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Consumer images of shopping centres a socio-economic analysis

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CONSUMER IMAGES OF SHOPPING CENTRES:

A SOCIO-ECONOMIC ANALYSIS

by

DAVID W. BELL

B.A. Brock University, 1979

THESIS

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ABSTRACT

Previous research has shown that behaviour by consumers is influenced by many interacting factors that motivate each individual in different ways. It is how these factors are perceived and combined by each person that leads to the formation of consumer images of shopping centres.

Image is an important criterion in the comprehension of the consumer's perception of shopping centres. Studies have found that the consumer's image is related in a systematic way with the measures of social and economic characteristics of the consumer. Occupation and income are two variables that have often been employed by previous researchers to measure a consumer's socio-economic status. However, other factors such as sex, age, and education should be used in order to obtain a more distinct and complete measure of the consumer's socio-economic status.

This study examines consumers' images of two shopping centres in the City of Guelph. One centre is Stone Road Mall and the other is Willow West Mall. Responses were obtained from a sample of consumers through the use of a questionnaire. Each respondent was asked to indicate his feelings or responses to a set of images factors for each mall as well as completing a section related to his socio-economic status. The data were analyzed using a frequency count, the Wilcoxon match-pairs test, factor analysis and a relate technique.

It was first determined that consumers have different images of malls. Secondly, further analysis revealed that socio-economic sub-groups of the sample of consumers have different images of shopping centres. It was also shown that the discriminatory socio-economic characteristics differ significantly in their relationship with consumer images. Thus the consumer's socio-economic status is important in the formation of images of shopping centres.

ACKNOWLEDGEMETS

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Chapter I

INTRODUCTION

1.1 INTRODUCTION

The consumers' selection of a place to shop is determined in part by the image that they have of a shopping area. Hoggart (1978, pp. 415) states that "consumers' shopping needs and their ability to exert effort in shopping reflect their life style preferences and constraints on their behaviour." Social classes exist within a society into which consumers can be categorized when being compared with other consumer groups. One major purpose of social class research is to determine if social class provides a basis for consumer segmentation within an intra-urban market area. One method of segmenting consumers is by their preference to shop at a particular shopping centre.

The decision to shop in a particular shopping centre is dependent upon the consumer's perception of the retail centre. Perception is "both the response of the senses to the external stimuli and purposeful activity with which certain phenomena are clearly registered while others recede in the shade or are blocked out" (Tuan, 1974, pp.4). Perception, therefore, is a filtering mechanism and a process. Geographers examine the process and the product. Research into the consumer's image and perception of shopping centres provides some insight into consumer behaviour. Perception by the

consumer is determined in part by the geographic location of a shopping area, range of goods, price, advertising and image.

Image is "a representation of various dimensions: temporal, spatial, geographic, economic, social and cultural" (Straus, 1961, pp.6). Image is an important variable as it can be used to determine the behaviour of consumers and as a measure of success of a retail shopping centre. Martineau (1958, p.47) states that image of a shopping area is defined "in the shopper's mind, partly by its functional qualities and partly by an aura of psychological attributes". Attributes of an image have been identified as the store's layout, displays, styling, attitude of sales personnel, advertising, customer service, and store reputation (Martineau, 1958; McNeil, 1973; Nevin and Houston, 1980). In another study Rich and Portis (1964) have found that stores attract different types of customers and that shoppers choose a retail location whose overall image best fits the image they hold of themselves. Shoppers seek a shopping centre whose "image is acceptable and appealing to them individually" (Martineau, 1958, p.49). Futhermore he concludes that there is no such thing as an image "with equal appeal for all income groups, all social classes, all ages or all types" (p.50). Image is dependent upon the socio-economic characteristics of the consumer (Nevin and Houston, 1980). Therefore consumer images cannot be examined in isolation from social and economic characteristics of the consumer.

Research in marketing geography has found that image is related in a systematic way with the measures of the consumer's socio-economic characteristics (Baumol and Ide, 1956; Marble, 1959; Huff, 1960, 1961; Rushton et. al., 1967; Dawson, 1973). Two variables, occupation and income are most often used to provide a measure of the consumer's socio-economic status (Mathews and Slocum, 1970; Duncan et.al., 1972). Other variables such as place of residence, type of housing and education of the household head should be used if a successful and complete measure of socio-economic status of the consumer is to be achieved (Rich and Jain, 1963). Identifying the social and economic characteristics of consumers is important in order to determine the images that they have of a shopping centre. Social status is related not only to the people's perception of a shopping mall but it also determines how consumers select an appropriate centre to shop at.

1.2 OBJECTIVE OF THE STUDY

Although geographers, traditionally, have used some type of a distance measurement to explain consumer behaviour, the objective of this study is to show that behaviour is, in part, related to the consumer's social and economic characteristics. This objective can be realized by studying the images that consumers have of shopping centres (Pacione, 1975). It will be shown that different consumer groups view

a mall differently and that, their images between malls is also different. Specifically, this study will test the following hypotheses:

1. That the images of shopping centres, as held by consumers, are significantly different.
2. That identified sub-groups of the sample of consumers (e.g. on the basis of discriminatory characteristics such as sex, age, income, etc.) have significantly different images of individual shopping centres.
3. That individual sub-groups of the sample of consumers have significantly different images of different shopping centres.

If Hypothesis One is accepted then further analysis is required to determine how consumer images vary. Segmenting consumers by socio-economic characteristics will reveal whether images of a mall vary significantly between such factors as age, income, etc. The third hypothesis examines the images of each socio-economic sub-group of consumers to determine if each sub-group's images of the two shopping centres is significantly different.

This study will examine the consumer's images of the two largest shopping centres - Stone Road Mall and Willow West Mall within the city of Guelph. Stone Road Mall opened in 1973 and is classified as a regional shopping centre and is located in the south-western part of the city adjacent to Highway 6. Willow West Mall constructed in 1970 serves as a

community mall for the residents of the west end of the city. These two retail centres are within five kilometres of each other which suggests that each centre shares part of a much larger common market area. Although the two centres may be within a consumer's action space it is assumed that he will subdivide the market area partly by the range of goods and services available at each mall and by the image he has of each centre.

To determine the consumer's image of a shopping centre each respondent in the survey is asked to complete a questionnaire. The questionnaire contains a number of image attributes as determined from previous studies (Downs, 1970; Lindquist, 1974; and Pacione, 1975). Using a seven point equal interval bipolar scale each consumer indicated both the direction and intensity of their feelings on each image variable. The responses permit the author to identify which variables are most important in terms of the consumer's image of a shopping centre. The consumer's image of the shopping centres were then analyzed using the socio-economic variables of all the respondents.

It is hoped that this study will provide a better understanding for geographers interested in the spatial analysis of consumer behaviour. Image research as related to the consumer's socio-economic characteristics can provide an insight into the success of a shopping centre. Retailers and mall management can use this knowledge to comprehend more

fully the strengths and weaknesses of the shopping centre's image as viewed by the consumer. They will be able to correct the negative aspects while reinforcing the positive components.

The following chapter reviews the geographical literature as it pertains to marketing geography. Two approaches are presented. First, the objective approach which examines location theory models such as Christaller's (1966) central place theory and market research models that look at the spatial movement and decision-making process of consumers. Secondly, the subjective approach which studies the effects of motivating people spatially in a market area is presented.

A description of the methodology employed in this study is given in Chapter Three while Chapter Four presents the results of the questionnaire regarding the consumer's image of Stone Road and Willow West Malls in Guelph. A summary of the study as well as conclusions is provided in Chapter Five.

Chapter II

LITERATURE REVIEW

2.1 INTRODUCTION

Marketing geography traditionally has focused on the relationship between retail centres and their surrounding trade areas. This has led to several different but complementary approaches to modeling the spatial behaviour of consumers. The objective approach, which is discussed in the following section, has traditionally focussed on the spatial or distance component to determine the retail location of a shopping area. This approach usually assumes that all consumers are identical in their needs and desires and will all act in the same manner. Additionally all environmental constraints are held constant in these models. The theories are referred to as either location theory models or market research models. The former are derived from Christaler's (1966) central place theory. It explains the location, size, nature and spacing of retail activity. Market research models also try to objectively explain consumer spatial behaviour. The models also introduce the concept that spatially consumers do not always travel to the nearest shopping area. Huff's (1963) model, which is an example, is based upon a series of descriptive methods which permit the researcher to form a hypothesized future spatial arrangement of consumer behaviour. However they overlook the behaviour

of individual consumers since they do not provide an explanation of the underlying processes which generate the consumers' spatial patterns.

However, recent studies have shown that consumers do not behave according to the strict limiting assumptions imposed by these objective or rational economic man models (Johnston and Zimmer, 1967; Clark, 1968; Downs, 1970; and Pacione, 1975). This has led researchers to adopt a subjective approach which is based on the individual consumer's behaviour. This method provides "for a broader conceptual framework to handle problems of consumer spatial behaviour" (Downs, 1970, pp.15). It begins with individuals who make decisions based upon their knowledge and perception of the environment. Although distance is a component in this approach it is not considered as the most important variable in explaining consumer behaviour. Other factors such as personality traits, attitudes and dissonance are also considered. Spatial behaviour in an urban retail environment may also be influenced, in part, by the images consumers have of different shopping areas. Dawson (1979, pp.126) states that "image is related to social and economic variables" and differs by social class. The consumer behavioural approach is examined in the third section of this chapter. However it is the image of a shopping centre as determined by the consumers' socio-economic status that is examined and tested in this study.

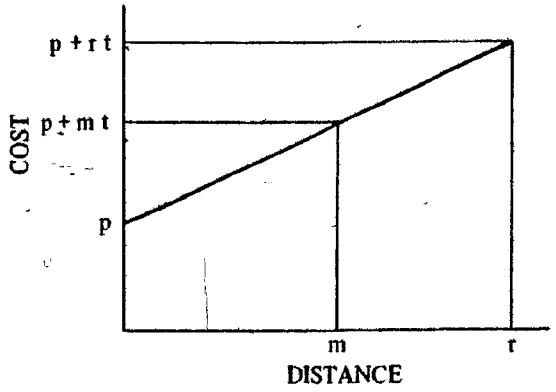
2.2 THE OBJECTIVE APPROACH

2.2.1 Location Theory Models

Location theory models are developed primarily to explain the location, size, nature and spacings of retail and service activities. From these models it is possible to infer the movement and thus the behaviour of consumers in a market environment.

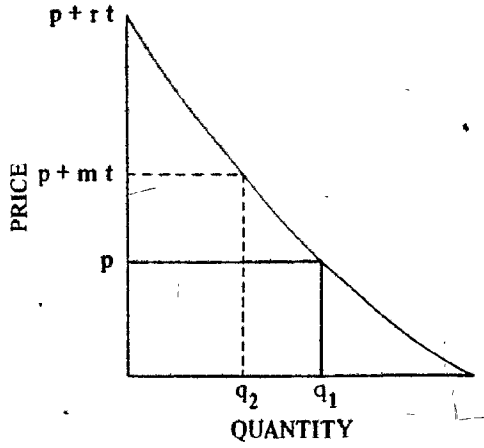
Christaller (1966) in a 1933 study was the first to introduce a deductive model to explain the spatial distribution of market centres "required for optimal distribution of a single good to a dispersed population" (Berry, 1967, pp.39). The classical model is based on two primary assumptions. The first is that consumers are distributed at uniform densities over an unbounded plain and secondly, that they can move freely in any direction. The introduction of distance as an intervening variable states that the cost (p) to the consumer increases in terms of actual distance (m) and transport cost (t). Figure 2.1 shows that the actual price paid by a consumer is $p + mt$. As price increases (Figure 2.2) the demand for the product decreases so that at price p, q_1 is consumed and at price $p + mt$, q_2 is consumed.

This argument led Christaller to introduce two economic constraints that affected consumer movement. The first is a minimum level or threshold of consumer demands which defines the smallest trade area required to support a firm. The second is that the size of the trading area is governed by a



(Berry, 1967)

Figure 2.1: Consumer Price Increases with Distance.

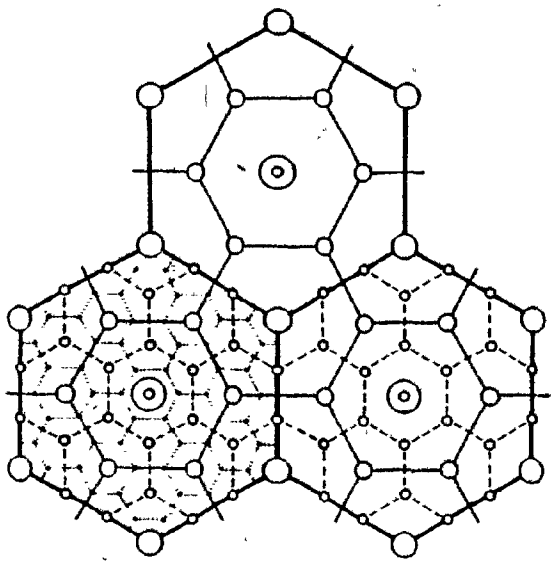


(Berry, 1967)

Figure 2.2: Quantity Declines as Price Increases.

maximum upper limit. This limit is defined as the furthest distance that a dispersed population is willing to travel to buy a good or obtain a service at any one particular place (Berry, 1967; Berry and Pred, 1968; Davies, 1976).

In the classical model the most dominant centre is located at the top of the hierarchy and all lower level markets can be located within its trade area. Christaller identified five levels of centres within the hierarchical structure. Figure 2.3 shows that the trade areas at each level are of equal size and that the markets offer a lower order and range of goods and services than found in the larger centres.



(Davies, 1976)

Figure 2.3: The Arrangement of Centres and Trade Areas in Christaller's Central Place Model.

Proudfoot (1937) and Mayer (1942) provided the early foundation for the practical studies of hierarchies within an individual urban centre. Proudfoot examined the loca-

tional characteristics of retail firms. He proposed a spatial classification scheme composed of the Central Business District (CBD), outlying business districts, main arterial roads or thoroughfares, neighbourhood business streets, and isolated clusters of individual stores. In contrast, Mayer examined the function and form of retail businesses. He defined four size-orders of retail complexes subdivided into six categories based on their shape. These categories were identified as "an intersection, cruciform, attentuated cruciform, bimodal, cruciform modified by diagonal, and quadrilateral" (Davies, 1976, pp.120).

These studies influenced Berry (1963) who has provided marketing geography with a definitive classification system based on empirical research conducted in the city of Chicago during the 1960's. Using a statistical approach he analyzed the functional composition of 125 business complexes in the metropolitan region of Chicago. He identified three major typologies which he labeled as the ribbon development, the specialized functional area, and the nucleated centre (Berry 1963). The subdivions of these three main groups are shown in Figure 2.1.

Berry (1963) states that the nucleated centres are in fact the principle class of shopping areas in the city. He found that the various complexes of shopping centres can be differentiated by size to form hierarchical levels similar to the inter-urban central place model. He identified five

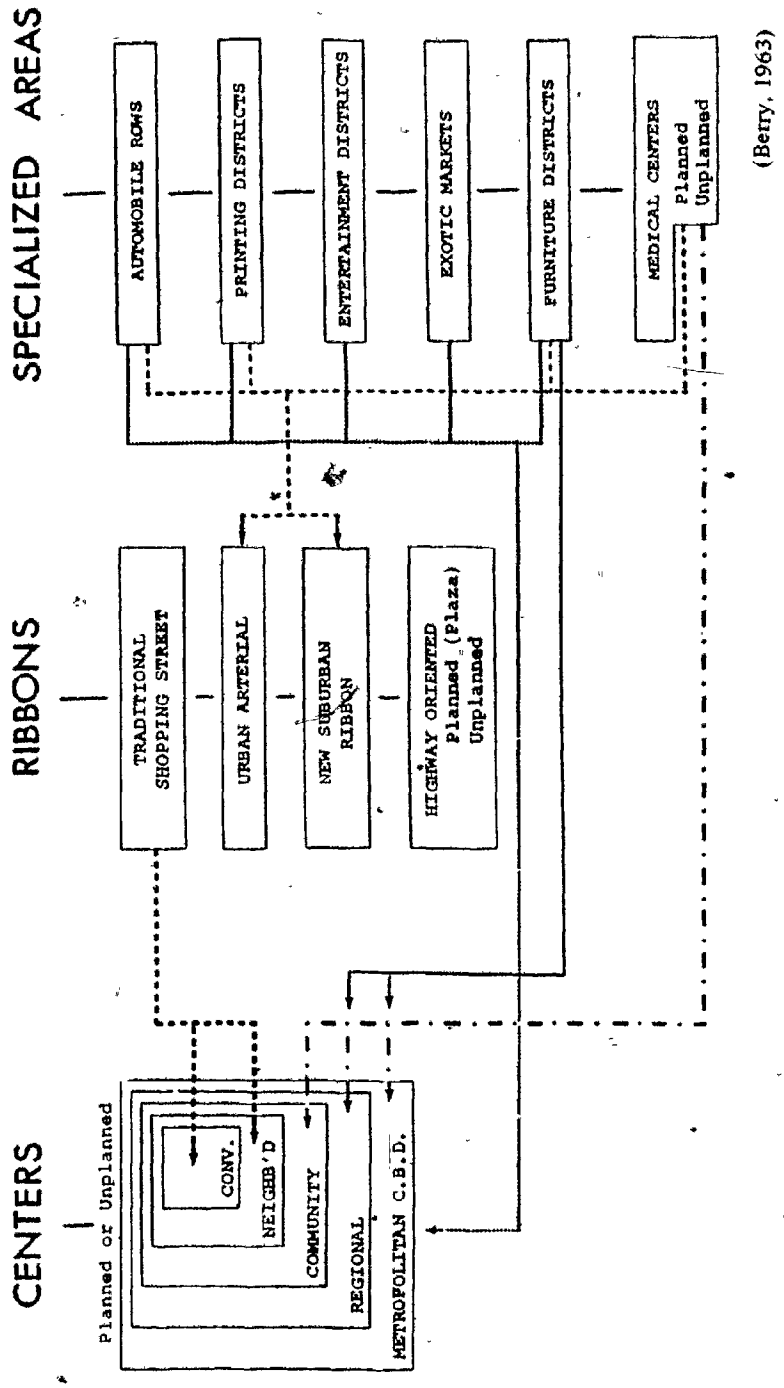


Figure 2.4: The Classification of Urban Retail Areas.

levels: the CBD, the regional shopping centre, the community centre, the neighbourhood centre and the convenience shopping centre. They can be distinguished by the size of their trading area, the kinds of functions they perform, their location within the metropolitan region, and whether they are dominant or subordinate with respect to other levels of centres. There are greater internal variations in the intra-urban classification scheme and a distinction must be made between the older, unplanned centres in the core or central region of the city and the newer, planned centres in the suburbs. The principle characteristics of these two major subgroups are summarized in Table 2.1. Of the two major typologies, the planned shopping centre located in the suburbs has had a great impact on the pattern of urban shopping trips and consumer behaviourism within the last twenty years.

Berry (1967) found that the model of central place theory correctly predicts the behaviour of the majority of shoppers as to which centre they shop at. However, it fails to explain why some consumers prefer to shop elsewhere. This is because the model assumes that all consumers will act in a rational manner and make the same decisions. Thus locational theory models provide a normative prescriptive explanation of consumer spatial behaviour that tend to a mechanistic allocation of pairing consumers with market centres. They offer no insights into the actual decision-mak-

TABLE 2.1

CHARACTERISTICS OF NUCLEATED CENTRES

	No. of Establishments	Ground Floor Area Sq. Ft.	Frontage in Feet	Trade Area Population
A. Unplanned Centres				
Major Regional Centres	200	600,000	6,000	300,000
Smaller Shopping Goods Centres				
High-Income Areas	150	330,000	3,600	77,000
Low-Income Areas	100	300,000	3,100	135,000
Community Centres	77	170,000	2,000	60,000
Neighbourhood Centres				
High-Income Areas	40	75,000	1,000	-
Low-Income Areas	55	125,000	1,500	-
B. Planned Centres				
Major Regional Centres	60	400,000	-	-
Shopping Goods Centres	35	150,000	-	-
Community Centres	25	100,000	-	-

(Berry, 1963)

ing process of consumer buying. Central place theory is seen to be a "extremely rigid and deterministic" theory (Davies, 1976, pp.28) which describes a static set of locational relationships. To overcome these restraints some researchers have suggested using market research models to better explain the consumers' spatial behaviour.

2.2.2 Market Reasearch Models

Market research models are "based upon a series of descriptive heuristics which allow projections to be made from an existing to a hypothesized future spatial arrangement of facilities and consumers" (Downs, 1970, pp.11). The predictive nature of these models allows the researcher to gather data which increases the understanding of spatial movement and the decision-making process of consumers.

Reilly's (1931) gravity model emerged as a theory of explaining, in simple terms, the movement or behaviour of consumers. He states that the movement between two centres is directly proportional to their size or mass and inversely proportional to the distance between them squared. Mathematically this is expressed as:

$$\frac{B_a}{B_b} = \frac{P_a}{P_b}\left(\frac{D_b}{D_a}\right)^2$$

(Converse, 1949)

where B_a, B_b are the proportions of trade drawn to cities A and B respectively from the intermediate area

P_a, P_b are the populations of centres A and B

D_a, D_b are the distances from the intermediate town to centres A and B

Strohkarch and Phelps (1949) modified Reilly's model in order to determine the breaking point or the boundary between trade areas. The breaking point defines the maximum distance from a market centre in which the consumer has an economic advantage over other centres. The model is expressed as:

$$D_b = \frac{D_{ab}}{1 + \sqrt{\frac{P_a}{P_b}}}$$

where D_b is the breaking point between centres A and B in linear units from B

D_{ab} is the distance between A and B

$P_{a,b}$ are the populations of centres A and B

This determines the exact location where the trade area is divided between the two competing centres.

In a further refinement of the breaking point formula, Tinkler (1979, pp.1) argues that there exist a "breakpoint to the 'right' of the smaller centre B itself lying to the right of the larger centre A". He defines this right side of B as the 'shadow' side of B with respect to A. However,

Figure 2.5 reveals that when centres A and B are located in an infinite plain, there exist an infinite number of break points and whenever A>B, the trading area of A surrounds B. The second break point, on the shadow side of B can be determined from the equation:

$$\frac{A}{dA_{X2}^{\phi}} = \frac{B}{(dA_{X2} - d_{AB})^{\phi}}$$

where A is the strength of centre A

B is the strength of centre B

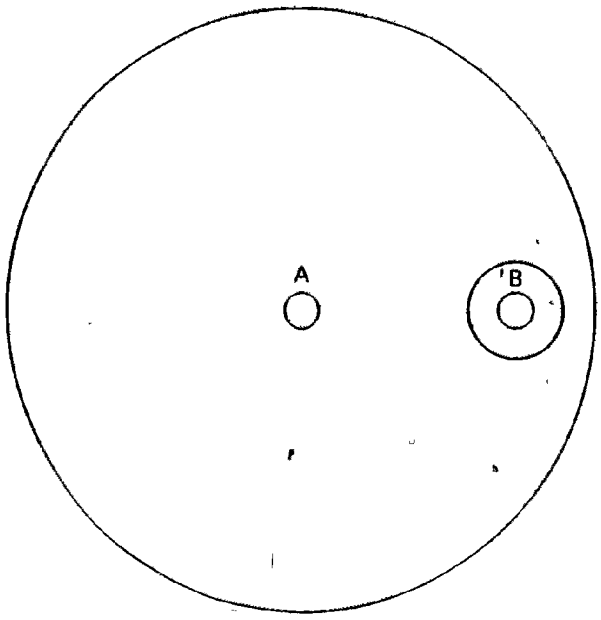
d_{AB} is the distance between A and B

d_{Ax_2} is the distance from A to the shadow breakpoint x

ϕ is the exponent attached to distance (set equal to 2 by Reilly)

This finding conflicts with one of the principal assumptions of central place theory - that consumers patronize their nearest centre. This would occur only when A=B in Tinkler's model. Whenever B<A, then consumers on the shadow side of B, but outside the trade area, would most probably patronize A; since the strength of A is greater than B.

Huff (1963) recognized that Reilly's model and its derivatives implied a fixed boundary circumscribing the market and, more importantly, that it does not reveal why observed regularities occur as they do. Therefore, he further refined the model with the focus on the consumer and not on the retail firm. It is important in the analysis of consumer



(after Tinkler, 1979)

Figure 2.5: The Spatial Extent of A and B's Trade Areas

behaviour that the researcher understand the affects of the consumer's choice of shopping area and "the choice process itself which gives rise to observable spatial behaviour" (Huff, 1963, pp.95.). He measured the probability of consumers travelling to any particular market. To calculate the probability one requires a variable that measures the number of items desired by the consumer at a market and a second variable of distance. He expresses the model as:

$$P(C_{ij}) = \frac{\frac{S_j}{T_{ij}^{\lambda}}}{\sum_{j=1}^{n} \frac{S_j}{T_{ij}^{\lambda}}}$$

where $P(C_{ij})$ is the probability of a consumer at a given point of origin i travelling to a given shopping area j

S_j is the square footage of retail space devoted to the sale of a particular class of goods by shopping area j

T_{ij} is the travel time from i to j

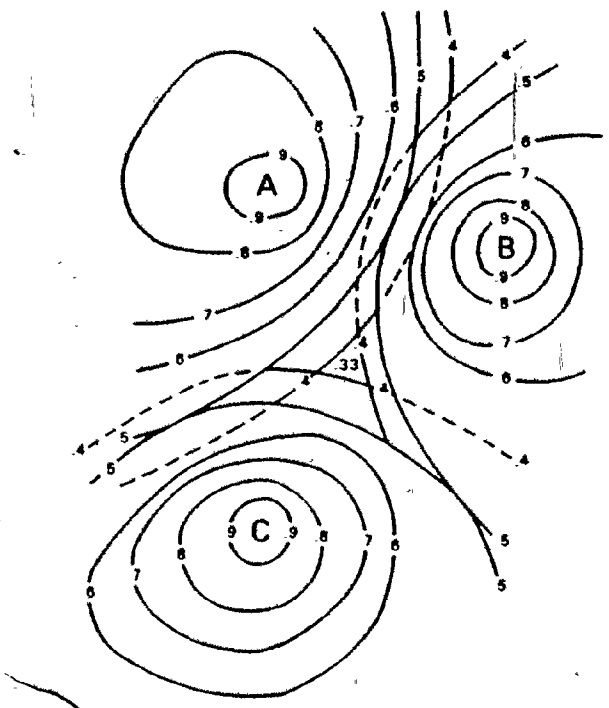
λ is a parameter which is estimated empirically to reflect the effect of travel time on various kinds of shopping trips.

