THE EFFECTS OF SELECTED VISUAL CUES ON TOURISTS' PERCEPTIONS OF QUALITY AND SATISFACTION, AND ON THEIR BEHAVIORAL INTENTIONS

A Dissertation

by

STACY RENEE TOMAS

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2007

Major Subject: Recreation, Park and Tourism Sciences

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Approved by:

Chair of Committee,	John L. Crompton
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ABSTRACT

The Effects of Selected Visual Cues on Tourists' Perceptions of Quality and Satisfaction, and on Their Behavioral Intentions. (December 2007)

Stacy Renee Tomas, B.S., Texas A&M University;

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In tourism, the product is the experience. The destination sets the stage, which facilitates the experience. First impressions, based largely on visual cues in the environment, help to determine the level of quality tourists should expect from their encounter. While much research has focused on destination image in advertising, little attention has been given to on-site assessments of tourists' perceptions of the visual environment.

This study had three specific objectives. The first was to determine if changes in the visual environment affect respondents' attitudes, perceptions of quality and satisfaction. The second objective set out to determine which visual quality elements have the strongest influence on respondents' attitudes, their perceptions of quality and satisfaction. The final objective was to explore the interrelationship between attitudes, quality, satisfaction and behavioral intentions.

Utilizing a series of digitally modified photographs and an experimental design approach with three treatments, this study examined how selected visual environmental

cues affected respondents' perceptions. The relatively high adjusted R^2 values across the three treatments suggests the strong influence of visual quality elements on hedonic (R^2 values ranging from .16 to .27) and utilitarian attitudes (R^2 values ranging from .16 to .24), and particularly on satisfaction (R^2 values ranging from .31 to .44) and overall quality (R^2 values ranging from .28 to .35). The visual cues having the strongest influence on perceptions were level of crowding, available seating, maintenance and upkeep, and type of signage.

Utilizing structural equation modeling, this study examined the interrelationship between the endogenous variables in the model. The influence of hedonic attitude on overall quality and satisfaction was confirmed, but the influence of utilitarian attitude on overall quality and satisfaction was not. This suggests that some tourism experiences are more hedonic in nature. This research supports previous literature suggesting that a high level of quality will result in a high level of satisfaction for the visitors (significant path estimate of .422). Additionally, standardized path coefficients indicate that overall quality (.416) and satisfaction (.486) were both related to behavioral intentions, with satisfaction being a stronger predictor.

DEDICATION

This dissertation is dedicated to my parents, Larry and Annette Tomas.

Thank you for all of your unconditional love, support, and great cooking.

I am so lucky to have parents like you two.

Thank you for showing me what love and family really mean.

This dissertation is also dedicated to the memory of my three wonderful

Czech grandparents who I knew and loved so much:

Agnes Pratka Tomas, Alice Breska Hrncir, and Stanley Hrncir.

They saw me start this incredible academic journey and

I hope they can look down and watch over me as I complete this endeavor.

I miss them so much.

Ja Vás miluju.

(I love you all.)

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CHAPTER I

INTRODUCTION

Marketing ultimately strives to satisfy customer wants (Howard and Crompton, 1980). Within the realm of marketing there are several sub-areas of interest, such as consumer behavior, advertising, and services marketing. For two decades, services marketing has been a rapidly growing area of interest, for both academics and managers. In a review of the services marketing literature, Fisk, Brown and Bitner (2001) comment: "Not since the strong emergence of interest in consumer behavior in the 1960s has a field developed within the marketing discipline with the passion and determination of services marketing" (p. 62). They added, "the single most researched area in services marketing to date is service quality" (p.77).

Nearly a decade before the study by Fisk, Brown and Bitner (2001), Cronin and Taylor (1992) stated, "interest in the measurement of service quality is thus understandably high and the delivery of higher levels of service quality is the strategy that is increasingly being offered as a key to service providers' efforts to position themselves more effectively in the marketplace" (p. 55). This sentiment has been shared in the recreation and tourism field as well. Wright, Duray and Goodale (1992) suggested that as society changes in terms of demographics and lifestyles, tourists are becoming more demanding.

This thesis follows the style of *Annals of Tourism Research*.

This pressure has been felt by leisure service providers to make substantive improvements in order to compete and remain viable. MacKay and Crompton (1990) posited that increased competition for tourists' dollars creates a "survival of the fittest" environment where only those agencies with the highest quality services will garner tourists' discretionary time and income. They argued that as competition and visitor wants increase, service quality may be a critical key to remaining a viable competitor. This implied that quality service would lead to positive behavioral intentions in tourists.

Another sub-area of interest is customer satisfaction, which reflects the degree to which a consumer believes that the purchase of a product, service, or more accurately the experience derived from them evokes positive feelings (Rust and Oliver, 1994). Satisfaction has received much attention in the marketing literature because of its potential influence on consumer behavior and retention (Oliver, 1980; Cronin and Taylor, 1992; Oliver, 1997, Cronin, Brady and Hult, 2000).

The examination of the quality and satisfaction constructs in the tourism and recreation literature has been equally prominent as in the marketing literature. Baker and Crompton (2000) noted that literature relating to quality and satisfaction within the field dates back to at least the Outdoor Recreation Resources Review Commission reports of 1962 (Manning, 1986). In both the tourism/recreation and marketing fields, the primary rationale for studying these constructs and learning how to improve customers' experiences by providing high quality, satisfying encounters will lead to increased or repeat visitation, positive word of mouth, and enhanced customer loyalty.

Thus, recent research in both fields has focused on better understanding these constructs, and on exploring their interrelationships (Parasuraman, Zeithaml, and Berry, 1985; Parasuraman et al., 1988; Cronin and Taylor, 1992; Babakus and Boller, 1992; Teas, 1993; Boulding, Karla, Staelin and Zeithaml, 1993; Cronin, Brady and Hult, 2000; MacKay and Crompton, 1990; Crompton and Love, 1995; Vogt and Fesenmaier, 1995; Childress and Crompton, 1997; Baker and Crompton, 2000; Tian-Cole, Crompton and Willson, 2002; Petrick, 2004). The goal of this stream of research has been to provide managers with information which will help build and strengthen their customer base.

Bitner (1992) argued that "managers continually plan, build, change and control an organization's physical surroundings, but frequently the impact of a specific design or design change on ultimate users of the facility is not fully understood" (p. 57). Indeed, the physical setting (part of the tangibles dimension of service quality) is recognized as being important in producing high quality services and experiences in both the marketing and tourism/recreation literatures (Parasuraman, Zeithaml and Berry, 1988; Cronin, Brady and Hult, 2000; Tian-Cole, Crompton and Willson, 2002; Baker and Crompton, 2000; Bitner, 1992; Baker, Parasuraman, Grewal and Voss, 2002).

In the field of environmental psychology, similar attention has been given to how humans react to their environment and how behavior is influenced by surroundings. Much of this literature is concerned with aesthetic response (Nasar, 1997), preference (Kaplan and Kaplan, 1978, Rapoport, 1982, Herzog and Barnes, 1999), and "likability" (Nasar, 1997), that is, visual quality. The goal of this visual quality research has been to

identify the types of spaces, images, settings, and so forth that people are drawn to and find appealing.

Ultimately, research in the fields of services marketing, environmental psychology, and tourism marketing study people's perceptions of phenomena. People form perceptions based on such factors as memory, affect, and sensory cues. Services marketing, tourism marketing, and environmental psychology all study the notion of "quality", but choose to examine the quality construct from different perspectives. However, regardless of the nomenclature, their core conceptualizations of quality are relatively similar. Assessments of quality influence behaviors (Ajzen and Fishbein, 1975). For example, to determine the quality of a building, or quality of a hotel's service, or the quality of an enchilada plate, people formulate opinions based on cues from the environment. Their perceptions of quality help to determine how they will react. If quality is high, people are likely to have positive behaviors—they will enter a destination, utilize a service, or eat a meal without reservation. However, if quality is low, people will be less likely to do so, or do so uncomfortably.

Are there similarities in the way in which people identify and recognize what elements of a service or destination provide cues about the anticipated level of quality they will receive? Marketing research has been able to identify five dimensions of service quality which have consistently been verified (Parasuraman, Zeithaml, and Berry 1988). However, research seems less clear on what environmental cues (the tangible elements) help to connote a positive, quality experience.

In tourism, the product is the experience. The destination sets the stage, which facilitates the experience. The tourism experience is facilitated by a conglomeration of destinations, goods, services, and interactions (Gunn, 1997). However, Gunn (1997) warned that as mass tourism continues to grow, it continues on a path of sameness, producing a homogenized landscape which is unappealing to tourists. He argued t hat as homogenized development continues, the sense of place becomes lost. Gunn (1997) posited that the definition of an attraction is magnetic, meaning it draws tourists in. "This concept, that an attraction is defined by its pulling power, is antithetical to the beliefs of many for whom an attraction comes into being merely by the owner's declaration and construction. But the true test is pulling power" (Gunn 1997, p. 51). Gunn (1997) also argued that the magnetism of a place was a product of design, development, and managerial operation.

Statement of the Problem

Because tourists cannot try out, test drive, or sample a vacation or tourism experience, first impressions are critical. First impressions help to determine the level of quality tourists should expect from their encounter. Bruner (1951) described a three-phase process of image formation that can be applied to the creation of tourists' images as they interact with an environment. Bruner suggested that tourists bring images of destinations with them when they travel. Even before they reach the destination, they imagine themselves there. He called the first stage *hypothesis* (Bruner, 1951). The

second stage, *input*, referred to the interaction with the destination, when tourists attempted to achieve their intended objectives for being in the destination, and was the totality of the experience. The third stage was referred to as check, which was a comparison of their expectations and pre-conceived notions about the destination with the actual experience (Bruner, 1951). Bruner's process of image formation suggests that developers and managers of tourism destinations can manipulate a physical setting to help stage positive experiences by tourists.

During a vacation experience, first impression and subsequent impression cues come from the environment (Bitner, 1992). Sensory cues are detected by tourists and processed in their minds. As tourists move through a destination, they scan their environment looking for clues about the destination and its quality. A tourist reacts to the environment both cognitively and affectively based on the sensory cues (Bitner, 1992; Rapoport, 1982; Nasar, 1983; Batra and Ahtola, 1991; Voss, Spandenberg and Grohmann, 2003), which can be positive, negative, or neutral. It is the goal of the tourism destination to be sensitive to the needs and desires of the tourists.

The destination should try to anticipate the types of experiences that tourists are seeking and what types of sensory cues will foster the registration of high quality assessments that will, in turn, help facilitate successful and positive experiences for tourists. This dissertation builds upon the marketing, tourism and environmental psychology literatures in exploring how people function in, and respond to, their physical surroundings. It is undergirded by the belief that a better understanding of this phenomenon will assist tourism managers in facilitating favorable guest experiences.

The idea of manipulating a physical environment to attract and retain customers and tourists is not new, but is becoming more mainstream. In an article entitled, "What Atmosphere!" in Leisure Management, Danny Chesworth (2002) argued that people are slaves to their senses and to their environment. He suggested that it is time for the leisure industry to focus on creating atmosphere within their destinations. Chesworth (2002) also noted:

> When it comes to the leisure industry, creating the right environment for your audience is now recognized as a key to developing a successful, profitable, and hopefully long-term relationship with clientele….More and more players within the leisure industry are putting these theories into practice, and finding they are having a positive impact on their customer's experience and their balance sheet.

Objectives of the Study

The central focus of this study is to examine how selected visual quality elements in a scene affect respondents' attitudes, their perceptions of quality and their levels of satisfaction. Additionally, the study examines the relationships between attitudes, quality and satisfaction, and their influence on respondents' behavioral intentions.

The specific objectives of the study are:

1. To determine if changes in the visual environment affect respondents' attitudes, perceptions of quality and satisfaction;
2. To determine which visual quality elements have the strongest influence on respondents' attitudes, their perceptions of quality and satisfaction; and

3. To explore the interrelationship between attitudes, quality, satisfaction and behavioral intentions.

Research Hypotheses

The review of literature in environmental psychology, tourism and marketing that guided the formulation of the research hypotheses is reported in Chapter II. The environmental psychology literature identified several visual elements which people use to make assessments about preference. In addition to identifying these elements, there is a discussion of how these elements can be manipulated to increase or decrease preference for settings. This included discussions of complexity, spatial depth, mystery and contextual fit. The research has suggested that visual cues in the environment shape our preferences. This study digitally manipulated photographs to create scenes containing eight visual elements identified in the literature: (1) maintenance and upkeep; (2) signage; (3) built or constructed elements; (4) level of crowding; (5) amount of vegetation present; (6) amount of available seating; (7) presence of water features; and (8) presence of an urban skyline. Three different treatments were created which were designed to represent scenes with high visual quality (Treatment 1 or T_{high}), scenes with mediocre visual quality (Treatment 2 or T_{med}) and scenes with low visual quality (Treatment 3 or T_{low}). **Thus, Hypothesis 1 stated that perceptions of the visual environment differed by treatment.**

Given that preference is tied to the formation of cognitive and affective attitudes (Zajonc and Markus, 1982; Bagozzi, 1992); and attitudes are tied to perceptions of quality and satisfaction (Cronin and Taylor, 1994; Cronin, Brady and Hult, 2000; Crompton and Childress, 1997; Baker and Crompton, 2000; Tian-Cole, Crompton and Willson, 2002), and ultimately to behavioral intentions (Cronin, Brady and Hult, 2000; Baker and Crompton, 2000; Tian-Cole, Crompton and Willson, 2002; Petrick 2004), **Hypothesis 2 stated that respondents' ratings of the endogenous variables in the theoretical model (hedonic attitude, utilitarian attitude, quality, satisfaction, and behavioral intentions) differed by treatment.**

Batra and Ahtola (1991) stated "consumers purchase goods and services and perform consumption behaviors for two basic reasons: (1) consummatory affective (hedonic) gratification (from sensory attributes), and (2) instrumental, utilitarian reasons" (p. 159). The hedonic dimension of consumer attitude results from sensations from the experience (similar to satisfaction), while the utilitarian dimension of consumer attitude results from functionality (similar to quality). Voss, Spandenberg and Grohmann (2003) further explored the hedonic and utilitarian dimensions of consumer attitude and found the two components (hedonic and utilitarian) of attitude to be distinct measures, but correlated. **Thus Hypotheses 3 stated that hedonic attitude was related to utilitarian attitude.**

Voss, Spandenberg and Grohmann (2003) found a relationship between affective involvement and the hedonic dimension of attitude; and a relationship between cognitive involvement and the utilitarian dimension of attitude. This finding relates to those

suggested by other researchers (Cronin and Taylor, 1994; Cronin, Brady and Hult, 2000; Crompton and Childress, 1997; Baker and Crompton, 2000; Tian-Cole, Crompton and Willson, 2002), who posited that perceptions of quality are a cognitive response while satisfaction is an affective response. **Thus, Hypothesis 4 stated that hedonic attitude and utilitarian attitude were positively related to overall quality and to level of satisfaction.**

Over the past decade, the prevalent thought has been that perceptions of quality are related to satisfaction (Parasuraman, Zeithaml and Berry, 1994; Cronin and Taylor, 1994; Baker and Crompton, 2000). This relates to Bagozzi's (1992) position that emotional responses follow cognitive responses. **Thus, Hypothesis 5 stated that overall quality was positively related to satisfaction.**

Multiple studies have suggested that quality and/or satisfaction influence behavioral intentions (Parasuraman, Zeithaml, and Berry, 1985; Parasuraman et al., 1988; Cronin and Taylor, 1992; Babakus and Boller, 1992; Teas, 1993; Boulding, Karla, Staelin and Zeithaml, 1993; Cronin, Brady and Hult, 2000; MacKay and Crompton, 1990; Crompton and Love, 1995; Vogt and Fesenmaier, 1995; Childress and Crompton, 1997; Baker and Crompton, 2000; Tian-Cole, Crompton and Willson, 2002; Petrick, 2004). While much research has shown the relationship between these variables, there have been some discrepancies within the literature as to whether quality or satisfaction is the stronger predictor of behavioral intentions. Cronin and Taylor (1992) and Tian-Cole, Crompton and Willson (2002) reported that satisfaction was a stronger predictor of behavioral intentions than quality. However, Baker and Crompton (2000), and Petrick

(2004) reported quality to be a stronger predictor of behavioral intentions than satisfaction. Indeed, Petrick (2004) stated, "this finding suggests that if managers are only able to use one variable for predicting intentions to repurchase, quality may be the preferred variable" (p. 405). **Thus, Hypothesis 7 stated that overall quality and satisfaction were positively related to behavioral intentions and that quality was a stronger predictor than satisfaction.**

Organization of the Dissertation

The dissertation consists of six chapters. The second chapter provides a review of literature. It discusses the environmental psychology literature as it relates to the present study, which encompasses the nature of the visual environment and human responses to the environment, including variables that influence environmental preference such as complexity, spatial depth, mystery, and contextual fit. Next, a discussion is provided on the effects of the visual environment on stress and health. This is followed by a review of visual quality in urban contexts and work on visual quality reported in the tourism/recreation and marketing literatures. Theories are examined which relate to human interactions with visual environments, specifically biophilia/biophobia, arousal theory, schema theory, and the theory of reasoned action. The chapter concludes with a review of the relationships among, satisfaction and behavioral intentions from the marketing and tourism literatures.

Chapter III offers the conceptual underpinning for the theoretical model used in the study. It includes a discussion of theoretical models from marketing and tourism that were used as a foundation for the present study. The chapter describes the conceptual model developed to explore the effect of visual environmental cues on tourists' perceptions of quality, satisfaction and behavioral intentions. It concludes with an exposition of the model components.

Chapter IV describes the research methodology used in the study, including the study design, construction of the treatments, questionnaire design, and measurement. The reliability scores of scales used to measure the latent variables are reported, together with a description of the sampling and data collection processes. The chapter concludes with a discussion of the methods of analysis used to test the research hypotheses.

Chapter V reports results from the empirical study. Characteristics of the study respondents are described and they are followed by a presentation of the results of the hypothesis tests. Included in this section is a discussion of the structural model employed in the study. The final chapter, Chapter VI, summarizes the results and provides theoretical and managerial implications of the study's results. The chapter concludes with an acknowledgement of the limitations of the study and with suggestions for future research.

CHAPTER II

LITERATURE REVIEW

This chapter reviews the four main constructs which are central to the research goals of this dissertation. They are: the visual environment, overall quality, satisfaction, and behavioral intentions. The visual environment review begins with a synopsis of what has been learned about human responses to visual environments, from several different literatures. Results reported in environmental psychology literature are reviewed first. They offer insights into the influence of complexity, spatial depth, mystery, and contextual fit in determining landscape preferences; and the effects of visual environments on stress and health. A synopsis of key findings in the recreation and tourism, and marketing literatures is followed by the presentation of three theories that appear to explain the human responses that are identified in the literature review.

The second construct reviewed is the notion of quality. Work is traced from the beginning of its modern operationalization in the marketing field in the mid-1980s; through subsequent research and conceptualization in both the marketing and recreation and tourism literatures. Quality is defined as tourists' perceptions of the attributes of a service that are under the control of the tourism supplier. Thus, in this context, quality is operationalized as quality of opportunity (Childress and Crompton, 1997; Baker and Crompton, 2000; Tian-Cole, Crompton and Willson, 2002).

The third construct reviewed is tourists' satisfaction, or quality of experience, which is defined as the psychological or emotional end state resulting from participation

in tourism activities (Brown, 1988; Crompton and MacKay, 1989; Crompton and Love, 1995; Baker and Crompton, 2000; and Tian-Cole, Crompton and Willson, 2002). Stemming from expectation disconfirmation theory (similar to quality), satisfaction is often conceptualized as a function of a comparison between expected and perceived experiences. Quality of experience is discussed from the standpoint of both the marketing literature, and the recreation and tourism literature.

While the first construct, the visual environment, is an input variable, that is, it is positioned as a cue to which tourists react either before or during their visit, the latter three constructs are output and outcome variables in the context of this study. Tourist satisfaction and perceptions of quality are evaluations that are made after the visit. Interim or formative assessments of each may be made during a visit, but only after the visit will a summative evaluation of these constructs be made.

The Visual Environment

Take a moment to close your eyes and imagine yourself on a dream vacation. In doing so, you have probably created a mental image of the entire environment—a cognitive and affective map, complete with sights, sounds, smells and feelings. It is likely that the image is vivid. If you were to visit this location, you would expect the mental map to resemble the real location. When you first arrive at the destination, it is likely that you will scan the environment, absorb it, and search for signs that the destination is what you expected it to be. If it is, you anticipate the stay will be pleasant

and the vacation enjoyable. If the destination fails to meet your expectations, doubts may emerge as to the quality of the destination and whether you will be able to find satisfaction there.

What is the significance of the surrounding environment? How do assessments of the environment affect behavior? What types of environments are preferred? It is a given that the environment impacts human experience, for everything humans do or feel occurs in the context of a physical environment.

It is important to study aesthetic responses to developed environments to know how the public responds or reacts to them. Perhaps the study of aesthetic response would not be necessary if the aesthetic values of those responsible for designing environments and those of large sections of the public were similar. However, often this is not the case. Several studies have demonstrated that designers, planners, and architects have building preferences quite different from those of the public, and often designers make inaccurate judgments regarding public preferences. For example, Delvin and Nasar (1989) asked architects and non-architects to rate 40 homes of two different styles: 20 "high-style" homes and 20 "popular style" homes. Architects liked "high-style" homes best, while non-architects liked "popular style" homes best. Architects rated highest the homes that non-architects rated lowest. While this study used only building facades, nonetheless it illustrates that if designers do not take public opinions and preferences into account, incompatible designs could yield inaccurate perceptions and low use by the public.

In the following discussion, it will be seen that visual settings, particularly views of nature, have been shown to have significant impacts on humans in numerous ways: affectively, cognitively, psychologically, and physiologically. Most humans explore and understand the world through their vision. Thus, when planning or designing a setting, careful consideration of the visual environments created and their impacts on potential users should be considered.

Human Responses to Visual Environments

The environmental psychology literature tends to focus on appearance and disregards other elements of aesthetics such as sound, smell, and touch (Nasar, 1997). Design researchers have argued that vision is the dominant human sense, which may be the reason why most research efforts have focused on visual efforts (Nasar, 1997).

Based on ideas suggested by Sparshot (1972), Russell and Snodgrass (1989), and Izard (1977), Nasar (1997) defined aesthetic response as "favorable evaluative affect experienced in relation to the environment….that is valued otherwise than for its commercial, economic, vital or hygienic significance" and indicated that it had three components: affective appraisal, physiological response, and behavior (p. 152-153). Nasar (1997) argued for the primacy of the aesthetic dimension in humans' experiences of their surroundings, stating "from an evolutionary perspective, there is good reason for the primacy of evaluation. To survive, humans would have to have had to evaluate

events that might benefit or threaten their well-being. If so, the aesthetic character of our surroundings is not a trivial concern" (p. 155).

According to Nasar (1997), there are two dimensions of how humans respond to visual environments: formal and symbolic. These are not mutually exclusive and often overlap. Formal responses emphasize structure, while symbolic responses emphasize content and meaning (Nasar, 1997). Formal response variables include physical properties and relationships such as shapes, proportions, scale, complexity, color, illumination, shadowing, spatial relations, and incongruity. These are objective visual characteristics, and they are independent of people's culture, learning, or background.

Symbolic responses reflect people's internal representations of, and associations with, an object or setting. Symbolic responses emphasize the meanings and associations people attribute to buildings or landscapes. They are related to learned emotions based on past experience, culture, and background. Symbolic responses have two meanings: a denotative meaning, a judgment about what something is; and a connotative meaning, or the inferences about meaning, quality, and value. Some of the most pertinent symbolic variables in relation to the environment or setting are naturalness and built nuisances as well as style (Kaplan and Kaplan, 1995; Ulrich, 1983; Rapoport, 1982; Groat, 1982; Nasar, 1990; Nasar, 1997). For example, a tourist may easily recognize a hotel. However, given modern décor, elaborate decorations, lush vegetation and a waterfall in the hotel foyer, a tourist may infer the hotel to be "up-scale." "In contrast to formal aesthetics, which refer to the appreciation of parts for their own sake, symbolic aesthetics depend on a cognitive process, where the individual recognizes the denotative

meaning, the content of style of a formal structure, and infers connotative meanings about it" (Nasar, 1997, p. 160).

People constantly scan and evaluate their surroundings to acquire information about content and meaning. Kaplan, Kaplan and Ryan (1998) argued that understanding and exploration are basic human traits. They stated that understanding is "the desire people have to make sense of their world, to comprehend what goes on around them" (p. 10) and that understanding provides a sense of security. When humans cannot understand their surroundings, they may become distressed. Additionally, humans have a strong desire to explore and expand their knowledge and understanding by seeking out new information and challenges. They further argued that the "understanding-and-exploration" framework lends insight to the design and management of settings. The authors' work focused on nature, but many of their observations may be germane to urban and indoor settings.

The environmental psychology literature has identified four variables that exert influence on determining landscape preferences. They are: complexity, spatial depth, mystery, and contextual fit. Each of these variables is discussed in the following sub-sections.

Complexity

Kaplan, Kaplan, and Wendt (1972) exposed respondents to colored slides of both natural and urban scenes to study the relationship between complexity and preference.

The images used in the study were chosen to represent a visual continuum ranging from entirely natural, through predominantly natural, through predominantly man-made, to entirely urban. Natural scenes were strongly preferred over urban scenes, so much so, that their distributions hardly overlapped, so the least preferred nature scene was favored over the most preferred urban scene. Additionally, the most preferred urban scene contained several small trees, suggesting a nature influence.

Regarding complexity, urban scenes were rated as being significantly more complex than natural scenes. However, complexity did not account for preference across the scenes, as the correlation between complexity and preference was relatively low. However, when the natural set and the urban set were evaluated independently, complexity and preference were significantly and positively correlated within each set. These results indicated that nature scenes were generally preferred over urban scenes and that complexity could not account for differences in preference values between nature and urban scenes. Preference between these two types of scenes could not be attributed to complexity, but within each scene type complexity was related to preference.

Spatial Depth

Kaplan et al. (1998) pointed out that despite different localities and a variety of backgrounds, people tended to rate scenes based on preference quite similarly. The authors identified types of scenes that generally rated low in preference and types of

scenes generally rated high in preference. They found that people generally did not favor scenes characterized by large expanses of undifferentiated landcovers, dense vegetation, or obstructed views. The authors suggested that settings with large expanses of undifferentiated landcovers provided no features to focus on and, thus, people are not inclined to explore the area further because they find the undifferentiated openness to be uninteresting. Scenes characterized by dense vegetation and obstructed views appeared to arouse concerns about confusion and getting lost. The most preferred settings were those that contained spaced trees and smooth ground, which provided clear focal points, unobstructed views, and invited entry.

These findings formed the foundation for development of a preference matrix based on arousal theory (Kaplan et al., 1998). The Kaplans' model is reproduced in Figure 1. This model proposes that preference is based on two conditions: understanding and exploration, and that these can be achieved by four factors: *coherence* and *complexity* in a two-dimensional plane and *legibility* and *mystery* in a three-dimensional plane. They argued that the two-dimensional plane or "picture plane" represents the surface, or rapid assessment of patterns, including light and dark, textures, elements in the scene, grouping and location, which are extracted as primary information. The three-dimensional plane involves aspects of inference, about what is deeper in the scene, beyond what can be seen there. These four factors are all evaluated by a person assessing a setting.

	UNDERSTANDING	EXPLORATION
IMMEDIATE	Coherence	Complexity
INFERRED, PREDICTED	Legibility	Mystery

Figure 1. The Preference Matrix (Kaplan and Kaplan, 1998)

According to the Kaplans (1998), a coherent setting is defined as being orderly and is organized into distinctive areas. Coherence can be enhanced if the scene has some repeating themes and unifying textures, such as similar plant materials, or unifying decorative styles. Textures can also be used to define areas by adding borders, or fences. A relatively small number of contrasting elements may also be helpful in creating coherence. Complexity relates to richness, intricacy, and variety. A highly complex scene can become coherent through creating patterns or themes. Legibility refers to distinctiveness. To increase legibility, a scene needs to have memorable components to aid in orientation and memory. Mystery is the promise that more is yet to be revealed or seen, which may create a desire to explore (Kaplan et al., 1998).

Mystery and Fear

Several studies have sought to determine the influence of mystery on visual preference. Mystery has been shown to be a contributor to both visual preference and perceived danger (Herzog and Gale, 1996; Kaplan and Kaplan, 1998; Schroeder and Anderson, 1984; Nasar and Jones, 1997; Herzog and Miller, 1998). Thus, it can elicit both approach and avoidance behaviors, depending upon the context, or type of setting.

Herzog and Miller (1998) proposed that "attraction (preference) and fear are incompatible affective reactions, and that one or the other will typically dominate in any specific situation, and that context will determine which reaction will dominate" (p. 421). They pointed out that mystery most commonly is linked to preference in natural settings, while almost all research that has been reported linking mystery to fear or danger has been in the context of urban settings. The authors explored the relationship among mystery, danger, and preference as they related to openness and pathway curvature in both urban and field/forest settings. They found that mystery was positively correlated to pathway curvature and negatively related to openness, and that it was a positive predictor of both danger and preference, even though danger and preference were negatively related. Thus, setting context, such as urban or natural, was a significant predictor of both danger and preference. Herzog and Miller (1998) confirmed that mystery can contribute to different affective responses, depending upon the context in which it is viewed. Thus, the affective responses associated with the

setting or environment contributed to whether mystery was positively or negatively perceived.

Schroeder and Anderson (1984) examined the characteristics that affect users' perceptions of personal safety at urban recreation sites. Using photographs of outdoor recreation sites, they asked respondents to rate the photographs on the dimensions of perceived safety and scenic quality. They found that high levels of perceived security tended to be associated with open areas which offered long viewing distances and with signs of development and nearby populated areas. However, they also found that high scenic quality depended on the presence of more naturalistic features including natural vegetation, and was lowered by man-made features. Generally, perceived security was associated with high visibility and developed park features, while scenic quality was associated with naturalness and vegetation.

Average viewing distance into a scene was the strongest predictor of perceived safety, followed by grass and water. Shrubs, graffiti, and litter were found to detract from perceived personal safety, while man-made items, such as park benches increased perceived safety. Regarding scenic beauty, woody vegetation and water were the main positive influences, while man-made features, litter, graffiti, and maintenance problems detracted from scenic beauty. These results suggested that it may be difficult to provide recreational areas that are perceived to be both safe and attractive. However, the authors believed that combinations of items that tend to signify safety and items that signify scenic beauty could be used in efforts to provide visually appealing and safe environments. For example, they suggested reducing the density and size of shrubs and

raising tree canopies to improve depth and visibility, in efforts to maintain natural elements which signify scenic preference.

Schroeder and Anderson (1984) found that perceptions of both safety and scenic beauty could be shaped by management. However, they also pointed out that perceptions could be influenced by nearby features external to a setting, such as streets and neighboring buildings. Additionally, the authors alluded to other factors that could affect perceptions that were not addressed in their study, including the activities in which a person was engaged while within the area, whether the person was alone or with a group, day or night use, and the reputation of the area.

Nasar and Jones (1997) examined the fear and stress of crime and how these emotions were related to physical settings. The authors used the term "hot spots of fear" to characterize situations that evoked fear (p. 292). They examined hot spots of fear using Appleton's (1975) prospect-refuge theory which proposed that, based on functional-evolutionary traits, humans prefer places that offer them prospect (in the form of open vistas) and places of refuge (enclosures) because they could see but not be seen. Additionally, he proposed that humans prefer a view of anticipated refuge when they feel safe, but in uncertain situations this type of view may evoke fear, because of the possibility of there being a hidden threat in the enclosed area. Thus, Nasar and Jones (1997) examined hot spots of fear based on three cues: *physical entrapment* (barriers to escape), and two elements of concealment (blocked prospect) as *hiding places*, and *dark spots*.

The authors asked female college students to walk along a predetermined path across a campus at night and carry a tape-recorder to record their emotions and reactions to the environment as they walked. Overwhelmingly, respondents indicated three areas as fearful, and their fears were associated with several elements of concealment (darkness, inability to see, and bushes), the absence of other people, and enclosure. Respondents identified three areas as safe. These areas "contained large, well-lit, open, grassy space, dotted with trees . . . numerous crosswalks, and some pedestrian activity" (p. 313). While their findings suggest mystery has negative emotional impacts, the authors point out their findings do not imply that deflected vistas or the element of mystery should be removed from planning: "Although eliminating such features may create places feeling safer after dark, it may deaden places during the day" (p. 319). They suggested the utilization of lighting which would eliminate and reduce concealment opportunities after dark to help alleviate fears.

