus, affective density is the subjective determination of whether perceived density

facilitates or inhibits the attainment of goals (Eroglu and Harrell 1986).

The level of perceived and subsequent affective density may be influenced by various characteristics in the physical environment. Considerable research on density levels has been conducted in the environmental psychology field. Moos (1986) suggested that the extent that an individual feels a space is inadequate is moderated by the interaction of physical elements with social and personal factors. Many studies on density levels investigate relationships between objects, people and available space, and suggest that these relationships influence the behavior of individuals (Rapoport 1976; Saegert, et al. 1976; Moos 1986). In retail stores, the level of perceived and affective density may be a function of various in-store objects/space relationships such as aisle width, number of fixtures, and compactness of merchandise, as well as a function of numbers of people in that space. Certainly it is possible for the consumer to make a judgment about density level based on merchandise arrangement whether or not other consumers are a part of that density. The issue is whether merchandise arrangement facilitates or inhibits the attainment of the individual's shopping goals. If the consumer's response to the density level is negative and that consumer feels constrained, stress, i.e. crowding, occurs.

As described, both image formation and crowding appear to be in response to environmental cues. Further, both research areas describe emotional or psychological responses to physical conditions in the store environment. And, both store image and retail crowding research have investigated factors that moderate consumer responses to physical conditions in the store. But despite the apparent linkage between these two streams of research, literature has not described how store image and retail crowding relate to each other. There is a need for a delineation of this relationship. Further, because both responses are attributed to environmental cues, additional investigation of the impact of specific cues and their influence on crowding and image formation is needed.

#### Purpose of the Study

The first purpose of the research focused on the need to better understand the influence of specific environmental cues on perceived retail crowding and the resulting store image. Because merchandise arrangement is so basic to all types of retailers, consumers' response to merchandise density seemed to be an important environmental cue for initial investigation. Previous studies on crowding have predominantly addressed density in terms of numbers of people in a space (Eroglu and Machleit 1990). However, the concept of density, the amount and organization of space,

may be applied to the amount of merchandise and its arrangement relative to the amount of space available. The first purpose of the research, then, was to explore and empirically test the importance of one environmental cue--merchandise density--on retail crowding.

A second purpose of the study was to explore the importance of retail crowding in the formation of retail store image. Therefore, a goal of this study was to expand on current research by incorporating the concept of retail store crowding with the store image research. Both retail crowding research and store image research address the importance of physical and psychological cues as a determinant of some sort of outcome, such as image formation, or of consumer behavior modification. What is unclear from earlier research is how retail crowding, as an emotional response to environmental cues, may influence store image formation and change. In support of this exploration, a third purpose for the study was to test empirically the proposition that perceived crowding has considerable impact on store image as perceived by the consumer.

#### Research Questions

The described goals suggest two questions that were addressed by the study. The first question was: Do different merchandise levels contribute to differences in



perceived crowding? This question may be explored by measuring consumers' reaction to different merchandise density levels and addresses the first purpose of the study: to improve the understanding of how specific environmental cues influence retail crowding and resulting store image.

A second research question involved the relationship of crowding and store image perceptions: Does the experienced crowding that results from merchandise density influence the consumers' perceived store image? Investigation into this question helped to accomplish the second goal of the study which was to explore the relationship of retail crowding and store image. Hypotheses developed from these two major research questions are presented in Chapter Three.

#### Significance of the Study

The retailing industry is faced with numerous external environmental factors that make survival difficult and failure rates high. These factors include a slow growth economy, intense competition, as well as changing consumer tastes and attitudes.

Given these conditions and the changing competitive structure in the retailing industry, retailers are increasingly concerned with the image they are conveying and with consumers' response to that image. The combination of these factors, plus the lack of differentiation in products are mandating the demise of those retailers who are not

successful in providing a positive shopping experience. Because consumers may obtain a given product at any number of retailers, increased emphasis must be placed on store characteristics and consumer response to those store characteristics other than product mix. Studies have suggested that a relationship exists between the image of a store and shopping behavior (Arons 1961; Lessig 1973). In today's highly competitive climate, a very thorough knowledge of why some people buy from a retailer and why others do not is critical (O'Connor 1992). Store image appears to be increasingly important in influencing a consumer's decision to shop at a specific store (Lewis and Hawksley 1990).

Prior research has identified a positive store image as an asset to the retailer. In some instances a unique store image may be one of the retailer's most valuable assets (Steenkamp and Wedel 1991). Not only has a positive store image been associated with store choice selection, image has been linked to product evaluation and consumer decision making (Thorelli, et al. 1989). Consequently, the benefits of understanding store image formation and the elements contributing to positive and negative images are significant.

Since research indicates that environmental cues play an important role in communicating images to consumers, it is important to understand what these cues are. Retailers'

marketing strategies require understanding the attributes or store features that are most critical in affecting patronage behaviors (Bearden 1977). Because the consumer is exposed to a myriad of cues, understanding will require examining the cues individually. Many of the cues are controlled by the retailer. For example, the retailer determines arrangement of fixturing, displays, aisle width, lighting levels and arrangement and density of the merchandise. This manipulation of cues in the store environment is done in an attempt by the retailer to enhance sales and support or change their image. Every established retailer has a store that attracts the existing clientele, but can be manipulated through its physical and psychological store characteristics (Lewis and Hawksley 1990) to attract additional targeted groups. So if the retailer wants to change image, as stores such as JCPenney and K-Mart have attempted, or if some other strategic action is to be attempted, it would be useful to know what elements within the control of the retailer could be manipulated that would result in image change. This is particularly important since creating or changing an image is often a prerequisite to motivating consumers to change their existing shopping behavior (Nevin and Houston 1980). The extent that the consumer is loyal to the store also plays a role in ease of image change by further complicating the image change process. Additionally, an image change

strategy presents a great risk for the retailer, since image change occurs very slowly and is often unsuccessful.

Understanding which of the controllable elements are resulting in negative responses by the customer has very significant implications for retailing strategies. While non-controllable variables, including elements of the competitive environment, impact the retailer's ability to manage successfully, the controllable elements provide a means for the retailer to affect consumer shopping behavior. Store-induced pleasure has been shown to be an important determinant of approach-avoidance behaviors within a store, including spending behavior (Donovan and Rossiter 1982). That is, if retailers can create pleasurable experiences by manipulating various combinations of store elements, consumers may be more inclined to have positive attitudes toward that store. In addition, elements of the store's environment may lead to positive assessments of other store attributes like overall service. It is, therefore, important to understand the specific store attributes that contribute to positive store images.

### Expected Results

Based on the review of earlier studies and initial information gathering, there were two major expected results. First, results were expected to support a relationship between various levels of merchandise density

in retail stores and the degree of perceived crowding felt by the consumer. While most of the crowding literature has been examined in terms of numbers of people in a space, the image literature suggests that the physical layout and arrangement of merchandise contributes to positive and negative perceptions about the store. If those perceptions are negative, retail crowding is likely to occur.

Second, results were expected to support a relationship between the degree that retail crowding is perceived and the image level the consumer associates with that store.

Informal interviews suggested that most people associate crowded stores with unpleasant shopping experiences. Some people interviewed said they refused to enter a store that looked crowded or congested. It would seem, then, that crowded stores would evoke negative images in the minds of the consumer.

#### Limitations of the Study

There are four limitations associated with the proposed study. First, response to retail crowding may vary by store type. Cardoza (1974) found that store images differ across store type and product class. The present study exposed the respondent to merchandise density levels in two distinct store types: a national discount store and a regional department store. Because this was an exploratory examination of the store environment, it was decided to

intentionally vary the store type to improve the generalizability of the results to various types of retailers. However, the study is limited in that the results may not be applicable to all retail store types. A logical next step would be to see if the type of store impacts whether the consumers' image of the store is affected. That is, if the type of store is expected to be crowded, is the negative impact moderated.

Further, this study involved various merchandise types in the simulation of merchandise density levels. Again, the variety of merchandise types was selected to increase the generalizability of the results. It is quite possible that perceived crowding and the resulting image formation may be a function of merchandise type. For example, consumers may experience more stress if in a crowded glassware area than in a crowded bedding area. The use of multiple merchandise categories in this study provided additional insight, but results may not be indicative of all merchandise categories. An interesting follow-up would be to examine whether merchandise type does, in fact, impact those findings.

There may also be situational factors, not included in the present study, that influence the degree that merchandise density results in perceived crowding and the resulting store image formation. In some cases, crowding may be less stressful than exciting. For example, crowds around densely merchandised sale racks often appear to

stimulate consumers to join the crowd. Additionally crowded conditions at special events, while typically dense settings, may be considered to be part of the attraction or excitement of the event.

Another interesting aspect of the retail crowding/store image relationship is the cultural differences perspective. In countries or areas of countries where personal space has been reduced because of dense populations and close living conditions, consumers may perceive a lesser degree of retail crowding because they are more accustomed to dense spaces. Because this study was conducted using domestic firms, the results may not be generalizable to retailers operating in foreign countries.

Finally, by the nature of the design of this study, only one environmental cue, merchandise density, was investigated. While this limits this study, individual investigation of the specific cues that create responses in retail consumers is necessary to gain understanding of this store environment/behavioral response relationship.

#### Organization of the Dissertation

The following chapters will present a review of the research foundation for the study, a proposed model linking the retail crowding and store image research streams, the proposed experiment and analysis, and recommendations.

Chapter two will present a review of supporting literature in the areas of store image and retail crowding. Different views and definitions of store image will be presented, as well as previously examined store image components. From the retail crowding literature, a description of relevant research from psychology and definitions of both density and crowding will be included.

Two key models from earlier studies will be described and serve as the basis for the proposed model. Mazursky and Jacoby's (1986) "Model of the Store Image Formation Process" is offered as a key contribution to the present study. The second model, Eroglu and Harrell's (1986) "Extended Model of Retail Crowding," seen as fundamental to the present study, is described in detail in chapter two.

In chapter three, the objectives and resulting research hypotheses for the study are presented. In addition, a "Model of Retail Crowding and Store Image Formation" is presented, including a description of each of the components of the model. A third section outlines the research design, including sample selection, questionnaire development, the slide selection process, pretests and the proposed experiment. Finally, the planned statistical analysis, including the proposed technique and potential problems, are described in the conclusion of chapter three.

Chapter four will present the results of the experiment, and the conclusions, recommendations and



suggestions for future research will be offered in chapter five.

## CHAPTER TWO

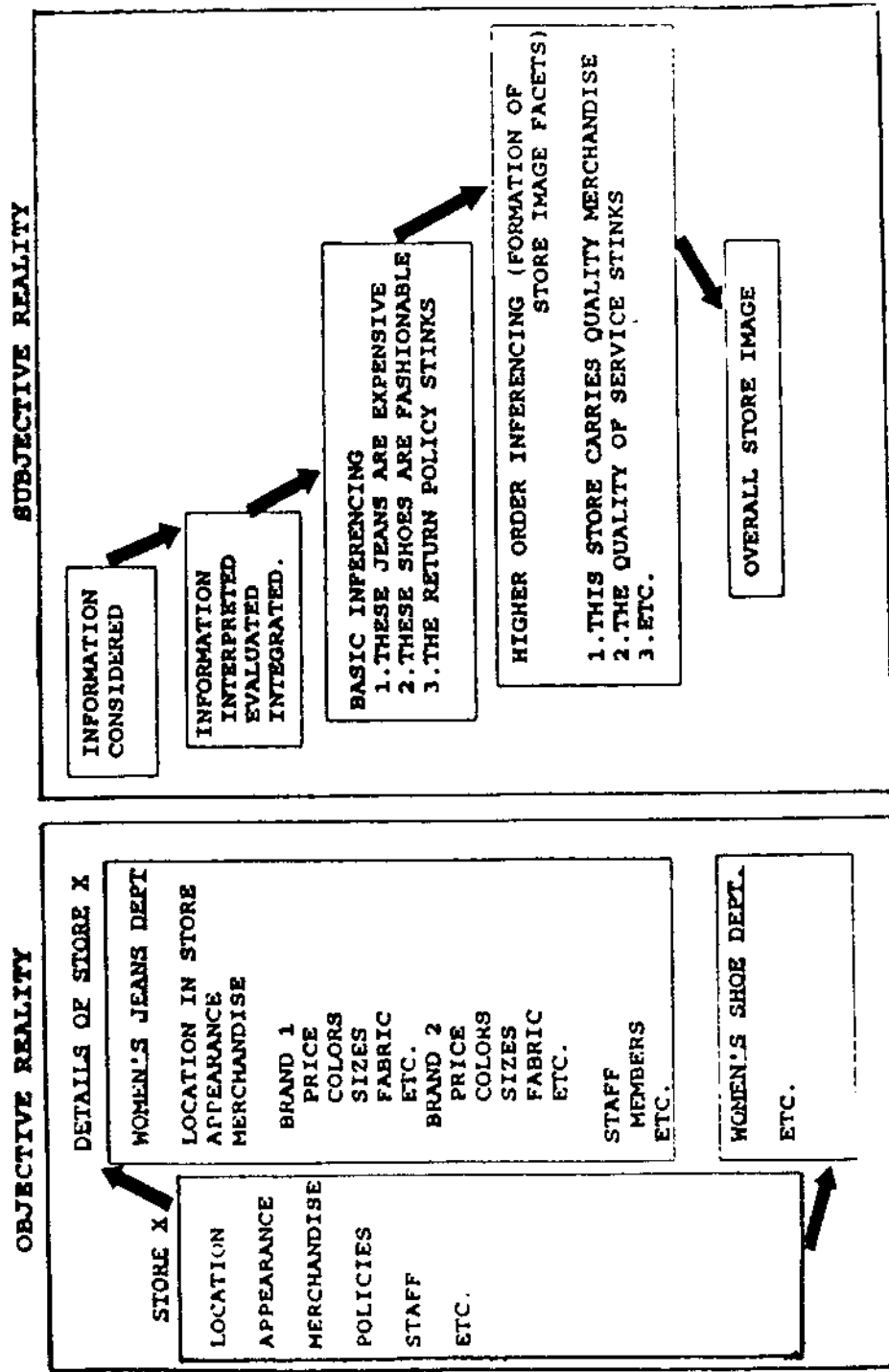
### THEORETICAL BACKGROUND

Two models, the "Extended Model of Retail Crowding" (Eroglu and Harrell 1986) and Mazursky and Jacoby's (1986) "Model of the Store Image Formation Process," provide the foundation for the present study. This chapter will provide descriptions of these two models, and additional supportive literature in the store image and retail crowding areas.