The probabilities, of consumers choosing one centre over a set of competing centres, can be mapped. This causes overlapping trade areas to occur which are not necessarily circular (Figure 2.6).

Another model that provides for the geographical spatial action of consumers was developed by Lakshmanan and Hansen (1965) in a study of alternate location strategies. Their model states that expected sales in centre j from zone i are directly proportional to the attractiveness of the centre and the total expenditure available in i, and inversely proportional to the deterence on interaction between the zone and the centre and the competitive attractions of all other centres in the model (Hodder and Lee, 1974, pp.52). Their model takes the form:

$$S_{ij} = E_i \frac{F_j (d_{ij})^n}{\sum_{k=1}^{n} (F_k / (d_{ik})^n)}$$

where S_{ij} is the sales at centre j generated from any zone i



(after Huff, 1963)

Figure 2.6: Probability Contours for Consumers Choosing to Shop at Each Centre

E_i is the total consumer expenditure of population in zone i

F_j and F_k are the attractiveness of centres j and k

f_{ij} and d_{ik} are the interaction deterrence functions between i and j, and i and k

n is an empirically derived exponent

Berry (1963) feels that the gravity model and its derivitives have provided a strong foundation and are of great use to marketing geographers. Reilly's model while simplifying reality assumes that consumers behave in a truly rational manner. Huff and Lakshmanan and Hansen's models ex-

press spatial action in terms of a hypothesis based on an index of attractiveness. The predictive nature of these models permits the analyst not only to determine the size of the market area, but also the number of shoppers that can reasonably be expected to patronize a particular market centre. Unfortunately, consumer behaviour is a complex process which is constantly changing. It is difficult to incorporate this complexity into a single objective approach model of consumer behaviour.

The use of location theory and market research models do not adequately explain how consumers act within their spatial environment. These approaches contribute only marginally to one's understanding of consumer spatial behaviour (Garner, 1970, pp.181-182). This has led researchers to adopt a subjective approach as a method which provides a fuller explanation of the behaviour and spatial preferences of individual consumers.

2.3 THE SUBJECTIVE APPROACH

2.3.1 Consumer Behaviour

Behaviour in humans is influenced by many interacting forces that motivate each individual in different ways. The study of how these forces interact and motivate people spatially in marketing is known as consumer behaviour. Consumer behaviour is defined as "the acts of individuals directly involved in obtaining and using economic goods and services,

including the decision processes that precede and determine these acts" (Engel, et al. 1963, pp.5).

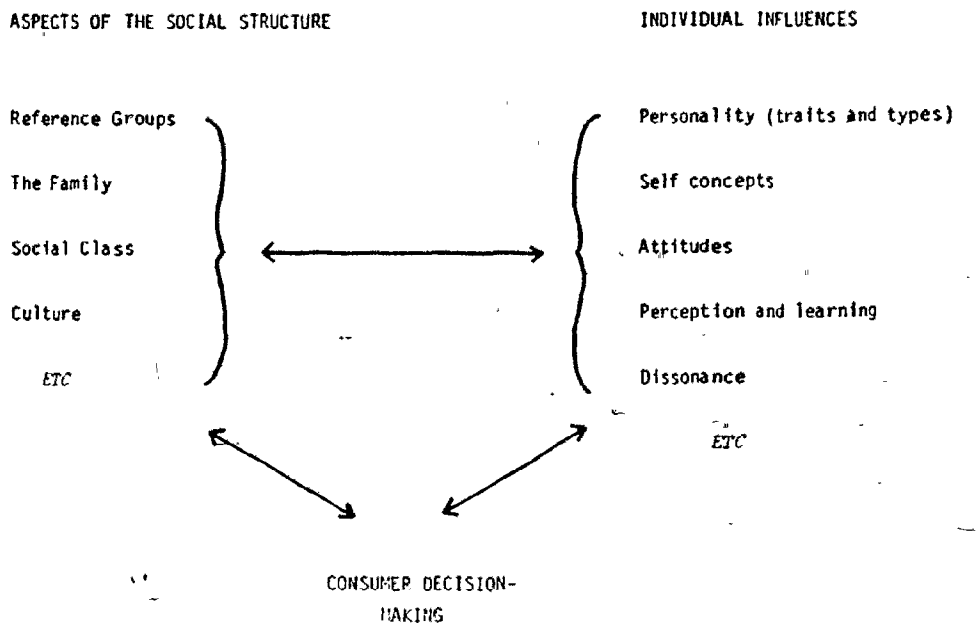
The decision-making process must be considered in terms of a wide range of stimuli and responses. Psychologists have attempted to identify these processes in terms of how they interact within one's mind while sociologists have been concerned with how the processes function as they reflect on group activity. To the geographer falls the responsibility of explaining how these processes interact spatially within one's environment. Thus the study of consumer behaviour must be multi- disciplinary in its approach.

A study of consumer behaviour must begin with an understanding of how the decision processes evolve within one's psychological or mental state. Psychologists have attempted "to depict consumer behaviour simply as a function of what occurs in the consumer's psyche, his 'black box' or central control unit" (Foxall, 1977, pp.19). As such, man's actions are the result of many forces acting within his psychological field. An individual is not only capable of reacting to present stimuli but is capable of remembering and recalling past experiences which aid him in making decisions not only in the present but also in the future.

Behaviour according to social psychologists begins with the psychological field or black box (Engel, et al., 1968; Foxall, 1977). Antecedents which are the result of previous actions or environmental stimuli act as inputs which trigger

action, with behaviour being the output or result. However, the mental processes that transpire to cause the individual to behave as he does can only be inferred and cannot be measured directly by the analyst. What can be measured directly is the final action which is the act of purchasing.

Behaviour is the result of a purpose and it always has reason in the mind of the consumer and "at the instant of behaving the actions of each person seem to him to be the best and most effective act he can perform under the circumstances" (Snygg and Combs, 1949, pp.12). Every individual is continually inundated with commercial advertising but only information that is of current interest will be selectively processed and retained. These stimuli or inputs are combined by the consumer with other underlying influences which are drawn from both his mental state and externally from his environment (Figure 2.7). It is how these variables are perceived and combined by an individual that leads to the formation of his behaviour as a consumer.



(Foxall, 1977)

Figure 2.7: Social and Individual Factors in Consumer Choice

2.3.2 Modeling Consumer Behaviour

One important subjective model of consumer behaviour is Huff's (1960) topological model of consumer space preferences. Space preference is defined as "a desired level of social contact, and when placed in the same spatial situation with others, providing all possess identical levels of information, they will behave differently" (Huff, 1960, pp.160).

Huff's Model (see Figure 2.8) begins with the 'desideratum' or the consumer's willingness to secure an object that he desires or needs. It is the result of a stimulus situa-

tion and/or a physiological drive. The stimulus situation is the result of the physical, social and cultural forces that affect a consumer at a particular time. The physiological drive is a specific condition that produces a need such as to eat or drink. Consumer behaviour, which is the outcome of these forces, is influenced by three major sets of factors.

The first of these is the consumer's value system which is composed of his geographical location and social differentiation based on personal characteristics such as sex, age, income, education, etc. Potter (1982) feels that these attributes condition the consumer's perception and resultant action within his urban environment. The second set of factors refers to the nature of the retail environment and is referred to as behaviour-space perception. Huff (1960, pp.163) says that shopping centres are "perceived on the basis of memory and inference" and are evaluated subjectively by the consumer. These factors are based on the physical characteristics of the mall and include reputation, range of merchandise, services offered and price level. The third factor which is movement imagery introduces the concept of travel or transportation. Factors include mode of transportation, travel time, travel cost and parking costs.

These major factors influence the consumer's overt behavioural response. However Huff points out that behaviour will be affected by additional or multiple interactions bet-

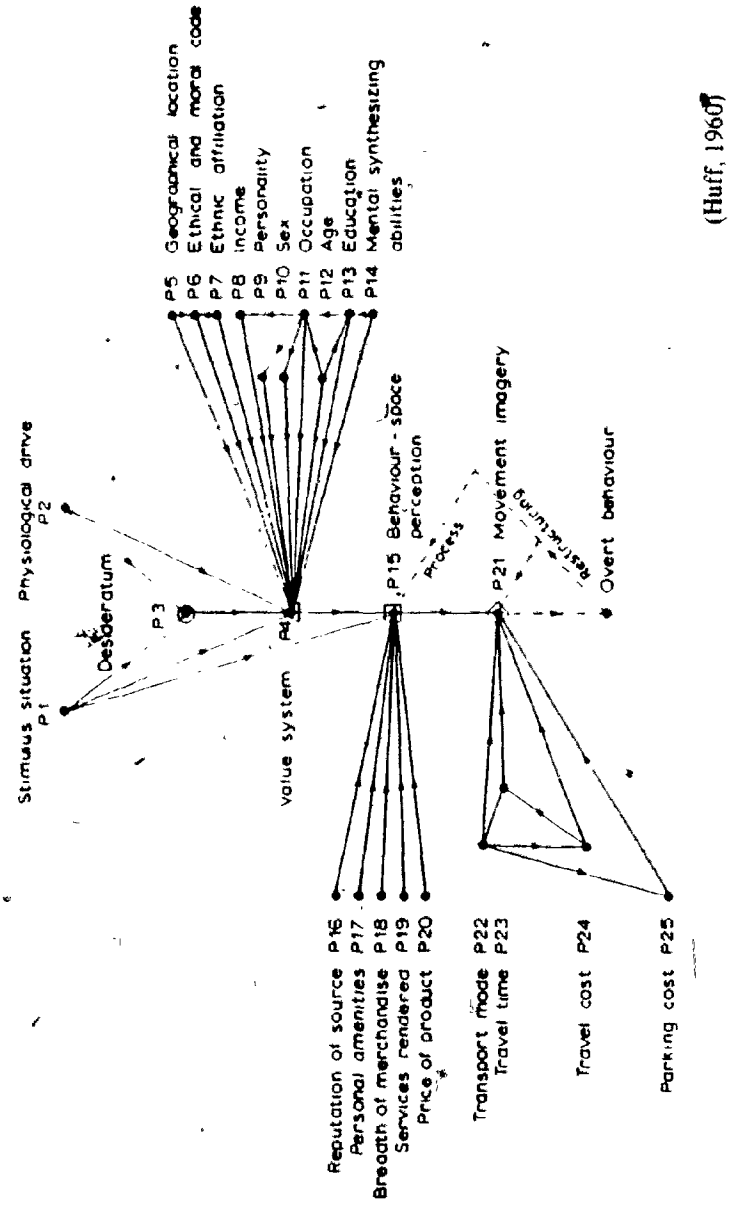


Figure 2.8: Huff's Model of Consumer Behaviour

ween the factors. For example a change in income will not only affect the consumer's value system but will also have a direct affect on the behaviour-space perception by influencing the price one is willing and able to pay for goods and services. This reveals that behaviour is a complex procedure. These complex interrelationships of the model's elements were tabulated by Huff in a matrix form to establish the proportion of total connectivity accounted for in each of the twenty-five elements. The most dominant factor was age (26 percent), followed by personality (14 percent), sex (13 percent), education (10 percent) and income (5 percent). Any differences or variations in these socio-economic characteristics will influence the consumers' behaviour or perception of their urban retail environment (Huff, 1960 and Shepherd and Thomas, 1980). Thus Huff has demonstrated in his model that the variable of distance alone cannot adequately explain the behaviour of consumers. Other variables such as the consumer's socio-economic characteristics also need to be analysed to determine how they affect the consumer's perception of a shopping centre.

Downs (1970) states that the perception of the spatial environment is one parameter that is available to all consumers. Consumers make decisions based on their perception or images of their environment. Although the subjective approach provides the basis for the present study, the concept of image must be examined to show how it influences the consumer's perception of his urban retial environment.

2.4 IMAGE

2.4.1 Definition of Image

Image is an important criterion in the comprehension of the consumer's perception of shopping centres. Downs (1970, pp.17) defines image as "the process of collecting, coding and evaluating information about the spatial environment". Boulding (1956 pp.6) was one of the first to theorize that behaviour is a "product of the images that a man perceives". A consumer functions and responds to not what is true but what is believed to be true. Boulding states, furthermore, that the consumer can handle only a certain amount of complex information and therefore must extract only a few meanings that appear salient.

Martineau (1958, pp.47) states that the image of a shopping centre is defined "in the shopper's mind, partly by its functional qualities and partly by an aura of psychological attributes". The two key phrases in this definition are 'functional qualities' and 'psychological attributes'. Functional qualities refer to such variables as merchandise selection, price ranges, credit policies, and physical layout. The psychological attributes which are intangible refer to atmosphere, friendliness and interest generated by the mall. Thus, Martineau implies that image is a complex process composed of tangible functional attributes and intangible psychological feelings which the consumer perceives to be present.

Marketing researchers have focussed on identifying the tangible and intangible attributes of a shopping centre's image and its measurement. Nine major attributes have been identified as aggregately forming the consumer's image of a shopping centre. They can be classified as follows:

Merchandise - The five factors considered are quality, selection, fashion, quantities and pricing offered by the mall.

Service - The factors within this attribute are sales clerk service, presence of self-service, ease of merchandise return and credit policies.

Clientele - This refers to social class appeal, self-image congruency and store personnel.

Physical Appearance - This attribute covers such factors as store layout, architecture, space, as well as such things as elevators, lighting, and washrooms.

Convenience - This attribute includes such factors as accessibility, parking and location convenience.

Promotion - The variables within this attribute include advertising, sales promotions and display.

Atmosphere - This refers to the customer's feelings of warmth, ease and acceptance.

Institutional Factors - This includes the elements of reputation and reliability.

Post-Transaction Satisfaction - The attribute summarizes the consumer's satisfaction with the stores and in-

cludes such variables as merchandise in use, returns and adjustment policies.

(Lindquist, 1974, pp.31-32)

These nine attributes include the hypothetical assertions and empirical findings of twenty-six market researchers (Lindquist, 1974). Figure 2.3 summarizes the nine image attributes. The attributes having empirical support have the letter "E" in the appropriate row of attributes and researcher columns. The attributes that have only been hypothesized have the letter "H" in the appropriate row and column. However, it should be noted that the attributes do not allow for the combination of factors nor do they reveal the order of importance of the attributes. The frequency of mention by these authors may be used as an indicator of potentially key attributes.

Table 2.2 presents the percentage of attributes mentioned by these researchers. At least one fourth of the researchers have either found or hypothesized that the factors of merchandise, service and location are the dominant components of a consumer's shopping centre image. Studies of the consumer's image of a shopping centre which can be used to help explain consumer behaviour are presented in the following section.

TABLE 2.2

ATTRIBUTES MENTIONED IN THE LITERATURE

Attribute	Scholar Mentions
Merchandise Selection or Assortment	42%
Merchandise Quality	38%
Merchandise Pricing	38%
Locational Convenience	35%
Merchandise Styling, Fashion	27%
Service, General	27%
Saleselerk Service	27%

Researchers

Image/Attitude Attributes	Rich	Martineau	Arons	Bucklin	Alderson and	Sessions	Rich and	Portis	Myers	Rachman and	Kemp	McCann	Wingate	Stonier	Kunkel and	Berry	Tillman	Kelly and	Stephenson	Fisk	Ellsworth	Benjamin, and	Rudolf	May	Wyckham	Weale
Merchandise																										
Quality	E	E	H				E								E		E	H		H				E	E	
Selection, Assortment	E	E	H	H	E		E								E		E	H		H				E		
Styling, Fashion		E	H				E		E	E					E									E		
Guarantee				H																						
Pricing	E	E	H	H			E			E					E			H		H				E		
Service																										
Service, General	E	E	H	H					E						E					H						
Salesclerk Service	E	E					E		E								E			H				E		
Self-Service	E																									
Ease of Return	E	E					E			E					E									E		
Credit	E	E		H			E													H				E		
Delivery	E						E													H				E		
Phone Orders	E						E																	E		
Clientele																										
Social Class Appeal		E										H	H							H						E
Self-Image Congruency		E																H						E		
Store Personnel		E					E								E		E	H							E	

(Lindquist, 1974)

Figure 2.9: Image Attribute Evidence

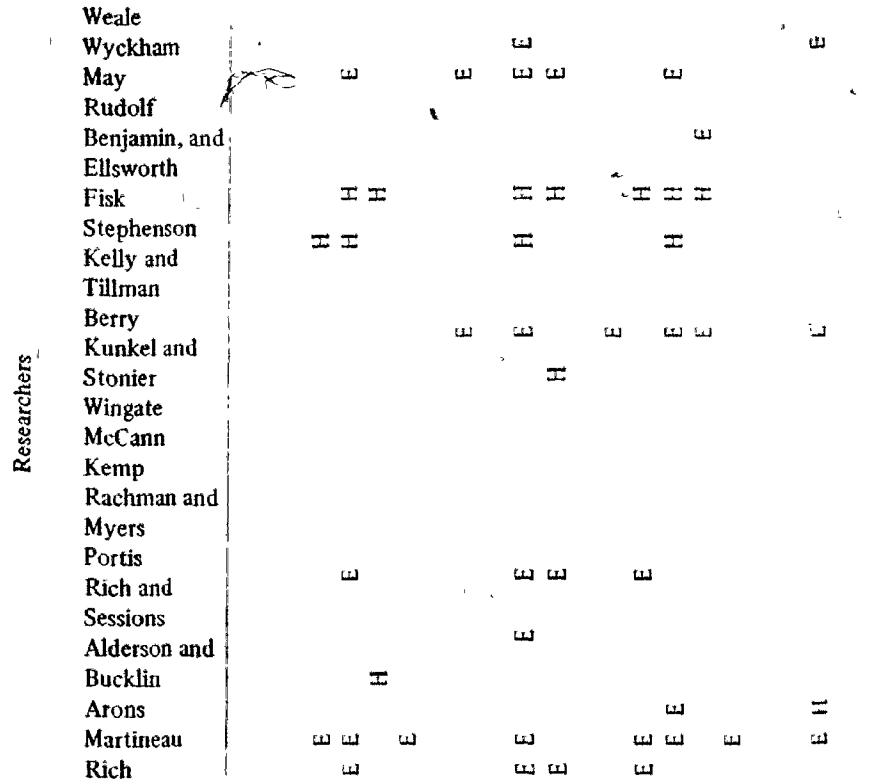


Figure 2.9 Image Attribute Evidence (continued)

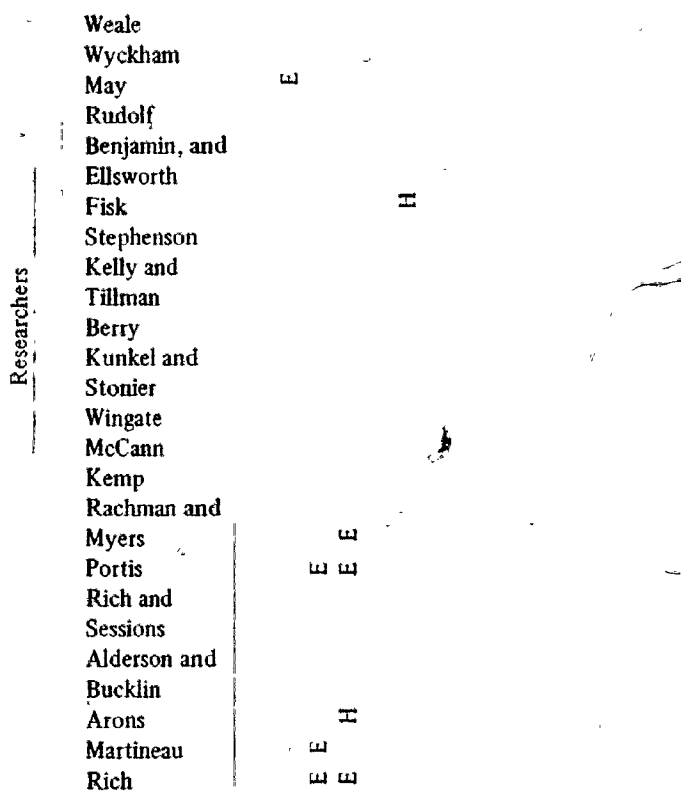


Figure 2.9 Image Attribute Evidence (continued)

2.4.2 Studies Using Consumer Images

Garner (1970) identifies four broad areas for research in the study of the consumer's image within the urban retail structure. They are as follows:

1. The nature of the images consumers have of the urban retail structure.
2. The relationship between the consumers and the images they hold.
3. The relationship between the images and the nature of the urban retail structure.
4. Comprehension of the mechanism by which different images are formed.

(pp.134-135)

The perception and measurement of shopping centre images based on Garner's proposals have been investigated by several geographical researchers. Perception by shoppers towards the attractiveness of a specific shopping centre has been studied by Downs (1970). He hypothesized that the image of a shopping centre is based on a number of cognitive components. His findings identified eight categories which form a centre's image. They can be divided into two main types:

1. Retail Establishment Factors

   Service Quality

   Price

   Shopping Hours

   Range of Shops

2. Structure and Function of the Shopping Centre

Structure and Design

Pedestrian Movement

Visual Appearance

Traffic Congestion

Pacione's (1975, pp.34) study analyzed "the relationship between consumers' preferences and the image of the retail environment". Using a seven point bipolar scale he measured seven main criteria which form the consumer's image of a retail area. He found that four criteria measure the attributes of the retail establishments. They are quality, competitive prices, reputation and variety of stores. Three criteria are concerned with the retail structure itself. They are accessibility and parking, convenience and physical appearance of the mall. He concluded that the spatial organization of the environment by consumers is directly related to image held of the shopping area.

Cadwallader (1975) investigated consumer behaviour as it related to the process of decision-making. Decision-making he defines as the "cognitive process of selecting from among alternatives" (pp.342). Consumers sort their information about each shopping centre in order to form judgements about their relative attractiveness and accessibility. The probability of shopping at a particular location increases with increasing attractiveness and decreases with increasing distance.

These researchers have focused on the consumers' perception of his environment and his resultant behaviour. However, consumers differ in the images they have of shopping centres. For example stores attract different kinds of shoppers and also shoppers prefer a retail location whose overall image suits the image they hold of themselves. Shoppers like to shop at a mall whose "image is acceptable and appealing to them individually" (Martineau, 1958, pp.49). Furthermore he states that there is no single image that has an equal appeal for all consumers. Image is a multidimentional phenomenon and is dependent upon the socio-economic characteristics of the consumer (Nevin and Houston, 1980). Therefore consumer images cannot be studied without first identifying the antecedent social and economic factors of the consumer.

Image is directly related to the social and economic characteristics of the consumer (Baumol and Ide, 1956; Marble, 1959; Huff, 1960, 1961; Rushton et al., 1967; Dawson, 1979). Two variables that are most often used as a measure of the consumer's socio-economic status are income and occupation (Mathews and Slocum, 1970; Duncan et al., 1972). However Rich and Jain (1968) have stated that, in addition to these variables, others such as place of residence, house type and education of the household head should be employed in order to obtain a successful and complete measure of social and economic characteristics of consumers.

All of these variables are important in determining the images consumers have of a shopping centre since social status affects how people feel about where they should shop. Levy (1973, pp.115) states that "consumers tend to sort themselves out in terms of where it is appropriate for themselves to shop".

2.5 SUMMARY

This chapter has provided an overview of the literature necessary to understand the various approaches employed by geographers in the study of marketing geography. The emphasis has focused on the consumer as the decision-maker within his environment. No two consumers will make the same decision given identical factors within the same spatial environment regarding the image of a shopping mall (Isard, 1956; Huff, 1960).

Garner's (1970) first two approaches to the study of consumer behaviour provided the initial background for this study. His approaches relate to the nature of the consumer's image and the relationship between the consumer and the image he holds. The formation of a shopper's image is based on the studies by Downs (1970); Lindquist (1974) and Pacione (1975) who identified the major attributes that form the consumer's image of a shopping centre. Finally, researchers such as Huff (1960); Rich and Jain (1968); Mathews and Slocum (1970) and Duncan et al., (1972) have identified the sa-

lient socio-economic characteristics that are used in this study to analyse the consumer's image of a shopping centre. From the literature reviewed above it appears that there are two major sets of variables that influence a consumer's image of a shopping centre. The two sets of variables are the relative location of the shopping centre and the consumer and the personal characteristics of the consumer. This study will examine the consumer's image of shopping centres by focussing on the latter set. The aspatial approach, which is employed in the present study, analyzes how socio-economic characteristics affect the consumers' image of shopping centres and it will provide further knowledge in understanding the process of consumer behaviour.

Chapter three describes the study area and examines the methodology which is used to test the hypotheses that the malls' images are different and that they vary according to the consumer's socio-economic characteristics.

Chapter III

METHODOLOGY AND RESEARCH DESIGN

3.1 INTRODUCTION

The purpose of this study is to examine the images of shopping centres as held by consumers and to determine if the images vary significantly according to the respondents' socio-economic background. Garner's (1970) research strategies provide the background for the analysis of the data in this study. Specifically, his first two strategies will be used. First, the nature of shopping centre image will be examined and measured. Secondly, the relationship between different groups of people and their shopping centre images will be examined. Specifically the following hypotheses will be answered at the conclusion of this paper.

1. That the images of shopping centres, as held by consumers, are different.
2. That identified sub-groups of the sample of consumers (e.g. on the basis of discriminatory characteristics such as sex, age, income, etc.) have significantly different images of individual shopping centres.
3. That the identified sub-groups of the sample of consumers have significantly different images of different shopping centres.