As previously mentioned, Kaplan, Kaplan and Ryan (1998) suggested mystery in a physical setting was preferred, as it encourages exploration. They stated that a "partial view or suggestion of what might be ahead makes the situation far more compelling" (p. 43). However, they also reinforced the conclusion by Nasar and Jones (1997) that blocked or obstructed views can create fear or concern, and visual access increases confidence.

Contextual Fit

Contextualism in architecture refers to a building fitting its context. In other words, contextualism explains whether a building has a good, compatible fit with its surroundings, or if it looks out of place. Groat (1984) examined the specific design features which influenced people's perceptions of how well a building fit its context. Using photographs, she interviewed 73 non-architects in three cities about the compatibility of 25 buildings found within the cities. She found that physical features such as façade design make the most significant contribution to perceived compatibility, while elements such as organization have relatively little effect. Additionally, the most preferred contextual relationships contained a high degree of replication. Groat stated that complete replication was not necessary, as people tended to prefer mixtures of traditional and contemporary styles, but common in the mixture was the replication of façade features. She identified several façade features as being influential in perceived compatibility: building materials (such as brick or limestone), windows, rooflines, and overall shape. Generally buildings were viewed negatively if they were "too different" from adjacent buildings. Groat found that her non-architect respondents preferred the more ornate facades of traditional buildings to the starkness of some contemporary architecture.

Groat (1984) reported differences in contextual preferences between local and non-local respondents. She suggested the reason for this was that locals viewed the buildings in a much broader context, drawing on previous experience and exposure to

the area in their interpretation of compatibility than non-locals, who had no or little prior context in which to view the picture.

Many cities have "design review" requirements which exercise influence on the design of new buildings in an area. Stamps (1995) stated, "for design review controls there is a very plain interpretation of this holding: the government has to do a cost/benefit analysis to establish that, for any proposed set of design controls, the degree of public benefit (i.e., the improvement of the visual image of the targeted area) will outweigh the costs imposed on the individual property" (p. 60). However, these codes are often determined without any research into what the public benefit is, or how the public responds to certain features. Thus, Stamps set out to validate residential urban design principles such as scale and character of residential block facades. He found that people preferred homogeneous blocks over blocks with different buildings, even if in isolation they preferred an individual different building more. He also reported that the more attributes a building shared with the other buildings on the block, the more people preferred the block. Thus, Stamp's findings supported those reported by Groat (1984).

Nasar (1989) examined the symbolic meanings of house styles. He proposed that architecture should communicate desirable meanings to the public, and empirically studied the meaning inferred from house styles. His research examined the connotative meanings that laypeople infer from various styles of homes, and whether those meanings varied with sociodemographic characteristics or region. He also examined whether these meanings were shared by architects and whether architects could accurately predict the opinion of a majority of the public.

Nasar's (1989) work is important because not only did it seek to determine if preference varied by sociodemographics, but also it examined connotative meanings about the people who might dwell in homes with different styles, such as their perceived status and friendliness. Thus, he sought to identify whether diverse groups of people shared common meanings in relation to home styles.

Six styles of homes were chosen, and pictures were chosen to control for size, height, number of windows, vegetation, and shading, in efforts to make the homes alike except for style. Respondents were asked to rank the six homes based on which they would most prefer to live. They were then asked to rank the homes on how friendly they perceived possible residents to be, and the status of each group of residents. On all three connotative meanings, non-architect respondents responded similarly. Architects also responded similarly to each other, but their rankings were different from the opinions of a majority of the public and, in addition, they misjudged the public's perceptions. As anticipated, sociodemographic differences were detected. Respondents varied in their responses according to education, occupation, age, gender, where they grew up and length of residence. What is particularly interesting about this study is that respondents were able to give immediate responses about meaning. Not only were they able to make assessments about the homes, but they were also able to make assessments about the characteristics of people who might reside within them. Nasar pointed out that irrespective of whether these assessments are accurate, such judgments are likely to influence behavior.

The preceding literature suggests there are elements within the visual environment that serve as cues to the public about preference. Complexity, spatial depth, mystery and contextual fit have all been reported to influence preference, or positive affect. This suggests that the visual environment can be manipulated to increase or decrease preference. The next section reviews literature that suggests the visual environment can also have psychological and physiological effects.

Effects of Visual Environments on Stress and Health

It is widely believed that being in the presence of nature is healthy, both mentally and physically. The idea that exposure to nature is beneficial to humans and is psychologically healthful is not new. Indeed this notion was part of the justification for national, state, and city parks in the nineteenth century (Nash, 1973). However, in contemporary times it is rarely considered when designing and developing buildings, settings, and locations. Oftentimes, buildings are constructed without any regard to views of nature or any thought of the stressful implications of a design on people's health.

The idea of psychological restoration was not empirically studied until the late 1970's. Ulrich (1979) examined visual landscapes and the psychological well-being associated with them. He was interested in the effects of visual perceptions on feelings of anxiety, and whether these effects differed from those produced by viewing urban environments that lacked nature elements. Using a selection of color slides chosen to

represent both nature and urban views and a range of depth and complexity, Ulrich showed either the nature set of slides or the urban set of slides to students immediately following completion of an examination, so they were experiencing some level of anxiety and arousal.

Ulrich utilized the Zuckerman Inventory of Personal Reactions (ZIPERS) (Zuckerman, 1977) to assess the respondents' well-being. According to Ulrich, "ZIPERS is a broad affect test that measures an individual's emotions and anxiety state at the particular time the test is taken" (p. 19) and it measures feelings on five factors: fear arousal, positive affect, anger/aggression, attentiveness/coping, and sadness. The results indicated that stressed individuals felt significantly better after exposure to nature scenes than to urban scenes lacking nature. Urban scenes tended to negatively affect emotional well-being. Additionally, nature scenes tended to hold respondents' attention longer than the urban scenes. These findings suggested that visual landscapes are important not only for their aesthetic appeal, but also because they can influence emotional states. Ulrich argued that location and design decisions relating to high stress work places and hospitals should incorporate interaction with nature, and that the potential of visual landscapes for reducing or increasing stress, and influencing other emotional states, should be considered.

Thus, Ulrich empirically demonstrated that visual landscapes affected psychological well-being. In 1984, he set out to determine if visual landscapes also impacted humans' physiological well-being. He postulated, "because most natural views apparently elicit positive feelings, reduce fears in stressed subjects, hold interest,

and may block or reduce stressful thoughts, they might also foster restoration from anxiety or stress" (p. 420). To test this hypothesis, Ulrich examined the effect of visual views on the recovery of hospital patients because patients spend much of their time in the same location, with little to occupy their time. He posited that patients with a view of nature through their hospital room window would experience a restorative effect, both emotionally and physically, and thus recover more quickly than those patients who did not have a view of nature through their hospital window.

Ulrich obtained records of patients who had a cholecystectomy (gallstone removal from the bladder) in a specific hospital between 1972 and 1981. All these patients had been assigned to rooms on the same floor. Patients who had been assigned to one side of the wing had a view of a small stand of trees, while patients on the other side had a view of a brick wall. All rooms were designed similarly, with the same nurses on call. Essentially, the only difference was the view through the window. All of the patients chosen had the same procedure, which is relatively standardized. Patients were matched in pairs so that each pair shared as many characteristics as possible (age, gender, weight, and so forth) except for the view through the window. The final data set included 46 patients grouped into 23 pairs, composed of 15 female and 8 male pairs. Several pieces of information were extracted from each patient's record: (1) length of hospitalization, (2) number and strength of analgesics given each day, (3) number and strength of doses of anxiety medication, (4) minor complications, (5) attending physician, and (6) all nurses' notes relating to a patient's condition or recovery.

Based on comparison of the patients' records, Ulrich (1984) reported that patients with the view of nature had fewer negative evaluations from nurses, took fewer doses of medications, used lower strength analgesics, and had slightly lower scores for post-surgical complications. Thus, he suggested that views of natural scenes had positive therapeutic influences on the patients and that hospital designs should account for the quality of patients' window views.

In these two studies, Ulrich determined that environmental scenes affected psychological and physiological well-being. In 1991, Ulrich, Simmons, Losito, Fiorito, Miles, and Zelson utilized both of these concepts together to see if environmental scenes influenced psychological and physiological well-being simultaneously. The authors utilized both self-ratings of affective states and several measures of physiological states to determine whether exposure to different types of environments affected stress recovery. This study was pioneering in two ways. First, it measured stress recovery utilizing not only self-reports based on ZIPERS scales, but also physiological measures such as cardiovascular activity, muscle tension, and skin conductance. Second, videotapes, with movement, color, and sound were used as the experimental treatment as opposed to still photographs. Thus, additional sensory cues could be incorporated into the treatment.

Together, the verbal affective measures and physiological measures revealed that nature environments fostered a more complete and faster recovery than urban environments. Based on the physiological findings, the authors suggested that exposure

to nature possibly has an impact on the parasympathetic nervous system in addition to psychological components including cognition and affect.

Kaplan, Kaplan, and Ryan (1998) offered suggestions on how to create restorative environments, which can reduce stress, mental fatigue, and irritability. They observed that restoration occurs when people can experience tranquility, serenity, or peace of mind, and that restorative benefits are most likely to emerge when people feel safe and can let down their guard so they can become immersed in an environment without feeling vulnerable. The authors suggested five features that contribute to creating restorative environments: (1) quiet fascination, (2) wandering in small spaces, (3) separation from distraction, (4) wood, stone, and old, and (5) the view from the window. According to the authors, all of these features allow opportunities for restoration because having these features in an environment "permits the eye to focus on things that do not require any special effort yet are inviting and fascinating" (p. 71).

The authors proposed that *quiet fascination* can come from natural settings, which can fill the mind and enhance restoration because these settings allow opportunities for reflection. As opposed to busy, noisy settings which can cause distraction and stress, areas containing opportunities for quiet fascination allow people to unwind and think about things going on in their minds, as opposed to things going on around them. The authors also suggested that *wandering in small spaces* can foster restoration because small spaces can nurture feelings of being in a completely different place, or a "whole different world" (p. 71). To create these small spaces the authors

suggested dividing up larger spaces and positioning viewpoints so that the entirety of the area cannot be seen from any one place.

The idea of being in a different place is referred to as "extent," which Kaplan, Kaplan and Ryan (1998) defined as "the sense of extension in time and space…the sense that there is more beyond what meets the eye, that one could go on and on" (p. 71). The authors state that "a place with extent is a coherent whole…free of interruptions and interference from things that do not belong" (p. 73). Thus, *separation from distraction* can lead to restoration, while intrusions and distractions may add to stress. Enclosures can help to create separation by blocking out distractions and leaving them out of view.

When designing settings, the authors state that choice of materials can help or hinder restorative effects. *Wood, stone, and old* materials help create a natural ambiance and give contextual meaning to areas, as opposed to other types of man-made elements which may be distractive. The authors posited that people do not have to be within a restorative environment to receive restorative benefits. Often, the opportunity to view a restorative environment will suffice. Thus, *the view from a window* showing a nature setting can foster restoration by providing opportunities for people to let their mind wander and feel that they are in the setting, separated from their immediate surroundings. The views may incorporate a restorative focus, such as a tree or flower garden, or an appealing vista.

Thus, the visual environment can be manipulated not only to improve preference or positive affect, but also it can be designed to improve mental and physical well-being. The following section reviews specific visual quality elements identified in the

environmental psychology literature that have been shown to impact perceptions and preferences.

Specific Visual Quality Elements

The literature has suggested multiple visual elements that affect perceptions and preferences. The following discussion briefly outlines a few of these elements: (1) built and constructed elements, (2) crowding, (3) vegetation, (4) water elements, (5) urban stressors, (6) maintenance and upkeep, (7) signage, and (8) comfort amenities. These elements represent those examined in the present study. These elements were chosen for several reasons. First, these eight elements have been examined in the environmental psychology literature and have been shown to influence perception of the physical environment. Secondly, these elements could be manipulated with ease in a digital photograph. Lastly, these eight elements represented a diversity of visual features, but still allowed the researcher to concisely define the visual parameters by not overcrowding the scene with manipulated visual features.

Built and Constructed Elements

The type of building materials used or the level of constructed elements have an impact on preference and scenic quality. Schroeder and Anderson (1984) found that man-made features detracted from scenic quality, and the presence of natural features

increased scenic quality. Kaplan, Kaplan and Ryan (1998) argued that the choice of building materials could enhance restorative feelings and thus influence affect. They suggested that wooden fence materials, wooden or stone structures, stone steps and wooden benches provided examples of materials that are compatible with their surroundings and thus do not distract from the setting.

Level of Crowding

In certain contexts, as crowding increases, preference for a setting decreases. Ulrich, et al. (1991) proposed that scenes with high pedestrian traffic were more stressful, and thus caused a more "negatively-toned" emotional state in respondents. Kaplan, Kaplan and Ryan (1998) argued that environments that provided opportunities for quiet fascination led to restorative feelings and positive affect. They argued that noisy settings full of spectators are distracting, and make it difficult for users to think of anything other than the distractions. Lee and Graefe (2002) defined crowding as a negative assessment of a certain density level in a given area. They found that perceptions of crowding resulted when individuals were overwhelmed by the density-induced condition of the physical environment or by interactions with other visitors.

Vegetation

Further discussion of natural elements, including vegetation is presented later in this chapter in a discussion of evolutionary perspective on humans' affinity for naturalness and Wilson's (1984) biophilia hypothesis. Wilson (1984) proposed that a common characteristic of humans is their tendency to pay attention to, affiliate with, or otherwise respond positively to nature, and that this response is partly genetic.

In addition to this later discussion, Schroeder and Anderson (1984) found that parks with abundant trees were rated high in scenic quality, and that vegetation was one of the main influences on scenic quality. Shafer and Richards (1974) found that natural environments were more pleasing than environments containing man-made structures and developments. Nasar (1983) found that the naturalness of scenes increased respondents' preference ratings. Ulrich (1979) found that stressed individuals felt significantly better after exposure to nature scenes as opposed to urban scenes lacking nature elements. Additionally, he found that exposure to natural scenes increased positive affect, including feelings of friendliness, affection, playfulness, and elation. Ulrich (1979) reported that natural scenes had strong attention holding properties, and he suggested that this plays a critical role in stress recovery restoration from mental fatigue. Kaplan, Kaplan and Ryan (1998) proposed that trees make special places. They argued that while other forms of vegetation are also greatly appreciated in shaping preference, the fondness people express for trees is particularly noteworthy.

Kaplan, Kaplan and Wendt (1972) found that nature scenes were greatly preferred to urban scenes. The images used in the study were chosen to represent a visual continuum ranging from entirely natural, to predominantly natural, to predominantly man-made, to entirely urban. Natural scenes were strongly preferred over urban scenes, so much so, that their distributions hardly overlapped, so the least preferred nature scene was favored over the most preferred urban scene. Additionally, the most preferred urban scene contained several small trees.

Water

Scenes including water features are generally preferred over scenes without water features. Schroeder and Anderson (1984) reported that parks with water features were rated high in scenic quality, and that water features were one of the main influences on scenic quality. Ulrich, et al. (1991) proposed that scenes with water features aided in stress reduction and thus caused a more "positively-toned" emotional state. Herzog and Barnes (1999) found that waterscapes promoted tranquility and preference and they reported a strong correlation between the constructs of tranquility and preference. Additionally, Zube, Pitt and Anderson (1974) found that water is a dominant visual element that always increased scenic quality.

Urban Stressors

Visual indicators of the urban environment have been found to decrease preference ratings. Schroeder and Anderson (1984) reported that urban park scenes with many buildings present were rated low in scenic quality. They also demonstrated that man-made features such as cars, fences, lights, and nearby buildings were negatively correlated with scenic quality. This implies that when people visit an urban park, they want to feel removed from elements that remind them of the city. Shafer and Richards (1974) reported that man-made structures and developments were less pleasing to respondents. Nasar (1983) found that preference for scenes decreased with the prominence of urban features, including poles, wires, signs, and cars. This finding is congruent with Kaplan, Kaplan and Wendt's (1972) study which demonstrated that people prefer natural scenes over urban scenes. Ulrich (1973) demonstrated that urban scenes worked against the emotional well-being of respondents, and than urban scenes held the attention of respondents less effectively than natural scenes. Thus, the preceding literature suggests that the urban environment provides stressors and detracts from pleasant perceptions and preferences.

Maintenance and Upkeep

Maintenance and upkeep have been reported to be visual indicators of preference for scenes. Schroeder and Anderson (1984) demonstrated that well maintained parks

were rated high in scenic quality. Additionally, they reported that the presence of litter in parks caused respondents to rate park scenes as having low scenic quality. They also found graffiti and other visible signs of abuse and neglect to detract from scenic quality. Additionally, dilapidation in the environment has been found to be negatively related to affect (Marans, 1976; Nasar, 1983). Nasar (1983) described that respondents had higher preference ratings for scenes that demonstrated upkeep.

Signage

Signage has been shown to influence visual preference. While there is an entire body of literature on semiotics and information provided on signs, the physical nature of the sign itself has been shown to influence scenic quality and preference. Nasar (1983) suggested that people have to make decisions about the use of an environment, and thus prefer scenes having clear cues as to the intended use of a setting. This relates to what Kaplan (1972) called "identity", which was one of the two components of legibility. Kaplan, Kaplan and Ryan (1998) argued that new visitors needed orientation and key decision points needed to be easily identified. They indicated that certain information needed to be emphasized for new visitors. This included landmarks, or the prominent and distinctive elements of the setting that anchor an individual's understanding of it. Kaplan, Kaplan and Ryan (1998) also referred to landmarks as gateways, which could include entrance signage. They described three features of gateways. First, gateways serve as aids to orient visitors to an area. Second, gateways serve as a transition between

"outside" and "inside" and allow individuals to anticipate what they could experience within a setting. Third, gateways are choice points in that they encourage people to stop and consider where they may be going. Thus, effective signage serving as a gateway for an area can encourage understanding of a space as well as exploration of it.

Signage also can have a negative effect. Nasar (1997) reported that people most frequently cited signs and billboards as the physical elements that most detract from community appearance. Nasar and Hong (1999) examined the role of sign obtrusiveness and complexity in the perception and evaluation of urban signscapes. Similar to Kaplan and Kaplan (1989), Nasar and Hong (1999) posited that theory suggested hedonic tone (preference and pleasantness) was related to involvement (a place being interesting) and making sense. They also suggested that hedonic tone might relate to spatial behavior, such as the desirability of a place to visit. They found that preference was associated with reductions in sign obtrusiveness. In addition, they suggested that some unmeasured sign features may also affect preference, such as age and upkeep of the signs as well as sign message.

Comfort Amenities

Kaplan, Kaplan and Ryan (1998) argued that stopping points along the way during an excursion provided opportunities for resting and observing. They suggested that providing places for people to rest and contemplate provided a restorative effect on individuals, thus influencing positive affect. They suggested that often, people try to

pack too much into a day, and even if the activities are enjoyable, people find themselves becoming mentally and physically fatigued. Thus, they indicated that "time out" or stopping points along the way helped in regaining a sense of peacefulness. Similarly, in a recent study of zoo visitors, Tomas, Crompton, and Scott (2003) suggested that zoos should focus attention on comfort amenities, including places to sit and rest and drinking fountains. They noted that such features were rated as important to zoo visitors, but visitors indicated the zoo performed rather poorly in this area.

Urban Visual Quality

Kevin Lynch (1960) wrote a seminal book entitled *The Image of the City*, in which he discussed the importance of sense of place, and how urban planning could help or hinder this notion. He argued that environmental images were the result of a two-way process between the observer and the environment:

> the environment suggests distinctions and relations, and the observer—with great adaptability and in the light of his own purposes—selects, organizes, and endows with meaning what he sees. The image so developed now limits and emphasizes what is seen, while the image itself is being tested against the filtered perceptual input in a constant interacting process (p. 6).

Thus, Lynch pointed out that different observers are likely to have significantly different images of the same environment.

Lynch introduced the idea of *imageability*, which he defined as "that quality in a physical object which gives it a high probability of evoking a strong image in any given observer" (p. 9). Imageability could be provoked by shape, color, arrangement, or

structure. He described the formal types of image elements that divide and create the city image: (1) paths—channels where people move; (2) landmarks—point references that define objects; (3) edges—linear boundaries or breaks in continuity; (4) nodes—strategic spots or intensive foci; and (5) districts—medium to large sections of the city, which people can mentally enter "inside of" that have some common, identifying character.

Lynch noted that as cities are designed or redesigned, these elements will become interrelated in the minds of observers. He pointed out that these elements "must be patterned together to provide a satisfying form" (p. 83). In grouping elements together in a visual setting, elements may "reinforce each other, resonate so that they enhance each other's power; or they may conflict and destroy themselves" (p. 83). The elements operate together in a context and that rather than a single comprehensive image for the entire environment, there are sets of images, which more or less overlap, or are interrelated.

In studying how people form images of cities, Lynch (1960) observed that image "was not a precise, miniaturized model of reality, reduced in scale and consistently abstracted. As a purposive simplification, it was made by reducing, eliminating, or even adding elements to reality, by fusion and distortion, by relating and structuring parts" (p. 87). Thus, people perceive their environments cognitively and create hierarchical schemas and cognitive maps to give the elements personal understanding.

Visual Quality in Recreation and Tourism

In 1972 Gunn first coined the phrase "vacationscape" to describe the environment in which tourists experience a destination. He noted, "I coined the word during my first visiting professorship in Hawaii in 1966. It stemmed from my basic profession, landscape architecture, and the escalating pastime of the day, vacationing—the American term for holiday or pleasure travel. Perhaps writings such as Gordon Cullen's Townscape in 1961 also had subliminal influence" (Gunn, 1997, p. ix). Gunn's writings stemmed from his question, "What do we as travelers see, smell, feel, and hear as we travel, and are designers and developers sufficiently sensitive to our interests and reactions?" (p. ix).

Gunn (1997) warned that as mass tourism continues to grow, it continues on a path of sameness, producing a homogenized landscape which is unappealing to tourists. As developers strive to copy other successful destinations or attractions, the visual landscape of tourism looks alike, and there is hardly anything worth leaving home for. As homogenized development continues, the sense of place becomes lost. Topographical and geographical features are removed or modified, vernacular architecture is replaced by standardized, modern architecture, and scenic vistas become blocked or destroyed: "Place qualities, the very essence of the pulling power of destinations, are unwittingly being decimated" (p. 6). Gunn cited a poignant quote by

Adolf Schmitt, a famous landscape architect, after Schmitt returned from a visit to the Nile:

> As the objects worth seeing are slowly given way to destruction, the one-sided development of tourism leads itself to absurdum. First of all, exaggerated traffic handling: the "Valley of the Kings" is covered with asphalt and concrete right to the center, which today is occupied by a monstrous restaurant building, suitably called the "Tomb of Coca Cola." There the tumultuous eating and noisily drinking human mass is sitting right in the middle of one of the most time-honored and most ancient graveyards in this world. (Schmitt, 1986, p. 158)

Such actions as these are especially detrimental to developing countries, to sustainable tourism, and to tourism based on natural or historic attractions. It is often not until the damage is done that local residents become aware of how their community has been forever changed, all in the name of tourism. "Developers often forget that everything created for the city has two kinds of users—residents and visitors. To satisfy both requires considerable communicative exchange and often diplomatic compromise" (Gunn, 1997, p. 7). Thus, it becomes imperative that the visual environment or vacationscape is acceptable, not only to tourists but also to residents.

Bruner (1951) described a three-phase process of image formation that can be applied to the creation of tourists' images as they interact with an environment. He argued that tourists bring images of destinations with them, that they have accumulated over time, when they travel. Even before they reach a destination, tourists visualize the setting, and imagine themselves in it. He called this first stage *hypothesis*, or expectancy, and it explains why tourists can have different reactions to the same stimulus, or notice different elements within the same setting. The more tourists travel, the more their expectations have been confirmed. Thus, these travelers are likely to be

more confident of potential satisfaction or dissatisfaction during repeat trips. The second phase was called *input,* which refers to the stimulus of the place, or when the material truth of a place becomes revealed to tourists. This occurs when tourists attempt to achieve their intended objective for being in the destination. Input evokes reaction through all the senses and, thus, is the totality of the experience. The final stage was referred to as *check*, which is a comparison between what was hypothesized by the tourist and the real input from the experience. This is the comparison of expectations, attitudes and pre-conceived images to the reality of the destination. It is this point for which developers and managers of tourism destinations bear responsibility. If they have created false images through elaborate advertising, they have ultimately staged the occasion for the tourist to feel unfulfilled.

Gunn (1997) argued that the definition of an attraction is magnetic, meaning it draws tourists in. "This concept, that an attraction is defined by its pulling power, is antithetical to the beliefs of many for whom an attraction comes into being merely by the owner's declaration and construction. But the true test is pulling power" (p. 51). Gunn identified two corollaries of the concept of magnetism that should be of concern to tourism developers and managers: (1) "magnetism exists in the eyes of the visitor, and each visitor has unique interests and preferences" (p. 52); and (2) "magnetism is a product of design, development, and managerial operation" (p. 52).

Echtner and Ritchie (1993) examined destination image and proposed a framework which suggests that image formation is complex, containing several components. Additionally, they argued that in order to measure tourists' images of

destinations, a combination of structured and unstructured methodologies are needed. They developed a conceptual framework to explain destination image formation which consisted of three continua: (1) attribute-holistic; (2) functional-psychological; and (3) common-unique (Echtner and Ritchie, 1993). Their model is reproduced in Figure 2.

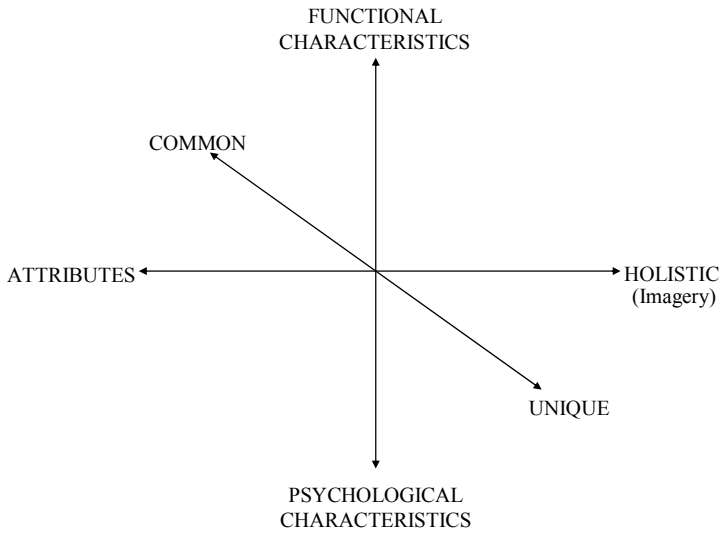


Figure 2. The Components of Destination Image (Echtner and Ritchie, 1993)

They argued that destination image has two main components: an attribute-based component, and a holistic component. Each of these main components contain both functional (tangible in nature) characteristics, and those that are psychological (or abstract). Additionally, destination images can have common (or functional) traits, or unique characteristics, which help to create ambiance and atmosphere.

The attribute-holistic continuum, which embraces the two main components of destination image, is based on the premise that humans have a need to process information they gather. This relates to schema theory (Mandler, 1984; Fiske, 1982; MacInnis and Price, 1987), which describes the organization of knowledge as an elaborate network of mental structures, in which individuals' experiences of an object are a function of their interaction between its features and their knowledge structures (the representation in memory of past experience with the particular class of objects). Echtner and Ritchie (1993) conceptualized the formation of destination image as both perceptions of specific attributes and as well as more holistic impressions of the place. They list specific attributes as items such as climate, prices, and roads; and they list holistic impressions as imagery and mental pictures.

The functional-psychological continuum of destination image, posits that the some characteristics of image can be directly observable or measurable, while other characteristics are intangible and psychological in nature. The third continuum, common-unique, stresses that most destinations have some unique features that sets them apart from other destinations, while they all contain many common features. For example, beach resorts are all likely to have sand and surf, however, the uniqueness of a destination may be in the whiteness of the sand or the number of palm trees lining the beach.

Because destination images are complex, the authors argued that measurement of tourists' images requires both structured and unstructured methodologies. Thus, the authors developed a scale to measure tourists' attribute-specific images, and used open-

ended questions to gauge both tourists' holistic images of destinations and the unique characteristics they identified at these destinations.

Echtner and Ritchie (1993) provided insights into the formation of destination image and a means to conceptualize it. However, the focus of their work was to tie destination image into positioning and advertising strategies seeking to create a destination image that is unique to the setting. Thus, their research focused on pre-travel image formation. The present study sets out to examine aspects of the visual environment that contribute to forming destination image once tourists are at the site.

Visual Quality in Marketing

At destinations, tourists move about freely. They interact with the destination in a manner they deem optimum, which is likely to be different from interacting with a specific service provider, such as a bank. The tourism product is the experience, the end psychological response to their travels and interactions. For most tourists, the sought outcome is the fulfillment of some set of motivating factors (relaxation, excitement, fun, etc.), so there is no tangible take-away good for them to evaluate. Therefore, while tourists ultimately will evaluate a tourism product based on experiences or memories derived from the encounter, it is likely that initial evaluations will be based on the setting in which their experiences occur.

Given the review of environmental psychology literature, it is quite possible that a tourist's initial assessment (or first impression) of a destination's (or vacation's)

quality is likely to be based on tangible elements rather than on other dimensions of service quality, such as responsiveness, reliability, empathy, or assurance. While service quality literature has repeatedly found that reliability is the most important determinant of quality (Berry and Parasuraman 1991), this is not likely to be the case when interaction with service providers and staff are limited. In many tourism settings, there is limited interaction with the staff or service providers, and much of the interaction is with the physical setting of the destination (for example, zoos, museums, parks, and beaches, or high facility/low staff recreation settings, as described by Crompton and MacKay in 1989.) In these types of tourism contexts, tangible elements are aspects of the destination with which tourists will have most contact and, thus, the dimension most likely to influence their perceptions of quality. Therefore, by manipulating tangible elements, the destination can attempt to enhance the quality of experiences for tourists.

Bitner (1992) examined the impact of physical surroundings on the behaviors of both consumers and employees. She drew from several bodies of literature, including environmental psychology, marketing, organizational behavior, ergonomics, and architecture. Since services are generally produced and consumed simultaneously, the consumer is "in the factory," and the factory, or place where the service is produced, has a strong impact on customers' perceptions of the service experience. She stated,

> Even before purchase, consumers commonly look for cues about the firm's capabilities and quality. The physical environment is rich in such cues and may be very influential in communicating the firm's image and the purpose to its customers. Research suggests that the physical setting may also influence the customer's ultimate satisfaction with the service (p. 57).

Bitner (1992) used the term "servicescapes" to describe the visual environment consisting of the man-made, physical surroundings, and suggested that servicescapes affect the behaviors of both consumers and employees in service settings. She further stated that individuals react to places in two general ways: approach and avoidance.

> Approach behaviors include all positive behaviors that might be directed at a particular place, such as a desire to stay, explore, work, and affiliate…. Avoidance behaviors reflect the opposite, in other words, a desire *not* to stay, explore, work, and affiliate (p. 60).

These approach and avoidance behaviors are influenced by perceptions of the environment.

Each individual comes to a particular service facility with a goal or purpose that may be aided or hindered by the setting. As a result, these places should be designed to encourage approach behaviors and discourage avoidance behaviors. Servicescapes influence the nature and quality of visitor interactions, and can affect the nature of the interaction in terms of duration of interaction and the actual progression of events:

> "Physical environments represent a subset of social rules, conventions and expectations in force in a given behavior setting, serving to define the nature of the social interaction…. Recurring social behavior patterns are associated with particular physical settings and when people encounter typical settings, their social behaviors can be predicted" (p.61).

In reviewing other studies, Bitner stated that behaviors such as small group interaction, friendship formation, and participation, aggression, withdrawal, and helping have all been shown to be influenced by physical setting. Thus, from a marketing perspective, one of the first steps in the purposeful design of the servicescape is to identify desired tourist behaviors and the consequent strategic goals that the organization hopes to advance through its physical facility.

In a service setting, tourists respond to their physical surroundings in three ways: cognitively, emotionally, and psychologically. These responses influence visitor behavior in the environment. "Hence, the perceived servicescape does not directly cause people to behave in certain ways…perceptions of the servicescape lead to certain emotions, beliefs, and physiological sensations which in turn influence behaviors. Behaviors are thus mediated by a person's internal responses to the place" (p.62). Thus, a person's personality traits and situational factors (the reason for being in the setting) can also affect response to an environment.

Expectation disconfirmation theory suggests that what a tourist expects to find in a setting or environment also affects an individual's level of satisfaction with it. When expectations are negatively disconfirmed, people are likely to dislike a place, but when expectations are met or when the setting exceeds expectations, people are likely to have positive feelings for a place. Dimensions of the physical environment, including ambient conditions such as temperature, noise, and scents, spatial layout and functionality, and signs, symbols and artifacts can be controlled by the service entity to enhance or inhibit customer actions.