#### Model of the Store Image Formation Process

The process of store image formation is described in a model developed by Mazursky and Jacoby (1986). The model is based on the authors' definition which describes store image as "a cognition and/or affect which is inferred either from a set of ongoing perceptions and/or memory inputs attaching to a phenomenon and which represents what that phenomenon signifies to the individual." This definition suggests that store image is internal to the customer, either psychologically or emotionally as a response to some stimuli. The phenomenon referred to in the definition is a part of the model called objective reality [see figure 1]. The objective reality of the store includes those features and characteristics of the store which stimulate the

Figure 1



Source: Mazursky, David and Jacob Jacoby (1986), "Exploring the Development of Store Images," *Journal of Retailing*, 62 (Summer) 145-165.

consumer to respond. These characteristics will include store specific attributes such as location, appearance, and merchandise, as well as details of the store such as the price of a category of merchandise, its arrangement and appearance, and sizes available.

The response to these cues or stimuli in the store is depicted in the model as subjective reality, and may be in the form of cognitions, affect or both. According to the model, as information based on perceptions of the elements in the objective reality are considered and interpreted, inferencing about the store occurs and an overall store image is formed in the mind of the consumer.

#### Theoretical Background - Store Image

Literature appears to support the idea of image as a subjective response to objective stimuli. Attention was initially drawn to store image when Martineau (1958) described a force other than functional factors, i.e. location, price and merchandise assortment, that contributes to the selection of one store over another. This force is described as a personality or image that is formed partly by functional characteristics and partly by the consumer's sense of the store's psychological attributes. Image was viewed as the consumer's response to attributes of the store. Early studies, while alluding to an intangible

aspect of store image, focused mainly on the tangible elements that contribute to the formation of store image.

Subsequent research expanded the view of image to include the concept of intangible and tangible factors as contributors to store image formation. Studies describe the store in terms of complex meanings and a total conceptualization that a person associates with a store (Arons 1961; Kunkel and Berry 1968). The idea of store image consisting of tangible elements (functional attributes) and intangible elements (psychological elements) is supported in many definitions. For example, image has been described as a combination of tangible and intangible stimuli emanating from various personal and impersonal communication sources associated with a store (Cox 1974). Oxenfeldt (1974-1975) defined store image as a "synergistic phenomenon representing interaction among characteristics" and as a combination of factual and emotional elements. While the tangible elements such as location and merchandise play an unquestionable role in the image of the store, intangible factors and the psychological and emotional responses to both types of elements make a significant contribution to overall store image.

The consensus in the literature is that store image is formed both in response to tangibles, such as products, and by a psychological process that combines attitudes, opinions and symbolic meanings to the intangible elements of the

store (Dornoff and Tatham 1972; Jenkins and Forsythe 1980; Villanova, et al. 1990). People develop images of stores by relating opinions and attitudes about tangible and symbolic characteristics of the store (Dickson and MacLachlan 1990). O'Connor (1992) described retail image as having two components. The first component is based on factual experience. The other element is attitudinal which may or may not have a relation to the facts. This attitudinal or emotional part of store image is the hardest to affect. Further, the attitudinal element may be different for the retailer, the consumer and even the store's personnel.

The literature also describes store image in terms of reinforcement of prior beliefs and experiences with the store. For example, Kunkel and Berry (1968) said store image is a conceptualized reinforcement that the consumer associates with shopping at a particular store. Consumers perceive the image of the store as a result of reinforcement of previous experiences. If the experience is positive, a positive image results and tendency toward store loyalty may increase. If the experience is negative, avoidance of the store may occur (Berry 1969).

The reinforcement may also come in the form of congruence with the customers self image. In a study on imageries of department stores, Rich and Portis (1964) noted that many customers select stores whose overall image best fits the image they hold of themselves. This finding is

supportive of Arons (1961) who showed that people associate certain types of consumers with certain types of stores.

In some studies, the response to the dimensions of the store is described as attitude formation (Doyle and Fenwick 1974-1975). Using Fishbein's multiattribute attitude model, Doyle and Fenwick (1974-1975) describe image as an evaluation by the consumer of all "salient aspects of the store as individually perceived and weighted. Likewise, James, et al. (1976) identified store image as a set of attitudes based on the store attributes that the consumer decides are important. Since attitudes are learned, the experiences within the store should strongly influence the image that is formed in the mind of the consumer (James, et al. 1976).

Throughout prior research, attempts have been made to identify the specific attributes or characteristics of a store that create these responses in consumers. Both functional or tangible elements and psychological or intangible elements are included in most investigations of store image. One of the characteristics consistently associated with consumer responses to the store is the arrangement of merchandise and fixtures. Martineau (1958) suggested that layout and store architecture, as well as symbols and colors, advertising and sales personnel, help to create the personality of the store. Merchandise, price appeal and shopping convenience have also been identified as

store image attributes (Rich and Portis 1964). In the Rich and Portis study, shopping convenience included efficient store layout and display.

One of the first "lists" of store image components was developed by Kunkel and Berry (1968). This list consists of twelve tangible and intangible elements. In a test of the appropriateness of the list, store atmosphere was identified as one of the most important image components for the overall population. Store atmosphere was defined to include the layout of the store, external and internal decor, merchandise display, congestion level and the prestige of the merchandise and overall store. Subsequent investigations of store image have typically included and confirmed that store atmosphere is significant as a contributor to image formation (Bearden 1977; Berry 1969).

Because of the many studies conducted on factors contributing to store image development, several combinations of store image attribute lists have been compiled. A framework arranged around nine image/attitude attributes separated store atmosphere from physical facilities (Lindquist 1974-1975). Under this framework, physical facilities included store layout, aisle placement and width, carpeting and architecture. Store atmosphere was described as the customer's feeling of warmth, acceptance or ease while in the store environment. This division of atmosphere from the physical aspects of the store is in



keeping with the concept of tangible versus intangible elements and in keeping with the concept of image formation as an emotional response to store attributes.

Mazursky and Jacoby's (1986) definition of store image and subsequent model of image formation presented a significant contribution by building on earlier research and offering an explanation of the image formation process. However, their explanation focuses on the information processing aspect of image formation. Certainly, this type of cognitive response is a part of how store images are formed. Stores and store design project a tremendous amount of information to the consumer (Markin, et al. 1976). But their explanation may be expanded upon through investigation of psychological and emotional responses to phenomenon in the store environment. One such response is retail crowding.

#### Theoretical Background - Retail Crowding

One response to environmental elements that has been identified in the literature is crowding. Crowding is a subjective state of psychological stress that occurs when a person's demand for space exceeds the supply (Stokals 1972). The condition of crowding has been investigated in the psychology discipline, usually in relation to high density population conditions or in terms of physical space requirements. Crowding often occurs in response to the

negative perception of high density (Rapoport 1976; Stokals 1972; Stokals, et al. 1973). That is, when individuals perceive themselves to be in a dense environment, this feeling of stress, called crowding, may occur. In retail stores the crowding may relate to density in terms of numbers of people, but may also be in response to other factors in the store.

Crowding is generally investigated in terms of density which has been operationalized by increasing the number of people holding space constant (Stokals 1972; Rapoport 1976), or by decreasing space holding the number of people constant (Lawrence 1974).

There are two major types of density. First, perceived density is the subjective estimate of the number of people, the space available and its organization. The second type of density, affective density, is the evaluation of perceived density against subjective standards and against desired levels of information and interaction (Rapoport 1976). Individuals observe the environment and evaluate the environment in terms of density levels that they judge to be acceptable. Thus, affective density is the subjective determination of whether perceived density facilitates or inhibits the attainment of goals (Eroglu and Harrell 1986). Density may be viewed as an antecedent for the experience of crowding (Stokals 1972). This type of density has been investigated to a lesser degree than has perceived density.

In early studies other environmental elements were not considered in determining density levels. Crowding is a specific case of affective density where the individual's response is negative and results in a level of stress. Crowding may be conceptualized at the same psychological status as other emotions (Worchel and Teddlie 1976). The individual may then attempt to alleviate that stress through various behaviors.

Attempts have been made to understand when density conditions result in the experience of crowding. The extent that the individual believes they have control over the situation is one element associated with levels of perceived crowding. In a study using an elevator for a setting, for example, people standing in front of the "control" panel felt less crowded than those individuals not able to reach the panel (Rodin, et al. 1978). Langer and Saegert (1977) incorporated control in a study on crowding by providing the respondents with increased information about the effects of crowding. Results confirmed that increased control over the situation reduced the level of perceived crowding. Crowding has been shown to be a response to loss of control (Schmidt and Keating 1979). Also, information overload often occurs under high perceived density resulting from a feeling of lack of control (Milgram 1970). Individuals are likely to attempt to regain some control and strive to reduce the negative response. A more recent study investigated control

as a mediator of a consumer's emotional and behavioral response to the physical environment in a service setting and confirmed that both density and control play a role in the pleasantness of the experience and the consumer's approach-avoidance response to the setting (Hui and Bateson 1991).

The number of people in a space is not the only factor that increases or decreases the level of perceived density. Density goes beyond the number of people per unit to relationships among people and objects (Rapoport 1976). Architectural design variables influence psychological processes as well. Considerable support exists for the notion that manipulation of environmental space impacts the individual's perception of density and a corresponding crowding level. Architectural design has been investigated as a contributor to crowding. Architectural features such as partitions, walls, openings in walls and partitions, as well as use of lighting and sound modifying equipment or insulation have been shown to impact the level of crowding in individuals (Desor 1972). Studies have also shown that when supply of space is reduced and/or limited, people feel confined, restricted and believe the room to be smaller and more uncomfortable (Stokals, et al. 1973). Also, the colors used in a setting and the complexity of architectural features have an influence on people (Baum and Valin 1977).

A number of studies, based on behavioral constraint theory suggest that psychological crowding results from a belief that task performance is being restricted (Stokals 1972; Harrell et al. 1980). The individual may attempt to alleviate the stress from that crowding through various behaviors. If a reduction of space is perceived to make an area cramped, disrupting behavior and arousing stress, the individual may attempt to cope by withdrawing from the setting (Baum and Valin 1977). If the stress level is considered to be unpleasant enough, avoidance behavior may occur. Stokals (1972) described crowding as a motivational state directed toward minimization of the unpleasant consequences of perceived constraints.

As can be seen from the above review of literature, the vast majority of research on the topic of density and crowding has occurred in the psychology discipline. Harrell and Hutt (1976) provided one of the first applications of crowding theory to consumer behavior. Early research on retail crowding focused on postpurchase satisfaction and repatronage intentions, however, without regard to the environmental factors within the store and the possible impact on perceived density. A model expanding on Harrell and Hutt's research was developed by Eroglu and Harrell (1986). This model describes the factors that lead to crowding and proposes likely consequences of retail crowding. "The Extended Model of Retail Crowding" (Eroglu

and Harrell 1986) provides the framework for the small amount of research that has been conducted on this topic. The next section provides an explanation of this framework.

#### The Extended Model of Retail Crowding

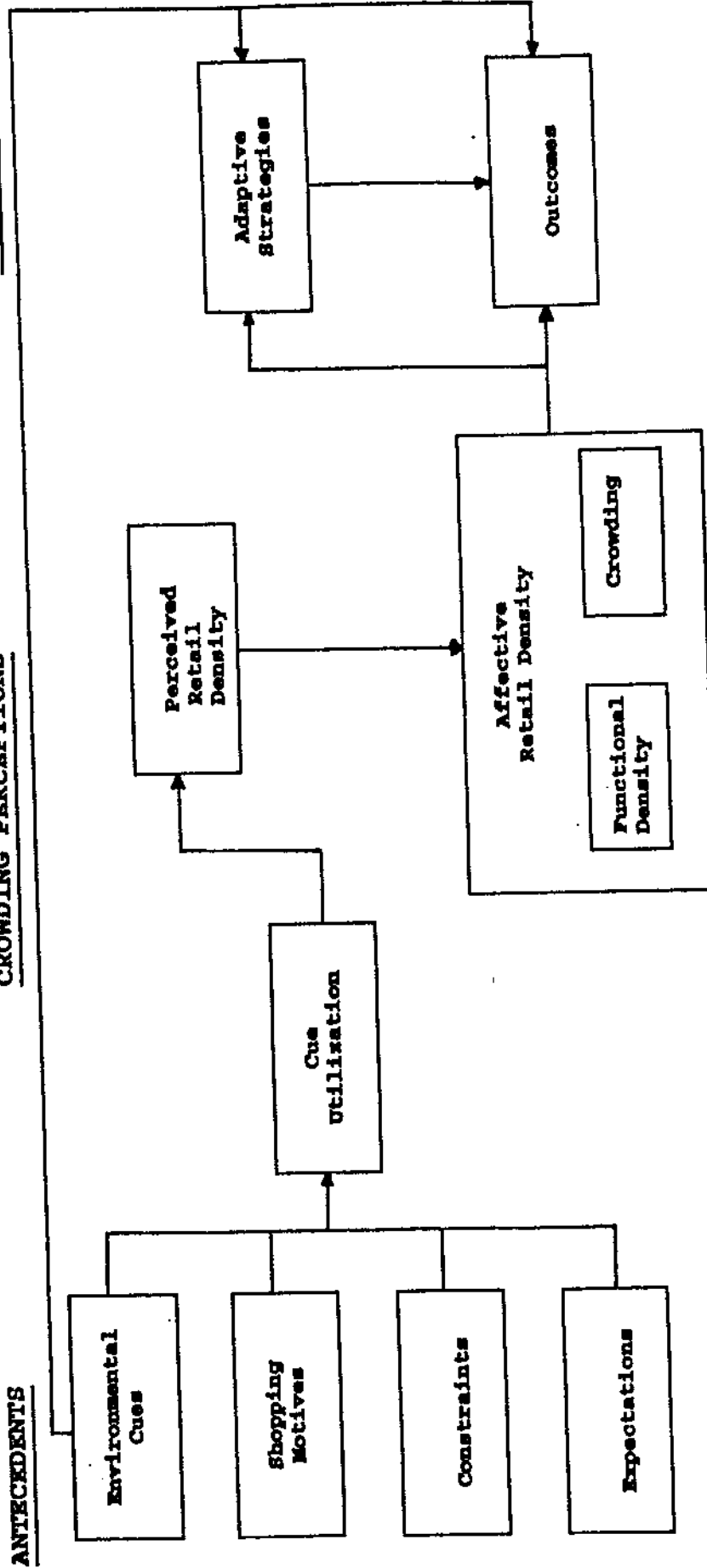
The crowding research developed in the environmental psychology discipline has been applied to the retailing field. "The Extended Model of Retail Crowding" (Eroglu and Harrell 1986) describes relationships between various antecedents and consequences of perceived density and crowding [see figure 2]. The antecedents describe possible causes of perceived density and crowding including environmental cues, shopping motives, constraints and expectations. These antecedents lead to cue utilization which is the selection and interpretation of the cues (Olson 1972). The way the cues are interpreted affects the level of perceived density and crowding that the consumer experiences. This is in keeping with studies on density and crowding as influenced by architectural design. The last part of the model depicts various consequences of perceived density and crowding. One consequence described by the model is that the consumer engages in adaptive strategies in an attempt to alleviate the feelings of crowding. For example, an adaptive strategy could be a reduction in shopping time. Another consequence shown in the model is