To test these questions two shopping centres in the City of Guelph were chosen and a sample of consumers were

asked in a questionnaire to indicate their image of the two malls and to answer questions related to their socio-economic background. The methods of obtaining the data are further explained in the following sections of this chapter.

3.2 STUDY AREA

The study area is comprised of the City of Guelph and its two largest shopping centres which were selected by the researcher for analyzing consumer images (see Figure 3.1). The two malls selected are Stone Road Mall and Willow West Mall.

Stone Road Mall is located at 435 Stone Road in the southern part of the city. It is situated on a major east-west street (Stone Road) and is adjacent to highway 6 (Hanlon Expressway). It is owned and operated by Sifton Properties Limited of London, Ontario. The centre was opened in 1973 and claims a market population of 225,000 people (80,000 in the primary trade area and 125,000 in the secondary trade area) and a sales volume of fifty-five million dollars. There is parking for 2,100 automobiles on the site. The mall has a gross leasable floor space of 410,000 square feet. There are eighty-five stores in this mall (see Table 3.1). The principle tenants or anchor stores are Sears with 116,000 square feet, K-Mart with 86,000 square feet and Steinberg with 35,000 square feet (Monday Report, 1980). According to McKeever's (1957) classification scheme Stone Road Mall is classified as a regional mall.

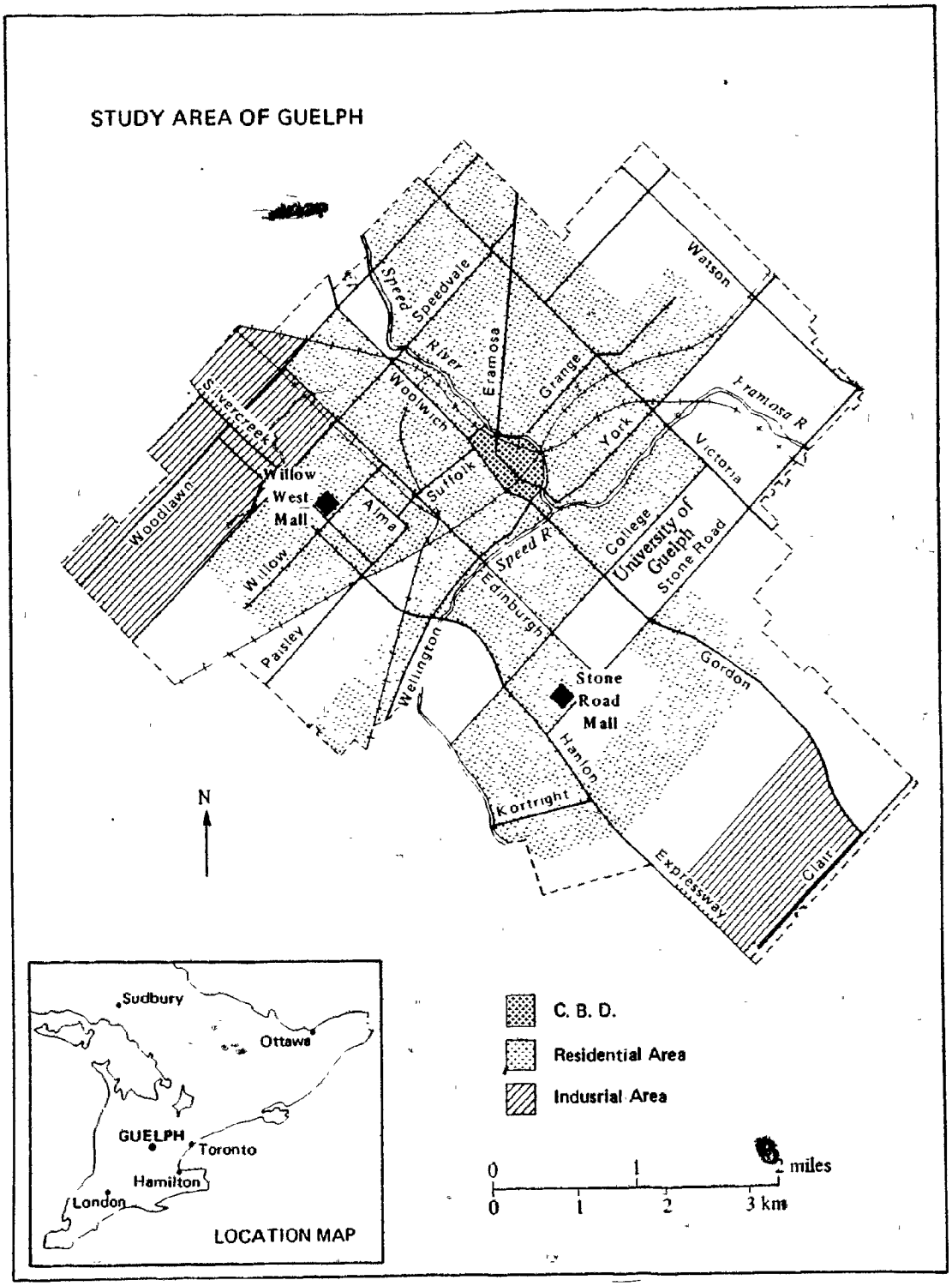


Figure 3.1: Study Area of Guelph

Willow West Mall located at 183 Silvercreek Parkway near Highway 6 is owned and operated by the Armel Corporation of Guelph. The mall, opened in 1970, claims a population of 130,000 people in its primary trade area and accomodates 1,300 automobiles in its parking lot. Willow West has a gross leasable area of 174,752 square feet and has twenty-five tenants (see Table 3.2). The main tenants or anchor stores are Zellers with 84,575 square feet and Zehrs with 31,775 square feet (Monday Report, 1980). The mall is classified as a community mall according to McKeever's (1957) and Hoyt's (1958) classifications.

The data for analyzing the images of the two shopping centres were obtained from a sample of consumers living in Guelph. The personal interview technique was employed in this study in preference to a mailed in questionnaire because of "its advantages in terms of its accuracy and the relative certainty of response" (Pacione, 1975, pp.35). The city was subdivided into fourteen subareas which conform to the 1976 census tracts established by Statistics Canada (see Figure 3.2). The street intersection having four directions nearest the centroid of each census tract served as a starting point for conducting interviews. From this point, in all four directions, the occupant of every fifth house was asked to complete the questionnaire. If the resident was not at home the next residence was interviewed. This proce-

TABLE 3.1

STONE ROAD MALL TENANTS

ANCHORS:
Sears, K-Mart, Steinberg

LADIES WEAR:
Alcove, Betts, Dalmy's Echoes, Fairweathers, Fashion Gallery, 5 Seasons, Flair, Hi-Lo, Irene Hill, Lingerie By Love, Smart Set, Suzy Shier, The Loft, Today's Girl, Town and Country, Very Very Terry Jerry, Yours Maternally, Zacks

MENS WEAR:
Big Steel, Elks, Jack Fraser, Peter Maxwell, Saturdays, Star, Tip Top

UNISEX:
Discovery, Thrifty's, Tramps

CHILDRENS WEAR:
Petits

DRUG:
Shoppers

PAINT/HARDWARE:
Pallet

ELECTRONIC:
Mr Sound, Muntz, Wickham's TV

JEWELLERY:
Birks, Morse

GIFT:
AMTI, Diversions, Gallery Plus

SPORTS:
Riordans

TOYS:
Playtime

(Continued)

TABLE 3.1 (Continued)

PHOTO:
Blacks Camera

FABRIC:
La Penta's, Singer

HOBBY/CRAFT:
Leisure World

PET:
Pet Stop

SHOE:
Aigles, Belinda S Brother, Cordwainer, Fredelle, Jallenkamp, Kiddie Kobbler, Kinney, Rare Earth

BOOK/STATIONERY:
Classic, Co-Op, Notes 'N Quotes

FOOD/RESTAURANT:
Baskin-Robbins Ice Cream, Charcoal Snacks, Laura Secord, Nick's Place, Orchid

FINANCIAL:
Bank of Montreal, National Trust

OTHER:
Crown Cut Barber, Flowers 'N Fancies, Kinsie Wool, Lighting Unlimited, M's Flair, Nettlecreek, Perfection Cleaners, Quil 'N Skin Leathe and Stationery, Travel Trend Tours, Wellington Optical, Wiff 'N Puff

(Monday Report, 1980)

TABLE 3.2

WILLOW WEST MALL TENANTS

ANCHORS:
Zellers, Zehrs

LADIES WEAR:
Milady Shoppe, Reitman's

MENS WEAR:
Royal Male

DRUG:
Shoppers

SHOE:
Bata

ELECTRONIC:
Circle of Sound

PHOTO
Fotofair

JEWELLERY:
Walter's

SPORTS:
Riordans

FINANCIAL:
Canada Trust, Royal Bank of Canada

FOOD/RESTAURANT:
Deli-Donut, Macs Milk, Pickwick's, Wedge & Del

OTHER:
Carmen's Beauty, Dallan's Barber, International Travel Service, McManus & Stronach Optical, Perfection Cleaners

(Monday Report, 1980)

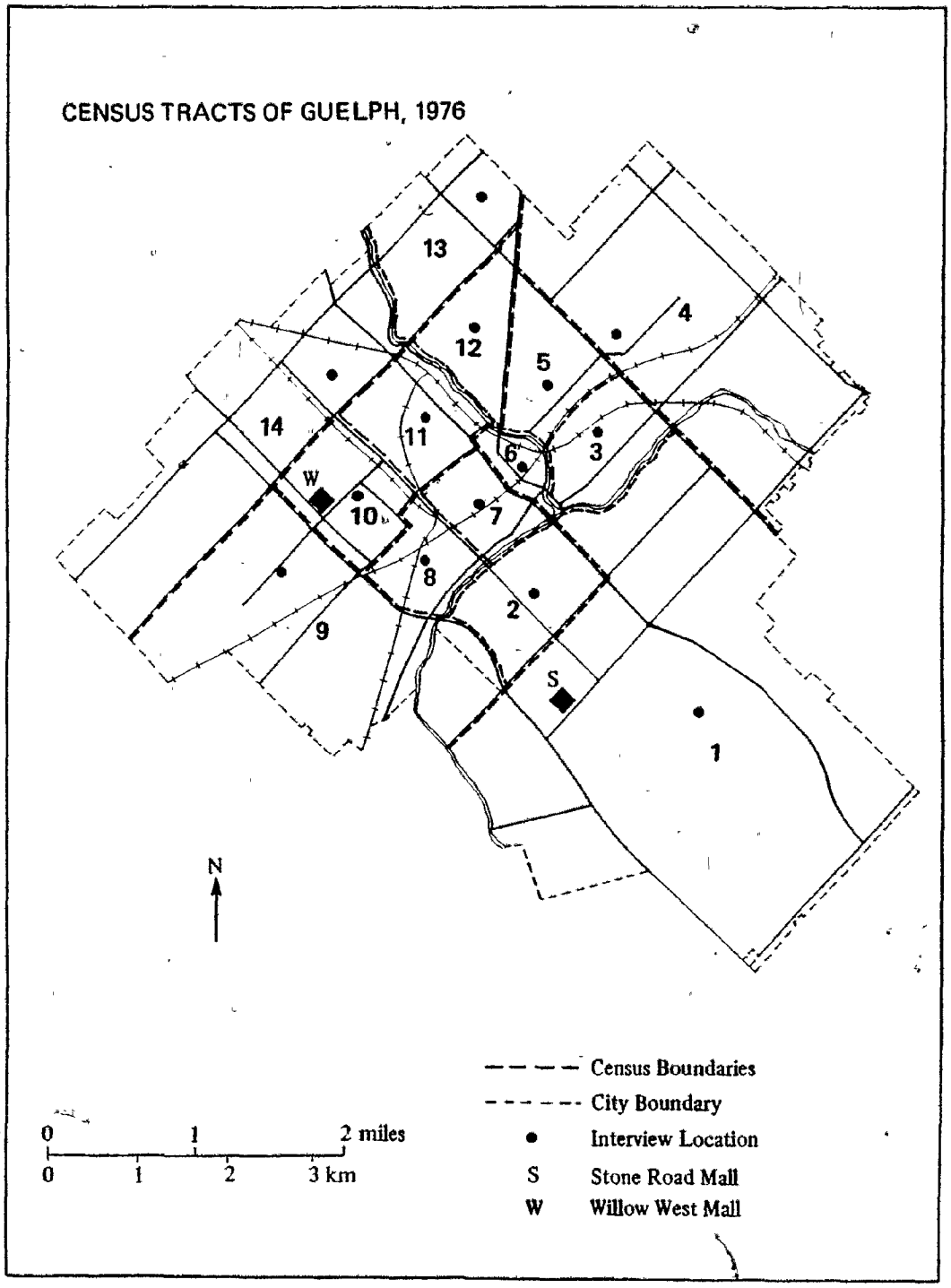


Figure 3.2 Census Tracts of Guelph, 1976

dure continued until four respondents in each direction from the initial intersection had been interviewed. Sixteen respondents formed the population sample in each of the fourteen census tracts. The total sample, therefore, consisted of 224 consumers. The reason for using the stratified systematic sampling technique is to obtain a spatial representation of consumers in the city.

3.3 THE QUESTIONNAIRE

Studies of store images using questionnaires are common in recent marketing literature. The questionnaire is designed to collect a combination of data related to mall images and the socio-economic characteristics of each respondent. The first two sections of the questionnaire, which are identical, combine the findings of Lindquist's (1974) review of retail images; Pacione's (1975) image components; the variables identified by Gentry and Burns (1977-78) and the criteria employed by Burns (1980) to measure the image of each shopping centre. The final section of the questionnaire contains a series of questions that identify each consumer's socio-economic characteristics.

The questionnaire presented sixteen variables designed to identify the consumer's image of each of the two malls. They were selected from the studies mentioned above. The variables were pretested in these reports and found to be

satisfactory in identifying retail images. Variables such as credit policies (Lindquist, 1974) which are not relevant to the formation of a mall's image were deleted from the questionnaire. Table 3.3 lists the components which were included in the first two parts of the questionnaire.

TABLE 3.3

QUESTIONNAIRE ATTRIBUTES

1) Availability of Parking
2) Sales Personnel
3) Traffic Congestion
4) Variety of Products
5) Cleanliness of Stores
6) Prices
7) Building and Landscape
8) Mall Hours
9) Advertising
10) Quality of Stores
11) Variety of Stores
12) Comparative Shopping
13) Reputation of Stores
14) Type of Shoppers
15) Value for Price
16) Overall Attitude/Feeling Towards Mall

The variables of availability of parking (1) and traffic congestion (3) provide a measure of the mall's tangible attribute of convenience and accessibility. Cleanliness of stores (5) and building and landscape (7) are the two criteria that attempt to measure the mall's attribute of physical appearance. The service component of the mall's image is

measured by the variables of sales personnel (2) and mall hours (3). The attribute of merchandise is measured by the variables of variety of products (4), prices (6), variety of stores (11), comparative shopping (12) and value for price (15). The institutional aspect of the mall's image can be determined by the variables of quality of stores (10), reputation of stores (13) and overall attitude or feeling towards the mall (16). Awareness of the mall is measured by the variables of advertising (9) and type of shoppers (14).

Two additional questions for each mall were asked of the consumer. First, they were asked to identify what major items or products they purchased regularly. This information provided the researcher with some idea as to why consumers shop at each mall and also with the knowledge of what type of consumer goods are purchased on a regular basis. Consumer goods and services can be classified as convenience, shopping or speciality items or services. These terms as defined by the American Marketing Association (1960, pp.10,21,922) are as follows:

Convenience Goods:

> Those consumer's goods which the customer usually purchases frequently, immediately, and with the minimum of effort in comparison and buying.

Shopping Goods:

> Those consumer's goods which the customer in the process of selection and purchase

characteristically compares on such bases of suitability, quality, price and style.

Speciality Goods:

Those consumer's goods with unique characteristics and/or brand identification for which a significant group of buyers are habitually willing to make a special purchase effort.

Berry (1963) found that consumers prefer to make a single trip to one centre for a number of purchases. However, these two malls offer a variety of similar goods and services and in many instances the same item can be found at both centres. Thus the offering and selection of goods at each mall does not fully explain the spatial behaviour of consumers.

The second question asked each consumer was to estimate the distance from their home to each of the malls. The perceived distances to each mall can be compared to the actual distance as measured from the centroid of each census tract. The difference between the measures of distance can then be compared statistically for any significant difference. If Pacione's (1975) conclusion that perception of distance is positively related to the perceived attractiveness of the shopping area, then distance might be used as an adequate measure to explain the consumer's shopping preference.

A section for additional comments on each mall was provided so that respondents could explain or expand what they had decided about the criteria or to include ideas or criticisms that were not described in the first part of the questionnaire. Over eighty percent of the respondents were willing to express their opinions and feelings about shopping centres and in particular Stone Road Mall and Willow West Mall. These comments reinforce the views of the consumer's responses to the image variables.

The last section of the questionnaire deals with the socio-economic background of each consumer. Studies have indicated that the image of a shopping centre is determined partly by the consumer's social and economic status (Baunol and Ide, 1956; Marble, 1959; Huff, 1960, 1961; Rushton et al., 1967; Dawson, 1979). Two characteristics - occupation and income of the household head - have been identified as the two most often used variables to define the consumer's socio-economic status (Mathews and Slocum, 1970; Duncan et al., 1972;). In addition other variables such as place of residence, house type and education of the respondent should be employed in order to gain a complete measure of the consumer's socio-economic background. Therefore, the following questions were included in the questionnaire:

1. Sex
2. Age
3. Martial Status

4. Number of Children Living at Home
5. Occupation of the Household Head
6. Occupation of the Respondent
7. Total Family Income
8. Level of Education of Household Head
9. Level of Education of Spouse
10. Years Lived in the City
11. Type of Residence
12. Ownership of Residence

The respondent was asked to place a "X" in the appropriate box for each socio-economic question (see Appendix A). The responses to these questions were used to categorize the respondents into various socio-economic subgroups of similar background. The analysis of the consumers' images of shopping centres was performed using the variables of sex, age, occupation of household head, total family income and education level of the respondent (which was determined by the author following the completion of the questionnaire) to test the hypotheses. The remaining socio-economic characteristics provided the author with a means of varifying the responses of each consumer.

3.4 THE SEMANTIC DIFFERENTIAL SCALE

The semantic differential scale is a technique used for measuring images. It has been used successfully in a number of geographical studies. This method is described in studies by Downs (1970); Golant and Burton (1970); Caldwallader (1975); and Pacione (1975). However the most detailed descriptions are provided by Osgoode, et al. (1957) and Snider and Osgoode (1969).

Golant and Burton (1970, pp.121) state that the semantic differential scale "is a psychological technique which makes use of linguistic encoding as an index of meaning." Further, they say that "it uses a combination of association and scaling procedures in measuring the psychological meaning of concepts" (pp.121). It is a means by which the responses indicated the feelings or attitudes people have of various shopping centre image attributes.

The method involves selecting a pair of bipolar adjectives (see Appendix A) and relating them to a specific image concept. For example if the question asked was: 'The Arctic temperature in the winter is: then the appproopriate bipolar adjectives would be hot and cold. Respondents to the questionnaire indicated their feelings or attitudes towards each shopping centre by rating the sixteen criteria for each of the two malls. Using a seven point bipolar scale that ranges from the negative of "extremely bad" to the positive of "extremely good", the respondents indicate their feelings by

placing a "X" in the appropriate box for each question. Each response represents a selection among a set of alternatives and serves to localize the concept of a point in semantic space (Snider and Osgood, 1969). In evaluating the concept or attribute, the position of the response varies in two ways. First, it varies in intensity; and secondly, it varies in direction. On the seven point scale the 'neutral' middle space represents the origin and the distance from it corresponds to the respondent's intensity to the reaction. The direction of the chosen response corresponds to either a positive or negative feeling towards the concept. The selection of the bipolar adjectives is derived from the findings and conclusions of existing geographical research (Downs, 1970; Cadwallader, 1975; Burns, 1980). Gould (1969) found that spatial preferences may be measured more appropriately on the ordinal scale. This permits the researcher to analyze the results qualitatively and then by quantifying the image data.

3.5 METHOD OF ANALYSIS

The data were collected during the months of June and July 1981. The 224 respondents were asked to indicate their feelings or attitudes towards each of the sixteen image criteria for each of the malls. The order of the malls in the questionnaire was reversed in order to eliminate any personnal biases on the part of the respondents. In the

third part of the questionnaire the respondent was asked to complete the section of questions related to his socio-economic background.

The data were analyzed using the statistical techniques of a frequency count, the Wilcoxon matched-paired test of significance, factor analysis and a rotational technique called RELATE. The data were analyzed to determine the image characteristics for both Stone Road Mall and Willow West Mall. This was done first for the entire sample and then by each of the selected socio-economic characteristics. The socio-economic characteristics analyzed are sex, age, occupation of the household head, total family income and education level of the respondent. The image characteristics as determined by each of the sample subgroups for each mall were compared for similarity or dissimilarity.

The frequency count routine determines the frequency percentages of importance for each image criteria for each of the two malls. This permits two independent statistical procedures to be used in analyzing the results of the semantic differential technique. The mean of each criteria and the frequency of responses for each point in the seven point bipolar scale permits the researcher to qualitatively compare results of the two malls for each sample subgroup. The Wilcoxon matched-paired test of significance indicates whether there is any significant difference between each subgroup's answers as related to the images of the two malls.

Factor analysis is employed to further test the results obtained by the semantic differential scale. Factor analysis is a multi-variate technique which takes a matrix and reduces it. To reduce redundancy that might be present in the original variables in the questionnaire, factor analysis merges together these variables. The procedures of factor analysis using the varimax rotational method produces factors of the consumer's image of a shopping centre. These factors which are independent and uncorrelated to each other can be considered as the equivalent of the dimensions of the individual consumer's image of a shopping centre. Thus factor analysis summarizes many variables by a few factors (Veldman, 1967). The sets of factors which result from each of the analyses are used to examine the variation in the images of the two malls for each of the socio-economic subgroups.

Finally, individual factor structures are compared using the rotational technique called RELATE. RELATE determines the degree of similarity between the factor structures for each socio-economic subgroup. It produces a measure of congruence between pairs of factor structures to determine whether the images of the malls are similar or dissimilar.

The following chapter presents the results of these various methods of analysis to determine if the images of shopping centres vary according to the consumers' socio-economic characteristics.

Chapter IV

ANALYSIS OF DATA

4.1 INTRODUCTION

The consumers' images of Guelph's two largest shopping centres - Stone Road Mall and Willow West Mall are examined by analyzing their socio-economic characteristics. Sixteen consumers were selected from each of the City of Guelph's fourteen census tracts of 1976. This provided a total sample of two-hundred and twenty-four consumers for this study.

The respondents were asked in the questionnaire to rate first, the characteristics of one mall then the other. The order of presentation of the malls was reversed to eliminate personal biases towards either mall. Each respondent was asked to indicate his feeling or attitude for each of the sixteen characteristics for both malls. These characteristics were used to form the consumer's image of each shopping centre. The third section of the questionnaire asked the respondents to answer questions related to their socio-economic characteristics. Eleven questions were asked in order to determine each respondent's socio-economic status.

The questionnaire also asked each respondent to estimate the distance from their home to Stone Road and Willow West Malls. This perceived distance was compared to the actual distance which was measured along the shortest street route from the centre of the census tract to each of the two

malls. Table 4.1 shows the mean values of the observed distances between the respondent's home and the shopping centre and the number of respondents in each census tract who underestimated this distance as compared to the number who overestimated it. A difference of means test - the Wilcoxon matched pairs two tailed test (Haber and Runyon, 1969, pp.253-259) - was employed to test the null hypothesis that the consumer's estimation of distance is similar to the actual distance. For the analysis the 0.05 level was selected as the level of significance for this test. For the Stone Road Mall the observed T value of 41.5 was greater than the expected T value of 21. Similarly, at Willow West Mall the T value of 36 was greater than the expected value of 17. Therefore the null hypothesis for both malls must be accepted. These findings infer that the measure of distance can not adequately explain the consumer's spatial behaviour. Therefore other factors must be discovered which will provide an adequate explanation of consumer spatial behaviour.

Huff (1959, 1960) argues that there are forces which operate outside the spatial system that influence consumer spatial behaviour. Marble (1959) found that distance travelled by consumers is significantly related to their social and economic characteristics rather than to their location relative to the shopping centre. Consumer behaviour is a function of one's environment or, more specifically, the perception of the spatial environment. The organization of

TABLE 4.1

ESTIMATION OF DISTANCES TO THE SHOPPING CENTRES BY CENSUS TRACT

Census Tract	Stone Road Mall Mean Distance	Over Estimation	Under Estimation	Willow West Mall Mean Distance	Over Estimation	Under Estimation
1	2.50	7	9	9.00	3	5*
2	2.00	11	3*	4.50	9	7
3	6.00	10	6	6.00	12	4
4	7.00	11	5	6.50	7	6*
5	7.00	3	6*	7.00	12	3*
6	2.50	1	12*	5.00	7	4*
7	3.00	4	9*	3.00	5	6*
8	4.00	3	5*	2.00	3	4*
9	5.50	6	10	2.00	3	13
10	5.00	2	13*	1.00	0	9*
11	4.50	2	14	2.50	7	4*
12	5.00	3	9*	3.50	4	12
13	3.50	14	1*	4.50	3	8
14	5.00	4	9*	2.00	3	7*

* Does not include respondent's correct estimation of distance.

the environment is directly related to the consumer's image of his action space. Image is the process of collecting, coding and evaluating information about the spatial environment (Downs, 1970).