Bitner (1992, p. 67) concluded that the physical environment may assume a variety of strategic roles in services marketing and management:

1. The servicescape provides a visual metaphor for an organization's total offering, acting as a package, conveying a total image and suggesting the potential usage and relative quality of the service;

2. The servicescape can assume a facilitator role by either aiding or hindering the ability of visitors to carry out their respective activities; and
3. The physical environment can serve as a differentiator in signaling the intended market segment, positioning the organization, and conveying distinctiveness from competitors.

Carbone and Haeckel (1994) expanded on this idea and created the concept of engineering customer experiences. They reiterated that interaction with a product or service always results in an experience. They describe an experience as "the take away impression formed by people's encounters with products, services, and businesses—a perception produced when humans consolidate sensory information" (p. 9). Carbone and Haeckel believed that a setting could be engineered or manipulated in ways to help foster or create the desired experiences for customers. This process begins with the deliberate setting of a targeted customer perception, and results in successful registration of that perception in the customer's mind. Thus, systematically designing and orchestrating the signals generated by products, services, and the environment is the means to the end (Carbone and Haeckel, 1994).

They pointed out that the set of impressions customers gain about an organization are both rational and emotional. They can be subtle or extremely obvious, and can occur by happenstance or by purposeful design. These impressions collectively become the customer's experience. Carbone and Haeckel stressed that when engineering an experience, style must be consistent with the target population's perception of the experience, and should not come across as being manipulative.

Customers are wary of being manipulated and if the style is engineered in a clumsy fashion, it can produce negative connotations. Carbone and Haeckel identified two types of context clues used by customers: mechanics and humanics. Mechanics are the sights, smells, tastes, sounds, and textures generated by *things,* such as landscaping, graphics, scents, recorded music, and handrail surfaces. Humanics clues emanate from *people*. They are engineered by defining and choreographing the desired behavior of employees involved in the customer encounter.

Carbone and Haeckel also discussed the importance of uniqueness and building a positive reputation. They used the term *sticktion* to refer to a limited number of special clues that are sufficiently remarkable to be registered and remembered for some time, without being abrasive. They commented on the enormous benefits of favorable word-of-mouth advertising and suggested, "It is the '*talkability*' of *sticktion*, along with sustained quality of the services and products it promotes, that perpetuates an exceptional reputation" (p. 13). They drew from the service quality literature by stating that customer expectations, product performance, service delivery, and experience clues all reinforce one another.

Baker, Parasuraman, Grewal, and Voss (2002) tested the ideas put forth by Bitner (1992). They tested a comprehensive store choice model which incorporated different environmental cues and investigated how they affected choice criteria and store patronage. Since most marketing research on store environments had examined only one environmental condition, the authors set out to determine how different environmental cues collectively influence perceptions and store patronage. They categorized store

environmental cues into three categories: social factors (store employee perceptions), design factors (store design perceptions), and ambient factors (store music perceptions). Based on these various environmental cues, the authors examined consumers' inferences about the levels of quality, price, and value. Using Zeithaml's (1988) value research, the authors proposed that store patronage intentions were a function of merchandise value, interpersonal service quality, and shopping experience cost perceptions, collectively referred to as choice criteria.

Results indicated that design cues had a stronger and more pervasive influence on customer perceptions of the various store choice criteria than did store employee and music cues. The authors suggested that since design cues are visual, they are easier to comprehend and process, as opposed to ambient or social factors which may be more subconsciously processed. It was likely that design cues evoked more vivid mental images than social or ambient cues. Results also indicated that design cues had a stronger impact on the level of perceived stress (an experience cost) involved in shopping. Thus, in general terms, the design factors appeared to be the strongest indicators or predictors of perceived merchandise value.

The preceding review of literature on visual quality from the environmental psychology, recreation and tourism, and marketing literatures reinforces the proposition that there are elements within the visual environment that influence visitors. Consistent across all literatures is the notion that people respond to their environment both affectively and cognitively. As the environment is processed, visitors make assessments of preference. These assessments influence how visitors will interact with the setting.

The environmental psychology literature suggests the visual environment influences affect or preference. Literature in recreation and tourism suggests that image influences tourists' travel decisions. Literature in the marketing field suggests the visual environment influences behavioral intentions. The present study attempts to integrate these concepts into a single model to illustrate how the visual environment shapes tourists' perceptions of destinations and how those perceptions impact behavioral intentions.

Theories Which Explain Human Interactions with Visual Environments

From this discussion of the importance of servicescapes and the visual environment or setting which tourists encounter, it has been demonstrated that environmental cues in a destination are used by tourists to help them to form mental structures or schemas about a destination. These schemas or categorizations aid tourists in understanding their environments, setting first impressions and setting expectations. Thus, it is likely that the anticipated level of tourist benefits expected in a setting (destination) will positively affect their intentions to use the setting, or engage in positive approach behaviors. This section reviews three theories (evolutionary, arousal and schema) which offer insights into how tourists interact with, understand, and influence their visual environments.

Biophilia, Biophobia and Natural Landscapes—An Evolutionary Perspective

Wilson's (1984) biophilia hypothesis proposed that a characteristic of humans is their tendency to pay attention to, affiliate with, or otherwise respond positively to nature, and that this response is partly genetic. He suggested that certain affinities or aversions occur in societies which are widely separated by geography or ritual, positing the existence of a genetic basis for the human preference towards the natural world. For example, when asked to choose between photographs of natural or urban settings, most people prefer natural settings (Kaplan, Kaplan and Wendt, 1972; Kaplan and Kaplan, 1982; Kaplan and Kaplan, 1995) suggesting an ancestral connection to our roots as hunter/gatherers.

Ulrich (1993) expanded upon Wilson's (1984) ideas by speculating that humans' positive and negative responses to nature and natural landscapes were attributable to the adaptive significance of these responses during evolution. He argued, "both the *rewards* and *dangers* associated with natural settings during human evolution have been sufficiently critical to favor individuals who readily learned, and then over time remembered, various adaptive responses—both *positive/approach* (biophilic) responses and *negative/avoidance* (biophobic) responses—to certain natural stimuli and configurations" (p. 75).

An extensive review of previous research led Ulrich (1993) to propose that biophobic and biophilic tendencies result in humans having a predisposition to approach and avoid certain types of physical settings and elements. He suggested that visual depth

and spaciousness in environments is preferred because it reflects evolutionary benefits such as facilitating surveillance, proximity to hidden threats, and escape opportunities. He argued that humans are likely to dislike and avoid settings that are spatially restricted and to respond positively to open, savannah-like landscapes. Additionally people tend to respond positively to natural settings that contain water and green vegetation as opposed to synthetic settings. Ulrich (1993) concluded that the literature overwhelmingly demonstrates that humans exhibit similar responses to natural scenes irrespective of differences in individuals, groups, and cultures.

Ulrich (1993) also observed that in addition to people exhibiting a liking and preference for natural settings, these settings have restorative and stress recovery effects, and they promote enhanced high-order cognitive functioning. He stated that natural open settings foster the recharge of physical energy and promote recovery from psychologically stressful situations. From a functional evolutionary perspective, exposure to non-threatening natural landscapes tends to promote faster and more complete restoration from stress, than does viewing urban or built environments lacking nature. Ulrich concluded that the research suggesting biophilic response to natural landscapes included not only aesthetic preference, but also positive shifts in emotional states and positive changes in activity levels in physiological systems.

Among the characteristics that Ulrich (1993) identified as being consistent with the functional-evolutionary perspective regarding restorative and stress-reducing responses to natural scenes were: speed of recovery, effective reduction of "negatively toned" affects such as fear and aggression, reduction of taxing and deleterious

sympathetic nervous system functions exemplified by reduced blood pressure, and the maintenance or recharge of energy. Additionally, he reiterated the long-standing belief that viewing nature can induce stress recovery and lead to restored mental performance or recovery from mental fatigue. Finally, Ulrich proposed that viewing nature can aid in creative problem solving and creativity.

Arousal Theory

Arousal theory (Berlyne, 1971, Wohlwill, 1976) views the magnitude of aesthetic experience as being dependent on level of arousal. Berlyne (1971) proposed that individuals differ in their responses to arousal depending on their internal state. They may seek an increase in arousal through diverse exploration, or seek a decrease in arousal through specific exploration. This concept is based on the environmental stimulation model (Leuba, 1955), which postulated that individuals receive stimulation from various aspects of their environment, such as ambiguity, novelty and complexity, and that every person has an individual optimum arousal level. The underlying assumption is that there is an inner drive for stimulation. Research has revealed that exploratory behavior can be explained in terms of increasing stimulation, while conservative behavior can be explained in terms of reducing stimulation (Riley, Niininen, Szivas, and Willis (2001).

Berlyne (1971) believed complexity influenced levels of interest and preference, proposing that interest and arousal increases with complexity to some threshold level at

which point interest starts to plateau. He suggested that preference exhibits an "inverted U-shaped" relationship to arousal, with a peak preference occurring at a moderate level of arousal. Thus, individuals who are low in arousal (left of the peak) seek an increase in arousal, while those who are high in arousal (right of the peak) seek a decrease in arousal. Berlyne believed that change in arousal can be achieved by modifying the level of complexity within an environment, such as structure and uncertainty.

Schema Theory

According to schema theory (Mandler, 1984) individuals' experiences with an object are a function of their interaction between its features and their knowledge structures (the representation in memory of past experience with the particular class of objects). Knowledge structures often are seen as cognitive assessments that offer humans a quick way to acquire, organize, retain, retrieve and act on complex environmental information (Mandler, 1984). The knowledge structures for an environment provide a schema against which individuals evaluate a new environment. When they find a discrepancy, they can expand their knowledge structure to embrace the new environment, place it in a different existing category, or create a new category for it. Fiske (1982) argued that schemas guide inferences and predictions.

Summation

These three theories provide an understanding of how individuals react and respond to their environment. Biophilia/biophobia theory proposes that humans have a predisposition to approach or avoid certain physical settings and that humans are drawn to natural settings. Arousal theory proposes that aesthetic preference is dependent on levels of arousal and that complexity influences preference. Thus, individuals seek stimulation from their environment and will explore settings with moderate levels of complexity. Schema theory argues that individuals experience and interact with settings according to their knowledge structures or schemas. This provides a framework for evaluating a new environment. Individuals continually evaluation their environment and compare it against existing schemas. New information is either incorporated into existing schemas, or put into a new schema. Thus, schemas guide inferences and predictions about the environment.

All three theories suggest that tourists seek out information to serve as cues about their environment. These cues, perhaps natural or man-made elements, or level of complexity of a setting, provide information that is measured against current schemas to determine how these tourists will respond to their environment. These cues can encourage approach (or positive) behaviors if greater arousal is anticipated, or could encourage avoidance (or negative) behaviors if the scene is too mundane or overly complex. This will be categorized by the tourists, and will help them to anticipate the type of experience they will encounter in the space.

Quality in the Marketing Context

Service quality measures have become widely advocated since the pioneering work of Parasuraman, Zeithaml, and Berry (1985). They pointed out that it is more difficult for purchasers of services to evaluate quality, than it is for the purchasers of tangible products (Zeithaml, Parasuraman, and Berry, 1990). Thus, interest in measuring service quality is high given the widely accepted notion that the delivery of higher levels of service quality is a key strategy for increasing effectiveness in the marketplace (Cronin and Taylor, 1992).

Zeithaml, Parasuraman, and Berry (1990) noted three key factors that differentiate the purchasing of goods from the purchasing of services. First, services are intangible, suggesting that services deliver performances and experiences rather than objects. When a good is purchased, the customer acquires an asset When customers purchase a service, they incur an expense by spending money on a performance, but do not accrue any assets; they gain an experience. Therefore, service purchasers are likely to perceive there to be a higher risk associated with services than goods purchasers. A second differentiating feature of services is the inseparability of production and consumption. Unlike the production of tangible goods, the purchaser usually is involved in the service production process, and the quality of service is often determined by service delivery. Services usually are consumed while they are being produced, and cannot be evaluated before being delivered. The third differentiating feature of services is their potential for variability. Service delivery may not be consistent across

individuals, time, or situations. Although criteria may be developed to try to standardize a service, exogenous factors are involved that are likely to induce variability.

Researchers have phrased their definitions of service quality differently. Zeithaml et al. (1990) defined service quality as the excellence and superiority of a service, and its function of the extent of discrepancy between visitors' expectations or desires and their perceptions. MacKay and Crompton (1990) defined it as the "relationship between what customers desire from a service and what they perceive that they receive" (p. 47).

In 1985, Parasuraman, Zeithaml, and Berry conducted a study to better understand service quality. They examined four types of service firms (retail banking, credit cards, securities brokerage firms, and product repair and maintenance) and asked executives and customers about their perceptions of service quality. The study revealed criteria that customers used to judge service quality. The authors identified ten determinants of service quality: tangibles, reliability, responsiveness, competence, courtesy, credibility, security, access, communication, and understanding/knowing the customer. However, they noted that the ten determinants of service quality were not necessarily independent, and that some overlap occurred between them. In subsequent studies by these researchers overlap did occur and, as a result, they reduced the number of determinants to five.

Parasuraman, Zeithaml and Berry (1988) developed the SERVQUAL scale comprised of the resultant five dimensions: (1) *reliability*—the ability to perform the promised service dependably and accurately; (2) *tangibles*—the appearance of physical

facilities, equipment, personnel, and communication materials; (3) *responsiveness*—willingness to help customers and provide prompt service; (4) *assurance*—knowledge and courtesy of employees and their ability to inspire trust and confidence; and (5) *empathy*—caring, individualized attention provided to customers. This scale measured service quality as the discrepancy between customers' expectations about the performance of a provider and their assessment of the actual service performance. SERVQUAL operationalized the five components of service quality on a 22-item scale, which measured consumers' expectations about a service, and then reapplied the same scale to obtain their perceptions of the actual service performance.

Since the inception of SERVQUAL, service quality has been a topic of much discussion in the services literature. SERVQUAL has been modified for other contexts, including LODGSERV, which defines and measures service quality specifically for lodging properties (Knutson and Stevens, 1988) and DINESERV which measures service quality for restaurant experiences (Knutson, Stevens and Patton, 1995). Additionally, much attention has been given to the relationships between service quality, value, customer satisfaction and behavioral intentions. Cronin, Brady and Hult (2000) identified 25 articles that have appeared in marketing literature focusing on the relationship between quality, value and satisfaction.

Operationalization of the Quality Construct in the Marketing Context

While service quality has been a viable topic for research, Cronin and Taylor (1992) pointed out that it is an elusive and abstract construct that is difficult to define and measure. Parasuraman, Zeithaml and Berry's (1988) SERVQUAL scale was operationalized as the difference between performance perceptions and expected levels of service. Parasuraman, Zeithaml and Berry (1985) defined service quality as the degree of discrepancy between customers' normative expectations for the service and their perceptions of the service performance. Thus, gap scores created the measurement of SERVQUAL.

Zeithaml, Berry and Parasuraman, (1993) argued that service expectations exist at two different levels that customers use as comparison standard in assessing service quality. These are the "desired service"—the level of service representing a blend of what customers believe "can be" and "should be" provided; and the "adequate service"—the minimum level of service customers are willing to accept. Between these two levels is the "zone of tolerance" which represents the range of service performance a customer would consider to be satisfactory.

It is from this conceptualization of service quality that several areas of criticism have arisen. These include the use of discrepancy scores and the necessity for an expectations measure of quality. SERVQUAL scores were obtained by measuring the difference between expectations and performance. Babakus and Boller (1992) argued that it is important to recognize that "when people are asked to indicate a 'desired level'

and 'existing level' on a particular attribute, a number of psychological constraints may be activated to make the resulting deficiency scores problematic" (p. 256).

Boulding, Karla, Staelin and Zeithaml (1993) argued that the process which generates the expectations component of the gap score in SERVQUAL could lead customers to form varying levels of expectations. They made the distinction between the "should" standard and the "ideal" or "desired" standard. They argued "what customers think *should* happen may change as a result of what they have been told to expect" by word of mouth or advertising, and could be quite different than "the consumer's *ideal* expectation—what a consumer wants in an ideal sense…." (p. 9). The consumer's *ideal* expectation may be unrelated to what is reasonable or feasible. The problem of correctly operationalizing the expectations construct has been discussed by other researchers (Babakus and Boller, 1992; Cronin and Taylor, 1992; Teas 1993).

In addition to this criticism, others have argued that the use of difference scores is problematic in that the creation of a new construct (the gap score) is created by subtracting one measurement (expectations) from another measurement (perceptions) (Babakus and Boller, 1992; Teas, 1993). This, coupled with other psychometric problems identified with SERVQUAL (Babakus and Boller, 1992; Cronin and Taylor, 1992; and Teas, 1993), has led many researchers to prefer a performance-based measure of quality as opposed to a discrepancy measure.

Cronin and Taylor (1992) investigated the conceptualization and measurement of service quality by proposing an alternative method of operationalizing perceived service quality. The results of their study indicated that a performance-only operationalization

of service quality explained more variance in the service quality construct than does a discrepancy measure. They proposed the SERVPERF (performance-based only measures) approach to measuring service quality was superior to SERVQUAL (expectations minus performance) approach. They also argued that the scale items that define service quality in one industry may be different in another. "Perhaps high involvement services such as health care or financial services have different service quality definitions than low involvement services such as fast food or dry cleaning" (Cronin and Taylor, 1992, p. 65). They suggested that "how the service quality construct should be measured and how service quality is related to consumer satisfaction and purchase intentions are arguably among the most important concerns in services marketing" (Cronin and Taylor, 1992, p. 65).

Cronin, Brady and Hult (2000) examined quality, as it related to value, customer satisfaction and behavioral intentions. The goal of this study was to examine the constructs simultaneously and account for their interrelationships. The authors argued that "examining only a limited subset of the direct effects of quality, value, and satisfaction, or only considering one variable at-a-time, may confound our understanding of consumers' decision making" (p. 194), which can lead to strategies that either over-emphasize or under-appreciate the importance of these constructs. "Partial examinations of the simple bivariate links between any of the constructs and behavioral intentions may mask or overstate their true relationship due to omitted variable bias" (p. 198).

Given the debate on how to measure quality, Cronin, Brady and Hult (2000) used two multiple-item performance-based service quality measures. The first was a ten-item

service quality scale derived from Parasuraman, Zeithaml, and Berry's (1985) work; and the second measure consisted of three overall direct measures of overall service quality adapted from Oliver's 1997 work, but similar to those used by other researchers (Babakus and Boller, 1992; Cronin and Taylor, 1992). They found that quality perceptions were an important determinant of customer satisfaction and that the value of a service product is largely defined by perceptions of quality. They argued that from a managerial standpoint, quality should be emphasized as an important operational tactic and strategic objective. They also stated, "It is clear that the role of quality is far more complex than previously reported. Not only does quality affect perceptions of value and satisfaction, it also influences behavioral intentions directly" (p. 211). They viewed quality as a cognitive response to a service experience while satisfaction was viewed as an emotional response, and they argued that cognitive responses precede emotional responses, which is congruent with Bagozzi (1992) and Zajonc and Markus (1982).

Cronin, Brady and Hult (2000) also argued that additional decision-making variables should be included, such as measures of the physical or tangible quality of service products, and the quality of the service environment. Additionally, they suggested that in addition to measuring the direct effects of these constructs, the indirect effects of these variables in relation to each other are also worthy of research attention.

Quality in the Tourism and Recreation Context

Service quality has become an increasingly important concept in leisure services. While the concept was originally designed for businesses, the principles adapt well to leisure services and tourism enterprises. As society changes in terms of demographics and lifestyles, tourists are becoming more demanding. As a result, they are forcing leisure service providers to make substantive improvements in order to compete and remain viable (Wright, Duray, and Goodale, 1992). MacKay and Crompton (1990) suggested that increased competition creates a "survival of the fittest" environment, where only agencies with the highest quality services will garner tourists' discretionary time and income. As competition and visitor wants increase, service quality may be a critical key to remaining a viable competitor.

MacKay and Crompton (1988) offered two approaches to achieving a differential advantage over competitors: (1) charge a low price; or (2) offer a superior quality of service. However, increased competition in the leisure industry requires more substantiated investments in facilities and services in order to remain competitive, charging a lower price is often not a feasible option. Therefore, improving the quality of service may be the more effective solution.

Manning (1986, p. 80) stated that quality in outdoor recreation was "the degree to which opportunities satisfy the motivations for which they are designed." This suggests that quality exists when recreation opportunities meet the needs of visitors. Generally, agencies or companies that have a strong reputation for quality consistently meet

customer expectations. Wright, Duray, and Goodale (1992, p. 34) suggested "the only sure way an agency can know if it is meeting the service expectations of its customers is to measure customers' perceptions of its service quality."

In addition to this, it is important to point out that ultimately tourist satisfaction is achieved through positive *experiences* by the tourist, not necessarily through quality service. Thus, service quality does not directly measure satisfaction. However, quality service may help to provide positive experiences that ultimately provide a basis for satisfaction. As MacKay and Crompton pointed out "service quality relates to opportunities, that is, to the gestalt of the tangible and intangible attributes of the service, while level of satisfaction relates to the psychological outcome which emerges from experiencing the service" (1990, p. 49). Therefore, if tourism destinations want to increase tourists' satisfaction, they may need to enhance quality experiences by improving the quality of facilities and services.

Crompton and MacKay (1989) investigated perceptions of the importance of service quality dimensions for participants engaged in four different types of recreation programs. The four dimensions were based on levels of staff and facility intensity. The four types were: (1) high staff intensive/high facility intensive, (2) high staff intensive/low facility intensive, (3) low staff intensive/high facility intensive, and (3) low staff intensive/low facility intensive. In each of these types, programs were evaluated by participants using the service quality dimensions. They found that in a low staff/high facility intensive activity, the ambiance of the facility and equipment (i.e., the tangibles) were likely to be of central importance to a high quality outcome, whereas in a

high staff/low facility intensive activity, the tangible elements were not likely to be crucial to high quality. The self-directed nature of these activities makes the interaction with staff less prominent, and as a result, the service quality elements of responsiveness, empathy, and assurance are less important in this type of setting. In addition, they found that reliability was consistently ranked high among participants suggesting that irrespective of the type of program, the ability to perform the promised service dependably and accurately is a crucial and important dimension of service quality for recreation facilities to deliver.

Hamilton, Crompton, and More (1991) expanded the research of service quality by examining its importance in a park context. They questioned visitors in heavily utilized day-use parks in Minnesota and Texas, and reported significant levels of association between the level of service quality respondents perceived on each dimension and the particular park that they used. However, they pointed out that "a park is an abstract idea subject to wide and varied interpretations, rather than a standardized physical object. Consequently, parks are inherently diverse and characterized by their heterogeneity rather than their homogeneity…. The results emphasize that service quality studies in parks should be park specific" (p. 218).

Wright, Duray, and Goodale (1992) adapted SERVQUAL to assess users' perceptions of service quality at eight county recreation centers and discussed the procedures for developing a customized quality service. After creating a list of service quality attributes to be assessed, Wright, Duray, and Goodale carried the concept further by addressing the importance of the attributes to users. They asked respondents to "tell

us the degree to which you think an excellent recreation center should have the features described in the following statements" (p. 37). The reasoning behind this is that the importance dimension is relevant in helping managers to prioritize the perceptions of service quality. In other words, if managers do not know which features are considered most important to participants, they may be wasting resources improving the quality of unimportant service attributes.

Operationalization of Quality in the Tourism and Recreation Context

Crompton and Love (1995) argued that defining how the service quality construct should be measured is a key issue in tourism. They argued that within the tourism and recreation context, service quality is thought of as quality of opportunity, that is, "the quality of the attributes of a service that are under the control of a supplier" where evaluation is concerned with judgments about the performance of the leisure opportunity supplier (Crompton and Love, 1995).

Crompton and Love (1995) operationalized and evaluated quality based on five measures: (1) attribute expectations; (2) attribute expectations and importance; (3) attribute performance and importance; (4) attribute performance and expectations; and (5) attribute performance, expectations and importance. From their study, Crompton and Love (1995) reported, "the major findings were unequivocal. The best predictors of quality were the performance-based operationalizations; the least accurate predictors were the disconfirmation-based operationalizations; and the inclusion of importance

weights did not improve predictive validity of the measures" (p. 19). However, they noted that research employing different measures of quality as dependent variables may obtain a different result due to the particular system used, and that it is reasonable to suggest that there may be no single best way to measure quality, but rather different types of measures may be useful for different purposes. For example, they pointed out that considering only performance ratings and ignoring expectations and importance may mean that key insights about a tourism provider's quality are lost and suboptimal investment of resources may be made to improve quality on items that aren't expected to be of high quality or items that are not important to tourists.

LeBlanc (1992) explored customer perceptions of service quality with travel agencies to identify the dimensions used by travelers evaluating quality of services in travel agencies. He identified six dimensions of service quality in that context: corporate image, competitiveness, courtesy, responsiveness, accessibility, and competence. He measured service quality as a direct perception-expectation difference (as a comparison to expectations) rather than questions about perceptions and expectations asked separately. LeBlanc found that a significant relationship existed between perceived quality and corporate image, noting that "all aspects of the travel agency on which customers base their perceptions and form expectations are part of corporate image" (p. 14).

Ostrowski, O'Brien and Gordon (1994) explored service quality in the context of the commercial airline industry. Utilizing a scale derived from Parasuraman, Zeithaml and Berry's (1988) work, they found that respondents were less than pleased with the

level of service quality they had received from the two airlines studied and that differences occurred between business travelers and leisure travelers. Business travelers tended to be more critical of service quality than relatively infrequent leisure travelers, possibly due to their greater experience with flying. They noted the tangible elements of airline service quality were rated most negatively, suggesting that further research should explore the tangible aspects of service quality. They demonstrated that low perceptions of service quality led to low levels of customer loyalty, implying a connection between service quality and behavioral intentions.

Vogt and Fesenmaier (1995) evaluated service quality evaluations from tourists and service providers at a number of tourist sites. They asked respondents to rate the quality of services using an instrument modified from Parasuraman, Zeithaml and Berry's (1988) SERVQUAL scale. The authors removed the tangibility dimension from the questionnaire due to the variety of physical assets available in any given tourism destination and the lack of control over facilities in a community setting. They found that a gap existed between tourists' perceptions of quality and service providers' perceptions of tourists' ratings of service quality, implying that service providers did not understand the level at which customers evaluate their experience and tended to underrate the customer experience.

In an effort to more effectively evaluate alternate measures of quality used in the marketing and tourism literatures, Childress and Crompton (1997) empirically tested seven quality of performance measures. They pointed out that within the tourism and recreation fields, there has been an emerging consensus on two central points relating to

the conceptualization of service quality. First, the construct of service quality relates to visitors' perceptions of the quality of a supplier's performance, as opposed to perceptions of the quality of their experience, which defines the different construct of satisfaction. Second, visitors' evaluations of their expectations serve as reference points for perceptions of quality of performance, thus linking service quality to the expectancy disconfirmation theory as outlined by Oliver (1980).

Childress and Crompton outlined the debate within the marketing literature over the conceptualization of service quality, which was discussed earlier, and empirically tested seven proposed operationalizations of the quality construct. These were (1) a straight-forward perceptions of performance measure without an expectations component; (2) a one-column format measure of quality superiority in which respondents rated their desired level for an attribute by rating quality; (3) a two-column format measure of quality superiority in which respondents rated their desired quality level using two identical side-by-side scales; (4) a two-column format measure of quality adequacy in which respondents rated their minimum acceptable quality level using two identical side-by-side scales; (5) a three-column format measure of minimum service quality in three side-by-side scales; (6) a three-column format measure of desired service quality in three side-by-side scales; and (7) a perceptions minus expectations differential measure ratio of perceptions and a priori expectations (Childress and Crompton, 1997).

Similar to previous service quality studies, Childress and Crompton (1997) assessed predictive and convergent validity by regressing alternative measurement operationalizations of quality on a single, overall quality measure. Similar to Crompton

and Love (1995), they found the highest predictive value was obtained from the perceptions of performance measure, however; they argued that this offered little diagnostic potential and could result in improper priorities being established on items visitors expect to be poor, or find unimportant. The three-column format and the perceptions-minus-expectations formats are conceptually richer and offer more diagnostic potential than the competing operationalizations, but the authors pointed out that these measures were substantially lower in predictive power and had lower reliability coefficients than direct measures. Thus, the authors posited further research was needed to explore the construct of quality further, but confirmed that quality and satisfaction, or quality of performance and quality of experience, are different but related constructs.

Baker and Crompton (2000) reiterated the distinction between quality of opportunity (service quality) and quality of experience (satisfaction). They accepted quality of opportunity as synonymous with quality of performance, as it refers to the attributes of a service which are under the control of the supplier. They proposed that performance quality has a direct effect on behavioral intentions as well as an indirect effect on them through satisfaction. Baker and Crompton (2000) operationalized quality in two ways. First, a subjective disconfirmation measure was used, which required respondents to assess perceptions of performance quality directly against their expectations and to record their evaluation with a single score. Additionally, given previous research findings relating to the predictive validity of perceptions measures

(Crompton and Love, 1995; Cronin and Taylor, 1994) they also operationalized quality as a perceptions measure.

Structural equation modeling revealed that performance quality had a significant direct effect on visitor satisfaction and behavioral intentions. Additionally, overall performance quality had an effect on behavioral intentions. Their findings indicated that the perceptions measure of quality fit the hypothesized model better than the subjective disconfirmation measure and had a greater total effect on behavioral intentions. Baker and Crompton (2000) posited that the superior fit of the perceptions measure of quality may have been attributable to respondents finding it easier to answer the perceptions question as compared to the disconfirmation questions. They pointed out that from a managerial standpoint, perceptions measures are easier to design and analyze than disconfirmation measures. Given the strong link between performance quality and behavioral intentions, and the recognition that performance quality is directly under the control of management, the authors argued that improvements in quality performance offer the strongest guidance for improving visitors' behavioral intentions.

Tian-Cole, Crompton and Willson (2002) conceptualized quality of performance and quality of experience as direct antecedents of overall service quality and satisfaction. They argued that at the global level, overall service quality and overall satisfaction are different constructs which influence behavioral intentions. At the transaction level, the concepts of quality of performance and quality of experience are conceptualized as direct antecedents of overall service quality and overall satisfaction. Thus, over time, "the summation of visitors' evaluative beliefs about individual service attributes will

contribute to their overall evaluation of service quality of the recreation service" (Tian-Cole, Crompton and Willson, 2002, p. 4). They argued that while overall satisfaction is experience specific, overall service quality it not. "Since overall service quality is visitors' perceptions of overall performance, visitors can have a general impression towards the quality of a recreation site even if they have never been there" (p. 5), and this knowledge can be gained from external sources such as word-of-mouth communication, advertising, and so forth.

Tian-Cole, Crompton and Willson (2002) measured quality of performance using a list of attributes representing six domains derived from previous research. Those domains were: Education and Conservation, Staff/Volunteers, Comfort Amenities, Cleanliness, Information, and Wildlife. Respondents rated performance on a 7-point Likert-type scale. Overall service quality was measured on a 10-point scale with a single item that asked respondents their perceptions of overall quality. They found that quality of performance had a positive direct effect on quality of experience, and a stronger direct effect on overall satisfaction than did quality of experience. They reported that quality of performance also directly influenced overall satisfaction through quality of experience.

They reported that overall service quality was directly and indirectly influenced by quality of performance, quality of experience, and overall satisfaction. Visitors' future behavioral intentions were directly and indirectly influenced by quality of performance and overall service quality, as well as by quality of experience and overall satisfaction. Quality of performance was shown to have the strongest total effect on

behavioral intentions, even though it did not have any direct effect on it. Additionally, in contrast to Baker and Crompton (2000), Tian-Cole, Crompton and Willson found that overall service quality had the lowest total effect on behavioral intentions among all variables. They confirmed that quality of performance and quality of experience were distinct constructs, although they were correlated.

Petrick (2004) added a value construct to the mix and examined the roles of quality, value and satisfaction in predicting behavioral intentions. He argued that recent conceptualizations of the quality construct suggest that alternative measures are more appropriate than SERVQUAL. In 2002, Petrick developed SERV-PERVAL which conceptualized quality based on Zeithaml's (1988) definition, which stated that quality is a consumer's judgment about a product's or service's overall excellence or superiority. Given this definition, Petrick's (2002) SERV-PERVAL quality items were related to the reliability of a service, given that reliability has consistently been found to be the most important dimension of quality in the recreation and tourism literature (Petrick, 2004; Asubonteng, McCleary and Swan, 1996; Backman and Veldkamp, 1995; Howat, Crilley and Milne, 1995; Knutson, Stevens and Patton, 1995; Ostrowski, O'Brien and Gordon, 1994). Quality was operationalized in his study under Petrick's (2002) SERV-PERVAL model.