FIGURE 2

AN EXTENDED MODEL OF RETAIL CROWDING

RETAIL DENSITY AND CROWDING PERCEPTIONS

CONSEQUENCES



Source: Eroglu, S. and G.D. Harrell (1986), "Retail Crowding: Theoretical and Strategic Implications," *Journal of Retailing*, 62 (4), 347-363.

the outcome. Three outcomes of retail crowding, as depicted in the model are level of satisfaction with the store, level of confidence in having obtained the best value, and revision of shopping patterns.

The next chapter will present the proposed model linking the previously discussed retail crowding and store image streams of research. Hypotheses based on the research questions addressed are offered, and the experiment is described.



## CHAPTER THREE

### METHODOLOGY

#### Introduction

Following Eroglu (1985) and McClelland and Auslander (1978), this study incorporated the use of color slides to simulate a retail store setting. The validity of using slides as a simulation of retail settings was established recently by Bateson and Hui (1992). In a service setting, their results suggested that slides "evoked the same psychological and behavioral phenomena" as the actual setting. ANOVAs and an ANCOVA were used to analyze the effects of the independent variables in 2x2x2 factorial designs. The following sections provide a detailed description of the hypotheses, the experimental procedure and analysis.

#### Hypotheses

The investigation of previous literature on store image and retail crowding demonstrates a noticeable correspondence in the suggested determinants of the two concepts. Each of these streams of research has identified antecedents of the phenomena and many of these antecedents, like environmental cues, overlap. There appears to be a relationship between

store image and the retail crowding concept that has not been addressed. One of the objectives of this study was to bring together these two streams of research and present a conceptual model describing the relationship. The research questions presented in chapter one address the relationships described by the proposed model. From these two questions, several hypotheses emerge.

The first research question focused on the understanding of specific environmental cues as they impact retail crowding and store image. Many environmental cues have been identified as contributing to both store image and retail crowding. The importance of these cues lies in how consumers are affected and how they interpret and respond to those cues.

According to the Mazursky and Jacoby (1986) "Model of Image Formation" described earlier, an overall image of the store is formed once inferencing based on the interpretation of the cues occurs. According to the proposed model, the interpretation of cues in the form of merchandise density levels, will result in a level of experienced crowding. Image formation or change is described as one of the outcomes of that retail crowding. So at a preliminary level, the model suggests that differences in merchandise density levels will result in differences in perceived crowding levels. One of the goals of the study was to explore and test empirically the effect of one environmental

cue, merchandise density, on the perception of crowding. On this basis, and in keeping with the first research question, the study examined the following hypothesis:

H1: Consumers' perception of retail crowding differs when faced with high and low levels of merchandise density.

Based on the level of crowding perceived by the consumer, several outcomes may occur in respect to image formation. One consequence of crowding, according to the original model is referred to as outcomes. Outcomes include an emotional evaluation of the shopping experience, consumers' confidence in the value obtained, and possible revision of shopping habits.

This description of outcomes clearly coincides with the image formation literature. However, the role of experienced crowding on image formation is not addressed. There is some evidence that crowding does have an impact on the image consumers have of retail stores. The stress from crowding creates a strain or dissonance as a reaction to the store. This dissonance creates negative attitudes or images because they are negative enforcers (Markin et al. 1976).

Based on the store image and retail crowding literature, a relationship is likely. Addressing the second research question, given this background, the study examined

the impact of this perceived crowding on the formation of store image. Given the foundation literature, two additional hypotheses tested were:

H2: The image level associated with a store will differ when the consumer experiences high or low levels of crowding.

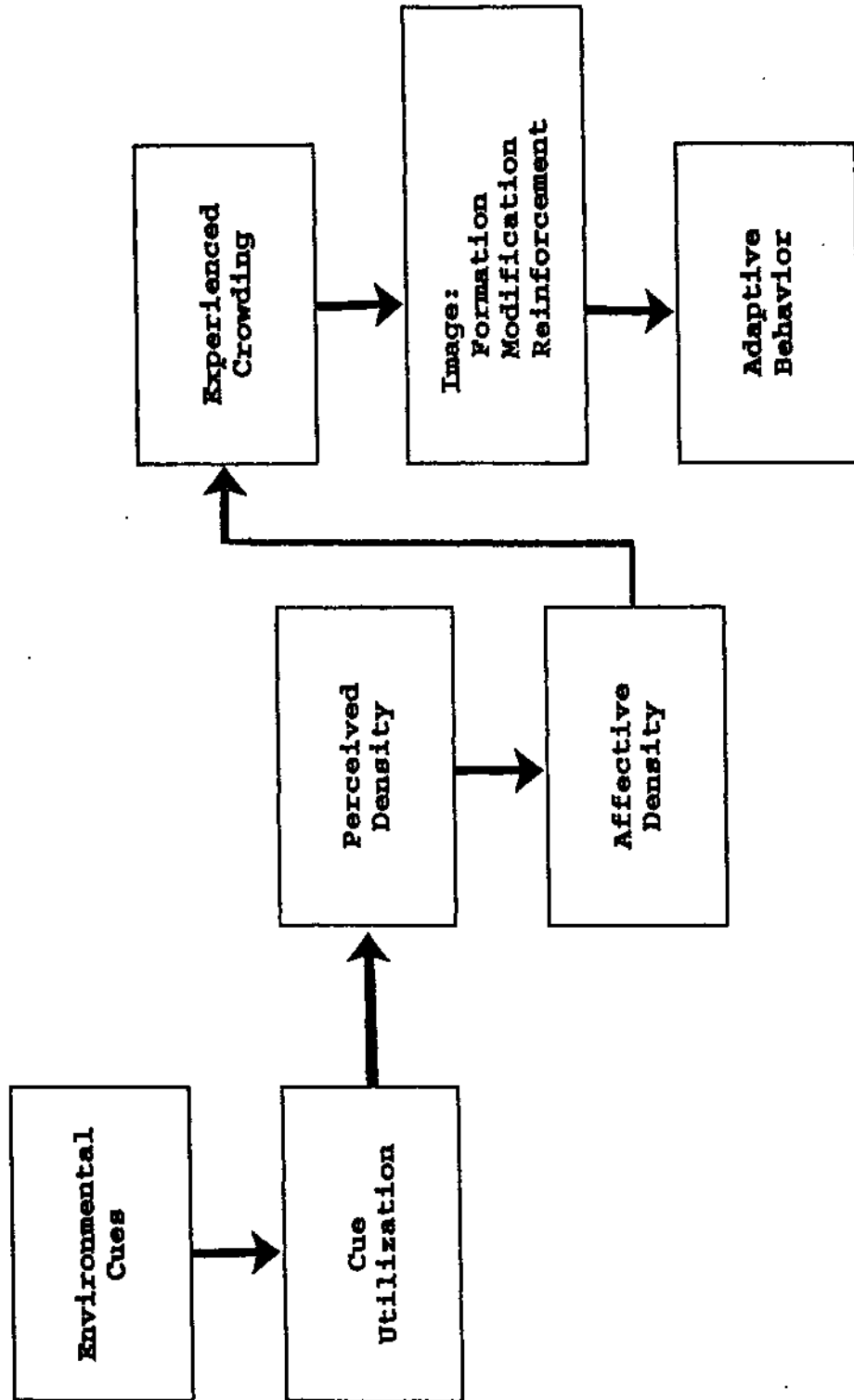
H3: The image level associated with a store will differ when the consumer is faced with high or low merchandise density levels.

These hypotheses are intended to illustrate the potential impact of environmental cues on image formation by understanding the relationship of retail crowding to store image. By investigating one cue, merchandise density, under the rubric of the store image and retail crowding frameworks, perhaps better understanding of these important retailing concepts has been accomplished.

#### A Model of Crowding and Store Image Formation

Figure 3 is a conceptual model that describes two major relationships involved in the process of store image formation and change. These interactions are grounded by the two conceptualizations of store image and retail crowding described earlier. The first of these relationships is the effect of environmental cues on

**FIGURE 3**  
**A MODEL OF RETAIL CROWDING AND STORE IMAGE FORMATION**



perceived density and retail crowding. The second interaction described by the model is the influence that retail crowding has on the consumers image of the store and resulting behavior modifications. Each construct of the model will be described in the following sections.

### Environmental Cues

Knowing the overall store image provides insight for the retailer, but in order to undertake strategic action, the retailer must understand consumer evaluations of specific store attributes (Bearden 1977). Both the crowding literature and the store image literature have identified environmental cues as stimuli that create responses and adaptive behavior in individuals. Cues are defined as a dimension, external to the person that can be encoded and used to categorize a stimulus object (Schellinck 1982). They are those elements that are used by the consumer when perceiving the environment. Any environment offers cues whereby people judge its nature and the behavior appropriate to that environment (Rapoport 1972). We perceive our environment and describe it either verbally or through imagery (Parsons 1974). Environmental cues may promote the perception of high density resulting in perceived crowding, or the cues may contribute to reduction or low levels of perceived crowding. Eroglu and Harrell (1986) described density cues as those environmental stimuli that may cause

feelings of crowding. Virtually any element within the retail environment may serve as a cue to the consumer. In evaluating which stores to patronize, consumers consider many elements sometimes referred to as evaluative criteria. Various cues may be included in these criteria, both internal and external to the environment. The retail environment may be viewed as multifaceted or consisting of many cues, some of which are controllable by the retailer and some which are not (Herrington and Capella 1991). Some examples of cues that are within the control of the retailer are aisle width, degree of concentration of merchandise on racks, noise levels, arrangement of racks and displays, lighting levels and temperature levels. Each of these cues is discretionary. That is, the management of the firm have the ability to vary these elements as needed to improve consumer response to the store. As such, these elements are potentially very important to the retailer.

Different physical and architectural features have been shown to influence individuals' judgments about the density of an environment (Baum, et al. 1974). Many studies have suggested that some architectural cues, like walls, partitions and other obstructions, may create a perception of separation and ultimately result in crowding (Baum et al. 1976; Desor 1972). So the way the physical structure is designed may create varied responses in the consumer. For example, the sheer size of hypermarkets is intended to say

something about the retailer. In addition to investigation of the structure itself, considerable effort has been given to determining the specific elements that contribute to various levels of crowding, particularly in the psychology literature. The environmental psychology research conducted on architectural elements' influence on crowding suggests that the physical features of an environment do mediate the experience of crowding. Desor's (1972) study on crowding suggested that changing architectural features in a setting significantly altered perceptions of room size and available space. Visual complexity and color also have been shown to influence the level of crowding experienced (Baum and Davis 1976). Parsons (1974) suggested that physical elements may either constrain or permit behavior, i.e. movement. Additionally, Baum and Davis (1976) investigated the impact of various colors of rooms and architectural changes such as adding partitions, walls and windows to a setting.

In the marketing literature, retail crowding has been described, but little attempt has been made to identify specific cues in the store environment that result in high and low perceptions of crowding. Eroglu and Machleit (1990) note that the impact of environmental factors on retail shopping behavior is just emerging as a research avenue. In an attempt to initiate research on the impact of specific antecedents of crowding and image formation, this model considers only one environmental cue: merchandise density.



This is not to suggest that merchandise density is the only cue influencing image formation. However, studies have implied that manipulation of merchandise has more impact on consumers' store image than manipulation of store policy and service levels (Mazursky and Jacoby 1986). Also, in a study on store preference, Rich and Portis (1964) showed that efficient store layout and display provided a reason for store preference for three different categories of stores. Clearly, the level of merchandise density does play an important role in the creation of perceptions and images in the mind of the consumer.

In a retail store, the most frequently manipulated element of the store is the merchandise itself. And the merchandise assortment dimension of a store has been shown to strongly influence a consumer's level of liking of shopping areas (Nevin and Houston 1980). Considerable effort goes into the planning of layout and merchandise arrangement. However, the intensity and rapid pace of the retailing business often results in the overshadowing of those plans by a need to get the merchandise on the sales floor and accessible to the consumers. Typically, retailers are concerned with space considerations about merchandise arrangement in terms of sales per square foot or productivity ratios (Markin, et al. 1976). Aisle width may be reduced as additional racks are placed on the sales floor to accommodate more merchandise. This increase in

merchandise density may inadvertently create obstructions that limit the visual range of the consumer and create difficulty of movement throughout the area. When conditions restrict or interfere with activities of an individual within a setting, these conditions may be perceived as crowded (Schmidt and Keating 1979). An environment produces negative affect and is perceived as crowded when physical factors reduce the amount of perceived freedom and control (Schmidt and Keating 1979). So individuals in retail stores who have difficulty moving around or feel restricted due to merchandise density may experience a feeling of constriction, become frustrated and ultimately experience crowding.