The consumers' images of the two malls are analyzed by each socio-economic characteristic to determine how each characteristic and the differential reaction of various groups to them affect the perceived image of a shopping centre. The data were analyzed, first, by comparing images of each shopping centre as determined by all the respondents and then, secondly, by each socio-economic sub-group. Sev-

eral statistical techniques are used to analyze the data. The frequency count routine yielded a mean response value which gives an indication as to how consumers rank the mall's image criteria. The Wilcoxon test is used to test the significance of the responses between the two malls. The importance of the evaluation criteria is pursued further through factor analysis. Finally a rotational technique called RELATE is employed to test the congruence between the two factor structures. However a crosstabulation between pairs of socio-economic characteristics is performed before the analysis to determine if each characteristic is unrelated and provides a different measure of a consumer's image of malls.

4.2 CROSSTABULATION OF SOCIO-ECONOMIC CHARACTERISTICS

Respondents to the questionnaire were asked to complete a section containing a number of questions related to their socio-economic status. Of the eleven questions that were asked, five were identified as being the most important for analyzing the consumers' perceived images of the malls. The five factors, which have been determined by previous researchers (Mathews and Slocum, 1976; Duncan et al., 1972 and Rich and Jain, 1963), are: sex, age, total family income, education of the respondent and occupation. Duncan et al. (1972) found that one's occupation leads to renumeration in the form of earnings and is related to his educational at-

tainment. This would indicate that some characteristics may be interrelated and simply provide a remeasurement of that socio-economic characteristic.

To test for interrelationships between pairs of socio-economic characteristics a crosstabulation between the five characteristics for the 224 respondents was performed. The results of the crosstabulation can be found in Appendix B. A chi-square test was applied to the crosstabulations and a null hypothesis was either accepted or rejected at the 0.05 level of confidence. The null hypothesis stated that there is no significant difference between a pair of socio-economic characteristics. The results of the chi-square test are presented in Table 4.2.

TABLE 4.2

CHI-SQUARE RESULTS OF THE SOCIO-ECONOMIC CHARACTERISTICS

Socio-economic Characteristics	Observed Chi-square	df	Expected Chi-square	Rejection of Null Hypothesis
Sex - Age	7.64	4	9.49	no
Sex - Income	3.97	4	9.49	no
Sex - Education	14.77	4	9.49	yes
Sex - Occupation	14.15	5	11.07	yes
Age - Income	45.66	16	26.30	yes
Age - Education	12.27	16	26.30	no
Age - Occupation	102.76	20	31.41	yes
Income - Education	49.36	16	26.30	yes
Income - Occupation	98.41	20	31.41	yes
Education - Occupation	93.09	20	31.41	yes

There are significant differences between the pair of characteristics of sex and age, sex and total family income and age and education of the respondent. It would appear, to the author, that there are no significant differences between the characteristics of income, education and occupation. Thus one's occupation can be measured by one's education and total family income. This conclusion is supported by the findings of Duncan et al., (1972). To eliminate repetiveness only the four socio-economic characteristics of sex, age, total family income and education of the respondent are discussed and analyzed in the following sections of this chapter.

4.3 FREQUENCY ROUTINE RESULTS

Each respondent rated the sixteen variables in the questionnaire for Stone Road Mall and Willow West Mall. The sixteenth criteria - overall attitude/feeling - is not used in the analysis but served as a control for the accuracy of all the responses. For example, if a respondent rated most of the criteria quite low and indicated a very high overall feeling towards the mall then his response was considered as suspect and the questionnaire was rejected for analysis. The responses to the image variables are used to comprise the consumer's image for both malls. The frequency routine shows the distribution of variable values and summarizes the results of the consumer's image of the malls. A summary of

the rating for each mall is shown in Figure 4.1 The data for all the frequency routine results have been included in Appendix C.

The mean responses for each of the mall's characteristics are more positive at Stone Road Mall than at Willow West Mall. The only exceptions where the criteria is more positive at the latter mall are availability of parking, traffic congestion and prices. The first two criteria reflect the smaller size of the mall. It would be expected that a smaller mall would attract fewer consumers than a larger mall and therefore it would have less automobile traffic. Proportionally a shopper should encounter less traffic congestion at the mall and be able to find suitable parking. The mean scores for these two variables support this argument.

For Stone Road Mall, consumers chose cleanliness of stores, mall hours and reputation of stores as the most favourable criteria. Following these criteria are quality of stores, sales personnel and variety of products. Criteria ranked relatively low are prices, value for price and traffic congestion. The most positive characteristics at Willow West are cleanliness of stores, availability of parking and reputation of stores. Closely following these criteria are sales personnel, mall hours and quality of stores. Comparative shopping, variety of stores and value for prices are the criteria having the lowest values. The most positive

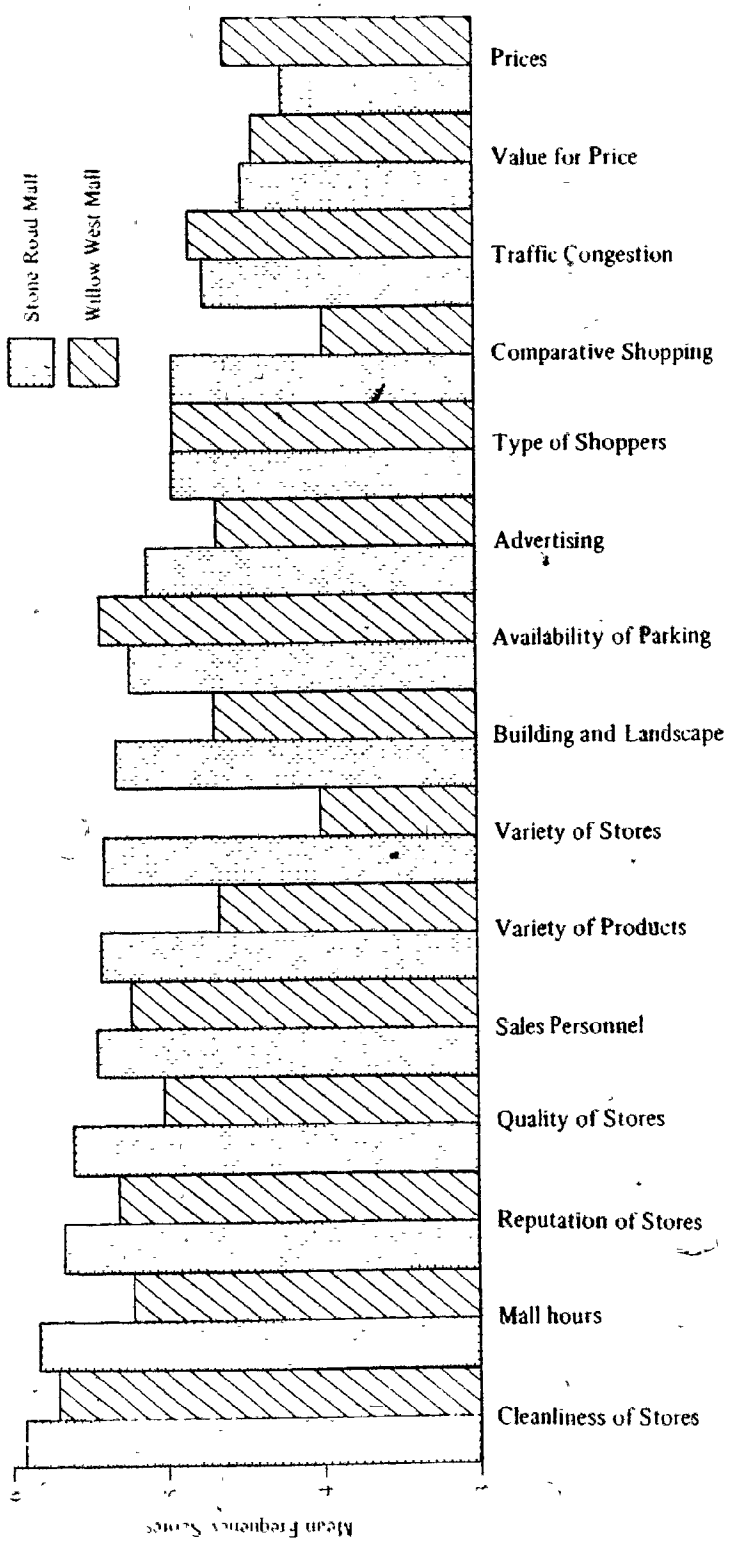


Figure 4.1: Frequency Mean Scores by All Respondents

criteria of both malls, as chosen by the respondents, are similar yet the order of importance varies. In contrast, the lowest criteria at Stone Road are prices and value for price which suggest that consumers find prices relatively high in relation to other shopping areas. For Willow West, the lowest criteria of comparative shopping and variety of stores reflects the size of the mall and its inability to attract more stores to its location.

A test of significance is employed to test the hypothesis that the images as determined by the respondents are the same for both malls. The Wilcoxon matched-pairs test is used to test for the significance of difference between the mean responses for each mall characteristic. A two-tailed test is used to test the null hypothesis that the images of both malls are similar. A T statistic for 15 paired observations equal to or less than 25 is required to reject the null hypothesis. Since a T statistic of 5 was obtained the null hypothesis at the 0.05 level of confidence can be rejected and it can be said that there is a significant difference in the respondent's perception of a shopping centre image. The consumers' image of shopping centres is further investigated by hypotheses two and three in examining the socio-economic characteristics of shoppers to determine how the images vary within and between malls.

4.4 FREQUENCY ROUTINE RESULTS BY SOCIO-ECONOMIC CHARACTERISTICS

Jonassen (1955, pp.75) found that people with different socio-economic status differ in their "attitudes toward alternate sources of shopping satisfaction". The frequency routine is employed to rank the order and importance of the mean responses for each of the shopping centre characteristics of Stone Road and Willow West Malls. The Wilcoxon test is then used to test the following hypotheses. First, that the consumers' image of a mall varies according to their socio-economic status and secondly, that consumers by socio-economic sub-group have different images for each shopping centre. The four socio-economic characteristics of sex, age, total family income and educational level of the respondent are tested.

The image variables for each mall are arranged in a descending order by their mean frequency scores as determined by all respondents. The mean responses of each socio-economic group are plotted against these values. Lines of one standard deviation are also included to assist in the analysis. A group's response that lies above or below the standard deviation lines will be considered as varying significantly from the total groups response for that particular variable although no statistical test is performed to support these statements.

The mean frequency results by sex for 127 female and 97 male respondents are shown in Figure 4.2. At Stone Road

Mall the mean responses are higher for the females than the males. The only variables which are more positive for males are availabilty of parking, traffic congestion and variety of products. However it would appear from the slopes of female and male responses that they do not vary greatly. But it can be stated that there is a difference between the consumers' image of Stone Road Mall and that it does vary according to the respondent's sex. The consumers images at Willow West Mall by sex are similar to Stone Road Mall. Females have a more positive image of the mall than males. Comparing the slopes of their mean responses reveals that there is a greater difference in the perception of their image for this mall. At Stone Road Mall a T statistic of -10 is obtained while at Willow West Mall it is -3. The hypothesis that a consumer's image is similar for both sexes can be rejected. This would suggest that consumers do not have a similar image for each mall.

Comparing the consumers' image between malls shows that females identified mall hours, cleanliness of stores and reputation of stores as the most positive criteria. Although they perceived the same criteria as being most positive for both malls, the mean responses are higher at Stone Road Mall. In contrast, the lowest rated criteria are found to be prices, value for price and traffic congestion at Stone Road Mall. For Willow West Mall, the lowest criteria are variety of stores, comparative shopping and value for price.

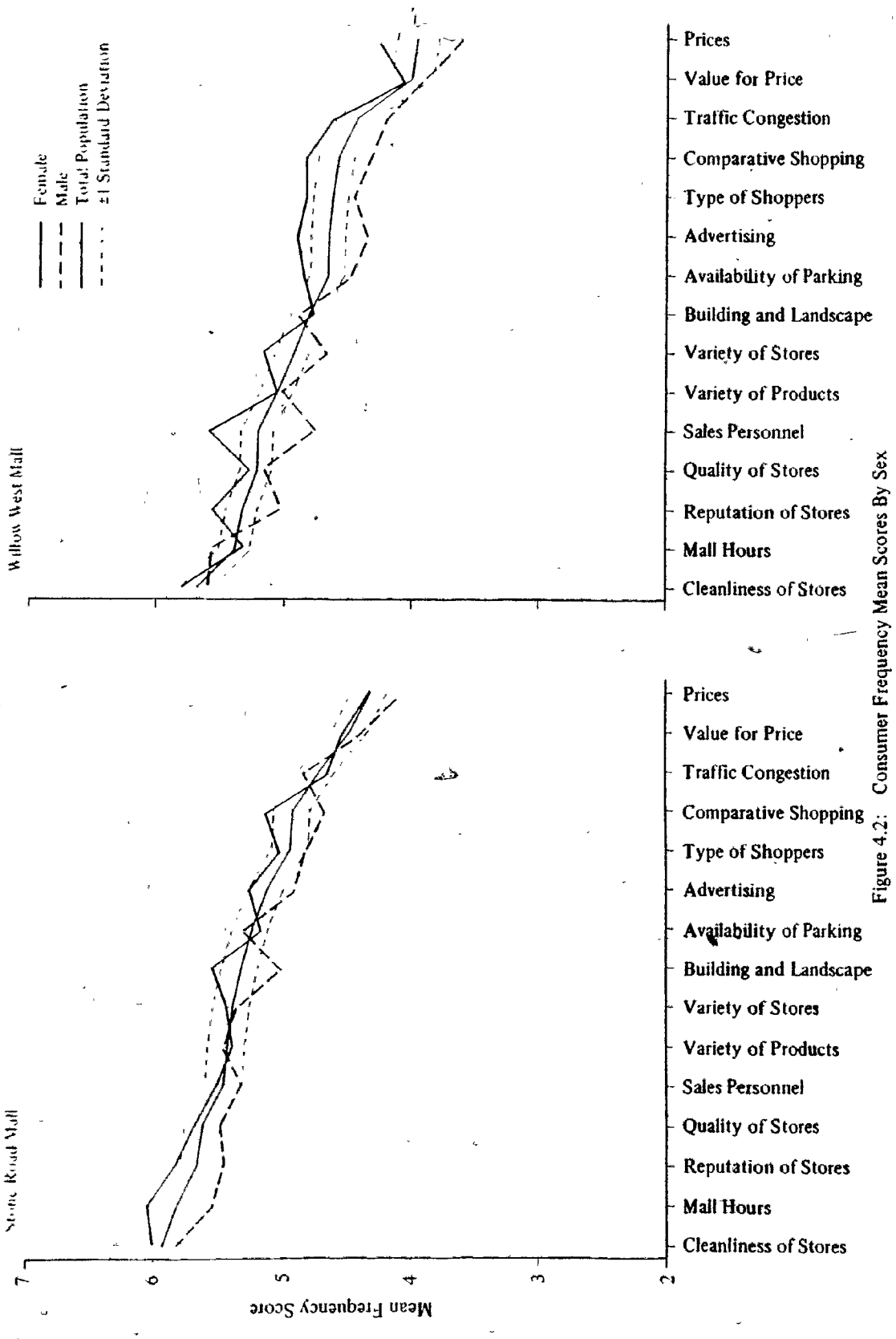


Figure 4.2: Consumer Frequency Mean Scores By Sex

This indicates that females perceive the image variables in a different order of importance.

For male respondents the most positive criteria at Stone Road Mall are identified as cleanliness of stores, mall hours and quality of stores. At Willow West they selected cleanliness of stores, availability of parking and sales personnel as the highest rated variables. The least desirable criteria are prices, value for price and comparative shopping at Stone Road. At Willow West, the least positive criteria are comparative shopping, variety of stores and value for price. The results for the males agree, in general, with the results of the females.

The Wilcoxon test is employed to test the null hypothesis that each sex group's image of each mall and for both malls is similar. For Stone Road Mall a T statistic of -10 is obtained between the images of female and male respondents. At Willow West Mall the value is -8. Comparing corresponding images between malls a T statistic of -20 is found for females and -13 for males. At the 0.05 level of significance it is found that the null hypothesis is rejected and it can be said that the consumer groups' image, by sex, is significantly different at each shopping centre and as well as between the two malls.

The mean responses for each of the five age groups are summarized in Figure 4.3. The number of respondents in each age category are: <25 - 35, 25 to 34 - 73, 35 to 49 - 60, 50

to 65 - 42 and >65 - 14. At Stone Road Mall the images of the 50 to 65 and >65 age groups are the most positive overall. The lowest image is held by the age group between 25 and 34. The variation in responses indicates that each group has a different feeling for many of the image variables. At Willow West Mall a similar pattern of images for each age group appears. The >55 age group clearly has the most positive image of the mall. The 50 to 65 age group has a slightly less positive image of the mall than the former group. The two youngest age groups of <25 and 25 to 34 have the lowest overall image of the mall. The variation in the responses between groups is greater than at Stone Road. However it is clear that a consumer's image of a mall does vary by age group.

Comparing the images by age group reveals that at Stone Road Mall all age groups are pleased with the clean appearance of the mall and its convenient hours. However, there appears to be no common third criteria. The two oldest consumer groups liked the friendly sales personnel which indicates a willingness to be assisted with their purchases. While the 25 to 34 and 35 to 49 identified the variables of quality and reputation of stores which reveal that they appreciate the intangible qualities in a store. Finally, the youngest age group liked the variety of stores which confirms the feeling of many older shoppers that the mall appeals to the younger shoppers. For the lowest rated crite-

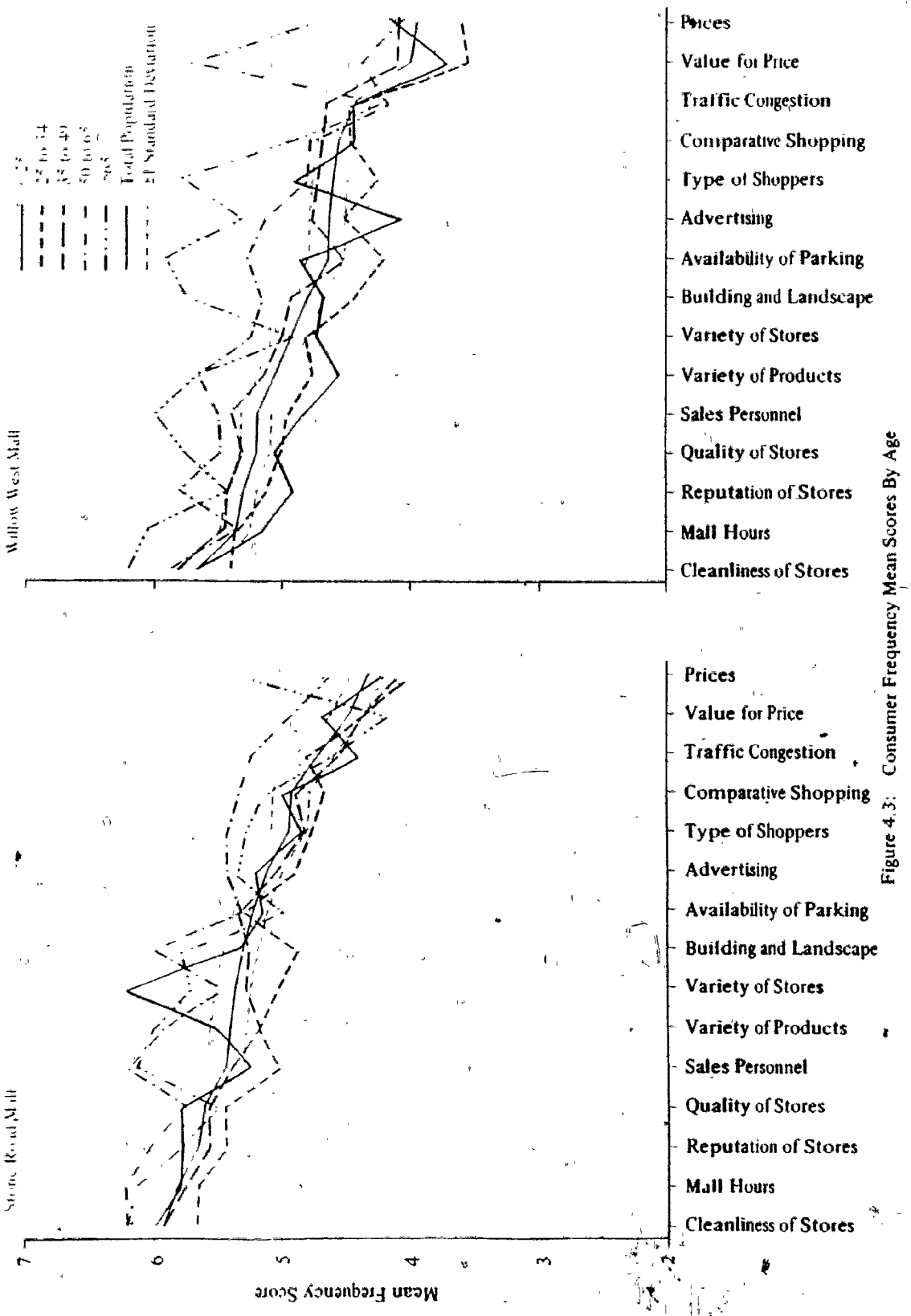


Figure 4.3: Consumer Frequency Mean Scores By Age

ria each age group is concerned about the high prices and low value for price. The exception is the over 65 age category which is concerned about the value of the merchandise for their money and with parking and traffic congestion.

At Willow West Mall each age group liked the clean appearance of the mall and the availability of parking. The third most appealing criteria varies by age group such as the tangible attributes of friendly sales personnel and convenient mall hours for the youngest and oldest age categories respectively. The remaining three groups preferred intangible attributes such as the reputation and quality of stores. The least attractive criteria are variety of stores and comparative shopping for all age groups except the >65 which likes least the value for price and comparative shopping. These criteria reflect the small size of Willow West Mall and its limited number of stores.

The Wilcoxon match-pairs test is used to test the hypothesis that consumer images by age groups of a mall are similar. The T-statictic values are presented in Table 4.3. At Stone Road Mall the hypothesis can be rejected for all age group pairings except for the <25 and >65 and 50 to 65 and >65 age groups who have similar images of the mall. At Willow West Mall the only pair of age groups that have similar images of the shopping centre are between the <25 and 25 to 34 age groups. The hypothesis can be rejected for all the other age group pairings which indicates that they have

different images of the mall. Comparing the slopes of their mean responses in Figure 4.3 supports these findings that the consumers' image of a mall varies significantly by age group.

Figure 4.3 also indicates that each age group has a different perception about a mall's image and that their images of both malls are different. The Wilcoxon test of significance is employed to test the null hypothesis - that the images for both malls are similar. Table 4.4 shows the T statistics between malls by socio-economic characteristic. For the age groups of <25, 25 to 34, 35 to 49 and 50 to 65 the null hypothesis is rejected and it can be said that the images of the two malls are significantly different. However, for the older than 65 year old group the null hypothesis must be accepted. Thus each age group, except the greater than age 65, have images of each mall that are significantly different.

The frequency routine is also used to summarize the respondent's image of the malls by total family income. The number of respondents by income group are: <$10,000 -30, $10,000 to $20,000 - 77, $20,000 to $30,000 -63, $30,000 to $40,000 - 33 and >$40,000 - 21. The results are presented in Figure 4.4. For Stone Road Mall the most positive image is held by the <$10,000 total family income group. This may be due, in part, to their limited disposable income which may restrict the number of shopping areas that they are able

TABLE 4.3

WILCOXON MATCH PAIRS TEST RESULTS

By Socio-economic Characteristic

Stone Road Mall

	Observed T-Statistic	Acceptance of Null Hypothesis
AGE:		
<25 - 25 to 34	-16	No
<25 - 35 to 49	-20	No
<25 - 50 to 65	14	No
<25 - >65	37	Yes
25 to 34 - 35 to 49	18	No
25 to 34 - 50 to 65	0	No
25 to 34 - >65	9	No
35 to 49 - 50 to 65	0	No
35 to 49 - >65	14	No
50 to 65 - >65	0	No
TOTAL FAMILY INCOME ($'000):		
<$10 - $10 to $20	-5	No
<$10 - $20 to $30	-3	No
<$10 - $30 to $40	-23	No
<$10 - >$40	-15.5	No
$10 to $20 - $20 to $30	42.5	Yes
$10 to $20 - $30 to $40	20	No
$10 to $20 - >$40	39	Yes
$20 to $30 - $30 to $40	42.5	Yes
$20 to $30 - >$40	31	Yes
$30 to $40 - >$40	-46.5	Yes
EDUCATION:		
<Grade 9 - Grades 9-12	-12	No
<Grade 9 - Grade 13	-4	No
<Grade 9 - Community College	-29	Yes
<Grade 9 - University	-17	No
Grades 9-12 - Grade 13	-32	Yes
Grades 9-12 - Community College	-33	Yes
Grades 9-12 - University	-47	Yes
Grade 13 - Community College	60	Yes
Grade 13 - University	55.5	Yes
Community College - University	-53.5	Yes

TABLE 4.3 (Continued)

WILCOXON MATCH-PAIRS TEST RESULTS

By Socio-economic Characteristic

Willow West Mall

	Observed T-Statistic	Acceptance of Null Hypothesis
AGE:		
<25 - 25 to 34	-48	Yes
<25 - 35 to 49	13	No
<25 - 50 to 65	6	No
<25 - >65	2	No
25 to 34 - 35 to 49	0	No
25 to 34 - 50 to 65	4	No
25 to 34 - >65	2	No
35 to 49 - 50 to 65	17	No
35 to 49 - >65	8	No
50 to 65 - >65	16	No
TOTAL FAMILY INCOME ($'000):		
<$10 - $10 to $20	21	No
<$10 - $20 to $30	-15	No
<$10 - $30 to $40	-31	Yes
<$10 - >$40	0	No
$10 to $20 - $20 to $30	0	No
$10 to $20- $30 to $40	-17.5	No
$10 to $20 - >$40	0	No
$20 to $30 - $30 to $40	55.5	Yes
$20 to $30 - >$40	-12	No
$30 to $40 - >$10	0	No
EDUCATION		
<Grade 9 - Grades 9-12	-12	Yes
<Grade 9 - Grade 13	-43	Yes
<Grade 9 - Community College	-25.5	Yes
<Grade 9 - University	-5	No
Grades 9-12 - Grade 13	50.5	Yes
Grades 9-12 - Community College	3.5	No
Grades 9-12 - University	0	No
Grade 13 - Community College	-21	No
Grade 13 - University	0	No
Community College - University	-1	No

TABLE 4.4

WILCOXON MATCH PAIRS TEST
BY SOCIO-ECONOMIC CHARACTERISTIC BETWEEN MALLS

	Observed T-Statistic	Acceptance of Null Hypothesis
ALL RESPONDENTS	5	No
SEX:		
Female	-20	No
Male	-13	No
AGE:		
<25	-11.5	No
25 to 34	-14	No
35 to 49	-25	No
50 to 65	-7	No
>65	-30	Yes*
TOTAL FAMILY INCOME:		
<$10,000	-1	No
$10,000 to $20,000	-56.5	Yes
$20,000 to $30,000	-13.5	No
$30,000 to $40,000	-16.5	No
>$40,000	-2	No
EDUCATION:		
<Grade 9	-4.5	No
Grades 9 -12	-36	Yes
Grade 13	47.5	Yes
Community College	34	Yes
University	-2	No

* For 12 pairs of observations.

to travel to. The three middle income groups have would appear to have similar images of the mall. The most varied image is held by the >$40,000 total income group which has definite opinions on most of the image varaibles. For exanple they perceive the variables of availability of parking, advertising and traffic congestion as being very positive. Their negative criteria are identified as reputation of stores, type of shoppers and prices. At Willow West Mall all income groups show a greater variation in their responses to

the image of the mall. The $10,000 to $20,000 group has the most positive image of all groups while the <$10,000 group's image is slightly less positive overall. The >$40,000 total family income group exhibits the lowest image of all the groups with the lowest responses on all the variables. The $30,000 to $40,000 group has a slightly less negative view of the mall than the higher income category. For both malls it is evident that the consumer's image of a mall decreases with an increase in income.