Petrick's (2004) results revealed that quality was an antecedent to satisfaction, which supports the findings of Cronin, Brady and Hult (2000), Tian-Cole, Crompton and Willson (2002) and Baker and Crompton (2000) and that quality is an antecedent of behavioral intentions. This also supported Bagozzi's (1992) and Zajonc and Markus'

(1982) proposition that cognitive responses precede emotional responses, and Cronin, Brady and Hult's (2000) argument that quality is a cognitive response to a service experience while satisfaction is an emotional response to the service experience. Additionally, Petrick (2004) found that quality had both a moderated and direct effect on repurchase intentions, and was a better predictor of repurchase intentions than value and satisfaction. Petrick (2004) concluded that "if managers are only able to use one variable for predicting intentions to repurchase, quality may be the preferred variable" (p. 405).

The previous discussion of the concept of quality outlines its importance in both the recreation and tourism and the marketing fields. Perceptions of quality directly effect satisfaction and behavioral intentions. Several studies of service quality have found reliability to be the strongest predictor of quality in both the marketing field (Berry and Parasuraman 1991) and the recreation and tourism field (Petrick 2004). However, in many tourism contexts, interaction with staff may be limited (as described in Crompton and MacKay (1989) as a low staff/high facility intensive setting). In this scenario, it is quite likely that quality is ascertained by tourists through their interactions with the tangible elements of the setting.

Operationalization of the quality construct has received much debate. Although numerous studies in both the marketing and recreation and tourism fields have examined operationalizing the quality construct, no definitive answer has been reached. However, there seems to be a growing consensus that a perceptions-based measure may be most fruitful. While no clear operationalization exists, researchers in both fields have

recognized and studied the relationship between quality and satisfaction as well as behavioral intentions. This indicates that quality is important in ultimately understanding tourists' behavioral intentions. Thus, cues about the quality of a destination can help tourists form perceptions of the quality of opportunity. This is likely to facilitate satisfying experiences and to enhance positive behavioral intentions.

Satisfaction

Satisfaction has been defined to as the quality of experience (Brown, 1988; Crompton and MacKay, 1989; Crompton and Love, 1995; Baker and Crompton, 2000; and Tian-Cole, Crompton and Willson, 2002). Quality of experience is ascertained by measuring tourists' satisfaction levels which, in turn, are likely to influence future behavior and increase visitation. Research has indicated that satisfaction is an effective predictor of behavioral intentions (Petrick, 2002; Baker and Crompton, 2000; Tian-Cole, Crompton and Willson, 2002; Cronin, Brady and Hult, 2000). By examining satisfaction, destinations are able to assess how well they are pleasing their visitors, where adjustments need to be made, and whether those adjustments lead to an improvement in visitor satisfaction.

Hunt (1977) described satisfaction as an evaluation of an emotion. Rust and Oliver (1994) carried this further suggesting that satisfaction reflects the degree to which a consumer believes that the possession, product or use of a service evokes positive feelings. Oliver (1997) compared satisfaction to "an individual pursuit, a goal to be

attained from the consumption of products and the patronization of services" (p. 10). He offered three reasons why satisfaction is important to consumers.

(1) Satisfaction itself is a desirable end state of consumption or patronization; it is a reinforcing, pleasurable experience.

(2) It obviates the need to take additional redress actions or to suffer the consequences of a bad decision.

(3) It reaffirms the consumer's decision-making prowess (p. 10).

The word "satisfaction" is derived from the Latin words *satis* (enough) and *facere* (to do or make) (Oliver, 1997). Oliver (1997) stated, "satisfying products and services have the capacity to provide what is being sought to the point of being 'enough'…. These terms illustrate the point that satisfaction implies a filling or fulfillment" (p. 11). However, Oliver pointed out that it encompasses more than mere fulfillment. Satisfaction describes the consumer's experiences—it is the end state of a psychological process.

Oliver suggested that consumers assess satisfaction at interim stages, as well as at the final stage, and that interim judgments will have an impact on the final assessment of satisfaction. Thus, as tourists move through a destination, interaction with individual elements and employees will be individually judged. Tourists generally can state how satisfying each of these events is perceived to be. Collectively, the series of events comprise a tourist's experience so, at the end of a visit, the overall extent to which desired benefits such as novelty, education, excitement, etc., have been attained can be evaluated by the level of satisfaction. In addition to this, the resulting level of

satisfaction can be assessed by comparing it to the expected satisfaction level that the visitor anticipated. "Thus, satisfaction can be viewed in terms of singular events leading up to a consumption outcome and as a collective impression of these events. Moreover, consumers can be satisfied or dissatisfied with the level of satisfaction received" (Oliver, 1997, p. 12). From this discussion, Oliver suggested:

> *Satisfaction* is the consumer's fulfillment response. It is a judgment that a product or service feature, or the product or service itself, provided (or is providing) a *pleasurable* level of consumption-related fulfillment, including levels of under- or overfulfillment (p. 13).

Oliver stated that because satisfaction is explained with reference to fulfillment, there is an implication that a goal exists, and that there is something to be filled. Therefore, fulfillment, and satisfaction, can only be judged with reference to a standard, usually in the form of a comparison. "A fulfillment, and hence a satisfaction judgment, involves at the minimum two stimuli—an outcome and a comparison referent" (p. 14).

Crompton and Love (1995) broadened the concept of satisfaction by conceptualizing it in the park, recreation and tourism context as tourists' quality of experience, which is a psychological outcome resulting from participation in recreation or tourism activities. This is consistent with Oliver's definition of satisfaction in that they both recognize the comparison between the expected and the perceived experiences gained, and that it is the psychological end state of this process that is important.

Baker and Crompton (2000) argued that satisfaction refers to an emotional state of mind after exposure to an opportunity, and pointed out that satisfaction cannot be controlled by management and may be influenced by extraneous events like climate or

social group interactions or the tourists' moods, dispositions, or needs. These influences are generally outside the providers' control.

Tian-Cole, Crompton and Willson (2002) concurred with Baker and Crompton's (2000) discussion of satisfaction, and conceptualized quality of experience as a transaction level assessment and overall satisfaction as a global assessment. They argued that while perceptions of service quality can be inferred without actually visiting a destination, satisfaction can only be derived from first-hand experience.

Operationalization of Satisfaction

The expectancy disconfirmation paradigm has been the main conceptualization guiding operationalization of satisfaction (Oliver, 1997). It suggests that visitors assess satisfaction by relating perceptions of their experience to expectations, and this assessment either confirms their expectations, negatively disconfirms their expectations (worse than expected) or positively disconfirms their expectation (better than expected). Within the marketing literature, numerous studies have supported the role of disconfirmation in influencing satisfaction in a multitude of contexts (Bearden and Teel, 1983; Churchill and Surprenat, 1982; Swan and Oliver, 1985). Similar findings have been reported in the tourism literature (Pizam and Milman, 1993; Weber, 1997).

Cronin, Brady and Hult (2000) operationalized satisfaction in two ways to reflect that "satisfaction with a service provider is perceived as being both an evaluative and emotion-based response to a service encounter" (p. 204). The emotion-based scale

utilized a nine-point Likert-type scale ranging from “not at all” to “very much”; and the second evaluative-based scale utilized a Likert-type format which ranged from “strongly disagree” to “strongly agree”. Their results indicated that both service quality and service value were significant predictors of satisfaction. This is consistent with the position that cognitive evaluations precede emotional responses (Bagozzi, 1992; and Zajonc and Markus, 1982). Additionally, Cronin, Brady and Hult found that satisfaction had a direct link to behavioral intentions.

Spreng, MacKenzie and Olshavsky (1996) defined overall satisfaction as “an affective state that is the emotional reaction to a product or service” (p. 12). Additionally, they argued that overall satisfaction has two antecedents: (1) attribute satisfaction, which is “the consumer’s subjective satisfaction judgment resulting from observations of attribute performance” (p. 17); and (2) information satisfaction, which is “a subjective satisfaction judgment of the information used in choosing a product” (p. 18). This conceptualization of the antecedents is consistent with the notion of quality of performance.

In the recreation and tourism context, Baker and Crompton (2000) utilized a four-item scale which was adapted from Crosby and Stephens (1987). This satisfaction scale offered an overall global measure of satisfaction and was selected because the scale had been empirically verified. The scale consisted of four semantic differential ratings using a 9-point Likert-type scale. They found that performance quality had a direct effect on satisfaction and satisfaction had an indirect effect on behavioral intentions.

However, they found quality to be a stronger predictor of behavioral intentions than satisfaction.

Tian-Cole, Crompton and Willson (2002) operationalized satisfaction in the same manner as Baker and Crompton (2000). Quality of experience, an antecedent of overall satisfaction, was operationalized with benefits items derived from the Recreation Experience Preference scales (REP) that have been used in past benefits research (Manfredo, Driver and Tarrant, 1996). They found that quality of performance had a positive direct effect on quality of experience and a stronger direct effect on overall satisfaction than quality of experience. Additionally, they reported that overall service quality was directly and indirectly influenced by quality of experience and overall satisfaction. Overall satisfaction had the highest direct effect on behavioral intentions. This finding was contradictory to that of Baker and Crompton (2000) who found quality to be a stronger predictor of behavioral intentions. Tian-Cole, Crompton and Willson (2002) reported that service quality and satisfaction exist at both the transaction and global levels. At the transaction level, service quality contributed to satisfaction, while at the global level, satisfaction influenced service quality.

Petrick (2004) operationalized satisfaction as an overall assessment and measured the construct with a single-item, 10 point scale. Petrick found satisfaction to be the least predictive variable on behavioral intentions, as compared to quality and value, but argued that it was possible that this occurred as a result of measurement error, since it was operationalized as a single-item measure which was inherently more susceptible to error variance (Kline, 1998; Tabachnick and Fidell, 1996).

This review of literature suggests that satisfaction is predominantly an affective-based response relating to the quality of experience. Satisfaction is an emotional state of mind which results from high quality experiences. Research has found it related to, but distinct from, quality, which relates to elements which are under the control of management. Research has consistently found satisfaction to be an effective predictor of behavioral intentions. However, there has not been a definitive understanding of whether quality or satisfaction is a stronger predictor of behavioral intentions. While most researchers concur that satisfaction is rooted in the expectancy disconfirmation paradigm (Oliver, 1997), its operationalization has been less clear. In the recreation and tourism field, it has been operationalized with benefits derived from the Recreation Experience Preference Scales, as well as with an overall assessment measured with a single-item scale.

The relationship between quality, satisfaction and behavioral intentions has been explored in both the marketing and recreation and tourism literatures. In both cases, researchers have called for further research to explore the relationship. For the purposes of this dissertation, satisfaction and quality are both seen as important predictors of behavioral intentions. However, the present study sets out not only to explore the relationship among quality, satisfaction and behavioral intentions, but also to explore the role of the antecedents of quality and satisfaction, which will be discussed later in this chapter and are described as utilitarian and hedonic dimensions of attitude.

Behavioral Intentions

Zeithaml, Berry and Parasuraman (1996) suggested that increasing customer retention and/or lowering the rate of customer defection should be a major objective of service providers in efforts to improve profits. Implicit in this statement is the notion that improving quality and satisfaction will aid in the retention or expansion of customer numbers. In a tourism context, increased tourist numbers could lead to greater success through increased loyalty, future visitation and enhanced reputation (Baker and Crompton, 2000). Behavioral intentions are often used to assess visitors' potential for revisiting, since this construct has been considered a relatively accurate predictor of future behavior. The theory of reasoned action states that behavior can be predicted from intentions that correspond directly to behavior (Ajzen and Fishbein, 1980).

One of the primary reasons for businesses to monitor their performance and evaluate customers' perceptions is that improving their performance and improving customers' perceptions of the business will result in increased visitation and increased revenues. Parasuraman, Zeithaml and Berry (1998) and Zeithaml, Berry and Parasuraman (1990) argued that survival in the marketplace is highly dependent on delivering quality service, yet little research had been conducted at that time to verify the relationships. Since then, many researchers have followed this argument and have conducted to examine these relationships.

Boulding, Karla, Staelin and Zeithaml (1996) stated that "interestingly, no empirical research outside a laboratory setting has been reported that supports this

relationship between service quality perceptions and behavioral outcomes of importance to the firm. Unless the positive relationship exists, understanding how customers form judgments about service quality has limited managerial relevance" (p. 12). Zeithaml, Berry and Parasuraman (1996) suggested that visitors' behavioral intentions could be viewed as a signal of retention or defection. When visitors defect, and thus do not visit again, businesses must rely on attracting new visitors, which is expensive. New visitors cost more because attracting them involves expensive advertising and promotion.

Zeithaml, Berry and Parasuraman (1996) argue that favorable behavioral intentions are associated with a service provider's ability to get customers to (1) say positive things about them; (2) recommend them to other consumers, (3) remain loyal to them and thus repurchase from them, (4) spend more money with the provider, and (5) pay price premiums. In a tourism context, Baker and Crompton (2000) operationalized behavioral intentions using seven items derived from Zeithaml, Berry and Parasuraman (1996). Tian-Cole, Crompton and Willson (2002) operationalized behavioral intentions similarly. In the marketing field, Cronin, Brady and Hult (2000) used a similar operationalization of behavioral intentions.

Cronin, Brady and Hult (2000) found a direct link between service quality, value, satisfaction and behavioral intentions in their overall model as well as within their industry-specific analyses. The link between value and behavioral intentions was significant in all six industry analyses, while the satisfaction and behavioral intentions link was significant in five of the six industry analyses, and the quality and behavioral intentions link was significant in four of the six industry analyses. The authors

examined the indirect links between these variables and behavioral intentions and reported a significant indirect path between both service quality and service value and behavioral intentions.

Baker and Crompton (2000) found both quality (performance quality and overall quality) and satisfaction had a significant direct effect on behavioral intentions. They noted:

> …high performance quality encouraged participants to be more loyal, increasing the probability that they would return and that they would spread positive word-of-mouth communication about the festival. The strong linkage between the quality domains and willingness-to-pay more is consistent with the belief that those who perceive performance quality to be high are willing to pay more for the opportunity (p. 799).

Baker and Crompton concluded that quality was a stronger predictor of behavioral intentions than satisfaction.

Tian-Cole, Crompton and Willson (2002) found that while both service quality and satisfaction directly influenced behavioral intentions, satisfaction was a stronger predictor of behavioral intentions than quality. This is contradictory to the findings of Baker and Crompton (2000). Tian-Cole, Crompton and Willson (2002) reported that behavioral intentions were either directly or indirectly influenced by overall quality and overall satisfaction, as well as by their antecedents, quality of performance and quality of experience. They found overall service quality had the lowest total effect on behavioral intentions among all variables.

In Petrick's (2004) study, value and quality were antecedents of satisfaction in the prediction of behavioral intentions. He also reported that quality had a direct effect

on behavioral intentions, and was a better predictor of behavioral intentions than value or satisfaction. He found satisfaction to be less predictive of behavioral intentions than perceived value and quality.

The ultimate goal of any tourism destination is positive behavior. The theory of reasoned action postulates that behavior can be predicted from intentions. Ensuring that tourists have positive behavioral intentions (positive word of mouth, repeat visitation, increased loyalty, for example) will help to ensure longevity and the financial success of tourism destinations. Research in both the marketing and recreation and tourism literatures shows that quality and satisfaction are antecedents of behavioral intentions. However, research has been inconclusive as to which is the stronger predictor. The present study sets out to further examine this relationship.

The Relationships Between Quality, Satisfaction and Behavioral Intentions

The relationship between satisfaction and service quality in reported studies often is unclear. Some have used the terms synonymously, while others have viewed them as independent constructs. Empirical studies examining their relationship in the recreation and tourism field are limited. However, a few studies have examined this relationship and its effect on respondents' future visitation intentions.

Parasuraman et al. (1988) distinguished between *perceived quality*, which they believed was a judgment about an agency's overall excellence and quality, and *object quality*, which they defined as an attitude derived from satisfaction that emerged from a

comparison of the performance in relation to expectations. They referred to perceived quality as a global judgment about a service as a whole, and related satisfaction to specific transactions. Thus, the summation of satisfying specific transactions would lead to perceived high quality.

Crompton and MacKay (1989) reiterated the importance of service quality research in the recreation and tourism field. "Service quality is the *raison d' etre* of a recreation agency. There is nothing more central to its mission, and its success in delivering a satisfactory level of service quality is likely to be crucial in determining the degree of constituency support that it can control" (p. 367). They stressed, however, that satisfaction and service quality are not the same constructs. Satisfaction is a psychological outcome that emerges from an experience, and service quality is concerned with the attributes of the service, itself. These attributes can be controlled and manipulated by recreation managers, but the level of satisfaction is dependent not only on quality of the service attributes, but on several uncontrollable variables, such as weather. "Such variables are outside a supplier's control and may intervene, so that a perceived high-quality service could result in a low level of satisfaction. Conversely, a high satisfaction outcome may result even when perceived service quality is low because, for example, the social group interactions are sufficiently positive to offset the low-quality service" (p. 368).

Tian-Cole, Crompton and Willson (2002) studied the relationship between service quality and satisfaction in a tourism context and confirmed that overall satisfaction and overall service quality were different constructs. However, they

reported a significant and relatively high correlation between the two. They found that if visitors' perceptions of overall service quality were high, they tended to have high levels of overall satisfaction. They suggested that service quality and satisfaction exist at both transaction and global levels, which is consistent with Oliver's (1997) contention that satisfaction evaluations are undertaken at both formative and summative stages (Tian-Cole, Crompton and Willson, 2002). The transaction level refers to a tourist's specific encounter with a service, such as a tourist's particular visit to an attraction. The global level refers to a tourist's overall experience with a service, and the cumulative experience that may be derived from multiple visits. Thus, service quality and satisfaction can occur both during a visit (formative evaluation) and collectively after the visit (summative evaluation) (Tian-Cole, Crompton and Willson, 2002).

Tian-Cole, Crompton and Willson (2002) stated that during a specific service encounter, tourists' perceptions of quality of performance strongly influenced the level of satisfaction received. This satisfaction with a particular service experience eventually affects long-term satisfaction with the service. They summarized this process and its lasting effect on tourists and their future behavior, stating that the satisfaction process, coupled with the evaluation of service attribute performance, forms the core outcome of a tourism experience.

They concluded that service quality and satisfaction could contribute independently to tourists' future behavioral intentions. They suggested that the two factors that directly influence tourists' overall satisfaction are quality of performance and quality of experience. Thus, to increase the level of satisfaction, agencies and

organizations need to improve the performance of the individual service attributes in order to help visitors to enhance the benefits they receive from the service encounter. To facilitate this, they suggested that recreation and tourism managers should focus attention on the transaction level of service quality and satisfaction.

According to Baker and Crompton (2000), quality is an antecedent to satisfaction and a good predictor of repurchase intentions. All else equal, it appears to be intuitively logical that the higher a destination's or attraction's quality of performance, the higher a tourist's level of satisfaction is likely to be. However, there is unlikely to be a perfect correlation between them since "satisfaction may be influenced by the social-psychological state a tourist brings to the site (mood, disposition, needs) and by extraneous events (for example, climate, social group interactions) that are beyond the provider's control, as well as by the program or site attributes that suppliers can control" (Baker and Crompton, 2000, p. 787). Thus, higher levels of satisfaction may result even when perceived service performance is low because, for example, the social group interactions are sufficiently positive to offset the low performance of the service. Conversely, a perceived high service performance by the destination may still result in a low level of visitor satisfaction. Thus, satisfaction is an emotional state of mind emanating from an experience, or how the provider's performance makes the tourist feel, while quality refers to the evaluation of "attributes of a service which are primarily controlled by a supplier (Baker and Crompton, 2000, p. 787), or the tourist's measure of the provider's performance.

As illustrated in previous sections, both quality and satisfaction have been shown to be predictors of behavioral intentions. However, research has shown different results as to which is the stronger predictor. Baker and Crompton (2000) found quality to be a stronger predictor of behavioral intentions, while Tian-Cole, Crompton and Willson (2002) found satisfaction to be a stronger predictor of behavioral intentions, and overall quality to be the least predictive of all variables examined. Cronin, Brady and Hult (2000) suggested that value may be a better predictor of behavioral intentions than either quality or satisfaction.

The most comprehensive examination to date of all of these variables was undertaken by Petrick (2004). He tested three models predicting behavioral intentions: (1) the satisfaction model, suggesting satisfaction had the highest predictive influence on behavioral intentions, (2) the value model, suggesting value had the highest predictive influence on behavioral intentions, and (3) the quality model, suggesting that quality had the highest predictive influence on behavioral intentions. While he found all three variables (quality, value and satisfaction) to influence behavioral intentions, he reported that quality (which had both a direct effect and a moderated effect on behavioral intentions) was a better predictor of behavioral intentions than both value and satisfaction, and satisfaction was the least predictive variable. Thus, Petrick (2004) posits, "if managers are only able to use one variable for predicting intentions to repurchase, quality may be the preferred variable" (p. 405).

The relationship between quality, satisfaction and behavioral intentions has been given attention in recent years in both the marketing and recreation and tourism

literatures. Cronin and Taylor (1992) suggested that "how the service quality construct should be measured and how service quality is related to satisfaction and purchase intentions are arguable among the most important concerns in services marketing" (p. 65). Understanding what influences behavioral intentions can provide valuable managerial insights for tourism destinations. The present study attempts to further explore this relationship.

Utilitarian and Hedonic Dimensions

Zajonc and Markus (1992) posited that two important questions which consumer research strives to address are (1) how preferences are acquired and (2) how they are modified. They argued that the antecedents of preference are likely to involve cognitive and affective processes in a variety of combinations. While preferences are primarily an "affectively based behavioral phenomena" (p. 124), the change of preferences has a cognitive emphasis (Zajonc and Markus, 1992).

They suggested that utility also plays a role in preferences. "In the confines of the preference paradigm, if X is preferred to Y, it is because X has greater utility or value than Y….the analysis of preferences is simply the analysis of cognitive representations of the features of objects, with the addition that these descriptive representations now have some affect attached to them in the form of utilities" (p. 124).

Batra and Ahtola (1991) stated "consumers purchase goods and services and perform consumption behaviors for two basic reasons: (1) consummatory affective

(hedonic) gratification (from sensory attributes), and (2) instrumental, utilitarian reasons" (p. 159). They (1991) posited that consumer attitudes are two-dimensional. The first dimension is a hedonic attitude, which results from sensations derived from experiences that are based primarily on affective gratification derived from attributes. These hedonic attitudes are more experiential in nature and are related to how much pleasure a consumer can derive. The second dimension is a utilitarian attitude, which is more instrumental in nature and is derived from functions performed by products or services. These utilitarian attitudes are concerned with expectations of consequences of product/service usage and are based on assessments of functional attributes.

Voss, Spangenberg and Grohmann (2003) suggested that measurement of hedonic and utilitarian attitudes can provide researchers and managers with new approaches to modeling marketing problems. They posited "measures of attitudinal dimensions provide building blocks for researchers attempting to develop models that explain a greater proportion of the variance in consumer behavior" (p. 310). Both Batra and Ahtola (1991) and Voss, Spangenberg and Grohmann (2003) proposed that for some products/brands/services the hedonic dimension may be more important; for others the utilitarian dimension may be more important, and for others, both dimensions may play a key role.

Voss, Spangenberg and Grohmann (2003) tested a number of product categories, including vacation resorts, and reported that resorts had high utilitarian and hedonic ratings. In general, they found that brands tended to vary on the hedonic dimension more than the utilitarian dimension, suggesting that their study subjects were responsive

to brand positioning advertisements, or that they understand the utilitarian properties of the product, regardless of their level of involvement. They suggested that if a brand adopts an experiential positioning strategy, it may be able to position itself higher than competing brands on the hedonic dimension. Their findings supported a link between hedonic and utilitarian attitudes, and purchase intentions and stated, "the studies reported herein support the contention that complex processes are at work in the formation of consumers' attitudes toward brands/products and their development of purchase intentions" (p. 319).

Given this review of literature relating to the power of quality and satisfaction in predicting behavioral intentions, the present study attempts to identify elements in the visual environment or setting that provide indications of the quality (quality of opportunity) and satisfaction (quality of experience) emanating from a visit to a tourism attraction or destination. It is hypothesized that perceptions of quality of opportunity are strongly influenced by tourists' first impressions as they move through a destination, beginning with their initial arrival at their destination. Once in the setting, tourists continue to evaluate the destination based on environmental cues. They cognitively and affectively process this information, and decide how to interact with the setting in order to maximize their experience. Thus, the physical environment influences perceptions of quality, the level of satisfaction derived, and ultimately influences behavioral intentions.

CHAPTER III

CONCEPTUAL DEVELOPMENT

The foundation of the conceptual model used to guide this study was Bitner's (1992) servicescapes model. Bitner proposed a framework for understanding environment-user relationships in service organizations. Bitner's model was conceptualized from literature in marketing and environmental psychology. While her model provided a baseline conceptualization for this study, the study incorporates other ideas from the marketing and environmental psychology literatures which offer insights into the role of environmental cues in consumers' behavioral intentions. For example, Bitner (1992) did not include the variable of quality in her model, although she implies that the overall flow of her model is based on consumers' and employees' perceptions of quality.

Bitner's Model

The purpose of Bitner's (1992) work was to "take a first step toward integrating theories and empirical findings from diverse disciplines into a framework that describes how the built environment (i.e., the man-made, physical surroundings as opposed to the natural or social environment), or what is referred to here as the 'servicescape,' affects both consumers and employees in service organizations" (p. 58). Her model is reproduced in Figure 3.

Bitner's (1992) model assumes that dimensions of an organization's physical surroundings influence customer and employee behaviors. She identified three environmental dimensions (ambient conditions, space/function, and signs, symbols and

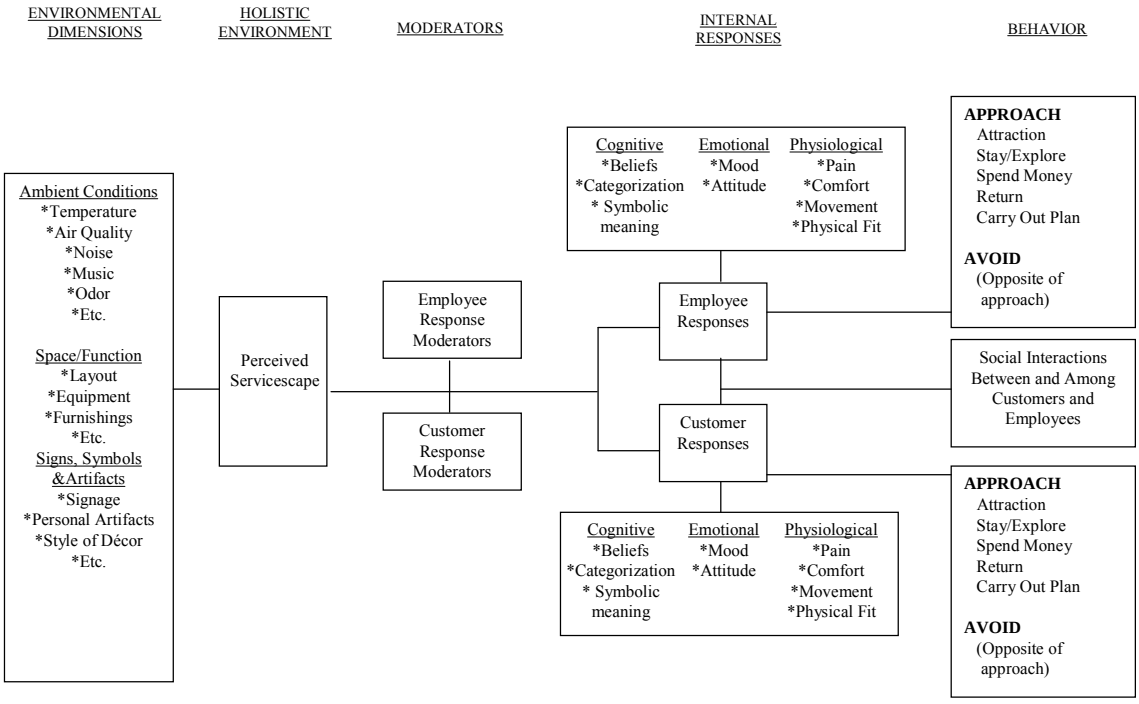


Figure 3. Bitner's (1992) Framework for Understanding Environment-User Relationships in Service Organizations

artifacts) that create a holistic environment, or the perceived servicescape. In her model, both employees and customers perceive the servicescape, and their perceptions are moderated by personal and situational factors. Both employees and customers internally respond to the servicescape through cognitive, emotional, and physiological mechanisms. Based on their internal responses, employees and customers exhibit either approach or avoidance behaviors, as well as interactions between and among themselves.

Bitner's work was innovative in that her proposal integrated ideas from diverse literatures and she explored the potential of the physical surroundings to facilitate achievement of organizational as well as marketing goals. The effect of atmospherics on consumers and workers had been widely recognized since it was first introduced in the marketing field by Kotler (1973) and in the tourism and recreation field by Howard and Crompton (1980). However, there had been no previous attempts to develop a theoretical framework explaining how atmospherics work. Bitner took that step. She recognized that different environmental factors are likely to generate innate responses (biological, evolutionary, or involuntary) while other factors produce learned responses (based on past experiences). She stressed that in service contexts, the place where the service is produced cannot be hidden. It has an impact on a customer's perceptions of the service experience, and often provides cues about a business's capabilities and quality before the point of purchase is reached: "the physical environment is rich in such cues and may be very influential in communicating the firm's image and purpose to its customers" (p. 57).

The author of this study believed that Bitner's model needed modification. Its strengths include incorporating the environmental psychology literature to explain human responses that encourage approach and avoidance behaviors to built environments, and recognizing that humans react to their environment holistically via cognitive, affective, and physiological responses. However, if these responses are to lead to purchase intentions or positive consumer behavior, then at some point the visitor has to make an assessment of the quality of the service. To say the visitor likes or

dislikes is not enough. The goal of any organization or business is to earn customers. Bitner does not incorporate this into her model, but alludes to it in her literature review: "even before purchase, consumers commonly look for cues about the firm's capabilities and quality….The physical environment… may be very influential in communicating the firm's image and purpose to its customers" (p. 57).

In addition, Bitner's model refers only to the built environment and disregards natural elements and social elements, both of which tend to be prominent in the physical environment in which tourism takes place. Indeed, the social and natural elements, in and of themselves, are often critical in creating tourism destination images. Thus, a holistic model of the effects of environmental cues on behavioral intentions in a tourism setting should incorporate the social and natural elements.

Bitner's model proposed that the holistic environment affects employees in much the same manner as it does consumers. However, she listed approach behaviors (derived from environmental cues) for employees as affiliation, exploration, staying longer, commitment, and carrying out the plan. It seems improbable that exploration and staying longer are "correct" approach behaviors for employees since it is their job to be in the environment and they are not there of their own free will. While employees are impacted by their physical surroundings, in a tourism context it is likely that tourists will interact with a destination or site itself and, in many situations, will have minimal if any contact with employees because employees often are not integral components of a tourist's experience. Crompton and MacKay (1989) referred to these settings as low staff/high facility scenarios, and these could include settings such as museums, zoos and

parks. Further, it is likely that the environmental cues which employees utilize are different from those used by tourists, and that the responses of employees to those cues will be different from the responses of tourists. Thus, in this study, only the effect of environmental cues on tourists, not employees, was examined. However, tourists who have interactions with employees are likely to be impacted by them and, thus, employees may be part of the social element of the environment which tourists encounter.

Bitner incorporated moderating variables that impacted consumers' responses to the environment. The moderating variables she identified were personal factors (personality traits) and situational factors (mood, plans and purposes for being there, expectations). However, she did not include past experiences, which, especially in the context of tourism, are likely to alter expectations tremendously.

Bitner's model provided the foundation to begin conceptualization of the model used in this study. Her work was grounded from environmental psychology literature, using schema theory. She envisioned the holistic environment to be comprised of environmental cues, to which visitors internally responded. This internal response influenced behavior. These conceptualizations provided a framework on with to build the model for this study.

Baker, Parasuraman, Grewal, and Voss's Model

Baker Parasuraman, Grewal and Voss's (2002) model is reproduced in Figure 4. The authors argued that customers utilize cues within a store environment (social factors, design factors, and ambient factors) to make assessments about the store, including interpersonal quality, merchandise quality, monetary price, and shopping experience costs (time/effort and psychic costs). From these choice criteria, customers make an assessment of the merchandise value. Their value perceptions guide store patronage intentions.

Baker et al. (2002) incorporated elements of Bitner's model in their measurement of environmental cues on store patronage intentions. The authors also included ideas Baker (1998) had proposed and ideas from Zeithaml's (1988) model of value perceptions. Zeithaml (1998) proposed that value perceptions, which drive purchase decisions, are based on perceptions of product quality (what consumers get from an exchange) and price (the monetary and nonmonetary aspects of what consumers give up in an exchange). Baker et al.'s adapted model did not test all the elements of Bitner's model, but they did empirically test some of the relationships she proposed.