#### Interpretation of Cues

The interpretation or utilization of the cues in the retail environment precede perceived density in the proposed model. The consumer may or may not place an interpretation on the cue due to selective perception. However, if perception occurs and the cues are observed, an interpretation is applied to that cue. Eroglu and Harrell (1986) noted that the quantity of environmental cues, as well as environmental constraints and shopping motives may play a role in what interpretation is applied to that cue. In situations of high density, the consumer may feel too high a level of stimulation, become less comfortable and may

withdraw from the setting (Baum and Valin 1977). In the case of merchandise density, the visual impact of the merchandise arrangement will cause the consumer to perceive a level of space availability. The physical design may influence the experience of density by creating a perception of more or less space and influence the level of crowding stress (Baum and Valin 1977).

The interpretation of cues is included in the subjective reality portion of the Mazursky and Jacoby (1986) image formation process. This is consistent with the cue utilization described in the Eroglu and Harrell (1986) model and as incorporated into the present model.

#### Perceived and Affective Density

Consistent with the Eroglu and Harrell (1986) model, cue utilization by the consumer leads to perceived and affective density as defined earlier. The aspect of perceived density relating to environmental cues is spatial density. Spatial density refers to the physical qualities of the perceived environment (Eroglu and Harrell 1986) such as the density of merchandise, aisle width or the number of customers in a space. Changes in the physical characteristics of the setting can influence the way the setting is experienced and influence the experience of crowding (Baum and Davis 1976). It would follow, then that the arrangement of merchandise within the store setting

could impact the crowding level experienced by the consumer.

Spatial inadequacy has been described as the experience of feeling cramped and is believed to result in arousal and a response relative to the space (Baum and Komar 1976). This feeling and response is due to affective density which involves a judgement of perceived density by the consumer against a standard set by the consumer.

The described process of cue interpretation leading to perceived and then affective density is very much like the process described in Mazursky and Jacoby's image formation model. Both processes involve the consumer interpreting physical cues in the store environment. In the image formation model, environmental cues, i.e. details of store X, appear in the objective reality. Information from these cues are interpreted, evaluated and integrated and inferences are made about the store. Cues that convey information about density levels will result in perceived and affective density interpretations. Based on the level of affective density, the stress related to crowding will occur.

#### Experienced Retail Crowding

Crowding is typically viewed as a negative perception of excessive density, a subjective experience (Rapoport 1976). That is, when density levels restrict or interfere with the individuals' activities within that setting,

crowding is experienced (Schmidt and Keating 1979).

Crowding is a specific case of affective density. It is an unpleasant feeling that is experienced by an individual (Hui and Bateson 1991).

The proposed model describes the experienced crowding as an antecedent of image formation or change. This positioning of the concept does not dispute either the Mazursky and Jacoby image formation model or the Eroglu and Harrell crowding model, but rather integrates the two processes.

From the perspective of the image formation process model, experienced crowding would occur in the subjective reality between interpretation and evaluation and the inferencing process. For example, a consumer in a high merchandise density situation may evaluate the level of density subjectively (affective density), may feel closed in, experience crowding, infer that they can't find what they want there, and form an image of the store based on that experience.

From the perspective of the Eroglu and Harrell retail crowding model, again the proposed placement of experienced crowding as an antecedent of image formation supports and expands the original model. Image formation may be viewed as one of the outcomes described by the Eroglu and Harrell model.

### Outcome

According to the Extended Model of Retail Crowding, two consequences occur as a result of the stress from perceived retail crowding: adaptive strategies and outcomes.

Adaptive strategies, according to the Eroglu and Harrell crowding model, describe how the consumer will cope in response to the level of crowding experienced. Outcomes in the Eroglu and Harrell model include the consumer's emotional evaluation of the shopping experience, confidence in their store choice, and revision of shopping habits.

Given our knowledge of store image processes, the description provided by the Eroglu and Harrell model warrants some adjustment and expansion. Based on the image literature, the emotional evaluation of the store and resulting image formation/modification may occur as a result of the level of crowding perceived. Image formation has consistently been shown as a response to both physical/tangible stimuli and emotional/intangible stimuli. The level of experienced crowding could have a significant impact on the psychological and emotional evaluations of a shopping experience and resulting image. The proposed model describes three image processes that may occur as a result of experienced crowding: image formation, image modification, and image reinforcement.

### Image Formation

If the consumer has no prior experience with or knowledge of the store, the exposure to the store environment will result in the initial formation of a store image. This situation may occur if the consumer is new to the market area, or if the store is new to the consumer's current trade area.

If a negative reaction to the density level in the store results in a high level of experienced crowding, the consumer may form a negative image of the store. If the consumer wishes to alleviate that stress, cognitive or behavioral adjustments may be directed toward dissonance reduction or restoration of cognitive consistency (Lawrence 1974). If little or no crowding is perceived and the store environment is thus perceived as non-hostile and comfortable, the individual will be inclined to perceive the activities that transpire in that environment as also positive (Markin, et al. 1976). The overall image about that store will then tend to be positive.

### Image Modification

If the consumer already has some knowledge of the store, some evaluation of the store has been made and a store image formed. Each time the consumer is in the store environment, there is potential for the held image to be modified or reinforced.

The consumer develops an image of the store based on the totality of experiences and the form that it takes, positive or negative, depends on the relative importance the consumer places on various store attributes (Kunkel and Berry 1968). These values may differ by store type. For example, in service settings, the absence of tangible product characteristics may make the intangible factors relatively more important to the consumer (Grove and Fisk 1983). In stores where the consumer expects a "bargain-basement" type environment, intangibles like ambience may be less important. What is important is that the image conveyed to the consumer via store characteristics is congruent with the image that the consumer finds acceptable for that store. Physical cues should reflect the image desired by the store (Grove and Fisk 1983). There should be a good "fit between the store image and the consumer's store choice evaluative criteria (Rosenbloom 1983).

So, if the consumer's prior image of the store is positive, and crowding is experienced in the store, a dissonance occurs and the store image may be modified negatively. In contrast, if the store is perceived to have a negative image, and the shopping experience is positive, again dissonance occurs, but the modification is positive.



### Reinforcement

A third image outcome will occur if the preconceived notions about the store are reinforced. In this situation, positive experiences are congruent with previously held positive images and no change in image occurs. Likewise, negative shopping experiences reinforce prior negative images of the store and again, no change in image occurs.

### Adaptive strategies

Once the image is formed, the consumer may respond by engaging in appropriate adaptive behavior. As mentioned earlier, one of the two consequences of retail crowding described by Eroglu and Harrell is that the consumer will engage in adaptive strategies. The original model of retail crowding suggests that various consequences of the stress of crowding could occur. First, adaptive strategies describes ways consumers might cope with the high density situations. For example, consumers may reduce shopping time in an attempt to avoid the crowded situation. In the proposed model, this adaptive behavior will result in response to the store image held by the consumer based on the shopping experience and level of crowding.

One explanation of how the consumer responds to the shopping experience suggests that consumers will engage in either approach or avoidance behavior. Donovan and Rossiter (1982) showed how the Mehrabian-Russell environmental

psychology model could be used to measure consumers' psychological responses to various in-store variables. The Mehrabian-Russell model suggests that individuals' responses to an environment may be classified as approach or avoidance behaviors. Donovan and Rossiter expanded this theory to apply to the store environment. Describing the store atmosphere in terms of the combination of in-store variables, the study proposes that atmosphere manifests itself as either pleasure or arousal and that these two emotional states are mediators of shopping behavior. Adaptation may take the form of adjustments of time spent in the shopping environment (Harrell et al. 1980) or an avoidance of the store entirely.

Milgram (1970) described situations where individuals engage in behavioral adaptation when the rate of environmental stimuli exceeded the individual's capacity to cope. If this overload occurs, the consumer may engage in one of several simplifying strategies such as physically removing the source of distraction or move himself to a more peaceful locale (Wright 1974). Harrell, et al. (1980) provided evidence that crowding in retail environments may have a predictable effect on shopping behavior. Clearly, this has significant implications for store loyalty and consumer shopping habits.

Although most of the investigations of crowding describe it negatively, in some situations the response to

crowding may be positive. For example, a crowd around a sale table seems to draw consumers toward that fixture. Likewise, at flea markets, fairs and special events, crowds may contribute to the excitement and be viewed positively by the consumer. In any case, the level of crowding creates a response and a corresponding behavior in the consumer. Retailers may be able to improve control over store image and the resulting buying behavior by addressing the elements in the store that are contributing to crowding.

This research was designed to test two of the relationships described in the model.

### The Research Design

#### The Sample

Respondents were selected on a non-probability sampling basis. The sample groups were selected such that they represented equivalent groups as nearly as possible. To accomplish this end, respondents were recruited from the faculty of public school systems. This provided a somewhat homogeneous group in terms of education level, income level and age range. A homogeneous sample reduces the possibility that differences in the results of the experiment are influenced by differences in the characteristics of the respondents. The sample was defined, then, to be individuals, age 22 to 65, who hold faculty positions in

public schools, and who shop in one of the two designated store types at least once a year.

#### Questionnaire Development

The questionnaire combined the use of a semantic differential scale and a Likert-type scale [see Appendix E]. To measure the crowding construct, eight adjective pairs were included based on instruments developed by Eroglu (1985) and Harrell, et al. (1980). These original instruments were designed to measure crowding due to numbers of people. Consequently, replacement of some items specific to people was necessary. For example, Eroglu's questionnaire used "too many/too few shoppers" as a measure. Since this study deals with crowding due to merchandise density, that type of item was replaced by more generic crowding measures such as "cramped/not cramped" which could refer to crowding due to any environmental condition.

The image measurement section of the questionnaire includes a semantic differential portion and a Likert scale. Subjects were asked to respond to seven adjective pairs or phrases reflecting various attributes of a store. The attributes are based on a literature search. Many researchers have attempted to identify attributes that contribute to store image formation. The adjectives selected for this questionnaire were selected from prior

lists of attributes and screened based on relevance to the present study.

A second portion of the image measurement asked subjects to respond to statements about a store setting by indicating the degree that they agree or disagree with given statements. The statements included references to type of shoppers associated with the store, and asked the extent that the store is more like Dillard's or K-Mart. These stores were selected to represent high and low image stores. The selection process is described in the pre-test section to follow.

For each of the sections of the questionnaire, respondents were asked to circle one of seven points on the scale. For the semantic differential portions, the polarity of the scale is alternated to reduce response bias.

The questionnaire was in booklet form and required that the respondent fill out these questions for each of the eight slides depicting store settings. After completion of the eight sets, respondents were asked about shopping frequency at various stores. Determination of shopping frequency may help to identify relationships between patronage behavior and experienced crowding or image formation. Finally, the questionnaire includes a demographics portion.

The development, purification, and reliability and validity checks of the instrument were conducted following

Churchill's (1979) procedure for questionnaire development. The questionnaire was tested during the pre-test procedures described in the following sections.

### Slide Selection

The initial question to be resolved in the slide selection process was which stores should be included. Previous experiments using slides as simulation have included a variety of settings. McClelland and Auslander (1978) used a wide variety of environments including restaurants, offices, libraries, retail stores and sporting events. Eroglu (1985) used slides of a mall under crowded and uncrowded conditions in a test of the EH model. And slides of a ticket office at a railroad station were used to simulate crowded and uncrowded conditions in a service setting (Bateson and Hui 1992).

Each of these experiments involved crowding in terms of numbers of people in a given amount space. The focus of the present study was not on numbers of people, but rather on the amount and arrangement of merchandise within a retail environment. Consequently, the slides needed to reflect various merchandise density levels within stores. In order to obtain a wide variation in merchandise density levels, a decision was made to include two store types and two merchandise categories.

The slides were taken in a regional department store and a national discount store. Slides depicting high to low merchandise density levels in both merchandise categories were taken for each store type. Similar representations from both store types were needed to reduce potential violations of internal validity that could be caused by various confounding elements. It should be noted that the stores did not necessarily reflect the stereotypical layout of that type of store. That is, the discount store was not necessarily the most crowded layout and the department store was not necessarily the most spacious. This fact should reduce bias that could result from preconceived images of store type.

Categories of merchandise depicted in the slides include mens and women's apparel and home furnishings. Again, similar representations from the two store types were included to reduce potential threats to internal validity. Given this study's results suggesting a relationship between various levels of merchandise density in general and crowding, future studies can further test whether different types of merchandise result in differences in perceived density levels.

Initially, 345 slides were taken and developed using a 35mm camera and available light. The photography sessions all took place before store opening. This timing was intended to insure that people were not included in the

shots. Because the study is examining merchandise density, the inclusion of customers and/or salespeople in the scenes could confound the results, since it is known from previous research that the number of people in a space does influence experienced crowding.

After randomly numbering the slides to avoid store identification, the technically unusable slides were eliminated. This group of eliminated slides included unfocused, dark and otherwise unclear shots. Next, judges were used to eliminate those slides that appeared to be extremely similar to other slides. This process in effect eliminated duplicate slides. The judges further eliminated any slides that "identified" the store. For example, slides showing identifiable signing or exclusive merchandise were discarded. A determination was made that, as much as possible, the store should not be recognized by the respondent.

The next step involved judges sorting pictures into five piles representing least cluttered to most cluttered. The judges were nine adults between the ages of 35 and 55. The sorting was accomplished by placing the slides on a large viewfinder and allowing them to arrange the slides as they wished. Five containers labeled one to five and least cluttered to most cluttered were provided. Once the judges had made a decision they placed the slides in the containers. After all the slides were sorted, the judges



were asked to go back through the piles and make adjustments if they were necessary. Then, the numbers off the slides were recorded on a judging form based on Eroglu's (1985) study [see Appendix A].