The hypothesis that a consumer group's image is similar (see Table 4.3) between income subgroups reveals several interesting patterns. At Stone Road Mall as income rises the images between subgroups tend to become similar. However at Willow West Mall it appears that most subgroups have a different image of the mall. The only exceptions are between the <$10,000 and $30,000 to $40,000 and $20,000 to $30,000 and $30,000 to $40,000 income groups whose images are similar.

Comparing the consumers' images between malls shows that the image characteristics are rated as more positive at Stone Road Mall which would indicate that consumers by total family income have a more positive or higher image of this mall than they do for Willow West Mall. The perceived images of both malls contain a variety of responses which reflects very definite opinions about both malls. The Wilcoxon test used to reveal whether the images of the two malls

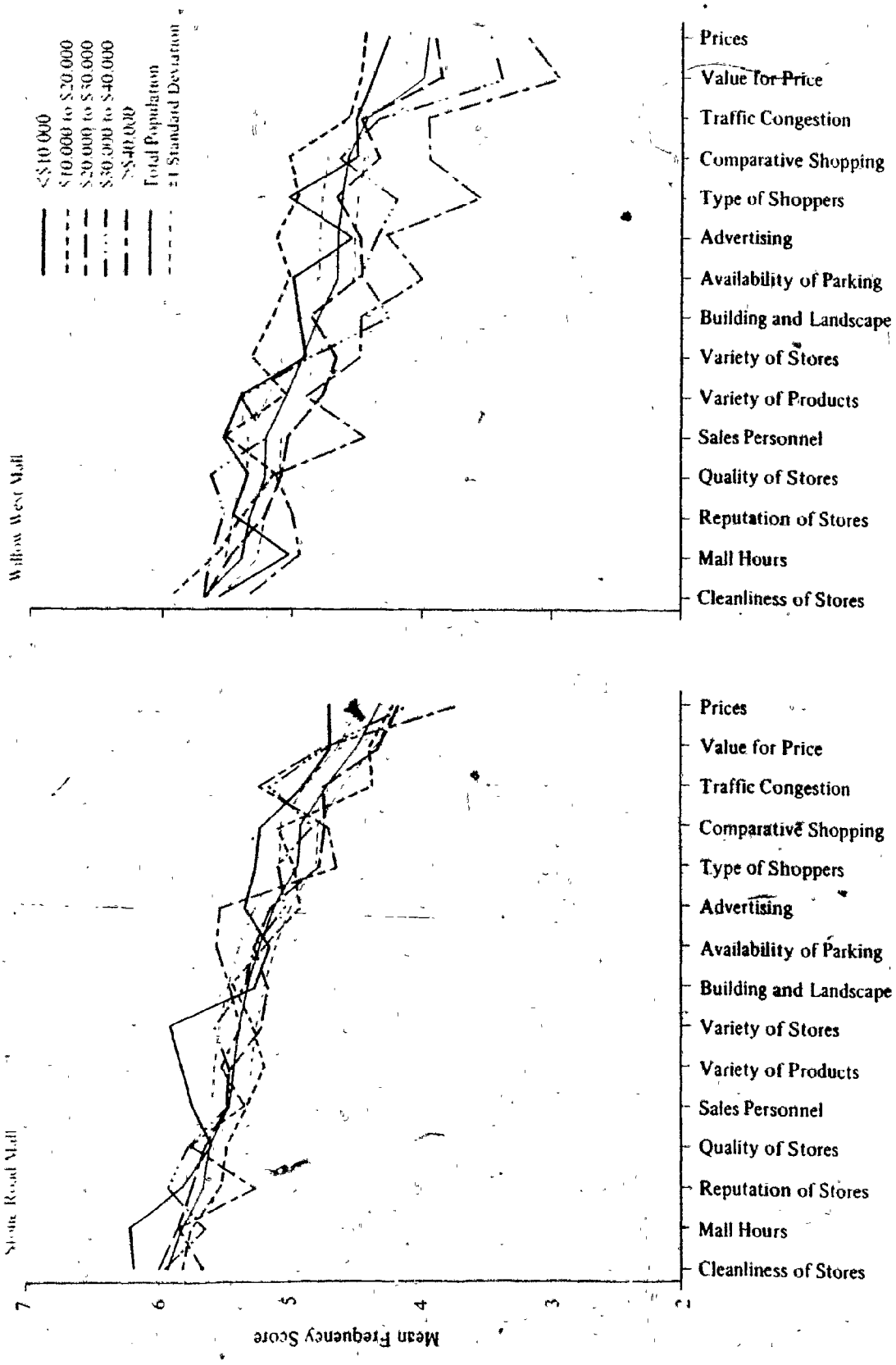


Figure 4.4: Consumer Frequency Mean Scores By Total Family Income

are similar for each of the five income groups is rejected for every income level except for consumers in the $10,000 to $20,000 income bracket (see Table 4.3). The images of both malls are not significantly different for this group.

The final socio-economic variable to be analyzed using the frequency routine is education of the respondent. Each respondent is asked to indicate the highest level of his education. The categories are less than grade 9, grades 9 to 12, grade 13, community college, university and other. Only the first five categories are analyzed as the 'other' category contained no responses.

Figure 4.5 presents the mean frequency responses by educational level. The <Grade 9 group has the most positive image of Stone Road Mall. For the Grades 9 to 12 their image can be described as being neutral since they have an equal number of responses above the total mean response line for all respondents as they have below it. The lowest images are held by the three highest educational groups. There is a greater variation in the responses at Willow West Mall which indicates that consumers do not appear to have as clear an image of this mall as they do for the former mall. Positive images are held by the <Grade 9, Grades 9 to 12 and Grade 13 groups. Community college graduates have definite opinions on each image variable. Their responses are either fairly high or low compared to the responses of the other groups. Their most positive responses are on the criteria of

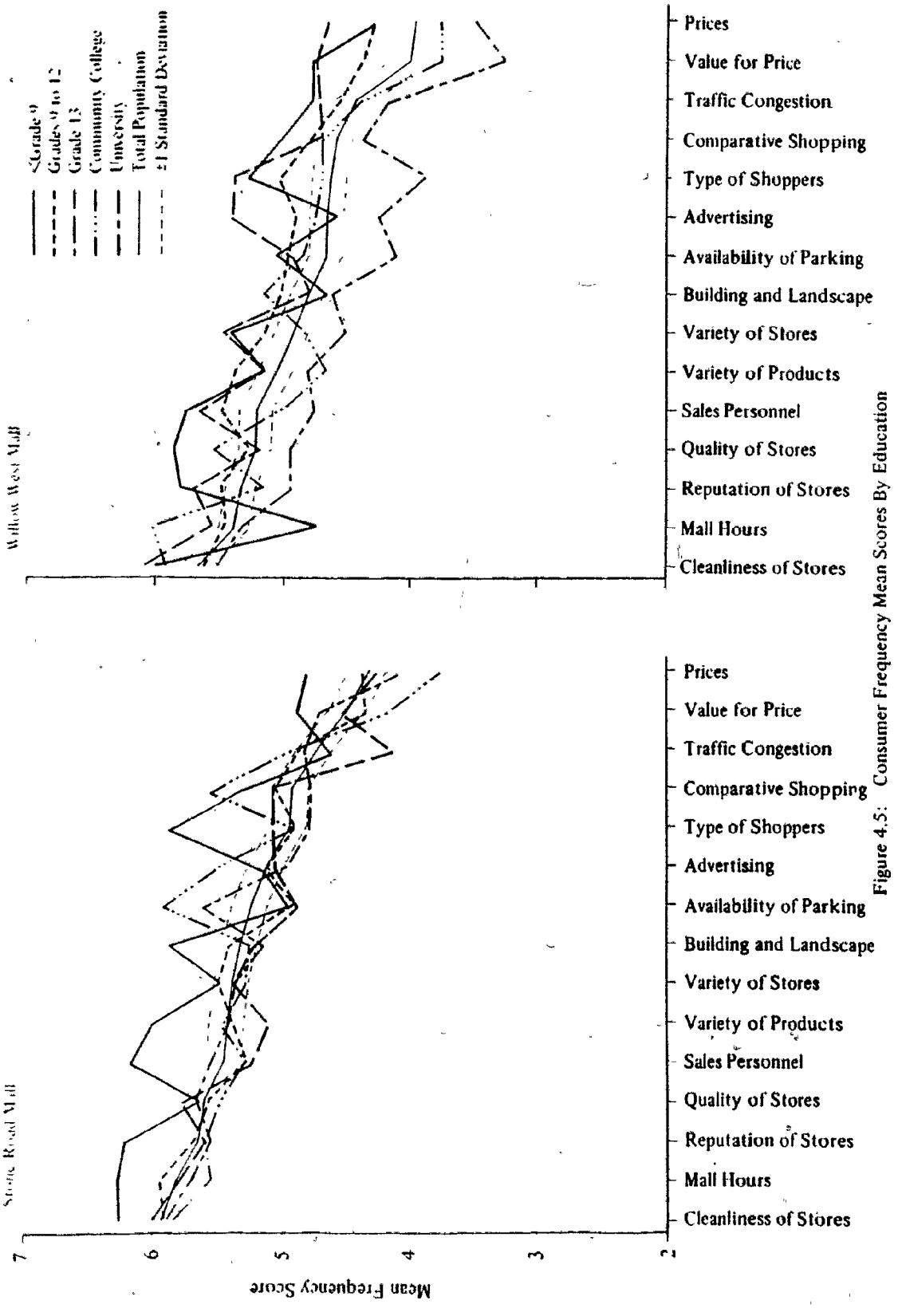


Figure 4.5: Consumer Frequency Mean Scores By Education

availability of parking, sales personnel and traffic congestion. In contrast they view the criteria of variety of stores, comparative shopping and quality of stores as the lowest rated. The university group ranks all of the criteria the lowest compared to all the other groups which clearly means that they have a very low image of this mall.

The Wilcoxon match-pairs test is employed to test the hypothesis that the consumers' image by education level of a mall is similar (see Table 4.4). For Stone Road Mall consumers with a <grade 9 education have an image of the mall which is significantly different for all groups except those with a community college education. However for the grade 9 to 12, grade 13 and university groups their images are similar to all other groups except the <grade 9 group. The hypothesis must be accepted when comparing the commmunity college's image to the images held by all the other educational groups. At Willow West Mall the <grade 9 group has a similar image to the grade 9 to 12 and grade 13 groups only. Comparing the grade 9 to 12 group's image with the other groups it was found that the hypothesis can be rejected for the grade 13 and university groups. The grade 13 group has a similar image wiith only the <grade 9 group of consumers. This pattern was also repeated for the community college group whose image is similar only to the grade 9 to 12 group. In contrast the university group's image of the mall was found to be significantly different to the images of all other

groups. Generally it can be said that consumers by educational groups have a similar image of Stone Road Mall but that their images are different for Willow West Mall. This may be due to the size of the malls in which the latter mall has a smaller selection and variety of stores and merchandise.

Examining each group's image between the two malls (see Table 4.4) reveals that for Stone Road Mall the respondents generally rated cleanliness of stores and mall hours as the two most important criteria of the mall's image. Cleanliness of stores is perceived to be the most important attribute in the formation of Willow West Mall's image by all groups. The second most important attribute varies for each group. Friendly sales personnel is preferred by consumers with less than grade 9, community college and university groups. However the criteria of reputation of stores is important to the other two educational groups.

The least preferred criteria at Stone Road Mall for respondents with elementary and secondary education are traffic congestion, prices and value for price. Community college and university people do not like the prices, value for price and comparative shopping at the malls. All respondents found that prices are relatively high compared to other shopping areas and that they receive slightly low value for their money. The lowest mean response at Willow West is for the variable of comparative shopping. The lack

of variety of stores is also mentioned as a low rated variable by consumers with grade 9 to 12, community college and university education. Respondents with grade 9 to 12, grade 13 and community college dislike the attribute of value for price which they find is quite low.

A test of significance using the Wilcoxon test is employed to test the null hypothesis that the images of the two malls are similar.

Comparing the paired results of consumer images by educational subgroups (see Table 4.3) all pairs of subgroups have similar images of Stone Road Mall. The exceptions are for the following groups who have different image of the mall: <Grade 9 and Grades 9 to 12, <Grade 9 and Grade 13 and <Grade 9 and University. At Willow West Mall images between subgroups are different except for the <Grade 9 and Grade 13, <Grade 9 and Community College, and Grades 9 to 12 and Grade 13. Comparing images between the malls the hypothesis can be rejected for the groups with less than grade 9 and university education (see Table 4.4). Their images of the two malls are significantly different. However, the null hypothesis must be accepted for the other groups whose mall images are not significantly different.

The results of the frequency routine reveal that each socio-economic group of consumers has a different image for each of the two malls. The test of significance examined each of the paired images of each sub-group and found that

in the majority of cases the two images of the malls are significantly different. However comparing consumer images by socio-economic factor at each mall reveals different results. Consumer images at Stone Road Mall are different for each socio-economic characteristic except for the higher total family income and higher educational groups whoses images are similar. At Willow West Mall all groups of consumers have different images of the mall. The exception are the educational groups of <Grade 9 and Grades 9 to 12, <Grade 9 and Grade 13, Grade 9 and Community College, Grades 9 to 12 and Grade 13 which have similar images.

The importance of this evaluative criteria is pursued further through the quantitative technique of Factor Analysis. The data reduction capabilities of factor analysis enables one "to see whether some underlying pattern of relationships exists such that the data may be "rearranged" or "reduced" to a smaller set of factors or components that may be taken as source variables accounting for the observed interrelations of the data" (Nie et. al., 1975, pp.469).

4.5 FACTOR ANALYSIS

It is the purpose of this section of the data analysis to identify the interrelationships in the consumers' responses to the characteristics of the two shopping centres. The consumer's semantic differential responses for each mall provides the data for factor analysis. Factor analysis sum-

marizes the data by reducing a set of original variables in order to obtain a smaller set of new, correlated variables.

Veldman (1967, pp.206) states that these variables are "defined solely in terms of the original dimensions, and which retain the most important information contained in the original data". Thus, the derived factors are of the same general nature as the variables from which they are derived. Factors are obtained for each shopping mall and for the four socio-economic characteristics to further test the hypothesis that a shopping centre's image varies according to the consumer's socio-economic background.

Fifteen variables are used in evaluating the results of the orthogonal factor analysis incorporating a varimax rotation. Varimax is used in this analysis as it simplifies the columns of a factor matrix and reduces the problem of the first factor being a general factor (that is, many variables tend to load high on it) while the remaining factors tend to be subclusters of variables as found within the quartimax rotational technique (Nie et al., 1975). Factoring ceases when all eigenvalues greater than one are obtained (Rummel, 1970, pp.357-353). This provides a set of factors which explain a large percentage of the total variance.

Before interpretation of factor analysis can proceed a method for choosing salient factor loadings must be selected. One method is to count, as significant, any variable possessing a loading of .5 or greater on a factor (Burns,

1980). This ensures that each factor containes a sufficient number of factor loadings to enable the author to identify each factor. The attributes of a consumer's shopping centre image which are used in this study, have been identified by several researchers such as Downs (1970) and Lindquist (1975). These image attributes can be summarized using factor labels such as merchandise, merchandise selection, accessibility, convenience, service, physical appearance, awareness of the mall and its institutional qualities. Factors, for each shopping centre for all respondents and then for each of the socio-economic characteristics are obtained from the consumers' responses.

The results of factor analysis for all respondents results in four factors with eigenvalues of 1.0 or greater being retained for each mall. They explain 51.7 percent and 51.0 percent of the total variance at Stone Road Mall and Willow West Malls respectively. The results of all the factor analysis are given in Appendix D.

Factor one, for consumers at Stone Road Mall, shows a high positive loading on the criterion of cleanliness of stores which refer to the mall's institutional qualities. Factor two is composed of the variables of variety of stores and quality of stores which indicates that consumers rate merchandise selection as the second most important elem[illegible] in their image of the mall. The third factor is related to merchandise. The fourth factor contains the variables of

traffic congestion and availability of parking. This factor can be interpreted as accessibility to the mall.

In contrast, factor one, for all consumers, at Willow West Mall shows high values for the criteria of comparative shopping, variety of stores, prices and value for price. This factor can be labeled as merchandise. Factor two is composed of the criteria of reputation of stores and mall hours. This factor can be labeled as institutional/service. The third factor combines the variables of variety of products and cleanliness of stores which refers to merchandise selection and physical appearence. Finally, the fourth factor contains the variable of availability of parking which measures accessibility.

Although the same factors are retained to explain the images of the two shopping malls, it is evident from the different order of the factors that the total group of respondents have a different image for each mall. A different order of factors means that consumers place a different level of importance on each similar factor in the formation of their image of a shopping centre.

Factor analysis is also performed on each of the four consumers' socio-economic characterisitics to determine if the consumers' image of a mall varies by socio-economic characterisitcs and secondly, that their images of the two malls are different.

Factor analysis for female consumers show that five factors are retained for Stone Road Mall which explain 67.1 percent of the total variance. At Willow West Mall only four factors are retained explaining 61.4 percent of the total variance.

Factor one for female shoppers at both malls can be labeled as merchandise. Positive loadings on the criteria of variety of stores, quality of stores and comparative shopping form this factor. It indicates that the principle factor in a mall's image for females is the merchandise at a mall. The remaining factors, although similar, are preceived as having a different level of importance in the image of each mall.

At Stone Road Mall the second factor is composed of the criterion of type of shoppers which refers to the factor of awareness. The third factor is service. The criteria of mall hours and building and landscape make up factor four. It is labeled convenience. The fifth factor is formed by the variables of traffic congestion and availability of parking and can be labeled accessibility.

At Willow West Mall, the second factor combines the criteria of cleanliness of stores and sales personnel. This factor can be called service. The third factor with a loading on the variable of availability of parking refers to the convenience of the mall. The fourth factor combines the criteria of value for price, traffic congestion and prices which refers to the consumer's awareness of the mall.

Factor analysis for male consumers at Stone Road Mall retains four factors which explain 68.0 percent of the total variance. For Willow West Mall, four factors are also retained explaining 61.2 percent of the total variance. The most important aspect of a mall's image for males is the factor described as institutional. It is composed of such criteria as reputation of stores and quality of stores. This would suggest that male shoppers are clearly aware of the stores that they shop at. Factor two at each mall is merchandise which is formed by the criteria of comparative shopping, value for price and prices. The third and fourth factors are the same at each mall but have a different order. The third factor at Stone Road is accessibility which is the fourth image factor at Willow West. In contrast convenience is the fourth factor at the former mall while it is the third factor at the latter. Factor analysis indicate that men tend to have similar images of the two malls.

Factor analysis indicates that female and male shoppers have a different image of each mall and that female shoppers in contrast to males clearly have different images of the two malls. Women, who tend to be the principle buyer in the family, feel that the type of merchandise offered at a mall is its most important aspect that satisfies their shopping needs. In contrast many men shop only for specific items primarily for their own use. This finding is supported by their selection of variables which indicates that the insti-

tutional aspect of the mall is their primary factor in a mall's image.

Factor analysis is also performed on the socio-economic factor of age. The five age categories as selected from Statistics Canada (1976) are less than 25, 25 to 34, 35 to 49, 50 to 65 and greater than 65.

For the age group less than 25 six factors are retained at Stone Road Mall. This explains 77.3 percent of the total variance. For the Willow West Mall only five factors are retained which explain 75.6 percent of the total variance.

Factor analysis reveals that this age group has a different image for each of the malls. The first factor at Stone Road Mall consist of the variables of quality of stores and reputation of stores which can be labeled the institutional factor. Service provided by the mall is considered to be the second most important element of the mall's image. The variables of value for price, prices, and type of shoppers refer to the factor of merchandise which is the third factor. Factor four is convenience which is composed of the variables of advertising and traffic congestion. The fifth factor is merchandise selection, while the last factor is called awareness and is composed of the variables of building and landscape and sales personnel.

At Willow West the factors are similar in nature but their order of importance to their consumer group's image varies. The first factor retained can be titled awareness.

Factor two is merchandise selection and contains the variables of cleanliness of stores and variety of products. The variables of value for price and availability of parking form the third factor of merchandise and accessibility. Factor four is called institutional. The last factor, convenience, combines the criteria of traffic congestion and sales personnel.

Three factors are extracted by the 25 to 34 age group at Stone Road Mall. The factors explain 64.6 percent of the total variance. This is contrasted by the five factors retained to explain the group's image of Willow West Mall. The factors explain 70.9 percent of the total variance.

The first factor at Stone Road Mall can be interpreted as institutional and merchandise. The large number of variables on this factor suggest that consumers of this age group are quite satisfied with most aspects of the mall. Service is the second factor while factor three is accessibility.

In contrast to Stone Road Mall, consumers of this age group have a more definite opinion as to what constitutes their image of Willow West Mall. Their first factor can be labeled as merchandise selection which is the most important element in their image of the mall. The second factor combines the criteria of reputation of stores, mall hours and cleanliness of stores. These variables refer to the institutional aspect of the mall's image. Merchandise is factor three with loadings on the variables of prices and value for

price. Advertising and type of shoppers are the variables that make up factor four. This factor is awareness. Factor five is formed by the variables of sales personnel and traffic congestion.

Factor analysis is also performed on the consumer group aged 35 to 49. Four factors are extracted for the Stone Road Mall. They explain 53.0 percent of the total variance. At Willow West Mall, four factors are retained, which explain 54.3 percent of the total variance.

Factor one at Stone Road Mall is composed of the variables of cleanliness of stores and advertising. This factor can be labeled awareness. Factor two refers to accessibility and contains loadings on the criteria of traffic congestion and availability of parking. Value for price and prices are the variables that make up factor three which can be interpreted as merchandise. Factor four can be called merchandise selection.

The first factor at Willow West Mall has high factor loadings on such variables as comparative shopping and variety of stores. These variables suggest that consumers rank service as the most important element in the mall's image. Accessibility to the mall is factor two. The criteria of reputation of stores suggest that factor three is institutional. Factor four is a combination of variables such as advertising and building and landscape. It can be titled awareness.

At Stone Road Mall four factors are retained by factor analysis for the 50 to 65 age group. The factors explain 66.9 percent of the total variance. For Willow West Mall five factors are extracted which explain 75.9 percent of the total variance.

Factor one, for the Stone Road Mall has factor loadings on the criteria of quality of stores and variety of stores. This factor can be labeled institutional. The criteria of sales personnel, cleanliness of stores and mall hours suggests that factor two is service. Awareness is the third factor and is made up of the criteria of type of shoppers and value for price. The criteria of availability of parking and building and landscape form factor four.

The first image factor at Willow West Mall has loadings on the criteria of cleanliness of stores, variety of products and sales personnel. This factor can be called service. The second factor indicates that consumers like the convenience of the mall to their homes. Comparative shopping, availability of parking and value for price form the factor of awareness. The fourth factor, merchandise, is made up of the variable of prices. The variables of advertising and traffic congestion form the fifth factor.

The results of factor analysis for the age group greater than 65 retain five factors for Stone Road Mall and four factors for Willow West Mall. The factors explain 37.6 percent and 32.3 percent of the total variance for the two malls.

The first factor indicates that consumers of this age group identify institutional qualities and merchandise selection of each mall as forming their first image factor. The second factor, also at each mall is awareness. It is composed of such criteria as traffic congestion, advertising and building and landscape. Convenience of each mall is the third common factor. Factor four is also a common factor which describes the mall's merchandise. The fifth factor, which is identified as a separate factor at Stone Road, relates to service.

Factor analysis shows that consumers of all age groups have a different image for each of the two malls. The images for each mall, however, shows some similarity. At Stone Road Mall consumers in all age groups identified institutional qualities as the most important element of their image. Only the 35 to 49 age group chose a different primary image which is service. The three youngest age categories identified merchandise as their first factor at Willow West Mall. The 50 to 65 and >65 groups preferred the factor of service. These findings suggest that consumers by age group have very similar images for each of the malls.

The responses to the questionnaire are also factored by total family income groups. The respondents are subdivided into the following five groups: less than $10,000, $10,000 to $20,000, $20,000 to $30,000, $30,000 to $40,000 and greater than $40,000.