The authors added a social element, which measures customers' perceptions of store employees. They included three environmental elements in their model: social factors, design factors, and ambient factors. However, for each of these elements, only one item was measured (Store factor: store employee perceptions; Design factor: store design perceptions; and Ambient factor: store music perceptions). This appears to be

overly simplistic, as it is likely that many more items are involved in the environment from which customers draw cues, many of which are included in Bitner's model.

Baker et al. (2002) identified store choice criteria, which they argued customers use to evaluate merchandise quality. They identified these criteria as interpersonal service quality perceptions, merchandise quality perceptions, monetary price perceptions, and shopping experience costs: time/effort perceptions and psychic cost perceptions.

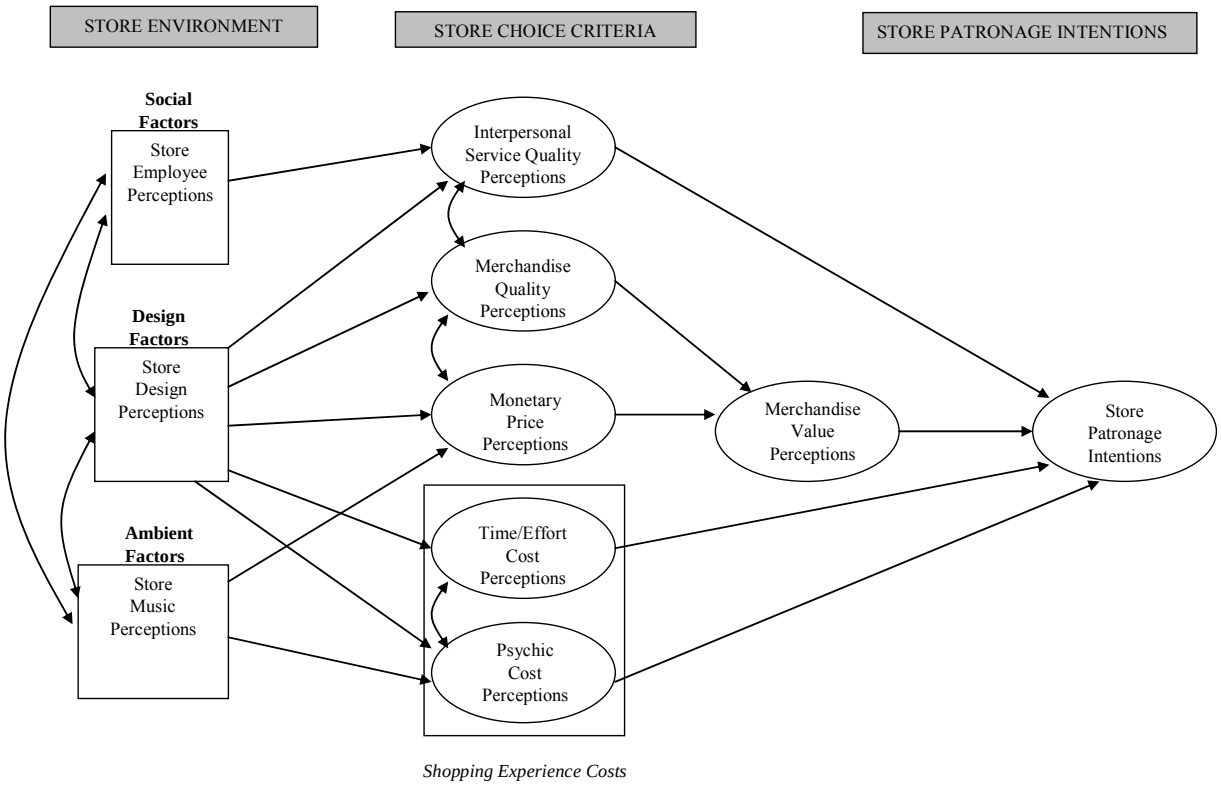


Figure 4. Baker et al.'s (2002) Model of the Prepurchase Process of Assessing a Retail Outlet on the Basis of Environmental Perceptions

The authors argued these choice criteria are used to evaluate merchandise value, which guides store patronage intentions.

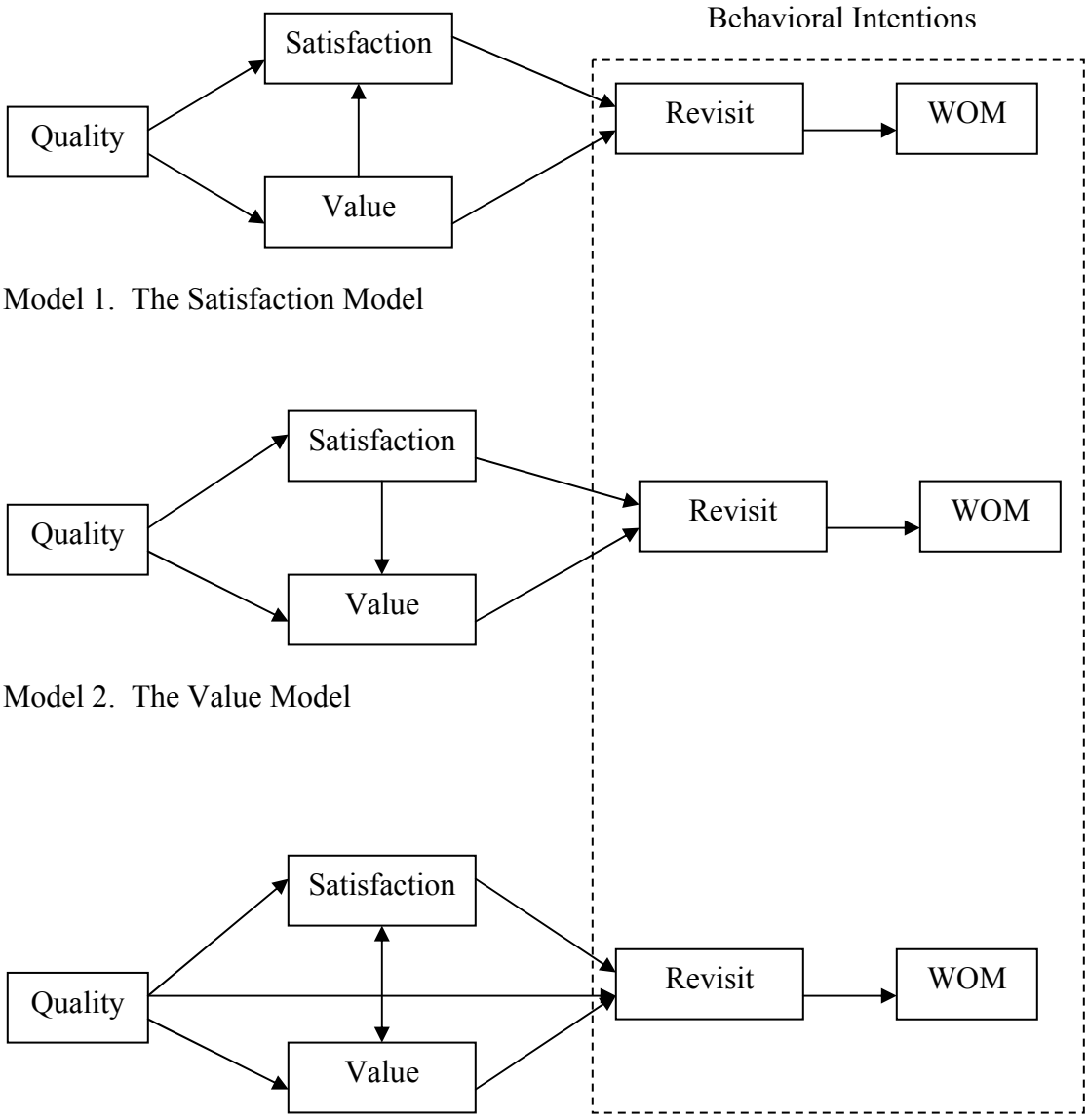
The notion of choice criteria appears to be a useful addition to Bitner's model, but Baker et al.'s conceptualization of it needs modification in order for it to be applied in a tourism setting. Choice criteria should relate to quality in general, rather than be subdivided into service quality and merchandise quality, because in a tourism context there is often no merchandise to purchase or evaluate. It is the quality of opportunity and of the experience that the opportunity facilitates that are evaluated in a tourism setting (Tian-Cole, Crompton and Willson, 2002; Baker and Crompton, 2000; Petrick, 2004). Thus, the subdivision suggested by Baker et al. (2002) is inappropriate in this context. Baker et al.'s suggestion that cost should be broken into monetary price and experience costs does appear to be germane to tourism where the effort and time involved in traveling to and from a destination may be a substantial part of the total cost incurred. This is also consistent with Zeithaml's (1988) conceptualization of value.

Tourists evaluate their environment based on multiple cues and filter their perceptions of the environment through personal and situational factors as well as through past experiences. After the environmental perceptions have been filtered, it is then that tourists make evaluations of quality. Baker et al.'s (2002) model does not include any moderating (or mediating) variables. They also do not explain the ways in which tourists (or consumers) internally respond to their perceptions. Tourists (or consumers) do internally respond in some way to the environmental cues they perceive. They must give meaning to these cues in order to make assessments about quality. This

is an important step that should be included in modeling the influence of environmental cues on tourists' destination decisions, and so it was incorporated into the study.

Petrick's Model

Petrick (2004) identified three competing models for predicting behavioral intentions involving quality, value and satisfaction in the context of tourism (Figure 5). The first was the satisfaction model (stemming from the satisfaction literature), which states that quality and perceived value lead to satisfaction, and satisfaction and perceived value are direct antecedents of behavioral intentions. The second was the value model (from the service value literature) which states that quality and satisfaction lead to perceived value, and as in the first model, satisfaction and perceived value are direct antecedents of behavioral intentions. The third model was the quality model (from the service quality literature) which states that quality has a direct role in predicting behavioral intentions, and also serves a moderated role in predicting behavioral intentions through its influences on perceived value and satisfaction. Petrick's (2004) study confirmed the relationships shown in the quality model. Although Petrick's revised model derived from his study contained more detail and antecedents, the basic model presented as model 3 in Figure 5 was modified and used in this study. The model was modified to include environmental cues.



Model 1. The Satisfaction Model

Model 2. The Value Model

Model 3. The Quality Model

Figure 5. Competing Models for Predicting Behavioral Intentions (Petrick, 2004)

Kaplan and Kaplan's Model

The three models previously described in this chapter incorporate literature from marketing and tourism. However, the author believed their conceptualization of the environment is underdeveloped. Environmental psychology, architecture, and landscape architecture tend to focus on the influence of environmental cues on visual preferences and behavior in physical settings or environments. This is intuitively logical, given that most people will not want to interact with or enter a setting they do not prefer. However, understanding what influences people's preferences has been approached in different ways.

Kaplan and Kaplan (1995) proposed a preference matrix which utilized four components derived from their exhaustive review of studies and methodologies regarding environmental preference. Through their review, they determined that results from environmental preference studies have been remarkably consistent, regardless of demographic differences and diverse settings. They stated, "given these results, there is reason to suspect that environmental preferences provide a glimpse into some essential ingredients of human functioning" (p. 40). Kaplan and Kaplan argued that human functioning depends largely on information, and the ability to extract information from surroundings. Thus, their preference matrix (Figure 6) was divided into "two domains representing two critical facets of people's relationship to information," which comprised understanding and exploration, and degree of inference (p. 50). The

preference matrix evolved from examining numerous studies of people's most and least liked scenes in various contexts.

	UNDERSTANDING	**EXPLORATION**
IMMEDIATE	Coherence	Complexity
INFERRED, PREDICTED	Legibility	Mystery

Figure 6. The Preference Matrix (Kaplan and Kaplan, 1998)

The first domain consisted of understanding and exploration. They stated that the need to understand, or to make sense of what is going on, is important to human functioning, and that when people comprehend and understand a setting, it is likely that they will have greater preferences for that setting. The second category in this domain was exploration, or the need to find out more about what is going on in a setting. The authors argue that exploration is an important element in accumulating experience, and that "it inclines one to expand one's knowledge as well as to increase one's capacity to understand previously confusing situations" (p. 51) and "provides a way to deepen one's grasp, by inquiring into new facets of a familiar situation" (p. 52). Kaplan and Kaplan point out that both categories of understanding and exploration are greatly influenced by past experiences.

The second domain of the preference matrix involved the "degree of inference that is required in extracting the needed information" from an environment (p. 52). They state this can be thought of in terms of the two-dimensional and three-dimensional aspects of the visual environment. The two-dimensional aspect involved information that is immediately available, and requires little inference. The three-dimensional aspect required greater inference, thus the emphasis is placed on what might be seen from a different vantage point as opposed to what is immediately apparent.

The combination of the above mentioned domains yields four distinct combinations to aid in understanding visual preference: coherence, complexity, legibility, and mystery. Complexity was defined as "the number of different visual elements in a scene; how intricate the scene is; its richness" (p. 53). Coherence was described by the authors as "providing a sense of order and in directing attention" and they noted it is "enhanced by anything that helps organize the patterns of brightness, size, and texture in the scene into a few major units" (p. 54). Legibility, which was originally introduced by Lynch (1960), was modified by the Kaplans. They defined a legible space as "one that is easy to understand and to remember. It is a well-structured space with distinctive elements, so that it is easy both to find one's way within the scene and to find one's way back to the starting point….Legibility thus entails a promise, or prediction, of the capacity both to comprehend and to function effectively" (p. 55). Mystery was defined as "a promise of further information if one could walk deeper into a scene. This necessarily implies that it would be possible to enter the scene, that there would be somewhere to go" (p. 56).

While Kaplan and Kaplan's (1995) preference matrix examines preference of nature and natural settings, they believed that the matrix is applicable to built or urban settings as well, since the components of the model are generically defined and do not directly imply that nature must be present.

Proposed Conceptual Model of the Effect of Environmental Cues on Behavioral Intentions in a Tourism Setting

The model created for conceptualizing this study is a blending of the models developed by Bitner (1992) Baker et al. (2002), Petrick (2004) and Kaplan and Kaplan (1995). By integrating elements derived from each of these models, a more comprehensive understanding of how environmental cues affect behavior can be created. Thus, the resultant conceptual model used to guide this study is shown in Figure 7. From this model, a theoretical model was created and tested (Figure 8).

The tourism product is an amalgam of places, services, and interactions that together form the opportunity that is used to facilitate the experience. Tourists take in sensory information from the environment in the form of environmental cues, and filter that information using past experiences, personal factors (or mood predisposition), and situational factors such as their plans or purposes for entering/choosing the site (Bitner, 1992; Baker, et al, 2002). Once the information has been filtered, tourists internally process the cues and respond to the environment (servicescape or vacationscape)

cognitively and affectively. Based on these responses, tourists then make evaluations about the tourism destination's quality of opportunity and quality of experience (Tian-Cole, Crompton, and Willson, 2002; Baker and Crompton, 2000). Tourists weigh those evaluations to determine their likelihood of enjoying the tourism product, which results in behavioral intentions characterized as approach and avoidance (Bitner, 1992). Thus, tourists draw cues from the environment which signal to them the types of opportunities and experiences they will receive from the destination, and ultimately determine whether the destination can fulfill the experience they initially sought.

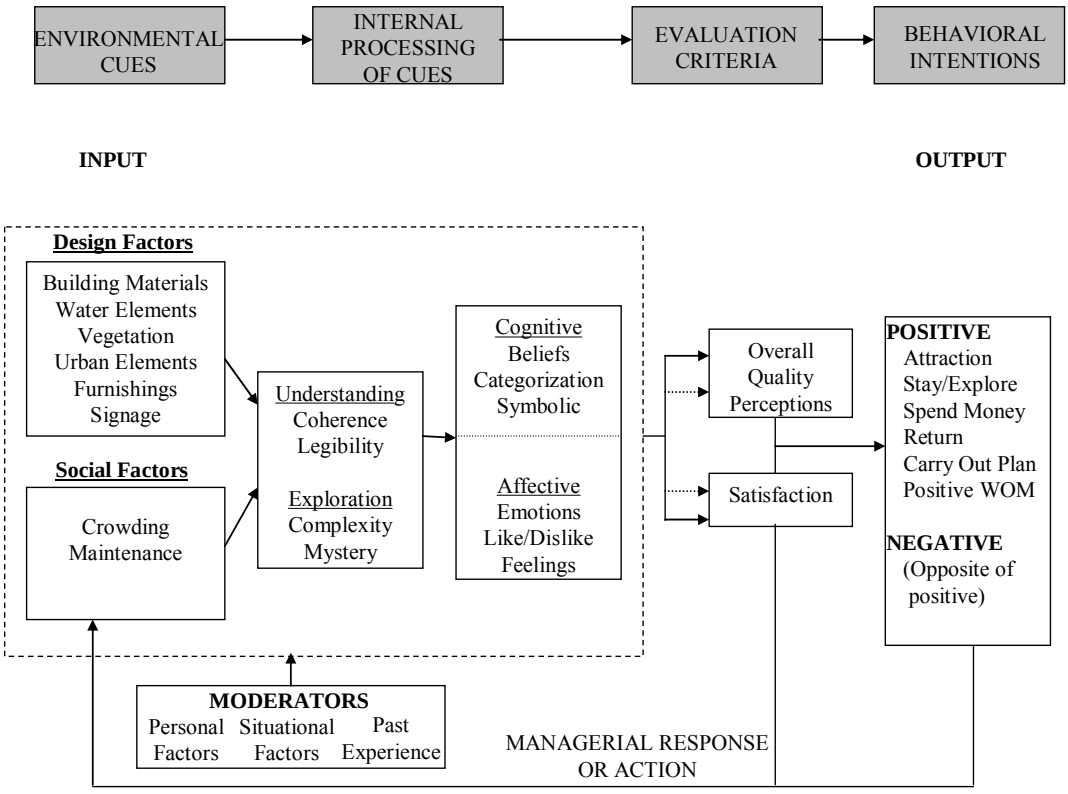


Figure 7. Conceptual Model of the Effect of Environmental Cues on Behavioral Intentions in a Tourism Setting

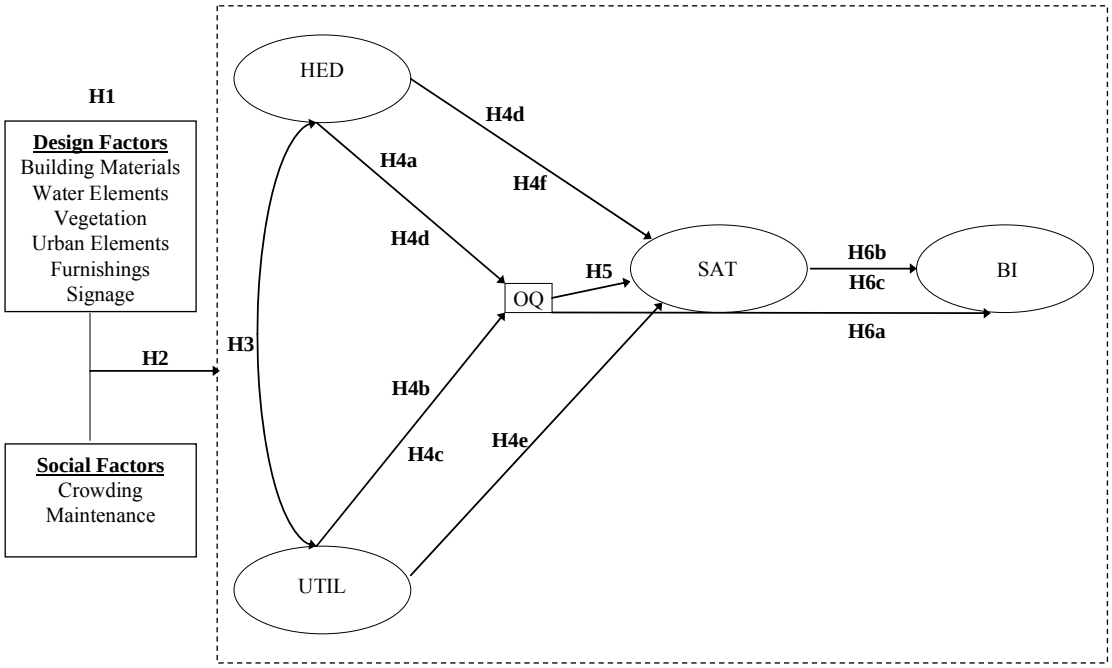


Figure 8. Conceptual Model of the Effect of Environmental Cues on Perceptions of Quality, Satisfaction, and on Behavioral Intentions in a Tourism Setting

Model Components

The theoretical model (Figure 8) was derived from the broader conceptual model. Given budget and time restrictions, the conceptual model was reduced to a more succinct form. Both models' components are discussed in the following sections. The theoretical model also lists the corresponding research hypotheses.

Environmental Dimensions

Tourists perceive their environment through their senses. Sights, sounds and smells influence how tourists react and respond to their environment. Specifically, the physical surroundings, some of which can be controlled and manipulated by tourism managers, help to create experiences for tourists, and provide tangible cues which tourists can use to evaluate the intangible experience they receive.

There is an extensive list of potential environmental cues which tourists may use to evaluate their surroundings. However, most of them can be categorized into two groups: design factors and social factors. Design factors include items that pertain to the spatial layout and functionality of a setting (Bitner, 1992; Baker et al., 2002). It is assumed that tourists enter a setting seeking specific benefits or to fulfill specific needs. The layout and functionality of a setting can enhance or inhibit the likelihood of tourists achieving their goals. Signage can facilitate successful tourist encounters by providing accurate and useful information, or by providing an indication of what to expect (Kaplan, 1972; Kaplan, Kaplan and Ryan, 1998; Nasar, 1997; Nasar and Hong, 1999; Hawkes, 1977). Thus, included under this factor are building materials (Kaplan, Kaplan and Ryan, 1998; Schroeder and Anderson, 1984), water elements (Herzog and Barnes, 1999; Zube, Pitt and Anderson, 1974; Schroeder and Anderson, 1984; Ulrich, Simons, Losito, Fiorito, Miles and Zelson, 1991), vegetation (Schroeder and Anderson, 1984; Shafer and Richards, 1974; Wilson, 1984; Nasar, 1983; Ulrich, 1979; Kaplan, Kaplan and Ryan, 1998; Kaplan, Kaplan and Wendt, 1974), urban elements (Schroeder and Anderson, 1984; Nasar, 1983; Shafer and Richards, 1974; Ulrich, 1973), furnishings

such as available seating (Kaplan, Kaplan and Ryan, 1998), and signage (Kaplan, 1972; Kaplan, Kaplan and Ryan, 1998; Nasar, 1997; Nasar and Hong, 1999; Hawkes, 1977).

Social factors refer to the issue of crowding (Ulrich, Simons, Losito, Fiorito, Miles and Zelson, 1991; Kaplan, Kaplan and Ryan, 1998; Lee and Graefe, 2002) as well as maintenance issues such as cleanliness, or litter (Schroeder and Anderson, 1984; Marans, 1976; Nasar, 1983). In many cases, the social factor is a positive part of the experience. In some tourism contexts, crowds are expected and provide cues as to the popularity or quality of the destination, for example, such is the case with night clubs. However, for other destinations such as national parks or museums, crowding may provide tourists with negative cues about the experience they will have. Maintenance of a destination signifies to tourists the level of service being provided to them. Regardless of whether a destination is crowded or not, tourists expect settings to be maintained and well kept.

It is likely that the above mentioned factors will be weighed in the minds of tourists in terms of understanding and exploration as described in the preference matrix (Kaplan and Kaplan, 1998). Tourists will determine the degree of coherence, legibility, complexity, and mystery the setting provides. Thus, a lack of coherence may make it difficult to understand a scene, while a scene high in coherence is likely to be easily understandable to tourists. A lack of complexity may diminish tourists' likelihood of becoming engaged with the scene, as may a scene that is too high in complexity (for example, too many signs which may confuse the tourist). A high degree of legibility encourages preference by providing distinctiveness, as opposed to an unexciting, or

undifferentiated area. A high degree of mystery may entice further exploration because it suggests there is something more to be seen. However, too much mystery may be detrimental by suggesting danger and the unforeseen (Schroeder and Anderson, 1994; Nasar and Jones, 1997; Appleton, 1975). Thus, it is likely that if environmental cues in a scene (maintenance, signage, built elements, crowding, vegetation, water features, urban skyline) were manipulated, visitors' preferences for the scene would differ.

Moderators (in the conceptual model but not tested in this dissertation)

Moderator variables influence tourists' reactions to their environments (Bitner, 1992). Included here are personal factors, situational factors, and past experience. Personal factors include people's general mood disposition and their present mood state. Situational factors include expectations as well as the plans or purposes for being in the setting. For example, a person may seek a trip to a museum to have a quiet, educational, and relaxing experience, while another person may seek out a night club to be surrounded by people and be social. Past experiences also affect how tourists react to the setting. If tourists have no prior experience with a setting, they are more likely to use multiple environmental cues to evaluate a setting. If they have experience with settings, they may seek out particular cues, based on expectations formed as a result of past experiences.

Internal Processing of Cues

Tourists respond to environments cognitively and affectively (Zajonc and Markus, 1992; Batra and Ahtola, 1991; Voss, Spangenberg and Grohmann, 2003), and physiologically (Ulrich, 1979; Zuckerman, 1977; Ulrich, 1984; Ulrich, Simons, Losito, Fiorito, Miles and Zelson, 1991; Kaplan, Kaplan and Ryan, 1998). These responses influence how they respond to and behave in the environment. The environment is likely to influence a tourist's beliefs about the people, places, and services found in a destination. Thus, the setting or environment serves as a form of non-verbal communication imparting meaning through what has been called "object language" (Ruesch and Kees, 1956).

The environment also may help tourists to categorize the setting, by allowing them to assign a label to it. For example, the environmental cues may serve as a short-cut device for tourists to label the setting as a trendy tourist destination (for example, large crowds, fashionable décor, and trendy music) or to distinguish between a fast food restaurant and a sit-down-meal restaurant (for example plastic molded booths and ordering at a counter, as opposed to wooden tables with chairs, wait staff, and leather embossed menus). In this way, categorization helps to facilitate expectations. The categories and beliefs obtained from the environmental cues help to infer the level of quality tourists will receive from the setting. For example, tourists who gather environmental cues about a dining facility and infer the facility to be a fast food restaurant are likely to have different expectations and quality judgments than tourists

who have inferred from environmental cues that the dining facility is a sit-down-meal restaurant.

As noted earlier, literature in both landscape architecture and environmental psychology confirms that environments can elicit affective responses such as pleasure, arousal, and preference. It suggests that these can be predicted by environmental dimensions such as complexity (visual richness), coherence (order and clarity) and mystery (Kaplan and Kaplan, 1998). It is likely that if tourists have positive affective responses to the environment or setting, it will lead to positive associations with the tourism destination.

Marketing literature also suggests that preferences are formed through cognitive and affective processes (Zajonc and Markus, 1992). Batra and Ahtola (1991) reiterated this notion: "consumers purchase goods and services and perform consumption behaviors for two basic reasons: (1) consummatory affective (hedonic) gratification (from sensory attributes), and (2) instrumental, utilitarian reasons" (p. 159). Thus, they argued that consumer attitudes are two-dimensional, containing a hedonic component, comprised of experiential, affective attitudes; and a utilitarian component which is more functional and cognitive in nature. Voss, Spangenberg and Grohmann (2003) suggested that hedonic and utilitarian attitudes were important in the development of purchase intentions.

Evaluation Criteria

Tourists' reactions to the environmental dimensions they perceived lead them to make assessments about the overall quality of a tourism destination or the quality of opportunity (Crompton and MacKay, 1989; Hamilton, Crompton and More, 1991; Wright, Duray and Goodale, 1992; Crompton and Love; 1995; Childress and Crompton, 1997; Baker and Crompton, 2000; Tian-Cole, Crompton and Willson, 2002; Petrick, 2004). Additionally, tourists anticipate the quality of experience, or their predicted level of satisfaction with the experience (Brown, 1988; Crompton and MacKay, 1989; Crompton and Love, 1995; Baker and Crompton, 2000; Tian-Cole, Crompton and Willson, 2002).

Tourists' Behavioral Intentions

If tourists conclude from their evaluations that quality and satisfaction at a tourism destination are high, they will likely engage in approach behaviors, which reflect positive behavior and behavioral intentions (Bitner, 1992; Baker, Parasuraman, Grewal and Voss, 2002). The higher the evaluation, the more likely it is that their stay will be extended, larger amounts of money will be spent, that they will return again in the future, and that they will spread positive word of mouth (Baker and Crompton, 2000; Petrick, 2004). Based on the environmental cues, tourists may decide whether or not they will be able to carry out the intended plan or purpose for visiting the setting, which

also is likely to lead to extended stays and more money being spent (Petrick, 2004). It is intuitively logical that if an environment is "inviting", then people will want to stay in the environment and explore it comprehensively. However, if an environment appears uninviting, (based on environmental cues), it is not likely that the person will choose either to stay in the environment for extended periods of time or wish to return to it.

Research Hypotheses and Research Question

The research objective of the study was to determine the effects of selected visual cues on tourists' perceptions of quality and satisfaction, and on their behavioral intentions. The research hypotheses are stated below as well as a research question to ascertain managerial implications of the visual environment.

- H1: Perceptions of the visual environment will differ by treatment.
    - H1a: Scenes with the appearance of a high level of maintenance and upkeep will be preferred over scenes with the appearance of low maintenance (regarding ratings for variable MAINT, $T_{high} > T_{med} > T_{low}$).
    - H1b: Scenes with pleasing signage will be preferred over scenes with incongruent and bland signage (regarding ratings for variable SIGN, $T_{high} > T_{med} > T_{low}$).
    - H1c: Scenes with natural building materials such as wood and stone will be preferred over scenes with man-made materials such as concrete or asphalt (regarding ratings for variable BUILT, $T_{high} > T_{med} > T_{low}$).
    - H1d: Non-crowded scenes will be preferred over crowded scenes (regarding ratings for variable CROWD, $T_{high} > T_{med} > T_{low}$).
    - H1e: Scenes with vegetated environments will be preferred over scenes with less-vegetated elements (regarding ratings for variable VEGET, $T_{high} > T_{med} > T_{low}$).

- H1f: Scenes with ample seating will be preferred over scenes with little available seating (regarding ratings for variable SEAT, $T_{high} > T_{med} > T_{low}$).

- H1g: Scenes with water elements such as a water fountain and a creek will be preferred over scenes without such elements (regarding ratings for variable WATER, $T_{high} > T_{med} > T_{low}$).

- H1h: Scenes with a prominent urban skyline will be less preferred over scenes with out the presence of an urban skyline (regarding ratings for variable URBAN, $T_{high} > T_{med} > T_{low}$).

- H2: Ratings of dependent variables will differ by treatment.
  - H2a: Tourists' hedonic attitudes will be highest for T_{high}, second highest for T_{med}, and lowest for T_{low} ($T_{high} > T_{med} > T_{low}$).

  - H2b: Tourists utilitarian attitudes will be highest T_{high}, second highest for T_{med}, and lowest for T_{low} ($T_{high} > T_{med} > T_{low}$).

  - H2c: Tourists' perceptions of overall quality will be highest for T_{high}, second highest for T_{med}, and lowest for T_{low} ($T_{high} > T_{med} > T_{low}$).

  - H2d: Tourists' perceptions of satisfaction will be highest for T_{high}, second highest for T_{med}, and lowest for T_{low} ($T_{high} > T_{med} > T_{low}$).

  - H2e: Tourists' perceived behavioral intentions will be highest for T_{high}, second highest for T_{med}, and lowest for T_{low} ($T_{high} > T_{med} > T_{low}$).

- H3: Hedonic attitude will be related to utilitarian attitude.

- H4: Hedonic attitude and utilitarian attitude will be positively related to overall quality and satisfaction.

  - H4a: Hedonic attitude will be positively related to overall quality.

  - H4b: Utilitarian attitude will be positively related to overall quality.

  - H4c: Utilitarian attitude will be a stronger predictor of overall quality than hedonic attitude.

  - H4d: Hedonic attitude will be positively related to satisfaction.

  - H4e: Utilitarian attitude will be positively related to satisfaction.

    - H4f: Hedonic attitude will be a stronger predictor of satisfaction.

- H5: Overall quality will be positively related to satisfaction.

- H6: Overall quality and satisfaction will be positively related to behavioral intentions.

    - H6a: Overall quality will be positively related to behavioral intentions.

    - H6b: Satisfaction will be positively related to behavioral intentions.

    - H6c: Overall quality will be a stronger predictor of behavioral intentions than satisfaction.