The mean and standard deviation were calculated for the combined ratings of the judges. Based on these numbers, a subset of slides was selected that reflected three distinct levels of merchandise density (means nearest to 1, 3 and 5) and the smallest standard deviation among the ratings. From the subset of slides, the final group of slides was selected such that each of the levels of density represented each of the store types and similar merchandise categories. In some cases, slides were selected that had relatively high or low means for the level. This situation occurred as a result of balancing store types and merchandise categories. Following the pre-test, a decision was made to include only high and low density levels. Based on comments from and observation of respondents suggesting fatigue during the experiment, an attempt was made to shorten the length of the experiment. Fatigue has been identified as a threat to internal validity. Consequently, elimination of a mid-range of merchandise density was justified. The final group of slides used, along with their mean and standard deviation, are shown in Appendix B.

### Pre-tests

A number of exploratory investigations on the crowding and store image constructs were conducted in anticipation of this study. In trying to gain better understanding of the general crowding/store image relationship, informal interviews were conducted to assess response to the idea of crowded conditions in retail stores. Fifteen individuals were interviewed. They included both professional and retired persons, academic and non-academic, with ages ranging from twenty years to seventy-seven years. These individuals were simply asked what their reaction is to stores that are crowded. Without exception responses were negative, i.e. they do not like to shop in crowded stores, suggesting that crowded conditions may result in higher levels of crowding stress. Some respondents suggested that they typically avoid or have quit patronizing particular stores because they are crowded. One individual said that he would not enter a store if the store looked congested when he looked through the glass storefront. On several occasions, people gave an example of local stores that they perceived as being crowded and indicated that they "had gone downhill". This type of response provided some suggestion that store image is related to the perception of crowding.

Two pre-tests in the area of store image were conducted prior to the experiment. Both tests were designed to determine what specific stores were regarded as having high

and low images. Previous studies have used store names to manipulate high and low store image perceptions (Thorelli, et al. 1989).

The first test was an open-ended format asking respondents to name four stores that they considered to be high image retailers and four stores that they considered to be low image retailers. In order to give the respondents a frame of reference, the introductory statement asked them to list stores that they "would (low image) or would not (high image) be embarrassed for their friends to know they had purchased their birthday gifts there" [see Appendix C]. This test resulted in a wide range of responses, with the most frequently named stores for high image being Dillard's and Foley's. Dillard's and Foley's are both regional department stores in the southwestern United States. The most frequently named low image stores were K-Mart and Sears. The results for the low image stores were not surprising. However, it was somewhat surprising that the test for high image stores placed Neiman Marcus as a somewhat distant third in frequency of response. Considering that the responses may have been a result of the way the question was asked, a supplementary test was conducted.

The second image pre-test asked respondents to rank stores in terms of their image. This time the top five named high image stores and the top five named low image

stores from the earlier test were listed and the respondents rank ordered them [see Appendix D]. This time Neiman Marcus was named as the highest image store with Dillard's being second. For low image, K-Mart was again named as having the lowest image.

Because some subjects in the study were recruited from areas some distance from a Neiman Marcus, there was reason to be concerned that some respondents may lack familiarity with that store and thus not be able to respond to the question. Consequently, a decision was made to use Dillard's as the representative store for high image.

A pilot study was conducted to assess the reliability of the questionnaire and the appropriateness of the experiment procedures. The study was conducted using 120 undergraduate students from four different classes. Several small classes were selected rather than one large section to approximate the conditions of the actual experiment. It was anticipated that the study would be administered to small groups of people given the sample selection process described earlier. Students were told that they would be shown a series of twelve slides of retail settings and that their responses on the questionnaire should reflect their feelings about each setting. The tests took from twenty-seven to thirty-six minutes to conduct using twelve slides. Respondents were allowed as much time as they needed to complete each section of the questionnaire. Time required

for each slide ranged from 1 minute to 4 minutes. Slide time required reduced as the experiment progressed and the respondents became accustomed to the questionnaire format. As mentioned previously, fatigue proved to be an issue in the experiment and a decision was made to reduce the number of slides to eight.

Using the data from this pilot test, principal components factor analysis and varimax rotation were used to determine if the variables loaded on two distinct factors, image and crowding. The crowding items loaded strongly on one factor. Loadings were high ranging from .68 to .89. The loadings of the image variables identified items that were poor measures of the image component. Seven items were subsequently dropped from the questionnaire as inappropriate to the study. The eliminated items either had very low loadings or loaded on more than one factor. This elimination reduced the questionnaire to eight measures of the crowding construct and eight measures of the image construct [see Appendix E]. Internal consistency reliability of the items was measured by coefficient alpha and interitem correlations.

### The Experiment

Because the experiment was conducted using small groups of respondents, the research setting varied slightly due to the need to access the respondents. The specific rooms

selected for each administration of the experiment were as close to the same as possible given the variety of locales. Each room contained desks and/or tables for the respondents. A slide projector and slide screen were set up in the room prior to the experiment time. Once the respondents were seated, the questionnaire booklets were passed out. The researcher began each session by saying:

Hello. My name is Nita Paden. I will be showing you a series of eight slides that show settings in retail stores. For each slide you will be answering two pages of questions. The questions are identical for each of the slides. As each slide appears on the screen, I want you to consider that setting as you answer the questions for that slide. You will have as long as you need to answer the questions. Please follow along as I read the instructions at the top of the first page.

After answering any questions, the slides began appearing on the screen. For each session, the slides were counterbalanced such that the order of the slides was randomized. After three minutes, the respondents were asked if they needed more time. Additional time was given as needed. If no additional time was necessary, the respondents were shown the next slide. This process continued until all eight sets of questions had been

completed. Respondents were then asked to complete the last two pages of the questionnaire which covered shopping frequencies and demographic information.

When all respondents were finished, questionnaires were collected. Debriefing followed and questions were answered. Finally the respondents were thanked for participating and dismissed.

### Statistical Analysis

In order to determine if differences exist in perceived crowding levels under varying merchandise density levels, it was necessary to examine the variance. Analysis of variance (ANOVA) provides an adequate means of investigating these differences. The null hypotheses tested was that the group means are equal. That is, there is no difference in perceived crowding at high and low levels of merchandise density; and there is no difference in perceived store image at high and low levels of perceived crowding.

Two relationships were investigated. First, the analysis examined whether there is a significant effect on the perception of crowding due to high and low levels of merchandise density. The different levels of merchandise density were manipulated through the use of the slides simulating these conditions. The factors included two store types, two merchandise categories and the two levels of merchandise density. The dependent variable, crowding, was

measured on ordinal scales as described in the questionnaire development section.

The second relationship investigated was whether there is a significant effect on the perception of store image due to high and low crowding levels. Crowding and store image levels were measured by the responses on the questionnaire. For this analysis, the factors included two store types, two merchandise categories and two levels of crowding. Again, the dependent variable, store image, was measured on ordinal scales as described in the questionnaire development section.

Typically, ANOVA is applied to studies using independent samples. That is, each treatment or level would have different subjects assigned to that treatment. In the present study, the same subjects responded to each of the levels in an attempt to control subject heterogeneity between the groups. That way the variance observed between levels is less likely to be the result of differences in the respondents. This is referred to as a design using repeated measures (Keppel 1973). Certainly, other factors were expected to be contributing to differences among the treatments. Distractions, fatigue, boredom, etc. will all contribute to the observed variance. However, the error components should be smaller using the same subjects than if independent groups are used.



One of the problems of repeated measures is that a carry-over effect may occur. That is, the response to one treatment may be influenced by earlier treatments. In the present study, this could mean that the respondents' answers for the third slide could be effected by the content of slides one and two. For example, judgments may be made in comparison to other slides rather than just on the setting being shown. This problem was handled by counterbalancing the treatments (Keppel 1973) as described earlier. This process requires that the sequence of slides be rotated to ensure that the effect of prior testing is minimized.

## CHAPTER 4

### RESULTS OF THE EXPERIMENT

#### Introduction

The hypotheses of the study were analyzed using two different procedures. The first hypothesis, which examined crowding as the dependent variable, was tested using repeated measures ANOVA. The second hypothesis focused on store image as influenced by experienced crowding and was tested using a repeated measures ANCOVA. The third hypothesis examined the effect of merchandise density on store image and was analyzed similarly to the first hypothesis using repeated measures ANOVA. The following sections describe the procedures and provide justification for their use. Included is discussion of the tests of the assumptions associated with the procedures. The chapter concludes with a description of the results of the tests.

#### Within Subjects Design/Repeated Measures

When the respondents in an experiment are exposed to multiple treatments, the design is referred to as a repeated measures design. Analysis of Variance (ANOVA), adjusted for repeated measures on each subject, was used to analyze data from the first and third experiments.

Repeated measures designs are sometimes referred to as within subjects designs. The "within subjects" term refers to the fact that each respondent is exposed to multiple treatments rather than having different subjects exposed to different treatments. Thus, the measured effect is the result of variations within the same person rather than between groups of people. That is, differences in responses are less likely to be the result of differences in individuals (Kidder and Judd 1986).

The main purpose of a repeated measures design is to provide control over individual differences in respondents (Winer 1962). Repeated measures designs also are efficient, requiring fewer numbers of subjects to achieve the same level of statistical power. The procedure generally is more sensitive to the effects of independent variables because there is more control over individual differences or subject heterogeneity (Keppel 1973).

The biggest disadvantage of a repeated measures design is the possible threat to internal validity that comes from carry-over or sequence effects (Winer 1962; Cook and Campbell 1979; Keppel 1973). For example, in the present study, responses to one slide may be influenced by the viewing of previous slides. The typical solution to the problem of carry-over effects is to use counterbalancing (Keppel 1973). This procedure involves randomizing the order in which the treatments are administered. In this

study, the experiment was administered in eight different sessions. The slide order was randomized for each session in an attempt to overcome this potential problem.

Another potential threat to internal validity in this type of experiment is fatigue. Because the respondents were asked to complete questionnaires for each of eight slides, responses to the latter slides had the potential of being influenced by loss of interest or boredom. This issue was addressed during the pre-test stage by reducing the number of slides from twelve to eight. With repeated measures designs, a situation often arises where non-independence, or violation of the assumption of independence occurs.

Typically non-independence occurs when the data is grouped or when it is sequential (Judd and McClelland 1989). In the present experiment, the observations came from the same individual so the data is grouped within individuals.

Because multiple measures are recorded for each respondent in a repeated measures design, adjustments have to be made to account for the dependencies between measures taken on each subject (Norusis 1990). To accommodate for this lack of independent responses, the regression model is modified. If these adjustments are not made, the test of treatment differences will be biased. The modification or adjustment involves combining the data from each individual into summary dependent variables which can be analyzed separately. This creates independent data since only one

measure is taken from each individual (Judd and McClelland 1989). These variables are called orthonormalized because they are orthogonal (independent) and are normalized (Norusis 1990).

Because data were gathered on each subject more than once in this experiment, single scores were created for each respondent by summing the responses and dividing the sum by the square root of the number of responses. These values were then regressed on the predictor variables for the treatment levels to determine differences among the transformed variables (Judd and McClelland 1989).

#### Tests of Assumptions

The repeated measures analysis of variance assumes that the dependent variable is multivariate normal. Multivariate normality was investigated by examining the distribution in each of the conditions. Table I shows the descriptive statistics for each condition of the dependent variable associated with hypothesis one.

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TABLE I

	DESCRIPTIVE STATISTICS		
	Mean	Std. Dev.	Kurtosis
LDEA	45.96	7.01	1.09
HDIA	17.39	5.87	-.64
LDINA	44.47	7.61	1.49
HDINA	20.17	6.27	3.66
HDEA	18.31	7.64	2.50
LDENA	45.51	6.83	.01
LDIA	45.65	6.61	.84
HDENA	18.77	7.10	1.68

Note: LDEA (low density/department store/apparel; HDIA (high density/discount store/apparel); LDINA (low density, discount store, non-apparel); etc.

Normality was investigated by visual inspection of both stem and leaf plots and normal probability plots. Such examination suggested that the assumption of normality was violated. The Lilliefors test of the hypothesis that the data are from a normal distribution was also conducted. This test is a modification of the Kolmogorov-Smirnov test. The results of the K-S Lilliefors test for each condition is included in Table II and further confirms that the normalcy of distribution assumption is violated.

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TABLE II

	K.S.-LILLIEFORS SCORES (crowding variables)			
	RAW	RECIP	SQRT	LG10
LDEA	.022	.000	.003	.001
HDIA	.005	.000	.020	.012
LDINA	.092	.000	.008	.001
HDINA	.031	.000	.065	.033
HDEA	.001	.025	.056	.058
LDENA	>.200	.000	.037	.007
LDIA	>.200	.000	.040	.004
HDENA	.003	.000	>.200	.079

When the assumption of multivariate normal distribution is violated, transformations of the data may be performed in an attempt to correct the situation (Keppel 1973). Transformations conducted on the data included reciprocal, square root, natural logarithm, and base ten logarithm. None of the transformations significantly improved the data (see Table II), and a decision was made to use the original data set. In this analysis, violations of the assumption of normality of distribution were not of extreme concern since the F test is robust in regard to this assumption (Keppel 1973; Hair, et al. 1987).

#### Results - Hypothesis 1

The first hypothesis stated that there would be a difference in perceived crowding at high and low merchandise density levels. Store type and merchandise type were included in the design to determine if these within subjects factors influence the effect of density on perceived crowding. Merchandise density, store type and apparel type are the within subjects factors because all respondents are exposed to all combinations of treatments.