Five factors are extracted for Stone Road Mall for the income group of less than $10,000. The factors explain 73.2 percent of the total variance. For the Willow West Mall, four factors are retained explaining 72.1 percent of the total variance.

The first factor at Stone Road Mall consist of such variables as quality of stores and variety of stores. This factor which is merchandise indicates that low income shoppers are keenly aware of what goods they buy. The variables with high loadings on the second factor include mall hours and sales personnel. This factor refers to the mall's convenience. The next factor is awareness/merchandise. The fourth factor is composed of the variables of variety of products, availability of parking, cleanliness of stores and reputation of stores. The fifth factor contains the criteria of traffic congestion. The fourth and fifth factors are labeled merchandise selection and accessibility.

Prices is the variable with the highest loading on the first factor at Willow West Mall. It can be called awareness. The second factor refers to merchandise selection. Some of the variables on this factor are cleanliness of stores, variety of products and sales personnel. Factor three includes the criteria of availability of parking and building and landscape and is labeled convenience. The last factor for this group is formed by the criteria of comparative shopping and variety of stores and refers to merchandise.

For the second income group of $10,000 to $20,000, three factors are extracted for Stone Road Mall. The factors explain 67.6 percent of the total variance. For Willow West Mall, four factors explaining 65.9 percent of the total variance are retained.

The first factor at both Stone Road and Willow West Mall can be interpreted as institutional. The consumer's awareness of the mall, which is factor two, is another common factor. Finally, the last common factor is labeled accessibility. The factor that pertains only to one mall is merchandise. This is identified as the fourth factor at Willow West Mall. The analysis reveals that consumers' in this category have a similar image of each shopping centre.

Six factors are retained for the $20,000 to $30,000 total family income group at Stone Road Mall. A total variance of 74.3 percent is explained by these factors. However only four factors are retained at Willow West Mall. The factors explain 64.9 percent of the total variance.

For Stone Road Mall, the first factor is related to the type of stores found in the mall. This factor is called institutional. The same factor is rated third in the image of Willow West Mall. Merchandise is factor two at Stone Road but is considered as the most important factor at Willow West Mall. Accessibility is the third and fourth factor at the two malls respectively. The other common image factor is merchandise selection/awareness which is the second fac-

tor at Willow West and awareness which is the sixth factor at Stone Road Mall. Two additional factors are retained in the consumer's image of Stone Road. They are service and convenience.

Factor analysis for the total family income group $30,000 - $40,000 extracted six factors for both Stone Road and Willow West Malls. The factors explain 32.0 percent and 30.8 percent of the total variance for both malls.

The first factor of the group's image of Stone Road Mall can be labeled as convenience. The second factor is titled awareness. Merchandise is the third factor. At Willow West Mall the first factor is identified as merchandise selection. The second factor is called service. Finally the variables of prices and value for price form the third factor of merchandise.

Factor analysis for the last income group of consumers of >$40,000 yields five factors for both malls. For Stone Road Mall, the factors explain 70.6 percent of the total variance and for Willow West Mall, 73.6 percent of the total variance.

Factor one at Stone Road Mall is labeled awareness. For Willow West the same factor is viewed as the third factor in the mall's image. The primary factor of Willow West Mall's image by this consumer group is its institutional aspect which is the third factor at Stone Road. The second factor at Stone Road which is accessibility is also the

fifth factor at Willow West. Merchandise selection is the second factor in Willow West's image and fourth at Stone Road. Factor four for Willow West is fifth at Stone Road and is labeled merchandise.

Each group of respondents by total family income has a different image of each mall except for the $10,000 to $20,000 group which has a similar view for both malls. Examining the images of each mall by income group shows that consumers can be grouped together according to the selection of their first image factor. At Stone Road Mall three groups emerge. The <$10,000 group selected merchandise, the $10,000 to $20,000 and $20,000 to $30,000 groups chose institutional qualities and the two highest income categories preferred the convenience of the mall to their homes. At Willow West Mall the factors of merchandise or merchandise selection was the first factor for the three highest income groups while the $10,000 to $20,000 chose institution and the <$10,000 selected awareness. These findings suggest that a consumer's image of a mall does vary according to whether they have a low, medium or high total family income level.

Level of education of the respondent is the final socio-economic characterisitic to be analyzed using the factor analysis technique. Consumers are divided into five groups of education levels. The levels are less than grade 9, grades 9 to 12, grade 13, community college and university.

Factor analysis for the less than grade 9 educational group yields five factors for both malls. For Stone Road Mall and Willow West Mall the factors explain 35.2 percent of the total variance.

For Stone Road Mall, the most positive loadings are on the variables of reputation of stores, type of shoppers and cleanliness of stores. This factor is labeled institutional. Service with a high loading on the variable of sales personnel is the second factor. The variable of advertising refers to the factor of awareness. Factor four is called convenience. Factor five contains the criteria of traffic congestion which measures accessibility to the mall.

The first factor at Willow West Mall combines a variety of attributes which refers to awareness. Prices is the variable on the second factor which refers to merchandise. The third factor is institutional with loadings on the criteria of variety of products, cleanliness of stores and reputation of stores. The fourth factor is composed of the variables of availability of parking and sales personnel. Factor five is formed by the criteria of value for price.

Factor analysis for the educational group of grades 9 to 12 yields four factors for Stone Road Mall which explain 70.9 percent of the total variance. Five factors explaining 69.3 percent of the total variance are extracted for Willow West Mall.

Factor one for Stone Road and Willow West Mall combines criteria which describes the malls' institutional qualities. Service is the second factor identified by the respondents to describe their image of the two malls. The third factor at Stone Road is identified as merchandise while at Willow West Mall it is fourth. A fourth factor of accessibility is identified at Stone Road Mall. This same factor is fifth in the consumer's image at Willow West. The third factor at Willow West Mall is awareness.

Factoring the consumer group with grade 13 education yields four factors for Stone Road and Willow West Malls. These factors explain 66.7 percent and 30.4 percent of the total variance respectively.

The first factor at each mall refers to the factor of convenience which is the most important element in a mall's image by its consumers. Merchandise selection is the second common factor at both malls. The third factor at Stone Road Mall can be titled service which is the fourth factor at Willow West Mall. Factor four at Stone Road is the third factor at Willow West which is awareness.

Factor analysis extracted five factors for the educational group of community college at Stone Road and Willow West malls. For the former mall, the factors explain 32.6 percent of the total variance and in the latter, 30.4 percent.

For Stone Road Mall the highest loadings on the first factor occur on such variables as variety of products and variety of stores. This factor is labeled merchandise selection. The second factor refers to accessibility and the consumer's awareness of the mall. The factor of convenience is composed of the variables of mall hours and cleanliness of stores. Factor four, merchandise, is composed of the criteria of prices and value for price. A fifth factor contains the variables of building and landscape, sales personnel and reputation of stores.

Five factors are retained for Willow West Mall. The first factor is called institutional/merchandise selection. The criteria of prices refers to the mall's merchandise. The third factor is labeled awareness. It is composed of such criteria as building and landscape, cleanliness of stores and mall hours. The fourth factor is formed by the criteria of variety of products and sales personnel which is merchandise. Factor five contians the criteria of availability of parking which measures accessibility.

The factor analysis technique for the group with university education extracted five factors for Stone Road Mall. They explain 72.4 percent of the total variance. For Willow West Mall, five factors are also retained which explain 71.5 percent of the total variance.

The highest factor loadings on the first factor at Stone Road Mall are on the criteria of advertising, mall

hours and cleanliness of stores. This factor can be labeled convenience. Factor two which is composed of the criteria of sales personnel and building and landscape refers to the service provided by the mall. Merchandise selection is the third factor with a loading on the variable of comparative shopping. The variables of traffic congestion and availability of parking form factor four which is accessibility. Factor five is merchandise.

For Willow West Mall, factor one which is labeled merchandise selection has high positive loadings on such variables as variety of stores, variety of products and comparative shopping. The second factor refers to service. The criteria of value for price and mall hours refer to the consumer's convenience to the mall. Factor four is composed of the variables of advertising which refers to awareness. The fifth factor is accessibility.

Consumers by education have identified similar primary factors to describe their images of the two malls. The exceptions are the <grade 9 and university groups which selected different primary factors in their image of the two shopping centres. Comparing the groups' images at each mall reveals that there is three main groups. For Stone Road Mall the institutional factor is selected by the <grade 9, grades 9 to 12 and community college, service by the grade 13 and convenience by the university group. At Willow West Mall the groupings are <grade 9 and university which chose mer-

chandise as their first factor. The other two major groups are the grades 9 to 12 and community college who selected institution and grade 13 which preferred the service at the mall. Factor analysis shows that consumers by educational groups have similar images for each mall but different images between the malls.

The factor analysis technique reveals that each socio-economic group of consumers has a different image for each mall since different factors are used to describe their image of each mall. Images between groups at each mall do not appear to be radically different. Although factors for different groups may have the same title, the order of the variables and their factor loadings are not the same. It has also been shown that the image of each mall is different due to the order and varying number of factors retained for each consumer group at the two malls. The importance of the order of the factors is further investigated using the Relate analysis technique which will reveal the correlation between factors in the consumer's images of the two malls.

4.6 RELATE ANALYSIS

The qualitative comparison using the frequency routine and the quantitative approach of factor analysis reveal that consumers by socio-economic groups have a considerable dissimilarity in the structure of an image of a shopping centre. Further analysis is performed using a rotational tech-

nique called RELATE in order to identify the correlation between the two factor structures.

Relate measures the congruence between two factor structures (Veldman, 1967, pp.236-244). Boots (1975, pp.115) summarizes Relate as a procedure which produces the best-fitting cosines between the vectors of the two solutions. The values of the cosines may be interpreted as correlation coefficients but no test of significance is available since the cosines are not based on deviations from mean values. However, if perfect identity between the two structures exist then the matrix of cosines will take the form of a perfect identity matrix. Boots (1975, p.115) further states that two important pieces of information may be derived from the matrix of cosines. First, the larger the off-diagonal elements the greater the difference between the corresponding factors. Secondly, if unities occur in off-diagonal elements the factors are identical in composition but not in importance. This is shown in Table 4.5 for all respondents. A third interpretation is possible. If the matrix of cosines contains no unity values then it can be said that the two sets of factors are dissimilar and that consumers' have a different image of each mall.

Although the criteria composition of each factor differs for both Stone Road Mall and Willow West Mall, consumers identified the same factors at each mall but assigned a different importance to each factor. High cosine values oc-

cur in the off-diagonal which indicate that the factors are identical in composition but are not perceived as having the same order of importance at each mall. The strongest correlation occurs between the factors of institutional qualities (.814) and merchandise (.802). This would suggest that these factors are the most important elements in a consumer's image of a shopping centre. These factors at Stone Road Mall are rated by all respondents as the first and third factors in their image of the mall. At Willow West Mall the same factors are ranked second and first respectively. This indicates that while consumers identify common factors in their images of the malls they do not view them as being of the same importance. The only factor that lies on the diagonal is the fourth factor of accessibility. Thus this factor is perceived as has the same rank of importance in the consumers' images of each mall.

TABLE 4.5

COMPARISON OF THE FACTOR STRUCTURE OF STONE ROAD AND WILLOW WEST MALLS

		Stone Road Mall Factors			
		1	2	3	4
Willow	1	-0.201	0.555	0.802	0.035
West	2	0.814	-0.016	0.302	-0.505
Mall	3	0.470	0.630	-0.331	0.474
Factors	4	0.284	-0.533	0.357	0.713

The Relate technique is also used to analyse the respondent's dimensions of shopping centre images by each of the socio-economic characteristics. The cosine matrixes for each socio-economic characteristic are presented in Appendix E.

Discussion of the relate analysis by each socio-economic characteristic will be limited to pointing out the significant differences in the order of the factors between malls. For example when a factor has a significantly high cosine or correlation value (for discussion purposes a cosine value of .700 or greater is considered significant as it explains about 50 percent of the correlation related to that factor) and a consumer group rates it as being much higher in importance in the image at one mall than at the other mall or that the percentage of total variance on a similar factor at each mall varies significantly between malls.

Female respondents identified four similar images components for both malls. The only factor in the image of a shopping centre that varies significantly in its rankings is that of awareness. Its cosine value is .941 and while this factor has similar values of percentage of total variance explained at each mall (14.0 percent for Stone Road and 13.7 percent at Willow West) it is the second most important image element at Stone Road Mall while being ranked fourth in the image of Willow West Mall. Although the other three

factors have a different order of importance in the consumer's image of each mall the differences in their order is not considered to te significant. Relate analysis also shows that factor five at Stone Road Mall, which is accessibility, is a unique factor occurring only in the consumer's image of this mall. In contrast relate analysis shows that males selected the same factors at the two malls to explain their image. The matrix of cosines and the order of the factors in their images of the malls supports the findings of the factor analysis which indicated similar images for each mall. Relate analysis clearly shows that the consumer's image of the two mall's varies according to the consumer's sex.

Relate anlaysis indicates a greater variation in the factors chosen and their order of importance by age group. The age group of <25 shows that the order of the image factors are very different for the two malls. The strongest correlation exist on the factor of awareness (.321). However the percentage of total variance explained varies significantly. It is 10.4 percent at Stone Road and 23.3 percent at Willow West. This factor is rated sixth in the group's image of Stone Road Mall and first at Willow West Mall. The ranking of the factor of institutional qualities with a cosine value of .703 is shown to be the most important image element at Stone Road while being the fourth factor in Willow West Mall's image. A third factor should also be men-

tioned that of merchasndise selection which is the second factor at Willow West and the fifth factor in the image of Stone Road. For respondents between the ages of 35 to 49 the high values in the off-diagonal indicate that they identify similar factors at each mall but that the order of importance to their image is different. The factor of awareness with a cosine of .710 is ranked first in the image of Stone Road and only fourth at Willow West. Similarly merchandise is the first image element at Willow West while it is perceived as the third factor at Stone Road. Additionally the merchandise selection factor is found only in the image of Stone Road. A similar pattern occurs in the consumer images of the malls for the 50 to 65 age group. The first factor at Stone Road is rated fifth at Willow West. For shoppers greater than 65, there does not appear to be any significant differences in the order of the factors in their images of the malls. However for the 25 to 34 age group the relatively low cosine values in the relate matrix would suggest the images for the two malls are not the same.

Relate analysis by total family income reveals that for each income group except the $10,000 to $20,000 there are some significant differences in the images between the malls.

The matrix of the <$10,000 group shows that there are significant differences in the order of the image factors of the two malls. Merchantise, the first factor in the group's

image of Stone Road accounts for 23.4 percent of the total variance explained, is ranked fourth at Willow West explaining only 14.3 percent of the variance. The second factor, merchandise selection, at Willow West is perceived as the fourth factor at Stone Road. Also, awareness is the first factor at Willow West and third at Stone Road. It explains 23.1 and 15.7 percent of the total variance of the consumer group's image of the two malls respectively. The analysis of the $20,000 to $30,000 group reveals that the relationship between the factor of awareness shows significant variation in its ranking in the group's images of the malls. The total variance explained is only 3.5 percent at Stone Road while it is 13.1 percent at Willow West Mall. It is the second image element at the latter mall and sixth for the former mall. The >$40,000 group also shows some significant differences in the order of importance of the image factors for each shopping centre. The factor of accessibility has the highest correlation (.922) but it is ranked as the second factor at Stone Road and only fifth at Willow West. The first two image factors, institutional qualities and merchandise selection, at Willow West are the third and fourth factors respectively at Stone Road. Thus relate anlysis agrees with the findings of factor analysis that the consumer's image of a shopping centre varies according to his total family income.

For the educational groups, the matrix of the less than grade nine group has very strong correlations between the factors of institutional qualities and awareness. Institutional qualities with a correlation value of .903 is ranked as the first factor in the image of Stone Road Mall and third at Willow West Mall. The reverse is true for the factor of awareness which is first at Willow West and third At Stone Road. The group of grades 9 to 12 identified a similar order of factors at each mall except for the factor of awareness. It is the third image factor at Stone Road and the fifth at Willow West. For the grade 13 group the only significant difference in the order of the factors occurs with the factor of merchandise which is perceived as the second factor at Stone Road while being the fourth factor at Willow West. Relate analysis shows two significant variations in the images of malls for the community college group. Merchandise (.730) is the second factor at Willow West and fourth at Stone Road while accessibility (.766) is second at Stone Road and fifth at Willow West. For the university group two factors, awareness (.953) and merchandise selection (.767), are reversed in the order of importance at each mall. Awareness is ranked first at Stone Road and third at Willow West. The same rankings are reversed at the two malls for merchandise selection. Relate analysis shows that there is a difference by education in the consumers' image of each mall due to the different order of factors and their importance in one's image of a shopping centre.

The relate analysis technique reveals that each socio-economic consumer group chooses different factors to describe the images of Stone Road and Willow West Malls. Furthermore, Relate shows that although each group may select the same factors for the two malls, the order of importance of the factors varies at each mall as well as the strength of their correlation as indicated by the cosine values in the matrices. The image components vary for the two malls according to the consumer's socio-economic background.

4.7 SUMMARY

The first task in examining the selected socio-economic characteristics was to determine if there was any correlation between the variables of sex, age, occupation, total family income and education of the respondent. A strong correlation between occupation, total family income and education was found using a chi-square test. It was felt by the author that occupation was in fact being measured by the other two variables. To avoid over-measuring a consumer's image of shopping centres this factor was discarded in further analysis of the data. The second task of the data anlaysis was to determine the distributional characteristics for each of the consumers' responses to the fifteen image variables in the questionnaire for Stone Road and Willow West Malls. The Frequency Routine was used to calculate a mean score of the consumers' responses to the image variables for the two shopping centres.

The findings of the frequency routine reveal that consumers have a different image of Stone Road Mall than they do for Willow West Mall. The mean scores of the variables also show that the consumers' image is more positive for Stone Road than for Willow West Mall. It was also found that a consumer's image of a mall varies by subgroup within a socio-economic characteristic. This was especially true for the factors of sex and age while total family income and education varied significantly only at Willow West Mall.

Further analysis by socio-economic characteristic using the frequency routine indicated that each of the consumer groups clearly has different images of the two malls. It was found that images for each group vary at each mall. For each socio-economic group the shopping centre image is higher for Stone Road than it is for Willow West Mall. The only exceptions are for the age group of greater than 65 and the educational group of the respondents who have attained grade 13 as their highest level of education.

The frequency mean scores also show that each socio-economic group has different positive and negative values for each image criteria. Therefore, it is possible to identify consumers by socio- economic characteristic that would be most attracted and least attracted to each of the two malls. The socio-economic groups most attracted to Stone Road Mall are: females, the age group of 50 to 65, consumers with less than grade 9 education and the total family

income group of less than $10,000. For Willow West Mall, the categories are: females, those over age 65, in the grade 13 educational group and the total family income of $10,000 to $20,000. The lowest images for Stone Road Mall are held by the socio-economic groups of males, those age 25 to 34, the grade 13 educational group and the group having a total family income of $10,000 to $20,000. At Willow West the socio-economic groups having the lowest image mean scores are males, the age group 25 to 34, the university educational group and those earning a total family income in excess of $40,000.

The components of the consumer's image of a shopping centre were further analysed using factor analysis. This technique which was employed by Downs (1971) (see page 32) provides a data-reduction of the fifteen original image characteristics by creating a smaller set of factors or components that may be taken as source variables (Nie, et al., 1975, pp.469) which account for any observed interrelations in the data.

When factoring the original criteria it was found that the consumers' image of each mall and between malls varies according to his socio-economic status. The images vary in both the structure and the number of factors. Although the image factors may have the same title, the reader should note that variables do not necessarily occur in the same order and that the factor loading values also vary on a fac-

tor. Reducing the image variables using factor analysis shows that identifying consumer images by socio-economic characteristics is not an easy and simple task as was revealed by the findings of the frequency analysis. This confirms the conclusions of previous researchers (Downs, 1970; Duncan, 1972) that consumer behaviour within a spatial market can not easliy be explained or modeled.

A further quantitative comparison of the factors is provided by the rotational technique called Relate which measrues the congurence between the two factor structures for each socio-economic group. This technique identifies the difference between corresponding factors. Although consumer groups may have identified the same factors as being important elements in the formation of a shopping centre's image, the Relate technique provided a measure by which the factors may be found to be identical in composition but not in importance. That is identical factors do not lie on the diagonal of the relate matrix. Relate analysis did show that only the 25 to 34 age group of consumers has different images of the two malls.

These analytical techniques have shown that consumers do have different images for each shopping centre and furthermore that the image of a shopping mall varies according to one's socio-economic background. This research has hopefully contributed by expanding on the existing literature of consumer images of shopping centres and to the understanding

that there is a connection between the individual's status and the formation of his image of a shopping centre. The last chapter provides a summary and conclusion on the findings of this study and the implication they may have on the study of consumer behaviourism.

Chapter V

SUMMARY AND CONCLUSIONS

One method of analyzing consumer perception of a retail centre is to determine the images of the mall as held by the consumers. The responses to the questionnaire provided a means of determining the respondents' images of Stone Road and Willow West Malls. The images were analyzed first for all the respondents and then by each socio-economic factor of sex, age, total family income and education of the respondent. The consumers' images were compared within each mall and then between the two malls for any differences. The frequency count routine provided the frequency percentage and a mean response value for each image variable. Comparing mean responses yielded a general comparison between different socio-economic groups of consumers. The Wilcoxon match-pairs test compared images between malls by utilizing the quantitative information inherent in the ranking of the differences in the mean frequency scores. Factor analysis reduced the set of image variables to a smaller set of factors by retaining the most important information contained in the original data. This technique avoids redundancy in the description of a consumer's image of a mall while identifying any interrelationship between the variables. Finally the relate technique allowed two factor structures to be compared to see if consumers view both malls similarly or differently.

These analytical methods were used to test the following hypotheses:

1. That the images of the two shopping centres, as held by consumers, are different.
2. That identified sub-groups of the sample of consumers (e.g. on the basis of discriminatory characteristics such as sex, age, income, etc.) have significantly different images of individual shopping centres.
3. That identified sub-groups of the sample of consumers have significantly different images of different shopping centres.

The analysis of the data has clearly shown that for hypothesis one consumers have an image of Stone Road Mall that is significantly different from the image of Willow West Mall. It was also determined that the consumers' images of the shopping centres vary significantly according to their socio-economic status. This was clearly shown by the factors of sex and age and to a lesser extent by total family income and education. The analysis also showed that there is an image correlation between the factors of total family income and education of the respondent. It can be concluded that these factors can be used to adequately define one's socio-economic background. This agrees with the findings of Rich and Jain (1968); Mathews and Slocum (1970) and Duncan, et. al. (1972) who found that these socio-economic factors provide a successful measure of social and economic status

of the consumer. The correlation between these factors was not as clearly evident in the factor analysis and relate technique. However these two statistical methods do support the findings of the frequency routine which show that consumer images vary according to their social and economic status. For the third hypothesis, the findings of the frequency count, factor scores and the relate analysis indicate that the discriminatory characteristics differ in their relationship with consumer images. That is to say that consumer sub-groups on the basis of socio-economic characteristics have different images of Stone Road and Willow West Malls.

Specifically, we can accept the three hypotheses and may conclude from the socio-economic analysis of the consumers' images of Stone Road Mall and Willow West Mall the following:

1. That the consumer's images are significantly different for the two malls. Consumers at Stone Road identified tangible image components and factors of service and merchandise. At Willow West they emphasized both tangible and intangible attributes and factors such as awareness of the mall and service.
2. That consumers rank most of the image components higher for Stone Road than for Willow West. This might be a reflection on the larger size of mall for Stone Road. It is classified as a regional mall while Willow West is a community mall.

3. That the consumers' image of Stone Road Mall is more clearly defined than the image of Willow West Mall. The total variance explained in the factor analysis is slightly higher and the range of mean responses in the frequency routine were smaller for the former mall.

4. That the consumers' image of a mall is different for each socio-economic sub-group. For example, by sex, females identified merchandise as their primary image factor at Stone Road Mall while males preferred its institutional qualities.

5. That the consumers' image as determined by each socio-economic sub-group is different for the two malls.

Understanding the differences in the consumers' perceived image of a shopping centre will assist both mall managers and retailers in promoting their mall as a place to shop. From the consumers' images they will be able to identify not only the positive aspects of the mall but its deficiencies which can be corrected. The analysis of the shoppers' perception of the mall is important to its success. Burns (1980) concluded in her study on the perception of shopping centres that mall management consistantly rates image components more positively than retailers and consumers and that retailers are more positive than consumers. However, it is consumers and their willingness to shop at a mall that determines how successful the shopping centre will be.

It is hoped that this study will further aid geographers who are interested in the spatial analysis of consumer behaviour. One's image of a retail shopping area affects, in part, one's decision as to where to shop. Local conditions in Guelph might affect the consumers' images of Stone Road Mall and Willow West Mall. Therefore it would be useful if this study could be replicated in a different location to see if similarities between the studies occur. Also further research should examine the link between an individual's perception of the environment as determined by his socio-economic status and his spatial behaviour within the environment. A better understanding of shopping patterns as influenced by consumer images will further the geographer's spatial knowledge of consumer behaviourism.

Appendix A

THE QUESTIONNAIRE

Dear Sir/Madam:

I am a graduate student at Wilfrid Laurier University and would appreciate your time to fill out this questionnaire. This survey is to determine consumer characteristics and what they like or dislike about shopping at shopping centres. Thank you for your consideration and time.

David Bell

Please place an X in the box that you feel describes your feelings or attitudes towards Stone Road Mall.