- Research Question: What are the key visual quality elements that contribute to respondents' hedonic and utilitarian attitudes as well as their ratings of overall quality and satisfaction?

In conclusion, Bitner's model offered an excellent point of departure for developing a model to guide this study. She provided a thorough literature review through 1992. The main modifications to her model in the present study are: (1) incorporation of the quality and satisfaction constructs; (2) extension to a natural environment context; (3) incorporation of hedonic and utilitarian constructs; and (4) an exclusive focus on tourists/visitors.

CHAPTER IV

RESEARCH METHODOLOGY

This chapter describes the methodological issues and steps taken to implement the study. In a general sense, the goal of this research was to understand how the visual environment affects tourists' perceptions of quality, and how those perceptions influence satisfaction and behavioral intentions. More specifically, the research aimed to explore whether selected visual characteristics impact tourists' perceptions and how tourists respond to those visual characteristics. The chapter is divided into three sections: study design, questionnaire development and methods of analysis.

Study Design

The study's goal was to determine the effect of the visual environment on tourists' perceptions. Given that the environment contains numerous visual elements, and that perceptions of a setting can be created based on stimuli other than visual cues, such as sounds, temperature, and smells, it was decided to delimit the study by utilizing photographs of settings rather than taking respondents to an actual study site. Since the goal was to examine how specific visual elements affect perception, it was decided that an experiment be designed which would allow the researcher to explore variables of interest at differing levels while holding all other visual factors constant. To capture all of the visual elements of interest in photographs, hypothetical settings were created by

digitally combining selected elements from several photographs to create desired settings. A series of photographs were taken at several zoos from across the country. The elements in the photographs included animal and educational exhibits, resting places, walkways, parking lots, refreshment areas, signage, and gathering areas. All people captured in the photographs gave their verbal permission to have their photograph taken.

These photographs were digitally modified to reflect the study's eight independent variables (visual elements) in order to expose subjects to visual treatments which were as similar as possible, varying only on the visual elements of interest for the experiment. Various elements from several photographs were digitally cut and pasted to create hypothetical scenes which offered a virtual tour of a zoo. Thus, the experiment explored whether the change in selected visual elements affected tourists' perceptions when all other visual stimuli in the photographs were held constant.

The review of literature suggested that the study site should contain visual elements from both urban and natural settings so both man-made and natural elements were represented. This was a primary reason for selecting a zoo as the study's focus. However, research has shown that in the context of zoos, the presence of animals in photographs can be influential in shaping perceptions and can elicit cognitive and affective reactions (Finlay, James and Maple, 1988). Thus, all photographs used in the study excluded animals.

The premise for this research was that settings with higher perceived visual quality would lead to higher levels of overall quality, satisfaction and more positive

behavioral intentions. From the review of environmental psychology literature, eight visual elements or characteristics were identified and examined in the study (MacKay and Fesenmaier, 1997; Allton and Lieber, 1983; Gobster, 1995; Schroeder and Anderson, 1984; Kaplan, Kaplan and Ryan, 1998; Kaplan, Kaplan and Wendt, 1972; Wilson, 1984; Heath, Smith and Lim, 2000; Nasar and Hong, 1999; Nasar, 1997; Ulrich, 1993; Bishop, Hull and Leahy, 1985; Clearwater and Coss, 1990; Shafer and Richards, 1974). They were: (1) built or constructed elements, (2) level of crowding, (3) amount of vegetation, (4) available seating, (5) presence of water elements, (6) presence of an urban skyline, (7) maintenance and upkeep, and (8) type of signage. Further description of these visual elements is provided in Table 1. In order to specifically examine these elements and control for other visual differences, hypothetical zoo scenes were created by blending portions of multiple photographs. A series of four photographs were digitally created to represent scenes that could be encountered on a trip to a zoo. Each of the four photographs featured two of the eight selected visual elements.

Construction of Treatments

A description of the visual element variables is provided in Table 1. To examine the relationships outlined in the research hypotheses, it was necessary to have varying levels of each of the eight visual elements. To accomplish this, three versions of the hypothetical zoo scenes were created (represented as three treatments): zoo scenes with high visual quality, zoo scenes with mediocre visual quality, and zoo scenes with low

visual quality. To ensure that all other visual stimuli in the photographs were held constant, the same photographs were digitally modified in three different ways for each treatment. Thus, the study consisted of three treatments for each of the four photographs each of which contained two of the visual elements of interest. The original photographs were taken using a digital camera (Canon Powershot S50) and the modified scenes were created using Adobe Photoshop 7.0.

Thus, the treatments were as follows: Treatment 1 (T_{high})—high visual quality on all eight elements, Treatment 2 (T_{med})—mediocre visual quality on all eight elements, and Treatment 3 (T_{low})—low visual quality on all eight elements. Each treatment consisted of the same four photographs, modified accordingly. Since there was no foundation photograph from which the treatments were then applied, the four photographs that comprise T_{high} are provided in Figure 9 to help illustrate the discussion.

Table 1. Description of Visual Element Variables

Variable	Name	Description	Located
1	MAINT	Maintenance and Upkeep	Photograph 1
2	SIGN	Type of Sign	Photograph 1
3	BUILT	Built or Constructed Elements	Photograph 2
4	CROWD	Level of Crowding	Photograph 2
5	VEGET	Amount of Vegetation	Photograph 3
6	SEAT	Available Seating	Photograph 3
7	WATER	Amount of Water Present	Photograph 4
8	URBAN	Urban Skyline	Photograph 4

Photograph 1	Photograph 2	Photograph 3	Photograph 4
			

Figure 9. Visual Illustration of T_{high} Photographs

The context of Photograph 1 was the entrance to a hypothetical zoo. The two visual elements of interest in this photograph (Table 1 and Figure 9) were the entrance sign and maintenance and upkeep (operationalized by trash and trashcans). The context of Photograph 2 was a view of an animal exhibit (without animals present). The two visual elements of interest in this photograph were the built or constructed elements (operationalized by building materials), and the level of crowding (operationalized by the number of people present in the scene). The context of Photograph 3 was a view of an exhibit hall. The visual elements of interest were the amount of vegetation (grass and trees), and amount of available seating (benches and picnic tables). The context of Photograph 4 was a view of a walkway exiting the zoo. The visual elements of interest were the number and extent of water elements present (operationalized by a natural feature—a stream, and a man-made feature—a water fountain), and the presence of an urban area (operationalized by a visible urban skyline). Each visual element is described separately in terms of manipulations for the three treatments in the following paragraphs. The equations below describe the study's design:

$$T_{high} = P1\ (V1_{high}, V2_{high}) + P2\ (V3_{high}, V4_{high}) + P3\ (V5_{high}, V6_{high}) + P4\ (V7_{high}, V8_{high})$$

$$T_{med} = P1\ (V1_{med}, V2_{med}) + P2\ (V3_{med}, V4_{med}) + P3\ (V5_{med}, V6_{med}) + P4\ (V7_{med}, V8_{med})$$

$$T_{low} = P1\ (V1_{low}, V2_{low}) + P2\ (V3_{low}, V4_{low}) + P3\ (V5_{low}, V6_{low}) + P4\ (V7_{low}, V8_{low})$$

Where:

T = Treatment

P = Photograph

V = Variable

Table 2 and Figure 10 provide a summary of the study design and treatments. Maintenance and upkeep (MAINT) was represented in the study by the presence or absence of trash. Previous research has suggested that visual cues of maintenance and upkeep signify a higher quality destination, while a lack of maintenance or upkeep signifies less desirable places to visit (Schroeder and Anderson, 1984; Marans, 1976; Nasar, 1983). For T_{high}, trashcans were present in the photograph, but no trash was visible. For T_{med}, one of the trashcans was full, and five pieces of trash were visible outside of the trashcans. For T_{low}, all trashcans present were full and 12 pieces of trash were visible outside of the trashcans. This is consistent with Schroeder and Anderson (1984), who found that the presence of litter in parks caused respondents to rate them as having low scenic quality.

Table 2. Summarization of Study Design

PHOTOGRAPH	VISUAL ELEMENT	TREATMENT		
		Treatment One High Visual Quality Tour (T_{high})	Treatment Two Mediocre Visual Quality Tour (T_{med})	Treatment Three Low Visual Quality Tour (T_{low})
Photograph 1 View of entrance to zoo	Maintenance and Upkeep	Trashcans present, but no trash visible	Trashcans present, one full, 5 pieces of trash outside of cans	Trashcans present and full, 12 pieces of trash outside of cans
	Type of Sign	Large, decorative sign	Medium-sized sign, somewhat decorative	Small sign, basic lettering
Photograph 2 View of an animal exhibit	Built or Constructed Elements	Wood decking and wood wall	Terracotta brick pavers and concrete wall	Asphalt paving and concrete wall
	Level of Crowding	5 people present in background	15 people present in background and midground	30 people present in background, midground, and foreground
Photograph 3 View of an exhibit hall	Amount of Vegetation	Trees and grass in foreground	Grass in foreground	Concrete in foreground
	Available Seating	2 benches and 4 picnic tables	1 picnic table	1 bench
Photograph 4 View of a walkway exiting the zoo	Amount of water elements	Large stream, water fountain	Mid-sized stream, water fountain	Water fountain, no stream
	Urban Skyline	no high-rise buildings visible	1 groups of high rise buildings visible	2 groups of high rise buildings visible

Signage (SIGN) was represented in the study by the type of entrance sign. Previous research suggests that signage can influence visual preference, and that the physical nature of the sign itself can provide clear cues about a setting (Kaplan, 1972; Kaplan, Kaplan and Ryan, 1998; Nasar, 1997; and Nasar and Hong, 1999). In all three treatments, the wording on the sign "COUNTY ZOO" remained consistent. This was to ensure that the verbal message conveyed by the sign remained consistent among the treatments (Hawkes, 1977). The sign characteristics were changed by materials used and size of the sign. Previous research has suggested that sign "identity" increases legibility and provides a source of orientation for visitors by containing distinctive elements and being prominent in a setting (Kaplan, 1972; Kaplan, Kaplan and Ryan,

	Treatment 1	Treatment 2	Treatment 3
Photograph 1			
Photograph 2			
Photograph 3			
Photograph 4			

Figure 10. Photographs and Treatments

1998). Additionally, Nasar (1997) and Nasar and Hong (1999) found that signs detracted from preference when they were too complex or incongruent with their surroundings.

For T_{high}, the sign was large in size, comprising about a third of the foreground in the photograph. Additionally, it was decorative, featuring rhinoceroses, and was made of a wood-like material, with large flowering plants beneath. The sign was multicolored

and featured a border. For T_{med}, the sign was smaller in size, and many of the details were omitted including the rhinoceroses and intricate border. The building materials remained the same, and the flowering plants below were reduced in size. For T_{low}, all decorative aspects were removed from the sign. It was represented by a metallic sign, no border, and no flowers below.

Built and constructed elements (BUILT) were represented in the study by the type of materials used to create the built elements in the scene, which consisted of an observation deck and retaining wall. The materials ranged from natural (wood) to man-made (concrete and pavement). This is consistent with previous research that found natural building materials enhanced affect (Kaplan, Kaplan and Ryan, 1998). They suggested that natural materials blended in with their surroundings and did not distract from the setting. Additionally, Schroeder and Anderson (1984) reported that man-made features detracted from scenic quality, while natural features increased scenic quality. Thus, for T_{high}, the observation deck and retaining walls were made of wood materials. For T_{med}, the observation deck was made of terracotta brick pavers and the retaining wall was made of concrete. For T_{low}, the observation deck was made of asphalt paving and the retaining wall was made of concrete.

Level of crowding (CROWD) was represented by the number of visitors present in the scene. Previous research has demonstrated that in certain contexts, as crowding increases, preference for a setting decreases (Ulrich, Simons, Losito, Fiorito, Miles, and Zelson, 1991; Kaplan, Kaplan and Ryan, 1998; and Lee and Graefe, 2002). For T_{high}, five visitors were present in the background portion of the scene. For T_{med}, 15 visitors

were present in the background and midground portions of the scene. For T_{low}, 30 visitors were present in the background, midground, and foreground portions of the scenes.

Amount of vegetation (VEGET) was represented by the presence of trees and grass in a scene. Previous research has suggested that settings containing abundant vegetation, including trees, were preferred over settings lacking these features (Schroeder and Anderson, 1984; Shafer and Richards, 1974; Nasar, 1983; Ulrich, 1979; Kaplan, Kaplan and Ryan, 1998; and Kaplan, Kaplan and Wendt, 1972). Additionally, Wilson's (1984) biophilia hypothesis proposed that a common characteristic of humans was their tendency to pay attention to, affiliate with, or otherwise respond positively to nature. For $T_{high,}$ four trees and grass were present in the foreground of the scene. For T_{med}, grass was present in the foreground of the scene, but the trees were removed. For $T_{low,}$ neither grass nor trees were present in the foreground of the scene and the ground was concrete.

Available seating (SEAT) was represented by the number of places to sit and relax in the scene. Previous research has suggested that comfort amenities such as places to sit and rest created positive affect. Kaplan, Kaplan and Ryan (1998) reported that seating provided along the way during an excursion created opportunities for resting and contemplation, thus enhancing a restorative effect. In this study, seating consisted of benches and picnic tables. For $T_{high,}$ two benches and four picnic tables were present. For T_{med}, a picnic table was present. For $T_{low,}$ one bench was present.

Amount of water present (WATER) was represented by a natural stream and a man-made fountain in the scene. Previous research demonstrated that scenes including water features were generally preferred over scenes without water features and that water features were often the main influence on scenic quality (Herzog and Barnes, 1999; Zube, Pitt and Anderson, 1974; Schroeder and Anderson, 1984; Ulrich, Simons, Losito, Fiorito, Miles and Zelson, 1991). Thus, for $T_{high,}$ a large natural-looking stream was present, as well as a large, man-made water fountain. For T_{med}, the stream was smaller in size, approximately that of a creek, and the water fountain was present. For $T_{low,}$ the stream was removed and replaced with a dry creek bed, and the water feature was present.

Previous research suggests that urban park scenes with many buildings present were rated low in scenic quality (Schroeder and Anderson, 1984). Additionally, other research has found that man-made structures including buildings and other urban features detracted from preference for settings (Nasar, 1983; Shafer and Richards, 1974; Ulrich, 1973). Thus, the urban skyline (URBAN) was represented by tall buildings in the scene to address how removed from the city respondents felt. For $T_{high,}$ no high-rise buildings were visible on the horizon of the scene. For T_{med}, one group of high-rise buildings was present. For $T_{low,}$ two groups of high-rise buildings were present.

The final photographs evolved iteratively to ensure validity. The initial versions were revised and modified after consultations with committee members and a graphic artist who specialized in environmental psychology and had expertise in digital manipulation. With their counsel and guidance, a consensus was achieved on what

constituted appropriate representation both of the eight visual elements and of the three treatment levels.

Questionnaire Design and Measurement

This section outlines the design of the questionnaire and measurement of the constructs of interest. As stated in the previous section, three treatments were created to represent varying levels of visual quality (Treatment 1—T_{high}; Treatment 2—T_{med}; and Treatment 3—T_{low}). A summary of the treatments is provided in Table 2 and Figure 2. The three versions of the questionnaire (one for each treatment) are reproduced in Appendices A, B, and C.

Eight Visual Quality Items

To assess respondents' perceptions of the eight visual quality items, they were asked to "Please rate the following features in the picture above" on a Likert-type scale from 1 (extremely poor) to 7 (extremely good). Some of the polar terms on the Likert-type scales were modified and reworded so they would appropriately relate to the individual item, which enhanced the readability and clarity of the questions. Given the goal was to assess respondents' general overall perceptions of the visual quality items, each item was measured with a single-item scale, similar to the overall quality rating used in marketing research (Parasuraman, Berry and Zeithaml, 1988; Cronin and Taylor,

1992). Thus, for level of crowding (CROWD) the Likert-type scales ranged from 1 (extremely uncomfortable) to 7 (extremely comfortable). For the urban skyline (URBAN), the question was framed as, "How removed do you feel from the city?" and the Likert-type scale ranged from 1 (not at all removed) to 7 (extremely removed). The nomenclature associated with the eight visual quality items is summarized in Table 3.

Table 3. Summary of the Nomenclature used for the Eight Visual Quality Items in the Questionnaire

Variable Name	Visual Quality Scale Item on Questionnaire	Likert-Type Scale Rate Equals 1	Likert-Type Scale Rate Equals 7
MAINT	Maintenance and Upkeep	Extremely Poor	Extremely Good
SIGN	Type of Sign	Extremely Poor	Extremely Good
BUILT	Built or Constructed Elements	Extremely Poor	Extremely Good
CROWD	Level of Crowding	Extremely Uncomfortable	Extremely Comfortable
VEGET	Amount of Vegetation	Extremely Poor	Extremely Good
SEAT	Available Seating	Extremely Poor	Extremely Good
WATER	Amount of Water Present	Extremely Poor	Extremely Good
URBAN	How removed to you feel from the city?	Not At All Removed	Extremely Removed

Satisfaction

Overall satisfaction was measured by a four-item, seven-point modified semantic differential summation ratings scale, which has been utilized in previous research (Baker and Crompton, 2000; Tian-Cole, Crompton and Willson, 2002; Childress and Crompton,

1997; Tomas, Scott and Crompton, 2002). The four items were: dissatisfied to satisfied, displeased to pleased, unfavorable to favorable, and negative to positive.

Hedonic and Utilitarian Scales

Hedonic and utilitarian attitudes were measured using Batra and Ahtola's (1991) hedonic and utilitarian consumer attitudes scale. The scale consisted of eight items measured with seven-point semantic differential scales. The eight items were classified into four items each for hedonic attitude and utilitarian attitude. The hedonic items were: unpleasant to pleasant, awful to nice, disagreeable to agreeable, and sad to happy. The utilitarian items were useless to useful, worthless to valuable, harmful to beneficial, and foolish to wise.

Overall Quality

Overall perception of quality was measured using a single item, seven-point modified semantic differential scale. Respondents were asked, "Please rate the OVERALL quality of the zoo." This follows the procedure initially developed by Parasuraman, Berry and Zeithaml (1988), which has been since used in other service quality research studies (Cronin and Taylor, 1992; Tomas, Scott and Crompton, 2002).

Behavioral Intentions Scale

A six-item, seven-point symmetrical Likert-type scale was used to measure tourists' behavioral intentions. The scale was derived from previous research in similar recreation settings (Tian-Cole, Crompton and Willson, 2002; Baker and Crompton, 2000; Childress and Crompton, 1997; Tomas, Scott and Crompton, 2002). This scale was originally developed by Zeithaml, Berry and Parasuraman (1996) and contained seven items. One item was removed from the scale (pay a higher price) because respondents did not actually visit a zoo, and therefore did not pay an admission price. Thus, this was not applicable to the present study. Response categories for the scale ranged from 1 (not at all likely) to 7 (extremely likely). The following items were included: "say positive things about the zoo," "visit the zoo again in the future," "encourage friends and relatives to visit this zoo," "will not come back to the zoo," "would just go to another zoo," and "continue to visit the zoo if the admission price was increased."

General Demographic Information

In addition to the above questions, general demographic information was collected to determine if differences existed within the sample of respondents. To ascertain the extent to which males and females reacted differently to the experimental treatments, respondents were asked to indicate their gender. Because respondents

completed the questionnaire in two different geographic locations, they were asked, "From which state are you responding to this survey?", and to select either Texas or North Carolina as their response. Given the respondents were university students, it was necessary to assess if there were predisposed differences that were attributable to the degree program respondents were pursuing. Thus, the following question was asked: "Which degree plan do you most identify with?" They were asked to select from the following: Recreation/Sport Management", "Natural Resources", "Tourism", or "Other".

Survey Instrument Pilot Test

The questionnaire and on-line survey techniques were pilot tested before being distributed to the experiment's sample. Graduate students and faculty at the two universities were asked to review the survey and provide written comments on questions that were unclear and to provide suggestions for improvements. A total of 34 responses were obtained. In addition to their written comments, follow-up discussions occurred with several of the respondents to gather more in-depth feedback. The information obtained through the pilot study was used to modify and improve the functionality of the questionnaire and on-line survey technique. For example, several respondents suggested increasing the size of the photographs to improve clarity of the images. Additionally, several semantic changes were recommended to clarify instructions. All suggested modifications were discussed and approved by the doctoral committee.

Reliability Scores

Before analyses could be performed on the constructs, it was necessary to determine if the study's scales were reliable. All of the scales were included in the present study because they had shown to be reliable in previous research, but the different contexts required that their reliabilities be confirmed. Reliability refers to a scale's internal consistency, or how well the scale items measure the latent construct (Bollen, 1989). The scales used in this study were hedonic attitude (comprised of four items), utilitarian attitude (comprised of four items), satisfaction (comprised of four items), and behavioral intentions (comprised of six items). When combining the items to obtain reliabilities and scale scores, two items in the behavioral intentions scale were reverse scored because they were negatively worded ("will not come back to this zoo" and "would just go to another zoo if this zoo was not available").

Results of the reliability tests are presented in Table 4. Scales having a Cronbach's alpha of greater than 0.7 are considered to have satisfactory internal consistency (Pallant, 2001). Additionally, the corrected item-total correlation (CITC), which indicates the degree to which each item correlates to the total score, was measured. Generally, CITC values which are lower than 0.3 indicate that the item is measuring something different from the latent variable (Pallant, 2001). The four items comprising the satisfaction scale had a strong internal consistency, with a Cronbach's alpha of 0.96, and CITC scores above 0.8 for all variables. This is consistent with previous research. For example, Tian-Cole, Crompton and Willson (2002) reported a

Table 4. Reliability Scores for Satisfaction, Behavioral Intentions, Hedonic Attitude and Utilitarian Attitude Scales

Scale	CITC*	Cronbach's Alpha	N
SATISFACTION		.96	308
Dissatisfied – Satisfied	.84		
Displeased – Pleased	.87		
Unfavorable – Favorable	.90		
Negative – Positive	.86		
BEHAVIORAL INTENTIONS		.79	311
Say positive things	.70		
Visit again	.78		
Encourage others	.78		
Will not come back	.37		
Go to another zoo	.20		
Visit if price increased	.57		
HEDONIC ATTITUDE		.95	307
Unpleasant – Pleasant	.85		
Awful – Nice	.90		
Disagreeable – Agreeable	.87		
Sad – Happy	.86		
UTILITARIAN ATTITUDE		.89	314
Useless – Useful	.78		
Worthless – Valuable	.82		
Harmful – Beneficial	.71		
Foolish – Wise	.71		

*CITC = Corrected Item-Total Correlation

Cronbach's alpha of 0.97 and Baker and Crompton (2000) reported a Cronbach's alpha of 0.98.

The six items measuring behavioral intentions had a Cronbach's alpha of 0.79. CITC scores revealed that "would just go to another zoo if this zoo was not available" was perhaps measuring a different latent construct, with a score of 0.20. However, it was felt that this item represented a key component of behavioral intentions (the substitutability of the zoo) that was not captured by the other items and, therefore, was important to the scale. Additionally, removing this item from the scale only increased the Cronbach's alpha to 0.84 from 0.79, so it was decided to retain this item in the scale. Previous research (Tian-Cole, Crompton and Willson, 2002) reported a Cronbach's alpha of 0.84 for the seven-item scale used to measure behavioral intentions.

The four items measuring hedonic attitude had a Cronbach's alpha of 0.95 and CITC scores above 0.8 for all variables. The four items measuring utilitarian attitude had a Cronbach's alpha of 0.89 and CITC scores above 0.7 for all variables. This is consistent with previous research, which reported alpha estimates of 0.85 for hedonic attitude and 0.89 for utilitarian attitude (Bearden and Netemeyer, 1999).

Sampling and Data Collection

The target population was undergraduate students at Texas A&M University and North Carolina State University who were enrolled in introductory recreation, park and tourism classes. It was decided to use students from these classes because enrollees in introductory classes often include students from different disciplinary backgrounds. Students were asked to participate in an on-line survey at their leisure. Instructors in the chosen courses passed out instructions and a letter explaining the survey to all students in their classes. There were three versions of the letters (one for each treatment) with the same instructions. The letters are reproduced in Appendix D. The letters were assembled in alternating order (T1, T2, T3, T1, T2, T3) by the researcher, and the instructors passed out the letters row by row to the students (each letter included a link to the respective survey for the assigned treatment). Data collection occurred during the spring and summer semesters in 2004.

A total of 574 students were asked to complete the final survey instrument. Of those, 330 surveys were completed and submitted by the students, yielding a response rate of 57.5%. Several instructors awarded extra credit points to those students who participated in the survey but, given the method of data collection, there was no practical way to examine non-response. Of the 330 completed surveys, 112 were completed for Treatment 1, 109 were completed for Treatment 2, and 109 were completed for Treatment 3. From the 330 surveys, 321 were usable for analysis (106 for Treatment 1, 106 for Treatment 2, and 108 for Treatment 3).

Data Analysis Procedures

The data were analyzed using SPSS version 13.0 and EQS version 6.1. SPSS was used to obtain general information about the dataset such as means and standard deviations, as well as to analyze differences between and within treatments. To analyze the acceptability of the proposed structural model, EQS was used. EQS is a statistical program designed for structural equation modeling that can handle both continuous and categorical data.

The data were first examined by using descriptive statistics such as frequencies, means, and standard deviations to develop profiles of the total sample and to identify the distribution of the sample. Next, reliability scores and factor analyses were conducted to determine how well the latent variables were described by the observed variables.

In order to test Hypothesis 1 regarding differences in perceptions of the visual environment by treatment, the MANOVA using Tukey's Honestly Significant (HSD) test as a post-hoc comparison was used. The MANOVA was used to compare the variance in ratings on the eight visual elements among the different treatments. A post-hoc comparison using Tukey's HSD test was used to help guard against the possibility of an increased Type 1 error, given the large number of different comparisons being made (Pallant, 2001). Tukey's HSD assumes equal variances for the groups. In order to test Hypothesis 2, regarding the differences in ratings of hedonic attitude, utilitarian attitude, overall quality, satisfaction and behavioral intentions by treatment, the MANOVA using Tukey's Honestly Significant (HSD) test as a post-hoc comparison was again used.

In order to test Hypotheses 3 through 6, structural equation modeling was used. Structural equation modeling (SEM) is a comprehensive statistical technique that allows researchers to test hypotheses about relationships among observed and latent variables (Hoyle, 1995). Additionally, SEM allows a hypothesized model to be tested statistically in a simultaneous analysis of the entire model to determine the extent to which it is consistent with the data (Byrne, 1994). Byrne (1994) points out that the term "structural equation modeling" conveys two important aspects of the procedure: "(a) that the causal processes under study are represented by a series of structural (i.e., regression) equations, and (b) that these structural relations can be modeled pictorially to enable a clearer conceptualization of the theory under study" (p. 3).

In addition to the hypotheses examined in this study, a research question was asked to ascertain managerial implications of the visual environment: *What are the key visual quality elements that contribute to respondents' hedonic and utilitarian attitudes as well as their ratings of overall quality and satisfaction?* To address this question, standardized Beta coefficients were compared from the results of multiple regression analyses on responses to the three treatments.

CHAPTER V

RESULTS

This chapter presents results of the study. Descriptive statistics are discussed first to provide a profile of the respondents. Next, results of the hypotheses testing are presented along with a discussion of the structural model. The chapter concludes with an examination of the results of the research question to ascertain managerial implications of the visual environment.

Characteristics of Study Respondents

The profile of respondents is provided for the entire sample as well as by treatment (Table 5). The sample was comprised of nearly equal numbers of males (53.8%) and females (44.7%). Nearly two-thirds (65.3%) of respondents resided in the state of North Carolina. This is attributable to the researcher's geographic proximity to the students in North Carolina. Almost half of the respondents (49.7%) were recreation or sport management majors, while 22.8% classified their major as "other", indicating that they were likely to be non-majors taking a recreation, park, or tourism class as an elective. Only 5% of respondents had never visited a zoo before, which indicates that respondents had a general frame of reference when rating the photographs in the present study. Nearly half of respondents (49.4%) had visited zoos five times or fewer, while 8.8% had visited zoos more than 15 times. In addition, nearly all respondents (91.9%)

had visited five zoos or fewer. Thus, the majority of respondents may be characterized as casual zoo visitors.

The surveys were administered to students in a random fashion, in an effort to eliminate any differences between treatments. Chi-square tests and ANOVAs were performed on the data to determine if there were differences between treatments (Table 6 and Table 7). Chi-square tests on the categorical data and ANOVAs on the continuous data were performed to ensure the treatments were equally proportioned regarding respondent characteristics.

The Chi-square tests (Table 6) revealed that there were no significant differences between treatments on gender ($X^2 = .616$), state of residence ($X^2 = .519$), degree sought ($X^2 = .674$), and whether respondents had visited a zoo ($X^2 = .954$). Results of the ANOVA tests (Table 7) similarly confirmed that there were no significant differences between treatments on the number of previous times respondents had visited a zoo (p=.798) or on number of different zoos visited (p=.529). Thus, any differences found between treatments should not be attributed to differences in the profile of the sample population.

Table 5. Demographic Profile and Visitation Characteristics of Respondents

	Treatment 1 (N = 106)		Treatment 2 (N = 106)		Treatment 3 (N = 108)		Total (N = 320)	
Characteristics	N	Percent	N	Percent	N	Percent	N	Percent
GENDER								
Male	60	56.6	53	50.0	59	54.6	172	53.8
Female	44	41.5	51	48.1	48	44.4	143	44.7
No Response	2	1.9	2	1.9	1	0.9	5	1.6
RESIDENCE								
Texas	38	35.8	40	37.7	33	30.6	111	34.7
North Carolina	68	64.2	66	62.3	75	69.4	207	65.3
No Response	--	--	--	--	--	--	--	--
DEGREE SOUGHT								
Rec./Sport Mgmt.	53	50.0	52	49.1	54	50.0	159	49.7
Natural Resources	9	8.5	5	4.7	8	7.4	22	6.9
Tourism	24	22.6	19	17.9	23	21.3	66	20.6
Other	20	18.9	30	28.3	23	21.3	320	22.8
No Response	--	--	--	--	--	--	--	--
VISITED A ZOO BEFORE								
Yes	101	95.3	99	93.4	106	94.4	302	94.4
No	5	4.7	5	4.7	6	5.6	16	5.0
No Response	--	--	2	1.9	--		2	0.6
TIMES VISITED								
0 – 5	57	53.8	54	50.9	47	43.5	158	49.4
6 – 10	25	23.6	27	25.5	37	34.3	89	27.8
11 – 15	8	7.5	8	7.5	8	7.4	24	7.5
> 15	7	6.6	12	11.3	9	8.3	28	8.8
No Response	9	8.5	5	4.7	7	6.5	21	6.6
NUMBER OF ZOOS VISITED								
2 or Fewer	39	36.8	36	34.0	51	47.2	126	39.4
3 – 5	58	54.7	62	58.5	47	43.5	167	52.5
6 – 10	7	6.6	5	4.7	8	7.4	20	6.3
>10	1	0.9	1	0.9	1	0.9	3	0.9
No Response	1	0.9	2	1.9	1	0.9	4	1.3

Table 6. Results of Chi-Square Tests for Differences in Respondents' Demographic Profile

Characteristics	T_{high} (N=106)		T_{med} (N=106)		T_{low} (N=108)		Total (N=320)		Pearson Chi-Square
	n	%	n	%	n	%	n	%	
GENDER									.616
Male	60	57.7	53	51.0	59	55.1	172	54.6	
Female	44	42.3	51	49.0	48	44.9	143	45.4	
No Response	2		2		1		5		
RESIDENCE									.519
Texas	38	35.8	40	37.7	33	30.6	111	34.7	
North Carolina	68	34.2	66	62.3	75	69.4	207	65.3	
No Response	--		--		--		--		
DEGREE SOUGHT									.674
Rec./Sport Mgmt.	53	50.0	52	49.1	54	50.0	159	49.7	
Natural Resources	9	8.5	5	4.7	8	7.4	22	6.9	
Tourism	24	22.6	19	17.9	23	21.3	66	20.6	
Other	20	18.9	30	28.3	23	21.3	320	22.8	
No Response	--		--		--		--		
VISITED A ZOO BEFORE									.954
Yes	101	95.3	99	95.2	106	99.4	302	95.0	
No	5	4.7	5	4.8	6	5.6	16	5.0	
No Response	--		2		--		2		

Table 7. Results of ANOVA Tests for Differences in Respondents' Visitation Characteristics

Variable	T_{high} (N=106)	T_{med} (N=106)	T_{low} (N=108)	Total (N=320)	F-Value	p-Value
TIMES VISITED					.225	.798
Mean	8.1	8.7	9.2	8.7		
St. Dev.	11.76	10.99	12.30	11.66		
NUMBER OF ZOOS VISITED					.638	.529
Mean	3.4	3.4	3.1	3.3		
St. Dev.	2.29	1.94	2.01	2.08		

Results of Hypotheses Tests

Before testing the hypotheses, means and standard deviations were calculated for all the variables as well as scale scores for the latent variables on the three treatments. These results are presented in Table 8. Hypothesis one stated that respondents' perceptions of the visual environment differed by treatment. To test this hypothesis, a MANOVA was performed on the eight visual quality items across the three treatments. Tables 9 and 10 report the results of the MANOVA. Tables 2 and 3 in Chapter IV provide a summary of the scenes used in the study. The MANOVA indicated that differences existed between treatments (Wilks' Lambda = .230, $F = 37.738$, $p < .001$), and 77.0% of the variance was explained in the model (Table 9). Table 10 provides the post hoc comparisons using Tukey's Honestly Significant Difference (HSD) tests.