This design involved setting up eight experimental conditions which were displayed to the respondents through the use of slides. As mentioned in chapter three, the validity of using slides to simulate retail settings has been established by Bateson and Hui (1992). The conditions

created via the slides were: (1) low density/department store/apparel (LDEA); (2) high density/ discount store/apparel (HDIA); (3) low density/discount store/non-apparel (LDINA); (4) high density/discount store/non-apparel (HDINA); (5) high density/department store/apparel (HDEA); (6) low density/department store/non-apparel (LDENA); (7) low density/discount store/apparel (LDIA); (8) high density/department store/non-apparel (HDENA). As previously discussed, in a repeated measures design, these conditions become contrasts, or transformed variables to be used in the analysis as the dependent variables.

The ANOVA results for the first experiment are presented in Table III. The analysis shows significant main effects for merchandise density, but not for store type or apparel type. This suggests that, as hypothesized, merchandise density does influence the level of experienced crowding in the respondents. An  $\eta^2$  of .92 for the density effect further supports the hypothesized relationship. Store type effect was not statistically significant suggesting that store type alone does not affect an individual's perception of crowding. Likewise, the merchandise type effect was not significant. The significant density by merchandise type interaction effect indicates that the effect of merchandise density on experienced crowding is different under apparel and non-apparel conditions. Additionally, the density by store by



merchandise type effect was significant. This finding suggests that both merchandise type and store type, when viewed in combination, influence the effect of merchandise density on the experienced crowding.

TABLE III

ANOVA SOURCE TABLE

Source of Variation	SS	df	MS	F	Sig.F	eta <sup>2</sup>
<u>Within Subjects</u>						
Density	233005	1	233005	1657.83	.000	.91
Error	27768	162	140.55			
Store type	14.82	1	14.82	.42	.520	.00
Error	5760.56	162	35.56			
Merchandise	52.24	1	52.24	1.71	.193	.01
Error	4944.63	162	30.52			
Density by Store	69.48	1	69.48	2.76	.098	.02
Error	4073.90	162	25.15			
Density x Mer.	482.25	1	482.25	14.65	.000	.08
Error	5331.63	162	32.91			
Store by Merch.	50.65	1	50.65	1.60	.207	.01
Error	5117.72	162	31.59			
Density by Store by Merch.	189.42	1	189.42	5.15	.025	.03
Error	5956.95	162	36.77			

Cell means are displayed in Table IV, and show that merchandise density conditions did elicit a difference in responses to perceived crowding and was in the direction expected. That is, the low density conditions generated lower crowding ratings than did high density conditions.

[Note: Subjects' ratings of perceived crowding were coded

such that higher ratings correspond to low crowding ratings.]

Cell means also provided additional information about the significant interaction between merchandise density and merchandise type. In the high density condition, average responses to crowding were lower under the non-apparel condition than the apparel condition. But in the low density condition, crowding responses were slightly higher under the apparel condition than the non-apparel condition.

Interaction also occurred among the density, store type and merchandise type variables. For the high density/discount store condition, the average crowding response was lower for non-apparel than apparel. But for the high density/department store condition, there was virtually no difference in the average crowding response under apparel and non-apparel conditions. This relationship was similar under the low density conditions. That is, for the low density/discount store condition, the average crowding response was lower for the apparel condition than the non-apparel condition. And for the low density/department store condition, the crowding responses were virtually the same under the two merchandise type conditions.

---

TABLE IV

CELL MEANS	
LDEA	45.96
LDINA	44.467
LDENA	45.509

LDIA	45.650
HDIA	17.399
HDINA	20.17
HDEA	18.306
HDENA	18.767

### Repeated Measures Analysis of Covariance

The second hypothesis investigated whether the store image perceived by the respondent was different under different levels of experienced crowding. Based on previously discussed pre-tests, it seemed conceivable that individuals perceive that a store has a high or positive image when experienced crowding is low. To test this hypothesis, a repeated measures analysis of covariance (ANCOVA) was used.

With repeated measures ANCOVA, continuously measured predictors (covariates) are included in the model in conjunction with the manipulated variables. There are basically two reasons for including the continuously measured predictor in the model. First, the statistical tests may increase in power if there is a relationship between the covariate and the dependent variable (Judd and McClelland 1989).

The second reason for including the continuously measured predictor is to ascertain the relationship between the covariate and the dependent variables in the repeated measures design (Judd and McClelland 1989). In the present study, the justification for using ANCOVA lies in the

relationship that exists between crowding, the continuously measured predictor variable and the dependent store image variables created by the repeated measure design.

#### Test of assumptions

Because the procedure used to analyze the second hypothesis is an extension of the repeated measures ANOVA procedure, the tests for assumption of normality were repeated using store image as the dependent variable. Table V shows the descriptive statistics for the store image variables: ILDEA (low density/department store/apparel); IHDEA (high density/discount store/apparel); ILDINA (low density/discount store/non-apparel); IHDEA (high density/discount store/non-apparel); IHDEA (high density/department store/apparel); ILDENA (low density/department store/non-apparel); ILDIA (low density/discount store/apparel); IHDEA (high density/department store/non-apparel).

TABLE V

DESCRIPTIVE STATISTICS (Store Image Variables)			
	MEAN	STD. DEV.	KURTOSIS
ILDEA	21.30	8.37	-.122
ILDENA	20.01	7.67	-.215
ILDIA	21.96	7.29	.174
ILDINA	25.83	9.00	.670
IHDEA	38.49	9.43	6.78
IHDEA	35.55	10.21	2.53
IHDIA	39.36	9.27	5.64
IHDINA	38.46	9.39	3.17

Once again, the assumption of normality of distribution of the dependent variables appears to be violated. This time, however, four of the variables (ILDEA, ILDENA, ILDIA, ILDINA), were improved by both the square root transformation and the natural log transformation. Table VI displays the Lilliefors scores for the various attempted transformations.

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TABLE VI

K.S. - LILLIEFORS SCORES  
(Store Image Variables)

	RAW	RECIP	SQRT	LN
ILDEA	.015	.000	>.200	>.200
ILDENA	.001	.000	.066	>.200
ILDIA	.001	.000	.054	>.200
ILDINA	.019	.000	>.200	>.200
IHDEA	.005	.000	.000	.000
IHDENA	.041	.000	.000	.000
IHDIA	>.200	.000	.001	.000
IHDINA	.048	.000	.001	.000

As can be seen, non-significance is apparent for the first four variables using the square root and the natural log transformations. However, none of the transformations resulted in a uniform improvement. A decision was made to use the raw data for the analysis since no single transformation provided improvements across all variables. Additionally, the F- test is robust in regard to violations of the assumption of normality.

### Results - Hypothesis 2

The second hypothesis stated that store image would be different at different levels of experienced crowding. Once again merchandise density, store type and apparel type were included as within subjects factors.

The ANCOVA results are displayed in Table VII. The analysis resulted in significant main effects for the covariate, experienced crowding in every instance. These findings strongly suggest that experienced crowding had a dramatic effect on the store image perceived by the respondents, and supports hypothesis 2. The negative slope for the covariate suggests a negative relationship between store image and crowding and provides further support of the importance of crowding in influencing store image.

Further review of the ANCOVA table revealed other interesting findings. In addition to the significant main effect of crowding, significant main effects were found for store type, density by merchandise interaction, and store by merchandise interaction. Given the results of pretests discussed in chapter three, one would expect store type to have an influence on store images. And given the significant density by merchandise type and store by merchandise type effects, it appears that merchandise type is an important factor in effecting store image when combined with the other two factors.

TABLE VII

## ANCOVA SOURCE TABLE

Source	b	SS	df	MS	F	Sig. of F	eta <sup>2</sup>
Crowding	-.68	10365.40	1	10365.40	92.28	.000	.36
Density		159.80	1	159.80	1.42	.235	
Error		18084.99	161	112.33			
Crowding	-.40	942.76	1	942.76	13.14	.000	.08
Store		1999.41	1	1999.41	27.86	.000	
Error		11555.19	161	71.77			
Crowding	-.44	1001.14	1	1001.14	21.22	.000	.12
Merchandise		6.36	1	6.36	.13	.714	
Error		7594.74	161	47.17			
Crowding	-.38	591.06	1	591.06	11.55	.001	.07
Density by Store		81.29	1	81.29	1.59	.209	
Error		8237.82	161	51.17			
Crowding	-.51	1380.52	1	1380.52	35.22	.000	.18
Density by Merch.		289.39	1	289.39	7.38	.007	
Error		6310.42	161	39.20			
Crowding	-.43	943.74	1	943.74	19.08	.000	.11
Store by Merch.		1250.67	1	1250.67	25.29	.000	
Error		7962.47	161	49.46			
Crowding	-.27	435.96	1	435.96	11.12	.000	.07
Density by Store by Merch.		103.16	1	103.16	2.63	.107	
Error		6314.29	161	39.22			

## Results - Hypothesis 3

The third hypothesis expanded on the investigation of the store image variables by examining the influence of merchandise density on store image formation. The

hypothesis was analyzed in the same manner as hypothesis one using procedure ANOVA in a repeated measures design.

The ANOVA results for hypothesis three are shown in Table VIII. Significant main effects were found for merchandise density, store type, density by merchandise type interaction, store type by merchandise type interaction, and the density by store type by merchandise type interaction. Additionally, the size of the effect reflected by  $\eta^2$  suggests the influence of merchandise density on store image is important. Thus, hypothesis three is supported.

TABLE VIII

ANOVA SOURCE TABLE						
Source	SS	df	MS	F	Sig. of F	$\eta^2$
Density	80270.98	1	80270.98	457.07	.000	.74
Error	28450.39	162	175.62			
Store	2146.42	1	2146.42	27.82	.000	.15
Error	12497.96	162	77.15			
Merch.	33.50	1	33.50	.63	.428	.00
Error	8595.88	162	53.06			
Density by Store	150.50	1	150.50	2.76	.098	.02
Error	8828.88	162	54.50			
Density by Merch.	837.44	1	837.44	17.64	.000	.10
Error	7690.93	162	47.47			
Store by Merch.	1055.16	1	1055.16	19.19	.000	.11
Error	8906.21	162	54.98			
Density by Store by Merch.	197.12	1	197.12	4.73	.031	.03
Error	6750.25	162	41.67			



Other findings of the analysis are meaningful as well. Just as in the analysis of hypothesis two, store type appears to play a significant part in influencing store image. Merchandise type effect alone does not appear to influence the formation of store image significantly, although this factor does appear to influence the effect of merchandise density on store image and the effect of store type on store image. In addition, interaction occurred among merchandise density, store type and merchandise type.

A review of the cell means offered some additional insight. Mean responses are shown in Table IX.

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TABLE IX

CELL MEANS - STORE IMAGE

ILDEA	21.30
ILDENA	20.01
ILDIA	21.97
ILDINA	25.83
IHDEA	38.49
IHDENA	35.55
IHDIA	39.96
IHDINA	38.46

The highest store image response was for ILDNA (low merchandise density/department store/non-apparel). The lowest store image response was for IHDIA (high merchandise density/discount store/apparel). These means are in the direction expected and further support the hypothesis that merchandise density influences store image.

Cell means also provided information about the interaction effects. Under the low density/discount store condition, image responses were lower for the non-apparel condition than the apparel condition. But for the low density/department store condition, image responses were closer with lower responses for apparel than non-apparel.

Under the high density/discount store condition, image responses were lower for apparel than non-apparel conditions. But under the high density/department store condition, image responses were considerably lower for the apparel conditions than for the non-apparel condition.

#### Summary

Each of the three hypotheses was supported. Merchandise density appears to be a significant influence on experienced crowding, as well as on store image formation. Additionally, experienced crowding appears to have a dramatic influence on perceived store image. Chapter five will address the significance of these findings, discuss the managerial implications suggested by the findings, and offer suggestions for expanding on these results through future research.

## CHAPTER 5

### DISCUSSION AND IMPLICATIONS

#### Introduction

Both store image and the concept of perceived crowding have been described in terms of responses to environmental cues. However, previous literature has not described how these two variables relate to each other. The development of the present model and the results of the present study provide an initial step in describing this relationship. Perceived crowding due to merchandise density was shown by the study to be an influence on store image. One of the questions addressed by this study is whether or not perceived crowding, once experienced, influences the image an individual associates with the store. The results of this study suggest that different levels of crowding influence an individual's image of the store. These findings advance our knowledge of the store image/crowding relationship and contributes to our understanding of these two concepts.

In addition to investigation of this image/crowding relationship, the study addressed the impact of environmental cues on crowding. Previous research suggested that elements in the retail setting influence customer

behavior and attitudes. Both the store image literature and the retail crowding literature identified environmental cues or stimuli in the store setting as contributing to the phenomena. The proposed model and resulting analysis suggest that retail crowding (an emotional and/or psychological response to store stimuli, i.e. merchandise density) contributes to the phenomena of perceived store image. The results of this study also contribute to the research stream by suggesting an influence on perceived crowding and store image due to a clearly defined environmental cue--merchandise density. Although prior research has suggested that both store image and experienced crowding are in response to various environmental cues, little research has been conducted investigating specific environmental cues in relation to these two variables. This study has focused on one environmental cue, merchandise density, and its significance in affecting perceived crowding. The concept of density, in terms of merchandise and its arrangement, has not been previously addressed, and this study suggests that the density of merchandise in department and discount stores does influence crowding and the perceived image of the store. The importance of studying merchandise density is in how consumers respond to environmental cues in the retail setting. This study addressed this issue and showed that merchandise density

influences the level of experienced crowding and the store image perceived.

The following sections discuss the findings in detail and describe the contribution to retail crowding and store image theories provided by this study.

#### Merchandise Density/Retail Crowding Relationship

Two research questions formed the foundation of this study. The first question asked whether different merchandise density levels in retail settings contribute to differences in perceived crowding. Previous literature suggested that environmental cues are a part of communicating various images and emotions to consumers. Studies have shown that physical features in the environment influence individuals' judgments about their environment (Rapoport 1972; Baum et al. 1974; Eroglu and Machleit 1990). Research conducted by Markin, et al. (1976) suggested that the arrangement of space affects and shapes consumer behavior. The present study expands on this stream of research by showing that the arrangement of space in terms of merchandise and its density affects the emotional response of consumers via retail crowding. The findings of this study also support prior research that suggested that consumers experience crowding as a result of various elements in the environment of the retail setting. The importance of this finding is that it advances our

understanding of consumer behavior in retail settings because we have identified and studied specific factors that contribute to consumer responses to store environments.