STONE ROAD MALL:

	Extremely	Quite	Slightly	Neutral	Slightly	Quite	Extremely	
1. Availability of Parking:								
CLOSE	☐	☐	☐	☐	☐	☐	☐	FAR
2. Sales Personnel:								
UNFRIENDLY	☐	☐	☐	☐	☐	☐	☐	FRIENDLY
3. Traffic Congestion:								
LITTLE	☐	☐	☐	☐	☐	☐	☐	MUCH
4. Variety of Products:								
BAD	☐	☐	☐	☐	☐	☐	☐	GOOD
5. Cleanliness of Stores:								
BAD	☐	☐	☐	☐	☐	☐	☐	GOOD
6. Prices:								
BAD	☐	☐	☐	☐	☐	☐	☐	GOOD
7. Buildings and Landscape:								
BAD	☐	☐	☐	☐	☐	☐	☐	GOOD
8. Mall Hours:								
BAD	☐	☐	☐	☐	☐	☐	☐	GOOD
9. Advertising:								
BAD	☐	☐	☐	☐	☐	☐	☐	GOOD
10. Quality of Stores:								
BAD	☐	☐	☐	☐	☐	☐	☐	GOOD
11. Variety of Stores:								
BAD	☐	☐	☐	☐	☐	☐	☐	GOOD

	Extremely	Quite	Slightly	Neutral	Slightly	Quite	Extremely	
12. Comparative Shopping:								
BAD	☐	☐	☐	☐	☐	☐	☐	GOOD
13. Reputation of Stores:								
BAD	☐	☐	☐	☐	☐	☐	☐	GOOD
14. Type of Shoppers								
BAD	☐	☐	☐	☐	☐	☐	☐	GOOD
15. Value for Price:								
LOW	☐	☐	☐	☐	☐	☐	☐	HIGH
16. Overall Attitude/Feeling Towards Mall:								
BAD	☐	☐	☐	☐	☐	☐	☐	GOOD

What are the major items or types of products that you purchase regularly? _____

_____

_____

How far is Stone Road Mall from your home? _____

_____

Additional comments you wish to add: _____

_____

_____

Place an X in the box that you feel describes your feelings or attitudes towards Willow West Mall.

WILLOW WEST MALL:

	Extremely	Quite	Slightly	Neutral	Slightly	Quite	Extremely	
1. Availability of Parking:								
	CLOSE ☐	☐	☐	☐	☐	☐	☐	FAR
2. Sales Personnel:								
	UNFRIENDLY ☐	☐	☐	☐	☐	☐	☐	FRIENDLY
3. Traffic Congestion:								
	LITTLE ☐	☐	☐	☐	☐	☐	☐	MUCH
4. Variety of Products:								
	BAD ☐	☐	☐	☐	☐	☐	☐	GOOD
5. Cleanliness of Stores:								
	BAD ☐	☐	☐	☐	☐	☐	☐	GOOD
6. Prices:								
	BAD ☐	☐	☐	☐	☐	☐	☐	GOOD
7. Buildings and Landscape:								
	BAD ☐	☐	☐	☐	☐	☐	☐	GOOD
8. Mall Hours:								
	BAD ☐	☐	☐	☐	☐	☐	☐	GOOD
9. Advertising:								
	BAD ☐	☐	☐	☐	☐	☐	☐	GOOD
10. Quality of Stores:								
	BAD ☐	☐	☐	☐	☐	☐	☐	GOOD
11. Variety of Stores:								
	BAD ☐	☐	☐	☐	☐	☐	☐	GOOD
12. Comparative Shopping:								
	BAD ☐	☐	☐	☐	☐	☐	☐	GOOD
13. Reputation of Stores:								
	BAD ☐	☐	☐	☐	☐	☐	☐	GOOD

	Extremely	Quite	Slightly	Neutral	Slightly	Quite	Extremely	
14. Type of Shoppers:								
BAD	☐	☐	☐	☐	☐	☐	☐	GOOD
15. Value for Price:								
LOW	☐	☐	☐	☐	☐	☐	☐	HIGH
16. Overall Attitude/Feeling towards Mall:								
BAD	☐	☐	☐	☐	☐	☐	☐	GOOD

What are the major items or types of products that you purchase regularly?_____

_____

_____

How far is Willow West Mall from your home?_____

_____

Additional comments you wish to add:_____

_____

_____

In the following questions please place an X in the appropriate box.

1. Female ☐ Male ☐

2. Age: less than 24 ☐
   25-34 ☐
   35-49 ☐
   50-65 ☐
   over 65 ☐

3. Marital Status: single ☐
   married ☐
   other ☐

4. Number of children living at home: 0 ☐
   1 ☐
   2-3 ☐
   4-5 ☐
   more than 5 ☐

5. Occupation of household head _____

   Occupation of spouse _____

6. Total family income: less than $10,000 ☐
   $10,000-$20,000 ☐
   $20,000-$30,000 ☐
   $30,000-$40,000 ☐
   $40,000-$50,000 ☐
   more than 50,000 ☐

7. Level of education of household head: less than grade 8 ☐
   grade 9-12 ☐
   grade 13 ☐
   Community College ☐
   University ☐
   Other ☐

8. Level of education of spouse: less than grade 8 ☐
   grade 9-12 ☐
   grade 13 ☐
   Community College ☐
   University ☐
   Other ☐

9. Years lived in city: less than 6 months ☐
   6 months to 1 year ☐
   1-2 years ☐
   3-5 years ☐
   more than 5 years ☐

10. Do you live in: an apartment ☐
    individual home ☐
    semi-detached home ☐
    townhouse ☐

11. Is your home: owned ☐
    rented ☐

THANK YOU FOR YOUR TIME. I GREATLY APPRECIATED YOUR EFFORTS.

Appendix B

CROSSTABULATION OF THE SOCIO-ECONOMIC CHARACTERISTICS

AGE	SEX		
	Female	Male	n
<25	18	17	35
25 to 34	35	38	73
35 to 49	40	20	60
50 to 65	28	14	42
>65	6	8	14
n	127	97	224

OCCUPATION	SEX		
	Female	Male	n
Managerial	3	5	13
Professional & Technical	16	29	45
Sales	9	9	18
Services & Recreation	15	13	28
Labourers	57	32	89
Other	22	9	31
n	127	97	224

INCOME	SEX		
	Female	Male	n
<$10,000	18	12	30
$10,000 to $20,000	47	30	77
$20,000 to $30,000	35	28	63
$30,000 to $40,000	14	19	33
>$40,000	13	8	21
n	127	97	224

EDUCATION	SEX		
	Female	Male	n
<Grade 9	13	7	20
Grades 9 TO 12	57	28	85
Grade 13	15	8	23
Community College	12	13	25
University	30	41	71
n	127	97	224

OCCUPATION	AGE					
	<25	25-34	35-49	50-65	>65	n
Managerial	2	6	3	2	0	13
Professional & Technical	7	18	11	9	0	45
Sales	3	6	5	4	0	18
Services & Recreation	3	7	14	4	0	28
Labourers	13	32	25	13	0	83
Other	7	2	2	1	14	31
n	35	73	60	32	14	224

INCOME	AGE					
	<25	25-34	35-49	50-65	>65	n
<$10,000	9	6	3	7	5	30
$10,000 to $20,000	9	29	16	15	9	77
$20,000 to $30,000	10	20	23	9	1	63
$30,000 to $40,000	2	16	9	6	0	33
>$40,000	5	2	9	5	0	21
n	35	73	60	42	14	224

EDUCATION	AGE					
	<25	25-34	35-49	50-65	>65	n
<Grade 9	4	4	4	6	2	20
Grades 9 to 12	16	25	22	10	3	35
Grade 13	2	7	7	4	3	23
Community College	3	12	6	3	1	25
University	10	25	21	10	5	71
n	35	73	60	42	14	224

INCOME ($'000)	OCCUPATION						
	Manag. & Techn.	Profess.	Sales	Services & Recreation	Labourers	Other	n
<$10	1	0	2	1	11	15	30
$10-$20	1	3	6	5	43	13	77
$20-$30	4	15	6	9	27	2	63
$30-$40	4	11	2	7	3	1	33
>$40	3	10	2	6	0	0	21
n	13	45	18	28	84	31	224

EDUCATION	OCCUPATION						
	Manag.	Profess. & Techn.	Sales	Services & Recreation	Labourers	Other	n
<Gr. 9	0	0	1	0	15	3	20
Gr. 9-12	5	4	7	3	55	11	35
Gr. 13	1	3	3	6	7	3	23
Comm. College	1	11	1	3	5	3	25
University	6	27	6	16	5	11	71
n	13	45	18	28	89	31	224

EDUCATION	INCOME ($'000)					
	<$10	$10-$20	$20-$30	$30-$40	>$40	n
<Grade 9	6	8	5	1	0	20
Grades 9 to 12	14	39	20	11	1	85
Grade 13	1	9	3	3	2	23
Community College	2	10	9	4	0	25
University	7	11	21	14	18	71
n	30	77	63	33	21	224

Appendix C

FREQUENCY MEAN SCORES

TABLE 1

CONSUMER FREQUENCY MEAN SCORES
ALL RESPONDENTS

	Mean Rating Stone Road	Mean Rating Willow West
Availability of parking	5.24	5.41
Sales Personnel	5.44	5.24
Traffic congestion	4.75	4.33
Variety of products	5.42	4.67
Cleanliness of stores	5.33	5.70
Prices	4.22	4.61
Building and landscape	5.33	4.69
Mall hours	5.83	5.23
Advertising	5.12	4.63
Quality of stores	5.60	5.06
Variety of stores	5.41	4.00
Comparative shopping	4.94	3.93
Reputation of stores	5.66	5.33
Type of shoppers	4.95	4.94
Value for price	4.50	4.44

N = 224

TABLE 2

MEAN RESPONSES BY SEX
FEMALE

	Mean Rating Stone Road	Mean Rating Willow West
Availability of parking	5.19	5.32
Sales Personnel	5.51	5.29
Traffic congestion	4.67	4.79
Variety of products	5.40	4.33
Cleanliness of stores	6.01	5.79
Prices	4.32	4.33
Building and landscape	5.55	4.35
Mall hours	6.05	5.59
Advertising	5.27	4.90
Quality of stores	5.69	5.08
Variety of stores	5.43	4.06
Comparative shopping	5.13	4.25
Reputation of stores	5.33	5.54
Type of shoppers	5.05	5.14
Value for price	4.56	4.62

N = 127

TABLE 3

MEAN RESPONSES BY SEX

MALE

	Mean Rating Stone Road	Mean Rating Willow West
Availability of parking	5.31	5.53
Sales Personnel	5.35	5.16
Traffic congestion	4.35	4.39
Variety of products	5.44	4.45
Cleanliness of stores	5.32	5.59
Prices	4.03	4.32
Building and landscape	5.03	4.47
Mall hours	5.55	4.76
Advertising	4.32	4.32
Quality of stores	5.49	5.03
Variety of stores	5.37	3.71
Comparative shopping	4.69	3.62
Reputation of stores	5.44	5.04
Type of shoppers	4.92	4.68
Value for price	4.41	4.21

N = 37

TABLE 4

MEAN RESPONSES BY AGE
STONE ROAD MALL

	≤25	25-34	35-49	50-65	≥65
Availability of parking	5.14	5.29	5.32	5.33	6.00
Sales Personnel	5.26	5.00	5.40	6.19	6.14
Traffic congestion	4.40	4.79	4.37	5.24	4.64
Variety of products	5.51	5.18	5.17	5.93	6.00
Cleanliness of stores	6.00	5.67	5.33	6.21	6.21
Prices	4.17	4.07	3.97	4.66	5.21
Building and landscape	5.37	4.83	5.25	6.02	5.79
Mall hours	5.80	5.64	5.73	6.21	6.14
Advertising	5.20	4.39	5.05	5.45	5.36
Quality of stores	5.80	5.44	5.53	5.79	5.50
Variety of stores	6.20	5.01	5.30	5.43	5.71
Comparative shopping	4.97	4.63	4.83	5.36	5.14
Reputation of stores	5.77	5.44	5.53	6.02	5.79
Type of shoppers	4.83	4.77	4.33	5.43	5.29
Value for price	4.69	4.33	4.37	4.93	4.14
N =	35	73	60	42	14

TABLE 5

MEAN RESPONSES BY AGE
WILLOW WEST MALL

	≤25	25-34	35-49	50-65	≥65
Availability of parking	5.17	5.37	5.47	5.33	6.07
Sales Personnel	5.06	5.00	5.32	5.50	5.79
Traffic congestion	4.69	4.44	4.93	5.17	5.79
Variety of products	4.89	4.22	4.72	4.31	5.79
Cleanliness of stores	5.66	5.42	5.82	5.93	6.21
Prices	4.43	4.47	4.70	4.79	4.93
Building and landscape	4.83	4.18	4.52	5.29	5.93
Mall hours	4.83	4.95	5.42	5.52	6.00
Advertising	4.06	4.51	4.77	5.14	5.36
Quality of stores	4.54	4.77	5.15	5.67	5.64
Variety of stores	3.71	3.52	4.03	4.36	5.71
Comparative shopping	4.06	3.53	4.03	4.19	4.79
Reputation of stores	4.91	5.12	5.45	5.31	5.43
Type of shoppers	4.74	4.82	5.00	5.24	4.93
Value for price	4.43	4.47	4.67	4.14	4.21
N =	35	73	60	42	14

TABLE 6

MEAN RESPONSES BY TOTAL FAMILY INCOME
STONE ROAD MALL

(£'000)

	<10	10-20	20-30	30-40	>40
Availability of parking	5.17	5.21	5.24	5.18	5.57
Sales personnel	5.73	5.34	5.46	5.45	5.33
Traffic congestion	4.93	4.35	4.76	5.15	5.24
Variety of products	5.33	5.19	5.44	5.45	5.52
Cleanliness of stores	6.20	5.82	6.02	5.94	5.67
Prices	4.70	4.21	4.19	4.15	3.76
Building and landscape	5.27	5.43	5.17	5.36	5.43
Mall hours	6.23	5.75	5.83	5.64	5.86
Advertising	5.33	4.92	5.16	5.03	5.52
Quality of stores	5.60	5.45	5.63	5.79	5.76
Variety of stores	5.33	5.29	5.24	5.55	5.38
Comparative shopping	5.23	5.10	4.73	4.82	4.71
Reputation of stores	5.33	5.53	5.75	5.91	5.24
Type of shoppers	5.27	4.37	4.73	5.09	4.67
Value for price	4.70	4.38	4.33	4.76	4.71
N =	30	77	63	33	21

TABLE 7

MEAN RESPONSES BY TOTAL FAMILY INCOME
WILLOW WEST MALL

(£'000)

	<10	10-20	20-30	30-40	>40
Availability of parking	5.03	5.55	5.48	5.61	4.95
Sales Personnel	5.33	5.16	5.11	5.64	5.14
Traffic congestion	4.97	5.14	4.87	4.27	4.24
Variety of products	5.03	5.00	4.68	4.21	3.57
Cleanliness of stores	5.53	5.92	5.65	5.67	5.33
Prices	4.50	5.04	4.35	4.64	3.95
Building and landscape	5.00	5.03	4.46	4.48	4.00
Mall hours	5.50	5.52	5.03	5.18	4.43
Advertising	4.57	5.13	4.48	4.36	4.29
Quality of stores	5.40	5.05	4.78	5.39	4.90
Variety of stores	4.40	4.48	3.37	3.39	2.95
Comparative shopping	4.27	4.36	3.90	3.45	3.19
Reputation of stores	5.43	5.39	5.21	5.52	5.00
Type of shoppers	4.90	5.32	4.68	4.88	4.48
Value for price	4.51	4.57	4.48	4.33	3.95
N =	30	77	63	33	21

TABLE 8

MEAN RESPONSES BY EDUCATION
STONE ROAD MALL

	<Grade 9	Grade 9-12	Grade 13	Community College	University
Availability of parking	4.95	4.91	4.87	5.32	5.61
Sales personnel	6.15	5.29	5.22	5.24	5.56
Traffic congestion	4.60	4.94	4.09	4.92	4.83
Variety of products	6.00	5.38	5.09	5.44	5.41
Cleanliness of stores	6.25	5.91	6.00	5.84	5.87
Prices	4.30	4.32	4.26	3.76	4.03
Building and landscape	5.35	5.10	5.22	5.24	5.15
Mall hours	6.25	5.93	5.78	5.56	5.70
Advertising	5.15	5.14	5.04	5.48	4.97
Quality of stores	5.65	5.55	5.78	5.48	5.63
Variety of stores	5.45	5.49	5.35	5.28	5.35
Comparative shopping	5.30	5.05	5.13	5.56	4.77
Reputation of stores	6.20	5.67	5.57	5.60	5.55
Type of shoppers	5.85	4.89	5.04	4.84	4.78
Value for price	4.35	4.33	4.52	4.16	4.70
N =	20	35	23	25	71

TABLE 9

MEAN RESPONSES BY EDUCATION
WILLOW WEST MALL

	<Grade 9	Grade 9-12	Grade 13	Community College	University
Availability of parking	4.75	5.45	5.57	6.00	5.30
Sales personnel	5.35	5.26	5.17	5.52	4.96
Traffic congestion	4.65	5.00	4.78	5.16	4.59
Variety of products	5.25	5.02	5.35	4.68	4.35
Cleanliness of stores	6.00	5.62	6.09	5.92	5.51
Prices	5.00	4.72	4.65	4.63	4.34
Building and landscape	5.15	4.96	4.91	4.84	4.10
Mall hours	5.75	5.45	5.65	5.00	4.76
Advertising	4.55	4.83	5.39	4.72	4.23
Quality of stores	5.15	5.36	5.13	4.64	4.73
Variety of stores	4.75	4.33	4.74	3.72	3.24
Comparative shopping	4.25	4.26	4.61	3.72	3.45
Reputation of stores	5.80	5.43	5.70	5.12	4.96
Type of shoppers	5.40	5.12	5.43	4.30	4.43
Value for price	4.75	4.56	4.70	4.36	4.15
N =	20	35	23	25	71

Appendix D

FACTOR ANALYSIS RESULTS

TABLE 1

FACTOR ANALYSIS FOR ALL RESPONDENTS -

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	3.031	20.9	20.9
2	2.746	18.5	39.3
3	1.934	13.4	52.7
4	1.323	9.0	61.7

LOADINGS

Factor	1	2	3	4
Availability of Parking				.718
Sales Personnel	.646			
Traffic Congestion				.350
Variety of Products				
Cleanliness of Stores	.723			
Prices			.548	
Building and Landscape	.620			
Mall Hours	.605			
Advertising	.519	.522		
Quality of Stores		.782		
Variety of Stores		.797		
Comparative Shopping			.501	
Reputation of Stores				
Type of Shoppers			.590	
Value for Price			.827	

TABLE 1 (continued)

FACTOR ANALYSIS FOR ALL RESPONDENTS

b) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	2.675	17.9	17.9
2	2.592	17.4	35.3
3	2.512	16.8	52.1
4	1.330	8.9	61.0

LOADINGS

Factor	1	2	3	4
Availability of Parking				.769
Sales Personnel			.629	
Traffic Congestion				.570
Variety of Products			.715	
Cleanliness of Stores			.712	
Prices	.617			
Building and Landscape				
Mall Hours		.697		
Advertising		.631		
Quality of Stores		.540		
Variety of Stores	.658			
Comparative Shopping	.789			
Reputation of Stores		.700		
Type of Shoppers			.511	
Value for Price	.607			

TABLE 2

FACTOR ANALYSIS BY SEX - FEMALE

(a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	2.771	18.5	18.5
2	2.096	14.0	32.5
3	1.952	13.0	45.5
4	1.859	12.4	57.9
5	1.433	9.5	67.4

LOADINGS

Factor	1	2	3	4	5
Availability of Parking					.756
Sales Personnel			.716		
Traffic Congestion					.319
Variety of Products			.656		
Cleanliness of Stores				.598	
Prices		.584			
Building and Landscape				.648	
Mall Hours				.783	
Advertising	.665				
Quality of Stores	.331				
Variety of Stores	.796				
Comparative Shopping	.502	.604			
Reputation of Stores			.616		
Type of Shoppers		.699			
Value for Price		.638			

TABLE 2 (Continued)

FACTOR ANALYSIS BY SEX - FEMALE

b) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	2.667	13.1	13.1
2	2.432	16.9	35.0
3	2.308	15.7	50.7
4	2.011	13.7	64.1

LOADINGS

Factor	1	2	3	4
Availability of Parking			.722	
Sales Personnel		.775		
Traffic Congestion				.588
Variety of Products		.642		
Cleanliness of Stores		.730		
Prices				.660
Building and Landscape				
Mall Hours			.670	
Advertising			.614	
Quality of Stores	.657			
Variety of Stores	.803			
Comparative Shopping	.752			
Reputation of Stores		.502	.562	
Type of Shoppers		.565		
Value for Price				.703

TABLE 3

FACTOR ANALYSIS BY SEX - MALE

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	4.342	29.6	29.6
2	3.052	20.8	50.4
3	1.376	9.4	59.8
4	1.139	8.2	68.0

LOADINGS

Factor	1	2	3	4
Availability of Parking				.304
Sales Personnel		.591		
Traffic Congestion			.874	
Variety of Products	.664			
Cleanliness of Stores	.669			
Prices		.577		
Building and Landscape		.646		
Mall Hours	.698			
Advertising	.802			
Quality of Stores	.750			
Variety of Stores				
Comparative Shopping		.633		
Reputation of Stores	.711			
Type of Shoppers	.643			
Value for Price		.824		

TABLE 3 (continued)

FACTOR ANALYSIS BY SEX - MALE

b) Willowbrook West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	3.500	23.3	23.3
2	2.507	16.7	40.0
3	1.843	12.3	52.3
4	1.327	8.9	61.2

LOADINGS

Factor	1	2	3	4
Availability of Parking				.73
Sales Personnel			.757	
Traffic Congestion				.799
Variety of Products	.629			
Cleanliness of Stores		.737		
Prices		.677		
Building and Landscape		.629		
Mall Hours	.603			
Advertising			.619	
Quality of Stores	.682			
Variety of Stores	.595	.659		
Comparative Shopping		.734		
Reputation of Stores	.799			
Type of Shoppers	.566			
Value for Price				

TABLE 4

FACTOR ANALYSIS BY AGE - <25

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	2.220	14.9	14.9
2	2.190	14.7	29.6
3	2.060	13.9	43.4
4	1.896	12.7	56.1
5	1.680	11.3	67.4
6	1.532	10.4	77.8

LOADINGS

Factor	1	2	3	4	5	6
Availability of Parking		.753				
Sales Personnel						.523
Traffic Congestion				-.766		
Variety of Products					.869	
Cleanliness of Stores		.743				
Prices			.794			
Building and Landscape						.303
Mall Hours		.905				
Advertising				.810		
Quality of Stores	.916					
Variety of Stores					.691	
Comparative Shopping	.633					
Reputation of Stores	.781					
Type of Shoppers			.532	.552		
Value for Price			.885			

TABLE 4 (continued)

FACTOR ANALYSIS BY AGE - <25

b) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	3.575	23.8	23.8
2	2.380	15.9	39.7
3	2.127	14.2	53.9
4	1.911	12.7	66.6
5	1.343	9.0	75.6

LOADINGS

Factor	1	2	3	4	5
Availability of Parking			.711		
Sales Personnel					.725
Traffic Congestion					.792
Variety of Products		.741			
Cleanliness of Stores		.853			
Prices	.522		.511		
Building and Landscape	.633				
Mall Hours	.729				
Advertising	.716				
Quality of Stores				.913	
Variety of Stores				.779	
Comparative Shopping	.802				
Reputation of Stores		.540	.551		
Type of Shoppers	.692				
Value for Price			.717		

TABLE 5

FACTOR ANALYSIS BY AGE - 25 TO 34

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	5.506	36.7	36.7
2	2.420	16.1	52.3
3	1.770	11.9	64.6

LOADINGS

Factor	1	2	3
Availability of Parking			.857
Sales Personnel		.830	
Traffic Congestion			.757
Variety of Products	.585		
Cleanliness of Stores	.810		
Prices	.620		
Building and Landscape	.523		
Mall Hours	.795		
Advertising	.673		
Quality of Stores	.870		
Variety of Stores	.639		
Comparative Shopping	.557	.519	
Reputation of Stores	.810		
Type of Shoppers	.728		
Value for Price		.742	

TABLE 5 (continued)

FACTOR ANALYSIS BY AGE 25 TO 34

b) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	2.485	16.6	16.6
2	2.439	16.3	32.9
3	2.256	15.1	48.0
4	2.049	13.7	61.7
5	1.369	9.2	70.9

LOADINGS

Factor	1	2	3	4	5
Availability of Parking				.637	
Sales Personnel					.710
Traffic Congestion					.702
Variety of Products	.641				
Cleanliness of Stores		.665			
Prices			.731		
Building and Landscape			.640		
Mall Hours		.715			
Advertising				.707	
Quality of Stores	.621				
Variety of Stores	.794				
Comparative Shopping	.691				
Reputation of Stores		.350			
Type of Shoppers				.695	
Value for Price			.680		

TABLE 6

FACTOR ANALYSIS BY AGE - 35 TO 49

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	2.302	15.4	15.4
2	2.256	15.1	30.5
3	2.035	13.9	44.4
4	2.042	13.6	53.0

LOADINGS

Factor	1	2	3	4
Availability of Parking		.843		
Sales Personnel				
Traffic Congestion		.864		
Variety of Products				.715
Cleanliness of Stores	.760			
Prices			.730	
Building and Landscape	.715			
Mall Hours			.614	
Advertising	.754			
Quality of Stores				.709
Variety of Stores				.697
Comparative Shopping				
Reputation of Stores				.532
Type of Shoppers				
Value for Price			.761	

TABLE 6 (continued)

FACTOR ANALYSIS BY AGE - 35 TO 49

b) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	2.513	17.7	17.7
2	2.455	17.3	35.0
3	2.418	17.0	52.0
4	2.324	12.3	64.3

LOADINGS

Factor	1	2	3	4
Availability of Parking		.721		
Sales Personnel			.630	
Traffic Congestion		.759		
Variety of Products			.601	
Cleanliness of Stores			.625	
Prices		.511		
Building and Landscape				.803
Mall Hours				
Advertising				.820
Quality of Stores			.506	.562
Variety of Stores	.733			
Comparative Shopping	.863			
Reputation of Stores			.794	
Type of Shoppers	.603			
Value for Price		.723		