Table 8. Mean and Standard Deviation Scores for Questionnaire Items Across Treatments

	T_{high}		T_{med}		T_{low}	
Questionnaire Item	Mean	S. D.	Mean	S. D.	Mean	S. D.
VISUAL QUALITY ITEMS						
Built or constructed elements	4.60	1.32	4.23	1.33	3.81	1.50
Level of crowding	5.89	1.38	4.80	1.38	3.35	1.50
Amount of vegetation	4.92	1.32	3.26	1.51	2.41	1.35
Available seating	4.74	1.60	2.06	1.28	1.81	1.19
Amount of water present	5.24	1.33	4.66	1.41	3.85	1.51
Feel removed from the city	4.03	1.47	3.69	1.48	3.56	1.51
Maintenance and upkeep	5.94	1.24	2.74	1.63	1.50	0.95
Type of sign	5.22	1.57	2.96	1.57	2.68	1.47
OVERALL QUALITY	**4.71**	**1.18**	**3.77**	**1.13**	**2.68**	**1.14**
SATISFACTION	**4.42**	**1.29**	**3.52**	**1.07**	**2.66**	**1.10**
Dissatisfied – Satisfied	4.48	1.37	3.40	1.23	2.57	1.33
Displeased – Pleased	4.55	1.45	3.56	1.28	2.69	1.24
Unfavorable – Favorable	4.58	1.50	3.65	1.34	2.75	1.27
Negative – Positive	4.71	1.65	3.96	1.39	2.85	1.31
BEHAVIORAL INTENTIONS	**3.85**	**1.02**	**3.13**	**1.04**	**2.60**	**1.01**
Say positive things	4.17	1.36	3.24	1.23	2.47	1.25
Visit again	4.84	1.49	3.10	1.52	2.21	1.32
Encourage others	4.02	1.56	3.08	1.41	2.23	1.30
Will not come back	5.00	1.66	4.45	1.81	3.92	2.24
Go to another zoo	3.18	1.57	2.75	1.72	2.99	1.86
Visit if price increased	2.88	1.49	2.15	1.36	1.78	1.27
HEDONIC ATTITUDE	**5.02**	**1.36**	**4.45**	**1.20**	**3.34**	**1.31**
Unpleasant – Pleasant	5.07	1.50	4.49	1.29	3.29	1.47
Awful – Nice	5.06	1.48	4.57	1.32	3.42	1.43
Disagreeable – Agreeable	4.76	1.43	4.30	1.26	3.31	1.34
Sad – Happy	5.20	1.50	4.45	1.38	3.34	1.57
UTILITARIAN ATTITUDE	**4.76**	**1.31**	**4.48**	**1.00**	**3.82**	**1.17**
Useless – Useful	4.63	1.51	4.44	1.35	3.69	1.46
Worthless – Valuable	4.78	1.53	4.47	1.17	3.79	1.41
Harmful – Beneficial	5.08	1.49	4.83	1.15	4.22	1.41
Foolish – Wise	4.54	1.37	4.20	1.08	3.59	1.29

Table 9. Differences in Respondents' Ratings Across Treatments

Items	MEANS T_{high}	T_{med}	T_{low}	UNIVARIATE F	p
VISUAL QUALITY ITEMS					
Built or constructed elements	4.60	4.22	3.84	7.64	.001
Level of crowding	5.91	4.74	3.39	78.22	<.001
Amount of vegetation	4.90	3.29	2.45	76.81	<.001
Available seating	4.79	2.07	1.80	140.36	<.001
Amount of water present	5.26	4.70	3.83	25.66	<.001
Feel removed from the city	4.07	3.64	3.61	2.82	.061
Maintenance and upkeep	5.93	2.70	1.51	306.14	<.001
Type of sign	5.17	3.04	2.63	76.66	<.001
Wilks' Lambda = .230 F = 37.738 p < .001					
DEPENDENT VARIABLES					
Overall Quality	4.73	3.79	2.81	22.89	<.001
Satisfaction	4.47	3.54	2.64	48.32	<.001
Behavioral Intentions	3.88	3.15	2.51	42.39	<.001
Hedonic Attitude	5.12	4.53	3.38	60.99	<.001
Utilitarian Attitude	4.83	4.53	3.75	69.68	<.001
Wilks' Lambda = .609 F = 15.550 p <.001					

Table 10. Results of Post Hoc Tests for Visual Quality Items Across Treatments

Variable	Treatment A	Treatment B	Mean Difference (A – B)	p-value
Maintenance and Upkeep (MAINT)	1	2	3.23	<0.001*
	1	3	4.42	<0.001*
	2	3	1.19	<0.001*
Type of Sign (SIGN)	1	2	2.13	<0.001*
	1	3	2.54	<0.001*
	2	3	0.41	0.155
Built Elements (BUILT)	1	2	0.38	0.142
	1	3	0.76	<0.001*
	2	3	0.38	0.136
Level of Crowding (CROWD)	1	2	1.16	<0.001*
	1	3	2.52	<0.001*
	2	3	1.35	<0.001*
Amount of Vegetation (VEGET)	1	2	1.61	<0.001*
	1	3	2.45	<0.001*
	2	3	0.84	<0.001*
Available Seating (SEAT)	1	2	2.72	<0.001*
	1	3	2.99	<0.001*
	2	3	0.27	0.378
Amount of Water Present (WATER)	1	2	0.56	0.020*
	1	3	1.43	<0.001*
	2	3	0.87	<0.001*
Urban Skyline (URBAN)	1	2	0.43	0.131
	1	3	0.46	0.082
	2	3	0.03	0.987

Note: Tukey's Honestly Significant Different Test (HSD) was used as the post-hoc test.
Note: * Indicates significance with $p < 0.05$

For the variable maintenance and upkeep (MAINT), initial results of the test revealed that there was a statistically significant difference among the treatments at the $p<.001$ level. Post hoc comparisons using Tukey's Honestly Significant Difference (HSD) test revealed that the three treatments were all statistically different ($p<.001$). Thus, the incremental addition of trash to the scene influenced respondents' preference for the scene, and Hypothesis 1a was supported.

For the variable SIGN, initial results indicated there was a statistical difference among the treatments. Tukey's HSD revealed that T_{high} was statistically different from T_{med} and T_{low} ($p<.001$); however, there was no significant difference in respondents' preference ratings between T_{med} and T_{low}. Thus, the ornate sign with increased vegetation was preferred over the other two smaller, less ornate signs, but there was no difference in preference between T_{med}, which featured a less ornate version of the sign in T_{high} and the sign in T_{low}, which lacked all detail. Thus, Hypothesis 1b was partially supported.

For the variable BUILT, which referred to the built or constructed elements, initial tests indicated there was a statistical difference among treatments. Tukey's HSD revealed that T_{high} was significantly different than T_{low} ($p<.001$), but there was no difference between T_{high} and T_{med} or T_{med} and T_{low}. Thus, respondents preferred wood decking and building materials over asphalt and concrete, but did not significantly prefer wood decking over the terracotta pavers, or the terracotta pavers over asphalt. Thus, Hypothesis 1c was only partially supported.

For the variable CROWD, which referred to the level of crowding, initial tests indicated there was a statistical difference among treatments. Tukey's HSD revealed that the three treatments were all significantly different ($p<.001$). So, the incremental addition of people in the scene appeared to lower respondents' preference for the scene. Thus, Hypothesis 1d was supported.

For the variable VEGET, which referred to the amount of vegetation present in the scene, initial tests indicated there was a statistical difference among treatments. Tukey's HSD revealed that the three treatments were all significantly different ($p<.001$). So, the increased vegetation in the scene appeared to increase respondents' preference for the scene. Thus, Hypothesis 1e was supported.

For the variable SEAT, which referred to the amount of seating available in the scene, initial tests indicated there was a statistical difference among treatments. Tukey's HSD revealed that there was a statistical difference between T_{high} and T_{med} as well as between T_{high} and T_{low} ($p<.001$); however, the difference between T_{med} and T_{low} was not statistically different. Thus, Hypothesis 1f was partially supported.

For the variable WATER, which referred to the amount of water present in the scene, initial tests indicated there was a statistical difference among treatments. Tukey's HSD revealed that all three treatments were significantly different (T_{high} and T_{med}, $p<.05$; T_{high} and T_{low}, $p<.001$; and T_{med} and T_{low}, $p<.001$). Thus, the addition of water elements in the scene, both man-made and natural, improved respondents' preference for the scene and Hypothesis 1g was supported.

The variable URBAN referred to the presence of an urban skyline, depicted by high-rise buildings in the horizon. Initial tests did not indicate any differences among the treatments. Thus, no further analysis was undertaken. Hypothesis 1h was rejected. A summary of the significant treatments across variables is provided in Table 11.

Table 11. Mean Differences of Visual Quality Items by Treatment Group

Variable	Significant Treatment Differences*		
	$T_{high} - T_{med}$	$T_{high} - T_{low}$	$T_{med} - T_{low}$
VISUAL QUALITY ITEMS			
Maintenance and Upkeep (MAINT)	3.23	4.42	1.19
Type of Sign (SIGN)	2.13	2.54	
Built Elements (BUILT)		0.76	
Level of Crowding (CROWD)	1.16	2.52	1.35
Amount of Vegetation (VEGET)	1.61	2.45	0.84
Available Seating (SEAT)	2.72	2.99	
Amount of Water Present (WATER)	0.56	1.43	0.87
Urban Skyline (URBAN)			

*All mean differences listed are significant ($p<.05$).

Hypothesis 2 stated that ratings of the dependent variables differed between treatments. Thus changes in the visual environment would induce changes in respondents' perceptions of overall quality, satisfaction and behavioral intentions as well as affect their hedonic and utilitarian attitudes regarding the zoo. In order to test this hypothesis, a MANOVA was performed on the endogenous variables across the three treatments. Tables 9 and 12 report the results of the MANOVA. The MANOVA indicated that differences existed between treatments (Wilks' Lambda = .609, F = 15.550, $p<.001$), and explained 39.1% of the variance in the model (Table 9). Table 12 provides the post hoc comparisons using Tukey's Honestly Significant Difference (HSD) tests.

Table 12. Results of Post Hoc Tests for Dependent Variables Across Treatments

Dependent Variable	Treatment A	Treatment B	Mean Difference (A – B)	p-value
Satisfaction	1	2	0.93	<0.001*
	1	3	1.83	<0.001*
	2	3	0.90	<0.001*
Behavioral Intentions	1	2	0.73	<0.001*
	1	3	1.36	<0.001*
	2	3	0.64	<0.001*
Hedonic Attitude	1	2	0.60	0.003*
	1	3	1.75	<0.001*
	2	3	1.15	<0.001*
Utilitarian Attitude	1	2	0.30	0.170
	1	3	1.08	<0.001*
	2	3	0.78	<0.001*
Overall Quality	1	2	0.94	<0.001*
	1	3	1.92	<0.001*
	2	3	0.98	<0.001*

Note: Tukey's Honestly Significant Different Test (HSD) was used as the post-hoc test.
Note: * Indicates significance with $p < 0.05$

For the latent variable HED, or hedonic attitude, initial tests indicated there was a statistical difference among treatments. Tukey's HSD revealed that all three treatments were significantly different (T_{high} and T_{med}, $p<.01$; T_{high} and T_{low}, $p<.001$; and T_{med} and T_{low}, $p<.001$). Respondents' hedonic attitudes toward the zoo differed depending on which treatment they viewed. Modifying the visual environment influenced respondents' hedonic attitude, or their affective feelings about the zoo. Those respondents who viewed T_{high} reported the highest hedonic attitudes, while those who viewed T_{med} reported lower hedonic attitudes, and those who viewed T_{low} reported the least positive hedonic attitudes. Thus, Hypothesis 2a was supported.

For the latent variable, UTIL, or utilitarian attitude, initial tests indicated there was a statistical difference among treatments. Tukey's HSD revealed that there was a statistical difference between T_{high} and T_{low} ($p<.001$) and between T_{med} and T_{low} ($p<.001$) but not between T_{high} and T_{med} ($p=.170$). Respondents' utilitarian attitudes toward the zoo differed depending on whether they viewed T_{low} as compared to T_{high} or T_{med}. Modifying the visual environment influenced respondents' utilitarian attitude or cognitive feelings toward the zoo. The difference appeared in T_{low}. Thus, Hypothesis 2b was partially supported.

For the observed variable overall quality (OQ), initial tests indicated there was a statistical difference among treatments. Tukey's HSD revealed that all three treatments were significantly different ($p<.001$). Respondents' ratings of overall quality differed depending on which treatment they viewed. This implies that modifying the environment has an effect on overall quality. Thus, Hypothesis 2c was supported.

For the latent variable SAT, satisfaction, initial tests indicated there was a statistical difference among treatments. Tukey's HSD revealed that all three treatments were significantly different ($p<.001$). Respondents' ratings of satisfaction differed depending on which treatment they viewed. Those respondents who viewed T_{high} reported the highest satisfaction, while those who viewed T_{med} reported lower ratings of satisfaction, and those who viewed T_{low}, reported the lowest ratings of satisfaction. Thus, modifying the visual environment influenced respondents' perceptions of satisfaction. Hence, Hypothesis 2d was supported.

For the latent variable BI, behavioral intentions, initial tests indicated there was a statistical difference among treatments. Tukey's HSD revealed that all three treatments were significantly different ($p<.001$). Respondents' ratings of their behavioral intentions differed depending on which treatment they viewed. Those respondents who viewed T_{high} reported the strongest positive behavioral intentions, while those who viewed T_{med} reported lower behavioral intentions, and those who viewed T_{low} reported the lowest behavioral intentions. Modifying the visual environment influenced respondents' perceptions of behavioral intentions. Thus, Hypothesis 2e was supported. A summary of the results of the MANOVA tests for Hypothesis 2 is provided in Table 13.

Table 13. Mean Differences of the Dependent Variables by Treatment Group

Variable	Significant Treatment Differences*		
	$T_{high} - T_{med}$	$T_{high} - T_{low}$	$T_{med} - T_{low}$
Satisfaction (SAT)	0.93	1.83	0.90
Behavioral Intentions (BI)	0.73	1.36	0.64
Hedonic Attitude (HED)	0.60	1.75	1.15
Utilitarian Attitude (UTIL)		1.08	0.78
Overall Quality (OQ)	0.94	1.92	0.98

*All mean differences listed are significant ($p<0.05$).

The Measurement Model

In order to test the remaining hypotheses (H3 through H6), structural equation modeling was employed. The data were analyzed using EQS, version 6.1, which is a statistical program designed for structural equation modeling that can handle both continuous and categorical data. A structural model was developed which incorporated four latent variables (hedonic attitude, utilitarian attitude, satisfaction and behavioral intentions) and one observed variable, overall quality, which was measured as a single-item construct. However, before the structural model could be analyzed, the measurement model was first examined. The measurement model consisted of four latent variables (hedonic attitude, utilitarian attitude, satisfaction and behavioral intentions) and their indicators. Overall quality, an observed variable, was excluded

from the model because it was measured by a single item (Kline, 1998).The measurement model is presented in Figure 11.

The sample sizes for the three treatments were N = 106, N = 106 and N = 108, respectively. SEM is a large-sample technique, given that the evaluation of complex models requires more subjects than does the evaluation of simpler models (Kline, 1998). While there are differences of opinion as to what constitutes a "large" sample size in SEM, there are some approximate guidelines. Kline (1998) suggested that samples with fewer than 100 cases were untenable with almost any type of SEM, unless the model is very simple, and contains no latent variables. He stated that medium sample sizes range from 100 to 200 cases, and large sample sizes contain more than 200 cases (Kline, 1998). Additionally, research has shown that decreasing sample sizes and increasing non-normality have led both to increases in the proportion of analyses that fail to converge and to improper solutions (Hoyle, 1995). Thus, the three treatments were combined into a single dataset to perform the SEM for the study.

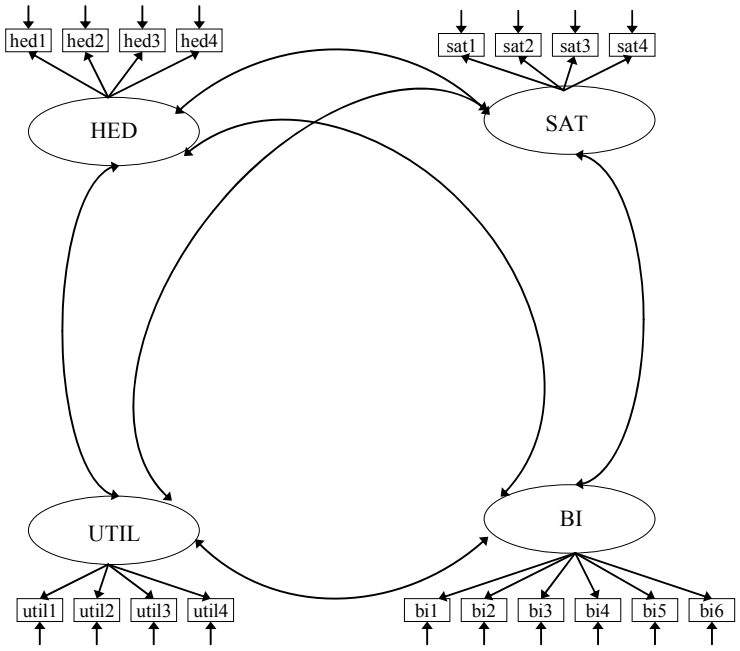


Figure 11. The Measurement Model

Measurement Properties

Before analyzing the causal model, it was necessary to examine the measurement model to ensure the variables in the model accurately corresponded to their intended latent variables. This generally involves assessing the reliability and validity of the constructs and indicator items. In general terms, reliability refers to the consistency of measurement, and validity refers to the extent to which an instrument measures what it is supposed to measure (Hatcher, 1994). Confirmatory factor analysis was used to assess the measurement model. Confirmatory factor analysis assumes all latent variables covary with each other (Kline, 1998).

Indicator reliability is the square of the correlation between a latent factor and that indicator, thus, the percent of variation in the indicator that is explained by the factor (Hatcher, 1994). This value is also referred to as R^2. Indicator reliability should capture 50 percent of the variation in the indicator (Fornell, 1981). Composite reliability is analogous to coefficient alpha. It reflects the internal consistency of the indicators measuring a factor. Composite reliability is an index of internal consistency reliability (Hatcher, 1994). It is similar to Cronbach's alpha (reported in Chapter IV). Composite reliability generally should be above .70, with .60 considered minimally acceptable (Hatcher, 1994). Variance extracted estimates are an index that assesses the amount of variance captured by an underlying factor in relation to the amount of variance due to measurement error (Hatcher, 1994). These estimates are considered the most stringent test of the validity of the latent construct as well as its indicators, given its conservative

nature (Hatcher, 1994). Generally, estimates over .50 are considered desirable, meaning the variance due to measurement error is less than the variance captured by the construct (Hatcher, 1994). The indicator and composite reliabilities and variance extracted estimates are reported in Table 14.

The indicator reliabilities for hedonic attitude were all above 0.78, as were the indicator reliabilities for satisfaction. The indicator reliabilities for utilitarian attitude were above the acceptable range (.50); however, two items (harmful-beneficial, and foolish-wise) had relatively low reliabilities (.505 and .511, respectively). Three items fell below the .50 threshold for behavioral intentions (will not come back--.103; go to another zoo--.010; and visit if price increased--.457). This suggests the validity of these items may be questionable. However, it was decided to leave these items in the model because they are central to representing the totality of behavioral intentions (substitutability and price sensitivity).

Additionally, Cronbach's alpha and corrected item-total correlations previously calculated (Chapter IV, Table 4) suggested these scales were reliable. In Table 4 (Chapter IV) the CITC scores revealed that "would just go to another zoo if this zoo was not available" was perhaps measuring a different latent construct, with a score of 0.20. However, it was felt this item represented a key component of behavioral intentions (the substitutability of the zoo) that was not captured by the other items, and therefore important to the scale. Additionally, removing this item from the scale only increased Cronbach's alpha to 0.84 from 0.79, so it was decided to retain this item in the scale.

Another way to assess reliability is to calculate composite reliability. Composite reliability was calculated using the following equation (Hatcher, 1994):

$$\text{Composite Reliability} = (\sum L_i)^2 / (\sum L_i)^2 + \sum \text{Var}(E_i)$$

Where:

L_i = the standardized factor loadings for that factor

Var (E_i) = the error variance associated with the individual indicator variables.

Table 14 provides the composite reliabilities for the latent constructs. Composite reliability is considered minimally acceptable at .60, and the preference is that scores should be above .70 (Hatcher, 1994). All factors had composite reliabilities above .83, indicating that the reliability of all constructs was acceptable.

Variance extracted estimates, as stated previously, assesses the amount of variance captured by an underlying factor in relation to the amount of variance due to measurement error (Hatcher, 1994). Variance extracted estimates were calculated using the following equation (Hatcher, 1994):

$$\text{Variance Extracted} = \sum L_i^2 / \sum L_i^2 + \sum \text{Var}(E_i)$$

Where:

L_i = the standardized factor loadings for that factor

Var (E_i) = the error variance associated with the individual indicator variables.

Table 14 provides the variance extracted estimates. It is desirable that constructs exhibit estimates of .50 or larger, because estimates lower than .50 indicate that variance due to measurement error is greater than the variance captured by the construct (Hatcher,

1994). All indices exceeded the .50 criteria, further suggesting the reliability of the scales. Thus, results of the indicator reliabilities, composite reliabilities and variance extracted estimates suggest the proposed model demonstrates reliability of both the indicator items and their corresponding constructs, or factors.

Table 14. Properties of the Measurement Model

Constructs and Indicators	Standardized Loading	Critical Ratio	Error Variance[a]	Reliability[b]	Variance Extracted
HEDONIC ATTITUDE				**0.944**	0.808
Unpleasant - Pleasant	0.895	14.522	0.200	0.800	
Awful - Nice	0.930	15.074	0.135	0.865	
Disagreeable - Agreeable	0.885	14.374	0.217	0.783	
Sad - Happy	0.885	14.377	0.216	0.784	
UTILITARIAN ATTITUDE				**0.888**	0.667
Useless - Useful	0.897	4.733	0.196	0.804	
Worthless - Valuable	0.921	4.747	0.152	0.848	
Harmful - Beneficial	0.711	4.595	0.495	0.505	
Foolish - Wise	0.715	4.599	0.489	0.511	
SATISFACTION				**0.949**	0.824
Dissatisfied - Satisfied	0.902	19.743	0.186	0.814	
Displeased - Pleased	0.923	20.560	0.147	0.853	
Unfavorable - Favorable	0.921	20.468	0.152	0.848	
Negative - Positive	0.883	19.036	0.221	0.779	
BEHAVIORAL INTENTIONS				**0.839**	0.523
Say positive things	0.896	5.569	0.197	0.803	
Visit again	0.927	5.594	0.141	0.859	
Encourage others	0.950	5.610	0.097	0.903	
Will not come back	0.321	3.0[8]	0.897	0.103	
Go to another zoo**	0.098	1.578	0.990	0.010	
Visit if price increased	0.676	5.298	0.543	0.457	

Note: **Double asterisk denotes non-significant t-test.
[a]: Error variance was calculated as 1 minus the indicator reliability.
[b]: Reliability scores in bold print denote composite reliability; indicator reliability scores were calculated as the square of the standardized factor loading.

Discriminant validity is demonstrated when different scales are used to measure different constructs and the correlations between these measures are not excessively high (Kline, 1998). Kline (1998) suggests that discriminant validity can be assessed by examining correlations between constructs. If the correlations are below .85, thus not highly correlated, it can be assumed they are different constructs (Kline, 1998). Table 15 provides a correlation matrix of the latent variables. The values shown in the lower quadrant display the correlations between constructs. All correlations are below .85, suggesting discriminant validity.

Discriminant validity may also be assessed with a variance extracted test (Hatcher, 1994). Hatcher (1994) suggests the variance extracted estimated for two factors should be compared to the squared correlation between the two factors. Discriminant validity is demonstrated if both variance extracted estimates are greater than the squared correlation (Hatcher, 1994). Table 15 provides the variance extracted estimates in bold italics. The squared correlations are provided in the upper triangle. Table 15 suggests discriminant validity between all constructs, with the exception of behavioral intentions and satisfaction. The squared correlation between these two constructs is .664, which should be lower than both variance extracted estimates (.824 for satisfaction and .523 for behavioral intentions). Thus, the squared correlation is slightly greater than the variance extracted estimate for behavioral intentions, suggesting discriminant validity might be a concern between these two constructs. However, since the correlation between the two constructs was not above .85 (as suggested by Kline, 1998), and the squared correlation between these constructs was only slightly greater

than the variance extracted estimate for behavioral intentions, it was determined that the proposed model, when all its elements were considered in total, performed moderately well.

Table 15. Correlation Matrix to Assess Discriminant Validity Among Latent Variables

	HED	UTIL	SAT	BI
Hedonic Attitude (HED)	***0.808***	0.643	0.648	0.551
Utilitarian Attitude (UTIL)	0.802	***0.667***	0.460	0.419
Satisfaction (SAT)	0.805	0.678	***0.824***	0.664
Behavioral Intentions (BI)	0.742	0.648	0.815	***0.523***

NOTE: The diagonal entries (in bold italics) represent average variance extracted by the construct.
NOTE: The correlations between constructs are shown in the lower triangle.
NOTE: The variance shared between constructs (squared correlations) are shown in the upper triangle.
NOTE: All correlations are significant at the $p<.05$ level.

The model chi-square statistic is often used as a measure of goodness of fit. However, chi-square is sensitive to both sample size and the assumption of multivariate normality (Bollen, 1989). Thus, chi-square is usually not considered to be the absolute standard by which goodness-of-fit of a model is judged (Bollen, 1989). Other measures of fit indices are more standardized and less sensitive than the chi-square statistic.

While there are numerous fit indices to choose from, Kline (1998) suggests choosing indices that reflect different facets of model fit, such as absolute and relative proportions of variance. He argues that a minimal set of fit indices should include the

following: (1) chi-square statistic and its degrees of freedom and significance level; (2) an index that describes the overall proportion of explained variance, such as CFI and GFI; (3) an index that adjusts the proportion of explained variance for the model complexity, such as RMSEA; and (4) an index based on standardized residuals such as SRMR (Kline, 1998, pg. 130). Thus, the tests used in this analysis were the Comparative Fit Index (CFI), the Joreskog-Sorbom Goodness of Fit Index (GFI), the Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Squared Residual (SRMR).

CFI and GFI are more standardized and less sensitive to sample size than the chi-square statistic. Both CFI and GFI describe the overall proportion of explained variance (Kline, 1998). According to Yu (2002), CFI performs relatively better than various other indices (such as RMSEA) because CFI is better able to take into account sample size and thus tends to avoid an underestimate of the model fit for smaller samples. Several researchers have suggested that a CFI value of .95 or above is an indicator of good model fit (Byrne, 2001; Hu and Bentler, 1999; Schuhmaker and Lomax, 2004), while others have argued that CFI greater than .90 indicate an adequate fit (Bentler and Bonett, 1980; Bollen, 1989). GFI is analogous to a squared multiple correlation in that it indicates the proportion of the observed covariances explained by the model-implied covariances (Kline, 1998). Values for GFI should be above .90 (Kline, 1998).

The RMSEA has been considered one of the most informative fit indices, as it takes into account the error of approximation in the population (Byrne, 2001; Browne and Cudeck, 1993; Schuhmaker and Lomax, 2004). This discrepancy measure is

expressed per degree of freedom and, thus, also takes into account the complexity of the theoretical model (Byrne, 2001; Browne and Cudeck, 1993; Schuhmaker and Lomax, 2004). For RMSEA, Yu (2002) suggested the cutoff value should be 0.05 or less. Others (Browne and Cudeck, 1993; Schuhmaker and Lomax, 2004; Byrne, 2001) have suggested RSMEA values of less than .05 indicate a good model fit, whereas values which are less than .08 indicate an adequate fit of the model.

SRMR is an index based on the standardized residuals. It is a standardized summary of the average covariance residuals, or the differences between the observed and model-implied covariances (Kline, 1998). When the model fit is perfect, SRMR equals zero, and a favorable value for SRMR is less than 0.10 (Kline, 1998).

Table 16 provides the fit indices for the measurement model. CFI suggested good fit with a value of .936 (above the suggested value of .90 by Bentler and Bonett, 1980 and Bollen, 1989). GFI suggested a less adequate fit with a value of .846, slightly below the suggested value of .90 (Kline, 1998). SRMR suggested good fit with a value of .059, below the suggested value of .10 (Kline, 1998). RMSEA suggested a less adequate fit with a value of .095 (values less than .80 indicate adequate fit according to Browne and Cudeck, 1993; Schuhmaker and Lomax, 2004; and Byrne, 2001). Overall, the measurement model demonstrated adequate fit, according to the fit indices. Based on the previous discussion of reliability and validity, as well as the results of the model fit, it was determined that the proposed model was ready to be examined further in order to address the study's hypotheses.

Table 16. Fit Indices of the Measurement Model

Fit Index		Value	
Comparative Fit Index (CFI)		0.936	
Joreskog-Sorbom's Goodness of Fit Index (GFI)		0.846	
Root Mean Square Error of Approximation (RMSEA)		0.095	
Standardized RMR		0.059	
Chi-Square Test	$x^2 = 450.221$	df = 125	$p < 0.001$

The Structural Model

To test the remaining hypotheses (H3 through H6), structural equation modeling was employed. A structural model was developed which incorporated four latent variables (hedonic attitude, utilitarian attitude, satisfaction and behavioral intentions) examined in the measurement model and one observed variable, overall quality, which was measured by a single item. The structural model is presented in Figure 12.

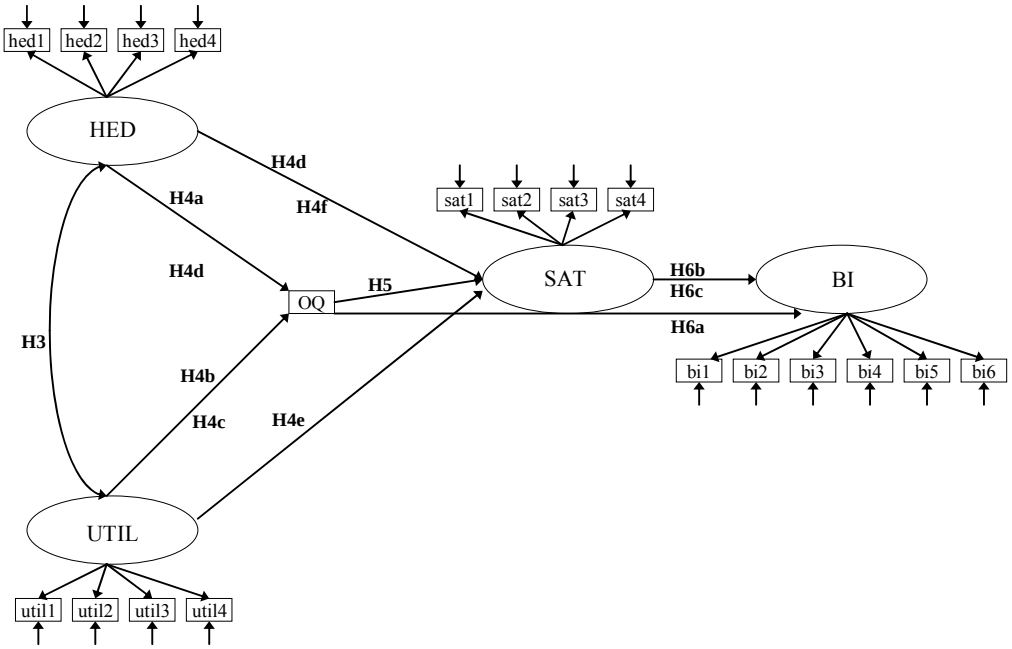


Figure 12. Theoretical Structural Model

The Initial Structural Model

Table 17 provides the fit indices for the initial structural model. The model had relatively good fit, according to the tests of model fit (CFI = 0.937; GFI = 0.843; RMSEA = 0.092; SRMR = 0.054). Chi-Square Test of Model Fit yielded $x^2 = 484.333$, df = 141, and $p < 0.001$. To identify problems with the model, significance tests for factor loadings, path coefficients and reliability scores for the constructs and their indicators were examined. The critical ratio (t-value) for all loadings should be greater than 1.96. The R^2 values for the observed variables are the squared multiple correlation coefficients. The goal is to find and use measures with high R^2 values (Bollen, 1989). The R^2 values for the latent variables indicate how much variance in the latent variables is explained by their corresponding indicator items (Bollen, 1989).