The significant ANOVA results described in chapter four suggest that perceived crowding is indeed different at different levels of merchandise density. A significant main effect was found for merchandise density, and an interaction effect was found between merchandise density and merchandise type as well as among the merchandise density, merchandise type and store type variables. This difference due to merchandise density was anticipated and supports the informal pretests conducted at the initial stages of the study. The pretests asked individuals if they are bothered by "close quarters" in retail stores. All respondents indicated that they dislike shopping in stores that they feel are too crowded. This study supports the proposed theory by suggesting that individuals have an emotional response, i.e. crowding, to the density and arrangement of a store's merchandise. These findings are also in support of the influence of environmental cues described by Eroglu and Harrell (1986). In the present study, merchandise density (an environmental cue) appeared to influence the level of crowding experienced, as well as, the level of store image associated with that environment. This further supports the Eroglu and Harrell (1986) Model of Retail Crowding by showing that one environmental cue, merchandise density, is

in fact an antecedent of experienced crowding. Environmental cues were identified as contributing factors, but were not delineated in the retail crowding model. The present study expands on the retail crowding literature and specifically the Extended Model of Retail (Eroglu and Harrell 1986) by analyzing merchandise density in terms of its contribution to experienced crowding as well as to store image formation. The results indicating that there is a difference in perceived crowding at different merchandise levels are important findings given the importance of merchandise arrangement in retail strategy. It expands studies that suggest that physical design influences the experience of crowding (Baum and Valin 1977) by showing that the physical arrangement of merchandise influences perceived crowding.

An interaction between merchandise density and merchandise type occurred for perceived crowding. This finding suggests that the crowding response may be different at different merchandise density levels when merchandise type is considered. This is an important discovery because it shows that the application of retail crowding theory, in terms of response to merchandise density, will vary depending on the merchandise mix of the retailer. In this study the two types of merchandise treatments were apparel and non-apparel. A review of the cell means of this interaction showed much higher means (lower crowding

ratings) at low density levels than high density levels, and the means were in the direction expected. This supports the significant main effect for density and the theorized influence of merchandise density on experienced crowding.

A significant three-way interaction occurred for merchandise density by store type by merchandise type. This finding suggests that experienced crowding was different under the various conditions. That is, both merchandise type and store type, when viewed in combination, influence the effect of merchandise density on experienced crowding.

The results of this study also delineate crowding in response to an environmental cue from previous studies that focused on density due to numbers of people in a given space. Affective density was defined in earlier research as the evaluation of perceived density against subjective standards and desired levels (Rapoport 1976). Certainly, this experiment required respondents to make a subjective estimate of the arrangement of merchandise in retail settings as depicted in the slides. The present study advanced knowledge of affective density in terms of a response to merchandise arrangement as suggested by the varying responses to different merchandise density levels. Earlier studies on density and crowding found that increased numbers of people in a given space created increased levels of experienced crowding (Stokals, et al. 1973). The findings of the present study add to this research stream by



showing that affective density and experienced crowding are a function of merchandise density as well as a function of numbers of people.

#### Retail Crowding/Store Image Relationship

A second research question addressed by this study was once perceived crowding occurs, does that crowding influence the image that the consumer associates with the store. Previous literature suggested that a relationship exists between the image of a store and shopping behavior, consumer decision-making and store selection (Arons 1961; Thorelli, et al. 1989; Lewis and Hawksley 1990). Research has also suggested that physical layout and arrangement of merchandise contributes to positive and negative perceptions about a store. Previous research theorized that physical and psychological cues are very important as a determinant of outcomes such as image formation. Outcome as depicted in the Extended Model of Retail Crowding includes an emotional evaluation of the shopping experience. The results of this study add to this theory by showing that the emotional evaluation may be perceived store image.

The study showed that the store environment produces various perceptions, not only about the appeal of the shopping experience, but also about the store's image. Specifically, the findings are in support of the influence of "objective realities" described in the Mazursky and

Jacoby model (1986). Objective realities include the characteristics of the store (environmental cues) that stimulate the consumer to respond (Mazursky and Jacoby 1986). The present study adds to the theory and model describing store image presented by Mazursky and Jacoby (1986) through the identification of specific cues, i.e. retail crowding (intangible) and merchandise density (tangible), that affect how the consumer perceives the store. The proposed model includes these specified cues and thus serves as an expansion to the store image and retail crowding models. The findings of this study help to further define the concept of store image by providing better understanding of the factors in the store environment that are contributing to that image--merchandise density and retail crowding. The study showed that merchandise density is one of the physical cues and experienced crowding is one of the psychological cues that influence store image. This provides additional support to the crowding and image theories and to the proposed relationship between the two theories.

The results of the study suggest that different image levels are associated with a store at high and low levels of perceived crowding. Mazursky and Jacoby's (1986) defined store image as "a cognition or affect which is inferred ...from a set of cognitions and perceptions...and which represents what that phenomenon signifies to the

individual". The findings of the present study showed that one set of perceptions influencing store image is experienced crowding--perceptions about the merchandise density levels resulting in affective density. This supports the theory of store image as internal to the customer--a psychological or emotional response to the stimuli. Objective reality in the Mazursky and Jacoby (1986) store image model includes the features and characteristics of the store which stimulate the consumer to respond. Based on the findings of this study, merchandise density and retail crowding may be included in the model as identified stimuli.

In addition to the significance of the covariate, crowding, a significant main effect was found for store type. This result suggests that differences in the image response occurred for different store types. A review of the cell means showed that higher image responses occurred for the department store condition than for the discount store condition. Given previous research on store image, this result is not surprising. Mazursky and Jacoby's definition said that store image was "a cognition ... inferred either from a set of ongoing perceptions and/or memory inputs...". One would expect that consumers have some preconceived ideas relating store image to store type. One of the image measures used in other image research has been to identify, through pre-test, stores that signify high

and low image stores and then ask if the treatment store is more like one or the other. For this study K-Mart, a national discount chain, and Dillard's, a regional department store, were identified as high and low image stores. Low image responses, then correspond to a discount store (K-Mart) and high image to a department store (Dillard's). The results of this study showing varying image responses to the two store types provides additional support for the Mazursky and Jacoby definition of store image and the subsequent store image model. In the model's objective reality, the details of "store x" provided the stimuli for the subjective reality or inferencing that resulted in a store image. The "details" provided by the discount chain and the department store in this study, then, appear to have resulted in differences in store images perceived.

Significant two-way interactions occurred between merchandise type and both density and store type. Further, the covariate, crowding, appears to be an important influence on store image perceptions. A review of the cell means for these interactions provided some insight. Under high density conditions, higher image ratings occurred for non-apparel than for apparel for both department and discount stores. However, under low crowding conditions, responses to store image were higher for non-apparel conditions in department stores and lower for non-apparel conditions in discount stores. These results could have

been influenced by the merchandise depicted in the slides. However, it is possible that the response is related to expectations of the individuals. In a study of crowding related to numbers of people, Baum and Greenberg (1975) showed that subjects anticipating crowding experienced increased crowding. In discount stores attempts may have been made to reduce the density in the apparel areas. Consumers may expect apparel to be crowded, and when those expectations are not met they may have more favorable impressions of the store's image.

The two way interaction identified by the analysis between merchandise type and store type further supports this notion. In the department store condition, higher image ratings occurred for non-apparel than apparel (ILDENA 20.01/ILDEA 21.30; IHDENA 35.55/IHDEA 38.49). But in the discount store condition, higher image ratings occurred for apparel than for non-apparel (ILDIA 21.96/ILDINA 25.83; IHDIA 39.36/IHDINA 38.46). This is an interesting finding since apparel lines often provide higher margins for retailers than do non-apparel lines, and much of the focus of image-building advertising for department stores centers on the apparel lines. One explanation for the discount store condition response is that typically discount stores have attempted to upgrade the apparel lines, not only in terms of product quality, but in merchandise arrangement as well. Merchandise arrangement of apparel in discount stores

is often more like department stores than is the arrangement of non-apparel lines. That is, arrangement of the apparel lines in both store types usually follows a boutique-type arrangement, i.e. circle racks and item racks in a random arrangement. However, for non-apparel lines, discount stores often use a grid layout (straight aisles), while department stores more often arrange non-apparel in boutique arrangements or shop concepts.

#### Merchandise Density/Store Image Relationship

Based on the results of the ANOVA, this study offers some insight into how image is influenced by a specific and very controllable cue in the retail environment--the density of the merchandise. Because the results of the first two experiments suggest support for the hypothesized relationships between density and crowding, and between crowding and store image, it is not surprising that the results of an analysis of store image and merchandise density provided significant main effects. Store type also produced a significant main effect, but merchandise type did not. Previous research suggests that store type influences store image as discussed earlier. There was a three-way interaction between merchandise density, store type and merchandise type, and interactions were observed between merchandise type and each of the other factors.

Cell means of the interactions were again informative. As in the previous analysis, apparel condition received higher image ratings than non-apparel for the discount store condition, while non-apparel received higher image ratings than apparel in the department store condition. Again, this may be explained by differences in general layout of the non-apparel categories of merchandise. That is, discount stores typically display non-apparel merchandise in long rows while department stores typically take more of a boutique arrangement approach. Thus, respondents may have associated the layout depicted in the slide with either discount or department store and responded accordingly. Apparel categories, in contrast, are arranged similarly in discount and departments store and might not have elicited a differentiating response.

Throughout the development of store image research, definitions of image have included the influence of both tangible and intangible elements. As mentioned earlier, this conceptualization corresponds with and supports the crowding literature, with tangible elements depicted as environmental cues and intangible elements encompassing the crowding response. This study expands on these conceptualizations by showing that a specific tangible cue, i.e. merchandise density, influences an intangible response, i.e. crowding, which subsequently contributes to store image.

Research has identified positive store image as a factor in store choice selection, product evaluation and consumer decision making. Research has also identified environmental cues as important in communicating store image. The findings of this study have advanced our knowledge of store image by identifying merchandise density and the resulting crowding response as important influences on perceived store image.

#### Managerial Implications

Retailers are concerned with the image they project to consumers. This is evidenced to some degree by the increasing use of institutional advertising focused on characteristics of the store other than the merchandise assortment. Managers want to know what image the store is conveying, and they attempt to insure that the image projected is the image desired. This focus on image is particularly important for the two types of stores included in the present study, department stores and discount stores. For these store types, products are often undifferentiated and the shopping experience is critical in securing the loyalty of consumers. Environmental cues are a part of communicating emotions and images to consumers, so the results of the study indicating differing responses to merchandise density provide important information for retail managers. Additionally, merchandise density is an element



that managers control. Knowing that density levels are influencing consumer responses to the store, managers can manipulate that element to create a positive shopping experience. The following section offers recommendations for managers of the two store types involved in the study with a discussion of the implications of the recommendations.

#### Merchandise Arrangement and Layout

In order to plan strategic actions, retail managers need to have an understanding of how consumers are evaluating store characteristics. Baum and Valin (1977) showed that colors and architectural features have an influence on individuals. Building on their results and the results of this study, managers should consider whether walls, partitions, close racks and tightly arranged merchandise are negatively affecting consumers in stores by increasing the density of the merchandise and increasing perceived crowding. Previous studies on crowding suggest that crowding may be a negative force on the shopping behavior of the consumer. Because merchandise density appears to be contributing to perceived crowding, retailers should give serious consideration to layout planning. Consideration should be given to whether the type of arrangement is appropriate for the store. Perhaps different layouts, i.e. grid, boutique, etc., are influencing

consumers differently and projecting different images. The interaction among merchandise density, store type and merchandise type and the corresponding cell means discussed in chapter four suggest some variation in layout may be appropriate. For the high density/discount store condition, the crowding response was lower for non-apparel than for apparel. But for the high density department store condition, there was virtually no difference in crowding responses under the apparel and non-apparel conditions. This finding suggests that for discount stores, the effect of merchandise density may be less for some types of merchandise than for others. Perhaps the consumer has more tolerance for crowded conditions in the discounters non-apparel departments than in their apparel departments. In that case, for apparel, boutique and free-form arrangements that typically hold less merchandise may be viewed more favorably by consumers than the grid arrangements often used by discount stores. For discount stores that wish to improve or change their image, some consideration of the arrangement of non-apparel lines may be warranted given the findings of this study. The lower image ratings on non-apparel merchandise conditions under high and low crowding and density conditions suggest that consumers are not viewing different departments of the store with the same image perspective. Perhaps the grid arrangement used by most discounters for non-apparel suggests a lower

image/lower quality retailer. The development of boutique type arrangements for non-apparel departments like bedding and bath should be considered by discounters desiring image improvement.

Maintenance of planned density levels should also be considered by retail managers. Once layout and density of merchandise is established at a level that is appropriate for the retailer's customer group, care should be taken that those levels are maintained to some degree. Often merchandise density levels increase to accommodate increased inventory levels or as a result of a lack of maintenance. When this occurs, this study suggests that the crowding levels and subsequent consumer response may be impacted as well. To avoid this increasing density situation, managers should consider periodic monitoring of merchandise density in relation sales potential. A visual inspection in conjunction with review of original layout plans could be useful. This is an especially important issue from a managerial perspective since retailers identify desired image and go to great lengths to maintain those store images. Because of lack of differentiation in products, retailers, particularly discount and department stores, often use store image to set themselves apart from their many competitors. Given the results of the study, retailers should consider the possible image ramifications of high

merchandise density and take steps to monitor and maintain planned merchandise levels.

Despite the evidence that merchandise density is impacting crowding and store image negatively, managers may argue that maintaining high density levels increases sales per square foot and is therefore desirable. What should be remembered is that image strategies are long term efforts and may positively influence long terms sales and profitability. Managers should weigh the pros and cons of developing creative ways of increasing merchandise density even though it may temporarily increase sales per square foot. They should resist the temptation to add racks of merchandise that create overly dense merchandise arrangement. The long term effect could be increased experienced crowding for customers and possible negative impact on store image.