TABLE 7

FACTOR ANALYSIS BY AGE - 50 TO 65

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	3.633	24.2	24.2
2	3.250	21.7	45.9
3	1.686	11.2	57.1
4	1.453	9.9	66.9

LOADINGS

Factor	1	2	3	4
Availability of Parking				.307
Sales Personnel		.782		
Traffic Congestion	.555			
Variety of Products		.646		
Cleanliness of Stores		.763		
Prices	.633			
Building and Landscape				.676
Mall Hours		.756		
Advertising	.663			
Quality of Stores	.924			
Variety of Stores	.850			
Comparative Shopping	.765			
Reputation of Stores		.727		
Type of Shoppers			.852	
Value for Price				.330

TABLE 7 (continued)

FACTOR ANALYSIS BY AGE - 50 TO 65

t) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	2.947	20.0	20.0
2	2.723	18.5	38.5
3	2.174	14.8	53.3
4	1.939	13.2	66.5
5	1.387	9.4	75.9

LOADINGS

Factor	1	2	3	4	5
Availability of Parking			-.707		
Sales Personnel	.791				
Traffic Congestion	.570				.520
Variety of Products	.794				
Cleanliness of Stores	.385				
Prices				.838	
Building and Landscape		.522			
Mall Hours		.543			
Advertising					.696
Quality of Stores		.396			
Variety of Stores			.549	.549	
Comparative Shopping			.351		
Reputation of Stores		.360			
Type of Shoppers	.523			.645	
Value for Price			.709		

TABLE 3

FACTOR ANALYSIS BY AGE - >65

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	3.106	20.7	20.7
2	2.585	17.2	37.9
3	2.561	17.1	55.0
4	2.473	16.5	71.5
5	2.413	16.1	87.6

LOADINGS

Factor	1	2	3	4	5
Availability of Parking			.625		
Sales Personnel	.505			.516	.624
Traffic Congestion		.979			
Variety of Products	.337				
Cleanliness of Stores	.343				
Prices			.329		
Building and Landscape		.334			
Mall Hours					.327
Advertising		.637	.636		
Quality of Stores			.563	.579	
Variety of Stores					.730
Comparative Shopping				.674	
Reputation of Stores	.597				
Type of Shoppers	.625		.523		
Value for Price				.933	

TABLE 3 (continued)

FACTOR ANALYSIS BY AGE = >65

b) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	5.107	34.6	34.6
2	3.130	21.2	55.8
3	2.662	18.0	73.8
4	1.326	9.0	82.8

LOADINGS

Factor	1	2	3	4
Availability of Parking			.748	
Sales Personnel	.636			
Traffic Congestion		.794		
Variety of Products	.844			
Cleanliness of Stores	.558		.646	
Prices		.518		
Building and Landscape		.556	.662	
Mall Hours	.827			
Advertising		.675		
Quality of Stores	.858			
Variety of Stores	.739			.527
Comparative Shopping			.501	.660
Reputation of Stores	.783			
Type of Shoppers	.730			
Value for Price		.339		

TABLE 9

FACTOR ANALYSIS BY TOTAL FAMILY INCOME - <$10,000

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	3.513	23.4	23.4
2	2.494	16.6	40.0
3	2.353	15.7	55.7
4	2.058	13.7	69.4
5	1.303	8.8	78.2

LOADINGS

Factor	1	2	3	4	5
Availability of Parking				.737	
Sales Personnel		.909			
Traffic Congestion					.394
Variety of Products				.776	
Cleanliness of Stores				.631	
Prices	.707				
Building and Landscape		.759			
Mall Hours		.862			
Advertising	.739				
Quality of Stores	.926				
Variety of Stores	.846				
Comparative Shopping	.730				
Reputation of Stores			.523	.526	
Type of Shoppers			.732		
Value for Price			.790		

TABLE 9 (continued)

FACTOR ANALYSIS BY TOTAL FAMILY INCOME - <$10,000

b) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	3.463	23.1	23.1
2	2.643	17.7	40.8
3	2.460	16.4	57.2
4	2.241	14.9	72.1

LOADINGS

Factor	1	2	3	4
Availability of Parking			.799	
Sales Personnel		.785		
Traffic Congestion				
Variety of Products		.321		
Cleanliness of Stores		.303		
Prices	.806			
Building and Landscape			.694	
Mall Hours	.577		.526	
Advertising			.650	.524
Quality of Stores	.730			
Variety of Stores				.729
Comparative Shopping				.344
Reputation of Stores	.733			
Type of Shoppers	.736			
Value for Price	.580			

TABLE 10

FACTOR ANALYSIS BY TOTAL FAMILY INCOME
$10,000 - $20,000

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	5.371	36.7	36.7
2	2.883	19.9	56.5
3	1.622	11.1	67.6

LOADINGS

Factor	1	2	3
Availability of Parking			.732
Sales Personnel		.629	
Traffic Congestion			.657
Variety of Products	.530		
Cleanliness of Stores	.810		
Prices	.533		
Building and Landscape	.721		
Mall Hours	.753		
Advertising	.813		
Quality of Stores	.816		
Variety of Stores	.537		
Comparative Shopping	.501	.604	
Reputation of Stores	.730		
Type of Shoppers		.655	
Value for Price		.812	

TABLE 10

FACTOR ANALYSIS BY TOTAL FAMILY INCOME
$10,000 - $20,000

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	5.371	36.7	36.7
2	2.883	19.9	56.5
3	1.622	11.1	67.6

LOADINGS

Factor	1	2	3
Availability of Parking			.782
Sales Personnel		.629	
Traffic Congestion			.657
Variety of Products	.580		
Cleanliness of Stores	.810		
Prices	.583		
Building and Landscape	.721		
Mall Hours	.758		
Advertising	.813		
Quality of Stores	.816		
Variety of Stores	.637		
Comparative Shopping	.501	.604	
Reputation of Stores	.780		
Type of Shoppers		.655	
Value for Price		.812	

TABLE 10 (continued)

FACTOR ANALYSIS BY TOTAL FAMILY INCOME
$10,000 - $20,000

b) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	3.178	21.2	21.2
2	2.748	18.3	39.5
3	2.312	15.4	54.9
4	1.640	11.0	65.9

LOADINGS

Factor	1	2	3	4
Availability of Parking			.710	
Sales Personnel		.693		
Traffic Congestion			.573	
Variety of Products	.582			
Cleanliness of Stores			.655	
Prices	.755			
Building and Landscape		.731		
Mall Hours			.597	
Advertising		.726		
Quality of Stores	.892			
Variety of Stores	.851			
Comparative Shopping	.530			.502
Reputation of Stores				
Type of Shoppers				
Value for Price				.923

TABLE 11

FACTOR ANALYSIS BY TOTAL FAMILY INCOME
$20,000 - $30,000

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	3.403	22.9	22.3
2	1.745	11.7	34.5
3	1.625	10.9	45.4
4	1.623	10.9	56.2
5	1.434	10.1	66.3
6	1.260	8.5	74.8

LOADINGS

Factor	1	2	3	4	5	6
Availability of Parking			.817			
Sales Personnel				.837		
Traffic Congestion			.817			
Variety of Products	.696					
Cleanliness of Stores						
Prices		.660				
Building and Landscape	.683					
Mall Hours					.372	
Advertising						
Quality of Stores	.834					
Variety of Stores	.595					
Comparative Shopping				.525		
Reputation of Stores	.840					
Type of Shoppers						.843
Value for Price		.792				

TABLE 11 (continued)

FACTOR ANALYSIS BY TOTAL FAMILY INCOME
$20,000 - $30,000

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	2.934	19.6	19.6
2	2.703	18.1	37.7
3	2.629	17.5	55.2
4	1.449	9.6	64.8

LOADINGS

Factor	1	2	3	4
Availability of Parking				.340
Sales Personnel				
Traffic Congestion	.563			.539
Variety of Products		.766		
Cleanliness of Stores		.632		
Prices	.625			
Building and Landscape	.620			
Mall Hours			.613	
Advertising			.763	
Quality of Stores			.747	
Variety of Stores	.765			
Comparative Shopping	.762			
Reputation of Stores		.604	.619	
Type of Shoppers		.600		
Value for Price				

TABLE 12

FACTOR ANALYSIS BY TOTAL FAMILY INCOME
$30,000 - $40,000

a.) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	2.816	19.6	19.6
2	2.470	17.0	36.6
3	2.103	14.5	51.1
4	1.554	10.7	61.8
5	1.529	10.5	72.3
6	1.407	9.7	82.0

LOADINGS

Factor	1	2	3	4	5	6
Availability of Parking					.360	
Sales Personnel						.377
Traffic Congestion					.639	
Variety of Products		.731				
Cleanliness of Stores		.631				
Prices			.646			
Building and Landscape			.799			
Mall Hours	.367					
Advertising				.832		
Quality of Stores	.709					
Variety of Stores		.802				
Comparative Shopping	.732					
Reputation of Stores	.651					
Type of Shoppers			.512	.679		
Value for Price			.796			

TABLE 12 (continued)

FACTOR ANALYSIS BY TOTAL FAMILY INCOME
$30,000 - $40,000

b) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	4.004	26.8	26.8
2	1.953	13.1	39.9
3	1.893	12.7	52.6
4	1.559	10.4	63.0
5	1.457	9.7	72.7
6	1.210	8.1	80.8

LOADINGS

Factor	1	2	3	4	5	6
Availability of Parking				.343		
Sales Personnel						.362
Traffic Congestion					.916	
Variety of Products	.875*					
Cleanliness of Stores					.546	
Prices			.869			
Building and Landscape	.532					
Mall Hours	.712					
Advertising	.736					
Quality of Stores		.865				
Variety of Stores	.801					
Comparative Shopping	.748					
Reputation of Stores					.709	
Type of Shoppers	.684					
Value for Price			.931			

TABLE 13

FACTOR ANALYSIS BY TOTAL FAMILY INCOME
>$40,000

at Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	3.332	22.2	22.2
2	1.937	12.9	35.1
3	1.831	12.2	47.3
4	1.797	12.0	59.3
5	1.699	11.3	70.6

LOADINGS

Factor	1	2	3	4	5
Availability of Parking					
Sales Personnel					-.761
Traffic Congestion		.945			
Variety of Products			.513		
Cleanliness of Stores	.581			.630	
Prices					
Building and Landscape	.330				
Mall Hours	.720				
Advertising	.751				
Quality of Stores		.805			
Variety of Stores					
Comparative Shopping				-.924	
Reputation of Stores			.893		
Type of Shoppers	.778				
Value for Price					.772

TABLE 13 (continued)

FACTOR ANALSIS BY TOTAL FAMILY INCOME
>$40,000

b) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	3.365	22.5	22.5
2	3.271	21.9	44.4
3	1.996	13.4	57.3
4	1.760	11.9	69.6
5	1.350	9.0	78.6

LOADINGS

Factor	1	2	3	4	5
Availability of Parking		-.526			
Sales Personnel	.911				
Traffic Congestion					.956
Variety of Products		.703			
Cleanliness of Stores	.806				
Prices				.697	
Building and Landscape		.735			
Mall Hours			.594		
Advertising			.899		
Quality of Stores	.880				
Variety of Stores		.768			
Comparative Shopping		.801			
Reputation of Stores	.756		.559		
Type of Shoppers					
Value for Price				.863	

TABLE 14

FACTOR ANALYSIS BY EDUCATION - <GRADE 9

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	3.523	23.9	23.9
2	2.741	18.6	42.5
3	2.305	15.6	58.1
4	2.266	15.4	73.5
5	1.730	11.7	85.2

LOADINGS

Factor	1	2	3	4	5
Availability of Parking	.532				.562
Sales Personnel		.936			
Traffic Congestion					.370
Variety of Products	.777				
Cleanliness of Stores	.349				
Prices			.754		
Building and Landscape		.893			
Mall Hours				-.772	
Advertising			.951		
Quality of Stores			.565	.652	
Variety of Stores				.779	
Comparative Shopping		.573		.595	
Reputation of Stores	.904				
Type of Shoppers	.854				
Value for Price		.752			

TABLE 14 (continued)

FACTOR ANALYSIS BY EDUCATION - <GRADE 9

b) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	4.013	27.4	27.4
2	2.492	17.0	44.4
3	2.250	15.3	59.7
4	2.131	14.5	74.2
5	1.621	11.0	85.2

LOADINGS

Factor	1	2	3	4	5
Availability of Parking				.869	
Sales Personnel				.715	
Traffic Congestion		.600			
Variety of Products	.512		.753		
Cleanliness of Stores			.751		
Prices		.922			
Building and Landscape	.533				
Mall Hours		.790			
Advertising	.302				
Quality of Stores	.782				
Variety of Stores	.776				
Comparative Shopping	.360				
Reputation of Stores			.647		
Type of Shoppers	.645				
Value for Price					.963

TABLE 15

FACTOR ANALYSIS BY EDUCATION - GRADES 9 TO 12

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	3.903	25.6	25.6
2	3.789	25.5	51.1
3	1.815	12.2	63.3
4	1.141	7.6	70.9

LOADINGS

Factor	1	2	3	4
Availability of Parking				.935
Sales Personnel		.674		
Traffic Congestion		.592		
Variety of Products	.760			
Cleanliness of Stores	.541	.654		
Prices		.718		
Building and Landscape		.637		
Mall Hours		.896		
Advertising	.780			
Quality of Stores	.756			
Variety of Stores	.843			
Comparative Shopping		.651		
Reputation of Stores	.582	.549		
Type of Shoppers			.679	
Value for Price			.841	

TABLE 15 (continued)

FACTOR ANALYSIS BY EDUCATION - GRADES 9 TO 12

b) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	2.521	16.8	16.8
2	2.466	16.4	33.2
3	1.958	13.1	46.3
4	1.827	12.2	58.5
5	1.625	10.8	69.3

LOADINGS

Factor	1	2	3	4	5
Availability of Parking			.777		
Sales Personnel		.659			
Traffic Congestion					.838
Variety of Products		.644			.587
Cleanliness of Stores		.779			
Prices	.531			.506	
Building and Landscape			.627		
Mall Hours	.613				
Advertising			.699		
Quality of Stores	.829				
Variety of Stores	.521				
Comparative Shopping				.719	
Reputation of Stores	.622				
Type of Shoppers		.718			
Value for Price				.773	

TABLE 16

FACTOR ANALYSIS BY EDUCATION - GRADE 13

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	3.058	20.4	20.4
2	2.507	16.7	37.1
3	2.359	15.7	52.8
4	2.036	13.3	66.7

LOADINGS

Factor	1	2	3	4
Availability of Parking				
Sales Personnel			.371	
Traffic Congestion				.745
Variety of Products				
Cleanliness of Stores			.734	
Prices	.721			
Building and Landscape				.351
Mall Hours	.354			
Advertising				.603
Quality of Stores		.576		
Variety of Stores	.818			
Comparative Shopping		.302		
Reputation of Stores		.654	.519	
Type of Shoppers		.579		
Value for Price	.739			

TABLE 16 (continued)

FACTOR ANALYSIS BY EDUCATION - GRADE 13

b) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	4.344	29.0	29.0
2	3.203	21.4	50.4
3	2.780	18.5	68.9
4	1.729	11.5	80.4

LOADINGS

Factor	1	2	3	4
Availability of Parking			.765	
Sales Personnel	.854		.543	
Traffic Congestion	.514			
Variety of Products		.887		
Cleanliness of Stores		.917		
Prices	.643			
Building and Landscape	.737	.510		
Mall Hours				.785
Advertising				.582
Quality of Stores	.817			
Variety of Stores	.813			
Comparative Shopping	.846			
Reputation of Stores		.831		
Type of Shoppers			.810	
Value for Price			.783	

TABLE 17

FACTOR ANALYSIS BY EDUCATION - COMMUNITY COLLEGE

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	3.435	23.3	23.3
2	2.659	18.1	41.4
3	2.197	14.9	56.3
4	2.118	14.4	70.7
5	1.753	11.9	82.6

LOADINGS

Factor	1	2	3	4	5
Availability of Parking	-.734				
Sales Personnel					-.696
Traffic Congestion		.871			
Variety of Products	.805				
Cleanliness of Stores			.791		
Prices				.870	
Building and Landscape					.814
Mall Hours			.873		
Advertising		.537			
Quality of Stores	.686				
Variety of Stores	.751				
Comparative Shopping	.565				
Reputation of Stores	.630				.529
Type of Shoppers		.847			
Value for Price				.861	

TABLE 17 (continued)

FACTOR ANALYSIS BY EDUCATION - COMMUNITY COLLEGE

b) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	2.735	13.6	13.6
2	2.575	17.2	35.8
3	2.443	16.3	52.1
4	2.119	14.1	66.2
5	1.599	10.7	76.9

LOADINGS

Factor	1	2	3	4	5
Availability of Parking					.330
Sales Personnel				.737	
Traffic Congestion		.769			
Variety of Products				.860	
Cleanliness of Stores			.772		
Prices		.344			
Building and Landscape			.333		
Mall Hours			.645		
Advertising			.562		
Quality of Stores	.819				
Variety of Stores	.786				
Comparative Shopping		.564			
Reputation of Stores				.544	
Type of Shoppers	.309				
Value for Price				.550	

TABLE 18

FACTOR ANALYSIS BY EDUCATION - UNIVERSITY

a) Stone Road Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	2.389	19.4	19.4
2	2.334	19.3	36.7
3	1.637	12.6	49.3
4	1.595	12.3	61.6
5	1.443	10.8	72.4

LOADINGS

Factor	1	2	3	4	5
Availability of Parking				.830	
Sales Personnel		.742			
Traffic Congestion				.833	
Variety of Products		.707			
Cleanliness of Stores	.634				
Prices					
Building and Landscape		.722			
Mall Hours	.787				
Advertising	.893				
Quality of Stores			.643		
Variety of Stores					.817
Comparative Shopping			.800		
Reputation of Stores		.516			
Type of Shoppers					.714
Value for Price					.838

TABLE 18 (continued)

FACTOR ANALYSIS BY EDUCATION - UNIVERSITY

b) Willow West Mall

	VARIANCE EXPLAINED	PERCENTAGE OF TOTAL VARIANCE	CUMULATIVE PROPORTIONS
Factor 1	2.905	19.4	19.4
2	2.689	17.9	37.3
3	2.432	16.2	53.5
4	1.406	9.4	62.9
5	1.293	8.6	71.5

LOADINGS

Factor	1	2	3	4	5
Availability of Parking				.555	
Sales Personnel		.918			
Traffic Congestion					.382
Variety of Products	.735				
Cleanliness of Stores			.503		
Prices			.591		
Building and Landscape	.545				
Mall Hours			.650		
Advertising				.750	
Quality of Stores		.867			
Variety of Stores	.912				
Comparative Shopping	.731				
Reputation of Stores		.764			
Type of Shoppers					.575
Value for Price			.733		

Appendix E

RELATE ANALYSIS RESULTS

TABLE 1

COMPARISON OF THE FACTOR STRUCTURE OF STONE ROAD AND WILLOW WEST MALLS

BY SEX

FEMALE

Stone Road Mall Factors

		1	2	3	4	5
Willow	1	0.319	0.170	0.077	-0.031	-0.343
West	2	-0.120	0.265	0.956	0.014	0.022
Mall	3	0.209	-0.212	0.063	0.373	0.382
Factors	4	0.048	0.841	-0.238	-0.002	0.484

MALE

Stone Road Mall Factors

		1	2	3	4
Willow	1	0.899	-0.030	0.352	-0.247
West	2	-0.040	0.945	0.097	-0.310
Mall	3	0.423	0.290	-0.556	0.654
Factors	4	-0.104	0.130	0.746	0.644

TABLE 2

COMPARISON OF THE FACTOR STRUCTURE OF STONE ROAD AND WILLOW WEST MALLS

BY AGE

<25

Stone Road Mall Factors

		1	2	3	4	5	6
Willow	1	0.358	0.414	-0.076	0.063	0.123	0.321
West	2	0.046	0.379	0.035	0.513	0.673	-0.351
Mall	3	0.198	0.534	0.673	-0.225	-0.341	-0.221
Factors	4	0.703	-0.530	0.293	-0.175	0.313	-0.047
	5	0.089	-0.267	0.272	0.302	-0.434	0.123

25 TO 34

Stone Road Mall Factors

		1	2	3
Willow	1	0.391	-0.513	0.
West	2	0.521	0.480	-0.220
Mall	3	0.595	-0.023	-0.349
Factors	4	0.347	0.422	0.220
	5	-0.319	0.573	0.644

35 TO 49

Stone Road Mall Factors

		1	2	3	4
Willow	1	-0.357	0.514	0.669	0.303
West	2	0.153	0.084	0.425	-0.146
Mall	3	0.431	0.673	-0.423	0.393
Factors	4	0.710	-0.375	0.406	0.374

(continued)

TABLE 2 (continued)

BY AGE

50 TO 65

Stone Road Mall Factors

		1	2	3	4
Willow	1	0.032	0.856	-0.503	-0.116
West	2	0.583	-0.050	0.100	-0.723
Mall	3	0.106	0.455	0.676	0.360
Factors	4	0.433	0.166	0.351	0.001
	5	0.674	-0.175	-0.335	0.573

>65

Stone Road Mall Factors

		1	2	3	4	5
Willow	1	0.722	-0.198	0.372	-0.012	0.552
West	2	0.080	0.794	0.452	0.377	-0.131
Mall	3	0.127	0.140	-0.679	0.615	0.353
Factors	4	-0.406	-0.492	0.436	0.629	0.083

TABLE 3

COMPARISON OF THE FACTOR STRUCTURE OF
STONE ROAD AND WILLOW WEST MALLS

BY TOTAL FAMILY INCOME

<$10,000

Stone Road Mall Factors

		1	2	3	4	5
Willow	1	0.324	0.466	0.773	-0.197	-0.214
West	2	-0.115	0.064	0.307	0.337	0.291
Mall	3	0.243	0.772	-0.464	0.018	0.361
Factors	4	0.890	-0.314	-0.166	0.243	-0.150

$10,000 TO $20,000

Stone Road Mall Factors

		1	2	3
Willow	1	0.643	-0.417	0.237
West	2	0.376	0.885	-0.076
Mall	3	-0.305	0.206	0.930
Factors	4	0.594	-0.003	0.204

$20,000 TO $30,000

Stone Road Mall Factors

		1	2	3	4	5	6
Willow	1	0.347	0.821	0.088	0.289	-0.200	-0.274
West	2	0.359	0.196	-0.203	0.008	0.141	0.879
Mall	3	0.631	-0.340	0.028	0.331	0.552	-0.266
Factors	4	-0.203	0.011	0.887	0.283	0.147	0.259

(continued)

TABLE 3 (continued)

BY TOTAL FAMILY INCOME

$30,000 TO $40,000

Stone Road Mall Factors

		1	2	3	4	5	6
	1	0.547	0.592	0.154	0.350	0.147	-0.349
Willow	2	0.171	0.123	-0.129	0.569	-0.348	0.744
West	3	0.287	-0.160	0.939	-0.251	-0.330	0.192
Mall	4	-0.135	-0.333	0.379	0.471	0.700	0.148
Factors	5	-0.291	0.642	0.144	-0.383	0.342	0.466
	6	0.559	-0.282	-0.339	-0.394	0.357	0.282

>$40,000

Stone Road Mall Factors

		1	2	3	4	5
Willow	1	0.187	0.235	0.919	0.549	-0.431
West	2	-0.046	0.608	-0.130	0.710	0.068
Mall	3	0.595	0.029	-0.077	-0.467	-0.201
Factors	4	0.190	0.262	0.139	0.239	0.839
	5	-0.012	0.922	0.035	-0.260	-0.141

TABLE 4

COMPARISON OF THE FACTOR STRUCTURE OF
STONE ROAD AND WILLOW WEST MALLS

BY EDUCATION

<GRADE 9

Stone Road Mall Factors

		1	2	3	4	5
Willow	1	0.106	0.470	0.733	0.428	-0.216
West	2	-0.023	0.046	0.351	-0.178	0.919
Mall	3	0.903	-0.403	0.065	0.127	0.044
Factors	4	0.377	0.603	-0.083	-0.633	-0.121
	5	0.172	0.497	-0.572	0.551	0.307

GRADES 9 TO 12

Stone Road Mall Factors

		1	2	3	4
Willow	1	0.906	-0.200	-0.167	0.330
West	2	0.119	0.709	-0.159	-0.063
Mall	3	0.293	0.491	-0.127	-0.486
Factors	4	-0.223	0.389	-0.237	0.786
	5	0.164	0.251	0.935	0.182

GRADE 13

Stone Road Mall Factors

		1	2	3	4
Willow	1	0.949	-0.230	0.353	0.325
West	2	-0.223	0.384	0.830	-0.062
Mall	3	-0.080	0.499	-0.255	0.303
Factors	4	0.455	0.734	-0.203	-0.443

(continued)

TABLE 4 (continued)

BY EDUCATION

COMMUNITY COLLEGE

Stone Road Mall Factors

		1	2	3	4	5
Willow	1	0.715	0.333	0.071	-0.247	0.554
West	2	-0.079	0.512	-0.303	0.730	0.171
Mall	3	-0.160	-0.618	0.839	0.344	0.362
Factors	4	0.505	0.001	0.280	0.313	-0.675
	5	-0.304	0.766	0.354	-0.340	0.290

UNIVERSITY

Stone Road Mall Factors

		1	2	3	4	5
Willow	1	0.157	0.160	0.953	-0.086	0.136
West	2	0.252	0.827	-0.073	0.133	-0.457
Mall	3	0.767	-0.080	-0.169	0.392	0.473
Factors	4	0.159	0.333	-0.232	-0.810	0.337
	5	-0.548	0.411	-0.067	0.380	0.613

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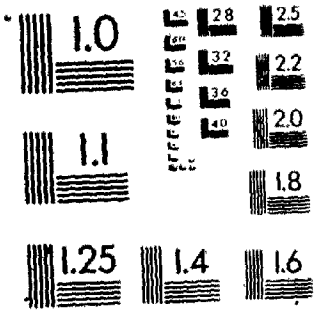

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