The controllable elements of the store, like merchandise density, provide the merchant a means of influencing consumer behavior within the store setting, as well as a means of establishing an overall image of the store. The retailer may be able to use the density level and subsequent crowding on a day to day basis to influence images the store projects to the consumer. For example, for a department store's wardrobe sale, where higher priced career clothing is featured, an image could be created to appeal to the target consumer by reducing the merchandise

density. This might be accomplished through the use of item and four-way racks rather than circle racks, or by featuring fewer duplicate garments and holding additional stock off the sales floor. Additionally, the density level may be manipulated to create different crowding perceptions in conjunction with special events. For example, a retailer with a low density/low crowding/high image may wish to increase density levels temporarily to create increased crowding that may add to the intensity of the promotion.

Although store type and merchandise type were not the primary focus of the study, the inclusion of these variables into the experiment did offer some additional insight, particularly from a managerial perspective. The density by merchandise interaction that occurred in the first experiment suggests that the effect of density on experienced crowding is different under apparel and non-apparel conditions. If the store image projected under various crowding levels varies by merchandise type as is suggested by the results, then arrangement of each category of merchandise should be considered individually. Possibly higher densities and higher crowding levels are more acceptable for some types of merchandise than for others. This makes sense particularly in the context of merchandise that is breakable or easily damaged. For example, consumers may be more intimidated by crowding in a glassware department than in the jeans department. Another

explanation for these results is that perhaps crowding tolerance levels are higher in non-apparel than apparel. Consumers may not mind that aisles are narrow, for example, when shopping for towels, but may find shopping for clothing in crowded conditions to be unpleasant.

The results indicating that higher images were projected for non-apparel than apparel in department stores suggests that some consideration should be given to the focus of image building efforts. Cell means showed that under both high and low density conditions, image responses were higher under the non-apparel than the apparel conditions. This could mean that non-apparel merchandise reflects a positive store image better, or at least as well as apparel merchandise. Often image building efforts focus on apparel merchandise. For example, JCPenney designated women's apparel as the first product line to be upgraded in the initial stages of their re-positioning. The results of this study suggest that non-apparel lines may have been more effective in projecting a higher image department store. Perhaps advertisements featuring the bedding and bath shop are just as important in establishing an image as designer dresses or sportswear.

The significance of the findings is that this crowding and image response may influence the individual's shopping behavior. From a managerial perspective, the findings suggest that serious consideration should be given the

arrangement of merchandise and its density, whether it be in terms of numbers of units displayed or aisle width and direction. Many of the elements that determine the level of density are within the control of the retail manager. For example, fixture arrangement, aisle width, and number of displays may contribute to the density level and are determined by management. Understanding that merchandise density is contributing to crowding levels allows the merchant to adapt merchandise arrangement to a crowding level that is acceptable to their target consumer.

Certainly this crowding level will not be the same from store to store. In some types of retail situations, a high level of crowding may simply add to the excitement of the shopping experience. For example, densely arranged merchandise may contribute to high levels of crowding during a sales event, but may be perceived as "part of the fun" to consumers. The important issue is a recognition that varying density levels are contributing to different crowding responses in the consumer, and that merchandise arrangement may be facilitating or inhibiting the attainment of shopping goals.

#### Research Implications and Suggestions for Future Research

This study supports the proposed model's description of crowding as an antecedent of image formation and the integration of the crowding literature and the store image

literature. The research examined two pieces of a conceptual model linking the retail crowding concept with store image. The integration of these two streams of research contributes to the development of these streams and provides many additional avenues of investigation. For example, an important element of the combined crowding/store image model is that the effect of crowding on store image may result in formation of an image where none existed, modification of a previously held image, or reinforcement of the image currently held by the consumer. In the Eroglu and Harrell (1986) model, one of the outcomes of experienced crowding is an emotional evaluation of the shopping experience. The results of the present study suggest that the outcome may very well be store image. An informative area of research would be to address the outcomes of image formation, modification, and reinforcement as described in the proposed model.

Another aspect of the model that warrants investigation is the adaptive behavior that occurs as a result of the image outcomes. The significance of confirming that crowding is increased by high density levels and that image perceptions are lower in high density/high crowding conditions is that consumers may attempt to reduce experienced crowding through various behaviors, i.e shopping elsewhere. Research into what adaptive behaviors are likely



to correspond to various crowding conditions would provide additional useful information.

Another area of interest suggested by the findings is the influence of control on experienced crowding and/or image formation. Since the results of the present study suggest that high density levels contribute to high experienced crowding and lower store images, what factors might moderate that response. Several previous studies have investigated the control/crowding relationship (Langer and Saegert 1977; Rodin et al 1978; Schmidt and Keating 1979; Hui and Bateson 1991). These studies and the present study could be expanded by examining moderating factors to crowding in the retail environment. For example, does signing within the store or available salespeople reduce the negative effect of high density conditions.

One of the limitations of this study is that it only addresses one environmental cue, merchandise density. Certainly, many other environmental cues influence perceived crowding. Lighting and noise levels, for example, have been investigated in terms of density due to numbers of people, but not in relation to store crowding (Desor 1972). Investigation of other environmental cues within the retail setting would provide additional insight into the concept.

Given the identification of merchandise density as a contributor to perceived retail crowding, more thorough investigation of how various store types and merchandise

types effect this relationship would be beneficial. In the present study, only two store types and two merchandise types were involved in the analysis. Results suggested that store type and merchandise type do influence the level of experienced crowding and store image. While these results provided some additional information about the variables of interest, they were not the focus of the study and therefore did not provide a thorough understanding of how crowding's impact on store image varies by store type and merchandise type. An additional aspect of the crowding/image relationship that warrants research is the influence of situational factors. Some previous crowding studies have looked at the circumstances under which store crowding occurs, but it would be interesting to know under which of these circumstances the outcome is a positive or negative store image. For example, do the high density/high crowding aspects of special events impact the general image the store projects on a day to day basis? This question has some significant implications for the way sales and promotions are handled by retailers.

Because this study focused on merchandise density, research has been advanced beyond prior crowding studies by addressing a density created by something other than numbers of people in a given space. Most crowding literature has focused on numbers of people in a given space. This study allows us to take the crowding stream a step farther by

adding that one environmental cue, merchandise density, also contributes to retail crowding. Additionally, the study contributed to the store crowding stream of research by providing an empirical investigation of one environmental cue, merchandise density, and its influence on perceived crowding. As noted by Eroglu and Machleit (1990), the impact of environmental factors on shopping behavior is just emerging as an area of research. This study's results move the discipline one step further in understanding this phenomena.

Many retailers are expanding into the international arena and the cultural differences among countries are likely to create differences in how density influences crowding and store image. In countries where personal space is limited, higher density levels may be more acceptable and create less experienced crowding than for American consumers. This study only involved domestic firms and thus does not address this issue. However, the issue is significant in that merchandise layouts and even retail facilities may need to be adapted to accommodate the differences in consumers.

This study provided a conceptualization and initial empirical investigation of the crowding/store image relationship. However, generalizability is limited due to the nature of the experimental design. While slides have been shown to be effective in simulating retail settings,

generalizability would be enhanced by conducting experiments within an actual retail setting. Exact duplicate levels of density and merchandise types were not possible to attain given the differing store types. However, variables in the slides were controlled as much as possible to improve internal validity of the current study.

Certainly, many more relationships remain to be investigated before complete understanding of the relationship is gained. However, the present research does provide an initial empirical investigation of the relationship between store crowding and store image. Additionally, the research provided some insight into the role of merchandise density in the crowding/image relationship.

APPENDIX A  
SLIDE SORTING FORM

## SLIDE SORTING

## INSTRUCTIONS:

This process is intended to provide comparative ratings of the scenes depicted in the slides. Please sort the slides into 5 sets ranging from least cluttered/most spacious (1) to most cluttered/least spacious (5). By sorting the slides you will be assessing the degree the picture reflects a crowded or cluttered feeling relative to other scenes. For example, by placing a slide in set 4 you are suggesting that the scene appears more crowded than slides in set 3, but appears less crowded than slides in set 5.

An easy approach is to initially pick some obvious extremes (slides belonging in sets 1 and 5), and then compare other slides to these. Once you have sorted all slides, please review each set and rearrange any slides that look out of place.

Once you are satisfied with the sets, record the numbers on the slides under the appropriate column on the attached sheet.

Thank you very much for your help!

Name: \_\_\_\_\_  
Date: \_\_\_\_\_

APPENDIX B  
MEANS AND STANDARD DEVIATIONS  
OF SELECTED SLIDES

## MEANS AND STANDARD DEVIATIONS FOR SELECTED SLIDES

	<u>Standard Deviation</u>	<u>Mean</u>
Low	0	1.0
	.8944	1.6
	0	2.0
	.5477	2.6
Medium	.4472	2.8
	.7071	3.0
	.7071	3.0
	1.0	3.2
High	0	5.0
	.5477	4.6
	.5477	4.6
	.7071	4.0



APPENDIX C  
IMAGE PRETEST 1

Instructions: Read the following statement and enter your responses on the lines provided. The order of your responses need not reflect rank order.

1. I consider the following stores to be high image retailers. I wouldn't be embarrassed for my friends to know I purchased their birthday gifts there.

_____	_____
_____	_____

2. I think the following four stores have a low image. I would prefer that my friends not know I purchased their birthday gifts at these stores.

_____	_____
_____	_____

APPENDIX D  
IMAGE PRETEST 2

**Instructions:**

How do you think the following stores rank (1-5) in terms of having a high store image? Place a 1 by the store that you think has the highest image, 2 by the store with the second highest image, etc.

JCPenney	_____
Neiman Marcus	_____
Foley's	_____
Dillard's	_____
Macy's	_____

How do you think the following stores rank (1-5) in terms of having a low store image? Place a 1 by the store that you think has the lowest store image, 2 by the store with the second lowest image, etc.

Target	_____
Montgomery Ward	_____
K-Mart	_____
Sears	_____
Walmart	_____

**APPENDIX E**  
**QUESTIONNAIRE**

Instructions: Observe the store setting shown in the slide as you answer the following questions. Circle the number on the scale (from 1 to 7) which best reflects your feelings.

Slide 1

1. Using the following items, how would you describe this store?

confined	[1]	[2]	[3]	[4]	[5]	[6]	[7]	spacious
allows free movement	[1]	[2]	[3]	[4]	[5]	[6]	[7]	restricts movement
crowded	[1]	[2]	[3]	[4]	[5]	[6]	[7]	uncrowded
loose	[1]	[2]	[3]	[4]	[5]	[6]	[7]	packed
restraining	[1]	[2]	[3]	[4]	[5]	[6]	[7]	open
stuffy	[1]	[2]	[3]	[4]	[5]	[6]	[7]	not stuffy
cramped	[1]	[2]	[3]	[4]	[5]	[6]	[7]	not cramped
comfortable	[1]	[2]	[3]	[4]	[5]	[6]	[7]	not comfortable

2. Using the following items, describe the extent that you think the store in the slide has these characteristics.

high prices	[1]	[2]	[3]	[4]	[5]	[6]	[7]	low prices
trendy	[1]	[2]	[3]	[4]	[5]	[6]	[7]	not trendy
low quality merchandise	[1]	[2]	[3]	[4]	[5]	[6]	[7]	high quality merchandise
sophisticated customers	[1]	[2]	[3]	[4]	[5]	[6]	[7]	unsophist. customers
organized	[1]	[2]	[3]	[4]	[5]	[6]	[7]	unorganized
unfashionable	[1]	[2]	[3]	[4]	[5]	[6]	[7]	fashionable

CONTINUE TO THE NEXT PAGE

3. Indicate the degree that you agree or disagree with the following statements.

This store is more like Dillard's than K-Mart.

Strongly								Strongly
Agree	[1]	[2]	[3]	[4]	[5]	[6]	[7]	Disagree

This store would probably appeal more to blue collar shoppers than to white collar, professional shoppers.

Strongly								Strongly
Agree	[1]	[2]	[3]	[4]	[5]	[6]	[7]	Disagree

**STOP. WAIT FOR THE NEXT SLIDE.**

## 4. Indicate the frequency that you shop in the following stores.

Foleys             Never  
                   Once a year or less  
                   2 to 6 times a year  
                   7 to 12 times a year  
                   2 to 3 times a month  
                   Once a week or more

K-Mart             Never  
                   Once a year or less  
                   2 to 6 times a year  
                   7 to 12 times a year  
                   2 to 3 times a month  
                   Once a week or more

Penneys            Never  
                   Once a year or less  
                   2 to 6 times a year  
                   7 to 12 times a year  
                   2 to 3 times a month  
                   Once a week or more

Pier 1             Never  
                   Once a year or less  
                   2 to 6 times a year  
                   7 to 12 times a year  
                   2 to 3 times a month  
                   Once a week or more

Walmart           Never  
                   Once a year or less  
                   2 to 6 times a year  
                   7 to 12 times a year  
                   2 to 3 times a month  
                   Once a week or more

Dillard's           Never  
                   Once a year or less  
                   2 to 6 times a year  
                   7 to 12 times a year  
                   2 to 3 times a month  
                   Once a week or more

Target             Never  
                   Once a year or less  
                   2 to 6 times a year  
                   7 to 12 times a year  
                   2 to 3 times a month  
                   Once a week or more



5. Finally, please give us the following information about yourself.

- Your age:             19 or less  
                       20 to 29  
                       30 to 39  
                       40 to 49  
                       50 to 64  
                       65 or older
- Sex:                     Female  
                          Male
- Education:             Less than high school  
                          Some high school  
                          High school graduate  
                          Some college  
                          college graduate
- Annual Income:       Less than \$10,000  
                          \$10,000 to \$19,999  
                          \$20,000 to \$29,999  
                          \$30,000 to \$39,999  
                          \$40,000 to \$49,999  
                          \$50,000 and above

**THANK YOU VERY MUCH FOR YOUR HELP.**

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