Table 17. Fit Indices of the Initial Structural Model

Fit Index		**Value**	
Comparative Fit Index (CFI)		0.937	
Joreskog-Sorbom's Goodness of Fit Index (GFI)		0.843	
Root Mean Square Error of Approximation (RMSEA)		0.092	
Standardized Root Mean Squared Residual (SRMR)		0.054	
Chi-Square Test	$x^2 = 484.333$	df = 141	$p < 0.001$

Tables 18 and 19 report the model results. Table 18 shows that all indicator items loaded successfully on their respective latent variables, except for the variable "go to another zoo" on the latent variable behavioral intentions. The critical ratio for this item was t = 1.914, just below the significant value of t = 1.96. This item was questionable in the measurement model.

Table 18. Parameter Estimates for Variables in the Initial Structural Model

Variable	Unstandardized Estimate	Standardized Estimate	Standard Error (S. E.)	Critical Ratio (t-value)	R^2
HEDONIC ATTITUDE					
Unpleasant – Pleasant	0.991	0.893	0.039	25.208	0.797
Awful – Nice	1.003	0.928	0.000	1.0^{38}	0.861
Disagreeable – Agreeable	0.914	0.884	0.037	24.512	0.781
Sad – Happy	1.014	0.884	0.041	24.483	0.781
UTILITARIAN ATTITUDE					
Useless – Useful	1.022	0.880	0.048	21.504	0.775
Worthless – Valuable	1.020	0.904	0.000	1.2^{09}	0.817
Harmful – Beneficial	0.837	0.749	0.052	15.951	0.562
Foolish – Wise	0.777	0.764	0.047	16.491	0.584
OVERALL QUALITY					0.585
SATISFACTION					0.731
Dissatisfied – Satisfied	0.990	0.904	0.038	25.799	0.817
Displeased – Pleased	1.000	0.922	0.000	4.7^{08}	0.850
Unfavorable – Favorable	1.003	0.919	0.037	27.089	0.844
Negative – Positive	1.009	0.881	0.042	24.027	0.776
BEHAVIORAL INTENTIONS					0.731
Say positive things	0.868	0.897	0.032	27.098	0.805
Visit again	0.983	0.927	0.033	30.244	0.859
Encourage others	1.010	0.947	0.000	1.0^{38}	0.896
Will not come back	0.435	0.332	0.075	5.808	0.110
Go to another zoo	0.131	0.114	0.068	1.914**	0.013
Visit if price increased	0.627	0.678	0.043	14.558	0.460

Note: **Double asterisk represents non-significant path (p>.05)

Table 19. Path Estimates for Initial Structural Model

Path	Unstandardized Estimate	Standardized Estimate	Standard Error (S. E.)	Critical Ratio (t-value)
HEDONIC ATTITUDE with				
Utilitarian attitude	1.494	0.824	0.152	9.853
OVERALL QUALITY on				
Utilitarian Attitude	0.201	0.187	0.088	2.279
Hedonic Attitude	0.573	0.603	0.078	7.351
SATISFACTION on				
Utilitarian Attitude	0.005	0.004	0.081	-0.062*
Hedonic Attitude	0.475	0.474	0.081	5.881
Overall Quality	0.466	0.442	0.058	7.999
BEHAVIORAL INTENTIONS on				
Satisfaction	0.510	0.485	0.065	7.876
Overall Quality	0.461	0.416	0.066	7.028

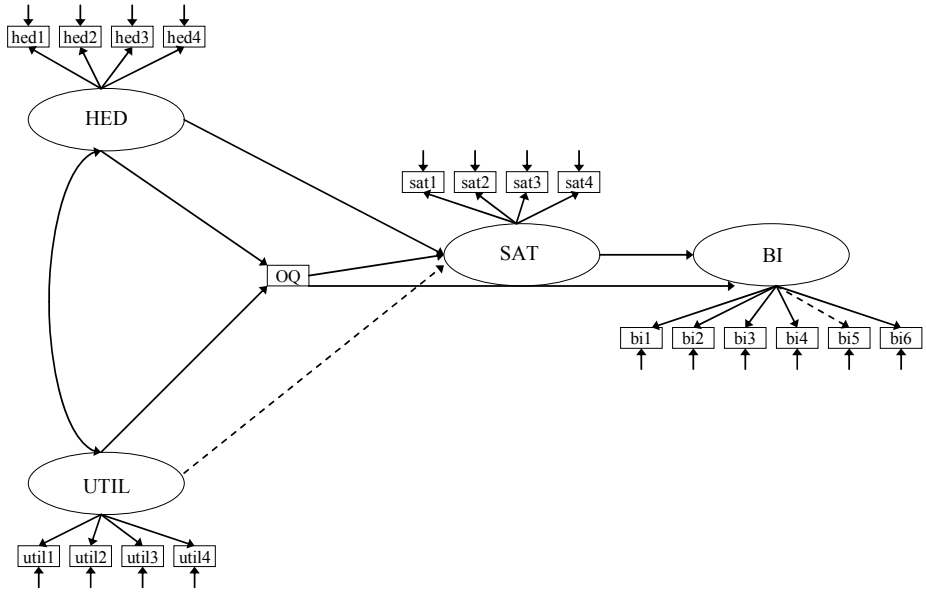
Note: "with" represents covariance; "on" represents regression coefficients

Note: *Asterisk represents non-significant path (p>.05)Crompton and Willson, 2002).

Table 19 reports the path estimates for the initial structural model. The only non-significant path was the path from utilitarian attitude to satisfaction (.004, t = -0.062). This suggests that satisfaction is a more hedonic, or affective response, than a cognitive response, focusing on the utility or functionality of the zoo. This is congruent with previous literature (Batra and Ahtola, 1991; Baker and Crompton, 2000; Tian-Cole, This supports this notion of satisfaction as "quality of experience" and not as "quality of performance", which refers to overall quality. Figure 13 illustrates the results of the initial structural model.

The Wald *W* statistic is an index used for model trimming. The Wald *W* statistics estimate the corresponding values of the chi-square difference test for dropping a set of parameters from the model (Kline, 1998). Thus, the Wald *W* statistic estimates the

amount the model's overall chi-square statistic would increase if a particular path were eliminated. The Wald *W* statistic suggests that the model would be improved if the path from utilitarian attitude to satisfaction were dropped (the model chi-square will change only .004). Thus, given this result and the theoretical reasoning, this path was removed from the initial structural model and a revised structural equation model was analyzed.



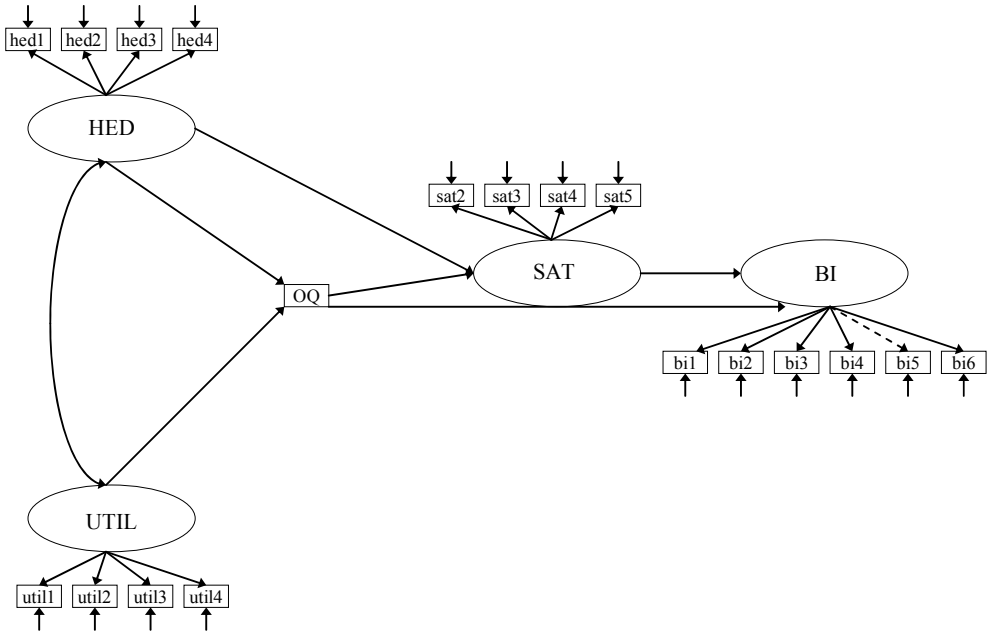
NOTE: Dashed lines indicate non-significant paths.

Figure 13. Empirical Structural Model

The Revised Structural Model

Table 20 provides the fit indices for the revised structural model. Similar to the initial model, the revised model had relatively good fit (CFI = 0.937; GFI = 0.843; RMSEA = 0.091; SRMR = 0.055). Chi-Square Test of Model Fit yielded $x^2 = 484.165$, df = 142, and $p < 0.001$. As before, significance tests for factor loadings, path coefficients and reliability scores for the constructs and their indicators were examined. Tables 21 and 22 report the model results. Figure 14 illustrates the results of the revised structural model. Table 21 shows that all indicator items loaded successfully on their respective latent variables, except for the variable "go to another zoo" on the latent variable behavioral intentions. The critical ratio for this item was t = 1.914, just below the significant value of t = 1.96. Table 22 reports the path estimates for the revised structural model. All remaining paths in the model were significant.

The Wald *W* statistic suggested that the model would be improved if the path from the indicator item "go to another zoo" to the latent variable behavioral intentions was dropped (the model chi-square will change only 3.662). Thus, given this item's low reliability and non-significant critical ratio, coupled with the result of the Wald *W* statistic, indicating this item should be dropped, it was decided to remove this item from the structural model and examine the further revised structural equation model.



NOTE: Dashed lines indicate non-significant paths.

Figure 14. Revised Structural Model

Table 20. Fit Indices of the Revised Structural Model

Fit Index		Value	
Comparative Fit Index (CFI)		0.937	
Joreskog-Sorbom's Goodness of Fit Index (GFI)		0.843	
Root Mean Square Error of Approximation (RMSEA)		0.091	
Standardized Root Mean Squared Residual (SRMR)		0.055	
Chi-Square Test	x^2 = 484.165	df = 142	$p < 0.001$

Table 21. Parameter Estimates for Variables in the Revised Structural Model

Variable	Unstandardized Estimate	Standardized Estimate	Standard Error (S. E.)	Critical Ratio (t-value)	R^2
HEDONIC ATTITUDE					
Unpleasant – Pleasant	0.982	0.893	0.000	2.6^{08}	0.797
Awful – Nice	0.994	0.928	0.039	25.189	0.861
Disagreeable – Agreeable	0.906	0.884	0.040	22.410	0.781
Sad – Happy	1.006	0.884	0.045	22.392	0.781
UTILITARIAN ATTITUDE					
Useless – Useful	1.009	0.886	0.000	3.3^{08}	0.784
Worthless – Valuable	1.005	0.908	0.046	21.982	0.824
Harmful – Beneficial	0.816	0.744	0.053	15.483	0.554
Foolish – Wise	0.756	0.758	0.047	15.958	0.575
OVERALL QUALITY					0.585
SATISFACTION					0.731
Dissatisfied – Satisfied	0.991	0.904	0.038	25.802	0.817
Displeased – Pleased	1.002	0.922	0.000	3.6^{08}	0.850
Unfavorable – Favorable	1.004	0.919	0.037	27.090	0.844
Negative – Positive	1.011	0.881	0.042	24.028	0.776
BEHAVIORAL INTENTIONS					0.731
Say positive things	0.859	0.897	0.032	27.097	0.805
Visit again	0.974	0.927	0.032	30.249	0.859
Encourage others	1.000	0.947	0.000	6.6^{08}	0.896
Will not come back	0.431	0.332	0.074	5.808	0.110
Go to another zoo	0.129	0.114	0.068	1.914**	0.013
Visit if price increased	0.621	0.678	0.043	14.559	0.460

Note: **Double asterisk represents non-significant path (p>.05)

Table 22. Path Estimates for Revised Structural Model

Path	Unstandardized Estimate	Standardized Estimate	Standard Error (S. E.)	Critical Ratio (t-value)
HEDONIC ATTITUDE with				
Utilitarian attitude	1.526	0.818	0.159	9.568
OVERALL QUALITY on				
Utilitarian Attitude	0.196	0.187	0.085	2.322
Hedonic Attitude	0.570	0.605	0.076	7.467
SATISFACTION on				
Hedonic Attitude	0.467	0.471	0.057	8.155
Overall Quality	0.465	0.441	0.058	8.040
BEHAVIORAL INTENTIONS on				
Satisfaction	0.515	0.485	0.065	7.875
Overall Quality	0.465	0.416	0.066	7.028

Note: "with" represents covariance; "on" represents regression coefficients

The Final Structural Model

Table 23 provides the fit indices for the final structural model. Similar to the previous models, the final model had relatively good fit (CFI = 0.945; GFI = 0.852; RMSEA = 0.091; SRMR = 0.049). Chi-Square Test of Model Fit yielded $x^2 = 428.006$, df = 125, and $p < 0.001$. As before, significance tests for factor loadings, path coefficients and reliability scores for the constructs and their indicators were examined. Tables 24 and 25 report the model results. Figure 15 illustrates the results of the revised structural model. Table 24 shows that all indicator items loaded successfully on their respective latent variables. Table 25 reports the path estimates for the revised structural model. All remaining paths in the model were significant.

Table 23. Fit Indices of the Final Structural Model

Fit Index		**Value**	
Comparative Fit Index (CFI)		0.945	
Joreskog-Sorbom's Goodness of Fit Index (GFI)		0.852	
Root Mean Square Error of Approximation (RMSEA)		0.091	
Standardized Root Mean Squared Residual (SRMR)		0.049	
Chi-Square Test	$x^2 = 428.006$	df = 125	$p < 0.001$

Table 24. Parameter Estimates for Variables in the Final Structural Model

Variable	Unstandardized Estimate	Standardized Estimate	Standard Error (S. E.)	Critical Ratio (t-value)	R^2
HEDONIC ATTITUDE					
Unpleasant – Pleasant	0.986	0.895	0.044	0.044	0.801
Awful – Nice	0.996	0.930	0.040	24.736	0.864
Disagreeable – Agreeable	0.904	0.884	0.000	3.7^{08}	0.781
Sad – Happy	1.009	0.886	0.046	22.110	0.784
UTILITARIAN ATTITUDE					
Useless – Useful	1.014	0.886	0.000	5.2^{08}	0.786
Worthless – Valuable	1.011	0.908	0.045	22.250	0.825
Harmful – Beneficial	0.830	0.752	0.052	15.826	0.565
Foolish – Wise	0.767	0.765	0.047	16.279	0.585
OVERALL QUALITY					0.592
SATISFACTION					0.731
Dissatisfied – Satisfied	0.993	0.905	0.038	26.091	0.819
Displeased – Pleased	1.005	0.923	0.000	1.0^{38}	0.852
Unfavorable – Favorable	1.008	0.920	0.037	27.417	0.846
Negative – Positive	1.016	0.883	0.042	24.336	0.779
BEHAVIORAL INTENTIONS					0.731
Say positive things	0.865	0.898	0.033	25.889	0.807
Visit again	0.977	0.927	0.000	1.0^{38}	0.860
Encourage others	1.004	0.947	0.033	30.477	0.897
Will not come back	0.444	0.339	0.074	5.955	0.115
Visit if price increased	0.624	0.680	0.043	14.420	0.462

Table 25. Path Estimates for Final Structural Model

Path	Unstandardized Estimate	Standardized Estimate	Standard Error (S. E.)	Critical Ratio (t-value)
HEDONIC ATTITUDE with				
Utilitarian attitude	1.545	0.823	0.161	9.600
OVERALL QUALITY on				
Utilitarian Attitude	0.194	0.184	0.085	2.286
Hedonic Attitude	0.576	0.611	0.077	7.517
SATISFACTION on				
Hedonic Attitude	0.466	0.472	0.057	8.167
Overall Quality	0.463	0.442	0.057	8.065
BEHAVIORAL INTENTIONS on				
Satisfaction	0.514	0.486	0.066	7.840
Overall Quality	0.461	0.416	0.066	6.998

Note: "with" represents covariance; "on" represents regression coefficients

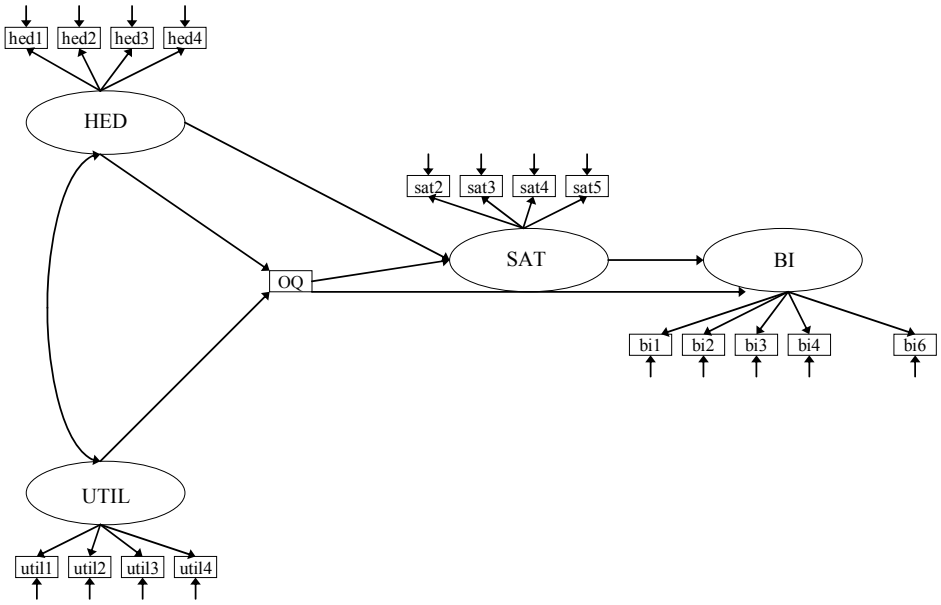


Figure 15. Final Structural Model

The Wald *W* statistic test did not identify any paths that should be deleted to improve model fit. This suggested the model was parsimonious, or trimmed, and the results of the hypothesis tests could be examined.

Table 26 summarizes the results of the initial, revised, and final structural models. The standardized path estimates and variance explained in the latent variables remained fairly consistent across the three models. However, there were improvements in the fit indices. CFI improved from .937 in the initial model to .945 in the final model. GFI improved from .843 to .852. RMSEA improved slightly by decreasing from .092 to .091, and SRMR improved by decreasing from .054 to .049. The chi-square statistic

Table 26. Analysis of Initial, Revised, and Final Structural Models

	Initial Model	Revised Model	Final Model
Direct Effect (standardized estimate)			
HED←→UTIL	0.824	0.818	0.823
HED→OQ	0.603	0.605	0.611
UTIL→OQ	0.187	0.187	0.184
HED→SAT	0.474	0.471	0.472
UTIL→SAT	0.004*	--	--
OQ→SAT	0.442	0.441	0.442
OQ→BI	0.416	0.416	0.416
SAT→BI	0.485	0.485	0.486
R^2			
OQ	0.585	0.585	0.592
SAT	0.731	0.731	0.731
BI	0.731	0.731	0.731
Fit Indices			
CFI	0.937	0.937	0.945
GFI	0.843	0.843	0.852
RMSEA	0.092	0.091	0.091
SRMR	0.054	0.055	0.049
Chi-Square Test	$x^2 = 484.333$ df = 141, p< 0.001	$x^2 = 484.165$ df = 142, p< 0.001	$x^2 = 428.006$ df = 125, p< 0.001

decreased from $X^2(141) = 484.333$ to $X^2(125) = 428.006$, which suggests an improved model fit.

The chi-square difference test can be used to evaluate the significance of the overall fit of a trimmed model (Kline, 1998). The chi-square difference test is the difference between the chi-square values of the initial and trimmed model, and its degrees of freedom equal the difference between the two respective values (Kline, 1998). The chi-square difference test was calculated as follows:

Initial model: $X^2(141) = 484.333$

Final model: $X^2(125) = 428.006$

$X^2_{difference}$ (df = 141-125= 16) = 484.333 - 428.006 = 56.327

For the test to be significant, t-value must equal 61.44, which is 16 multiplied by 3.84. The chi-square difference test yielded 56.327, which is less than the critical value of 61.44, thus the final trimmed model is not statistically different than the initial model. Kline (1998) suggests that models can be trimmed according to one of two standards, theoretical or empirical. The model in the present study was trimmed based on both theory and empirical results. While the final trimmed model was not significantly different from the initial model, it does indicate an improved fit, and there were sound theoretical reasons underpinning those decisions. Thus, the final model was deemed appropriate for evaluation of the hypotheses.

Hypotheses 3 through 6 were addressed by reviewing the results of the final revised structural equation model. Table 25 shows the standardized coefficient and

corresponding t-value for each significant path in the revised model. Additionally, the hypotheses are illustrated in Figure 12.

Hypothesis 3 stated that hedonic attitude would be related to utilitarian attitude. Table 25 shows all path estimates. The correlation coefficient between hedonic attitude and utilitarian attitude was r=0.823 ($p<.05$). This indicates that the correlation was relatively high, but far from perfect, suggesting these were indeed distinct constructs, but were correlated. Thus, Hypothesis 3 was supported.

Hypothesis 4a stated that hedonic attitude would be positively related to overall quality. The significant standardized path coefficient (.611, t=7.517, $p<.05$) between these two constructs indicates that Hypothesis 4a was supported. Hypothesis 4b stated that utilitarian attitude would be positively related to overall quality. The significant standardized path coefficient (.184, t=2.286, $p<.05$) between these two constructs indicates that Hypothesis 4b was supported. Hypothesis 4c stated that utilitarian attitude would be a stronger predictor of overall quality than hedonic attitude. The standardized path coefficient from utilitarian attitude to overall quality was .184 and the standardized path coefficient from hedonic attitude to overall quality was .611. Hedonic attitude was a stronger predictor of overall quality than utilitarian attitude, thus, Hypothesis 4c was rejected.

Hypothesis 4d stated that hedonic attitude would be positively related to satisfaction. The path from hedonic attitude to satisfaction was significant (.472, t=8.167, $p<.05$), so, Hypothesis 4d was supported. Hypothesis 4e stated that utilitarian attitude would be positively related to satisfaction. In the initial structural model, the

path from utilitarian attitude to satisfaction was not significant (Table 19, standardized estimate = .004, t= -.062), so it was removed from the model. So, Hypothesis 4e was rejected. Hypothesis 4f stated that hedonic attitude would be a stronger predictor of satisfaction than utilitarian attitude. The standardized path coefficient from hedonic attitude to satisfaction was .472, and the standardized path coefficient from utilitarian attitude to satisfaction was non-significant, demonstrating hedonic attitude was a stronger predictor of satisfaction than utilitarian attitude. Thus, Hypothesis 4f was supported.

Hypothesis 5 stated that overall quality would be positively related to satisfaction. The path from overall quality to satisfaction was significant (.442, t=7.999, $p<.05$), indicating that overall quality was positively related to satisfaction. Hence, Hypothesis 5 was supported.

Hypothesis 6a stated that overall quality would be positively related to behavioral intentions. The standardized path from overall quality to behavioral intentions was significant (.416, t=7.028, $p<.05$), so Hypothesis 6a was supported. Hypothesis 6b stated that satisfaction would be positively related to behavioral intentions. The standardized path from satisfaction to behavioral intentions was significant (.485, t=7.876, $p<.05$). Hence, Hypothesis 6b was supported. Hypothesis 6c stated that overall quality would be a stronger predictor of behavioral intentions than satisfaction. The standardized coefficient from overall quality to behavioral intentions was .416, while the coefficient from satisfaction to behavioral intentions was .485. Based on these coefficients, overall quality was not a stronger predictor of behavioral intentions than

satisfaction. Thus, Hypothesis 6c was rejected. A summary of the hypotheses testing results is provided in Table 27.

Table 27. Summary of the Hypotheses Tests

HYPOTHESIS		SUMMARY	FINDINGS
H1		Visual quality items (VQ) differed by treatment	
	H1a	For MAINT, $T_{high} > T_{med} > T_{low}$	Supported
	H1b	For SIGN, $T_{high} > T_{med} > T_{low}$	Partially Supported
	H1c	For BUILT, $T_{high} > T_{med} > T_{low}$	Partially Supported
	H1d	For CROWD, $T_{high} > T_{med} > T_{low}$	Supported
	H1e	For VEGET, $T_{high} > T_{med} > T_{low}$	Supported
	H1f	For SEAT, $T_{high} > T_{med} > T_{low}$	Partially Supported
	H1g	For WATER, $T_{high} > T_{med} > T_{low}$	Supported
	H1h	For URBAN, $T_{high} > T_{med} > T_{low}$	Rejected
H2		Dependent variables differed by treatment	
	H2a	For HED, $T_{high} > T_{med} > T_{low}$	Supported
	H2b	For UTIL, $T_{high} > T_{med} > T_{low}$	Partially Supported
	H2c	For OQ, $T_{high} > T_{med} > T_{low}$	Supported
	H2d	For SAT, $T_{high} > T_{med} > T_{low}$	Supported
	H2e	For BI, $T_{high} > T_{med} > T_{low}$	Supported
H3		HED related to UTIL	Supported
H4		HED and UTIL related to OQ and SAT	
	H4a	HED related to OQ	Supported
	H4b	UTIL related to OQ	Supported
	H4c	UTIL stronger predictor of OQ than HED	Rejected
	H4d	HED related to SAT	Supported
	H4e	UTIL related to SAT	Rejected
	H4f	HED stronger predictor of SAT than UTIL	Supported
H5		OQ related to SAT	Supported
H6		OQ and SAT related to BI	
	H6a	OQ related to BI	Supported
	H6b	SAT related to BI	Supported
	H6c	OQ stronger predictor of BI than SAT	Rejected

Results of Research Question

In addition to the hypotheses examined in this study, a research question was asked to ascertain managerial implications of the visual environment: *What are the key visual quality elements that contribute to respondents' hedonic and utilitarian attitudes as well as their ratings of overall quality and satisfaction?* To address this question, standardized Beta coefficients were compared from the results of multiple regression analyses.

Standard multiple regressions were performed on the three treatment datasets to determine which of the eight visual quality items were the strongest predictors of hedonic attitude, utilitarian attitude, overall quality, and satisfaction. The results of the standard multiple regressions within T_{high} are presented in Table 28. Four visual quality items (SIGN, BUILT, VEGET, WATER) significantly affected satisfaction, with SIGN being the strongest predictor ($\beta = .29$). The visual quality items (VQ) items explained 31% of the variance in satisfaction.

No visual quality items significantly affected hedonic attitude for T_{high}. MAINT and WATER significantly affected utilitarian attitude. The visual quality items accounted for 24% of the variance in utilitarian attitude. The visual quality items SIGN and BUILT significantly affected overall quality (OQ). The visual quality items accounted for 29% of the variance in overall quality.

Table 28. Significant Results of Multiple Regression Analyses of Visual Quality Items on Dependent Variables in T_{high}

Dependent Variable	Significant VQ Items	Beta (β)	t-value	p-value	Adjusted R^2
Satisfaction					0.31
	SIGN	0.29	2.81	0.006	
	BUILT	0.25	2.54	0.013	
	VEGET	0.23	2.41	0.018	
	WATER	0.19	2.12	0.037	
Hedonic Attitude	none				0.16
Utilitarian Attitude					0.24
	MAINT	0.26	2.42	0.018	
	WATER	0.23	2.39	0.019	
Overall Quality					0.29
	SIGN	0.32	3.11	0.003	
	BUILT	0.21	2.14	0.035	

The results of the standard multiple regressions with T_{med} are presented in Table 29. The only two visual quality variables which significantly affected the dependent variables were MAINT and WATER. Satisfaction was only significantly affected by MAINT, suggesting that as maintenance and upkeep decline, anticipated satisfaction of the zoo declines as well. The visual quality items accounted for 17% of the variance in satisfaction, 27% of the variance in hedonic attitude, 22% of the variance in utilitarian attitude, and 28% of the variance in overall quality.

Table 29. Significant Results of Multiple Regression Analyses of Visual Quality Items on Dependent Variables in T_{med}

Dependent Variable	Significant VQ Items	Beta (β)	t-value	p-value	Adjusted R^2
Satisfaction					0.31
	MAINT	0.20	1.71	0.019	
Hedonic Attitude					0.27
	MAINT	0.33	3.07	0.003	
	WATER	0.27	2.74	0.008	
Utilitarian Attitude					0.22
	MAINT	0.23	2.10	0.039	
	WATER	0.34	3.33	0.001	
Overall Quality					0.28
	MAINT	0.40	3.86	0.000	
	WATER	0.26	2.69	0.009	

The results of the standard multiple regressions with T_{low} are presented in Table 30. Three visual quality items (CROWD, SEAT and SIGN) significantly affected satisfaction. Thus, high levels of crowding, lack of seating, and poor signage negatively affected satisfaction. These items accounted for 44%, or nearly half of the variation in satisfaction. CROWD significantly affected hedonic attitude and the VQ items accounted for 19% of the variation in the latent variable. MAINT significantly affected utilitarian attitude and accounted for 16% of the variation in the variable. CROWD, MAINT and SIGN significantly affected overall quality and the VQ items accounted for 35% of the variance in the variable.

Table 30. Significant Results of Multiple Regression Analyses of Visual Quality Items on Dependent Variables in T_{low}

Dependent Variable	Significant VQ Items	Beta (β)	t-value	p-value	Adjusted R^2
Satisfaction					0.44
	CROWD	0.26	3.04	0.003	
	SEAT	0.25	2.68	0.009	
	SIGN	0.24	2.81	0.006	
Hedonic Attitude					0.19
	CROWD	0.29	2.83	0.006	
Utilitarian Attitude					0.16
	MAINT	0.29	2.62	0.010	
Overall Quality					0.35
	CROWD	0.25	2.78	0.007	
	MAINT	0.20	2.05	0.043	
	SIGN	0.24	2.69	0.009	

A summary of results across the three treatments is provided in Table 31. The relatively high adjusted R^2 values (or percent of variance explained) suggest the strong influence of the visual quality elements on hedonic (R^2 values ranging from .16 to .27) and utilitarian attitudes (R^2 values ranging from .16 to .24), and particularly on satisfaction (R^2 values ranging from .31 to .44) and overall quality (R^2 values ranging from .28 to .35).

Table 31. Summary of Significant Visual Quality Items Across Treatments

	T_{high}		T_{med}		T_{low}	
Dependent Variable	Significant VQ Items	Adjusted R^2	Significant VQ Items	Adjusted R^2	Significant VQ Items	Adjusted R^2
Satisfaction	SIGN BUILT VEGET WATER	0.31	MAINT	0.31	CROWD SEAT SIGN	0.44
Hedonic Attitude	none	0.16	MAINT WATER	0.27	CROWD	0.19
Utilitarian Attitude	MAINT WATER	0.24	MAINT WATER	0.22	MAINT	0.16
Overall Quality	SIGN BUILT	0.29	MAINT WATER	0.28	CROWD MAINT SIGN	0.35

CHAPTER VI

CONCLUSION: DISCUSSION AND IMPLICATIONS OF THE STUDY'S RESULTS

This chapter first reviews the study's results and postulates some interpretations of those results. Then, theoretical and managerial implications are considered. The chapter concludes with limitations of the study and suggestions for future research.

Summary of the Results

Data analyses were designed to address the research hypotheses and question posed in Chapter IV. Major findings of the data analyses and interpretations of them are discussed by hypothesis.

Hypothesis 1

Hypothesis 1 stated that perceptions of the visual environment would differ by treatment. Thus, for the eight visual quality items examined in the study, it was hypothesized that preference ratings would be highest for T_{high}, second highest for T_{med} and lowest for T_{low}. Half of the items (four of eight) were significantly different across all treatments. These were maintenance and upkeep (MAINT), level of crowding (CROWD), amount of vegetation (VEGET) and amount of water present (WATER).

This suggests that these items were the most pervasive cues in influencing assessments of the visual environment.

Three of the eight visual quality items showed some significant difference between the treatments, (T_{high} was different from T_{low}, but T_{med} was not different from $T_{low,}$ or in one case T_{high} was not different from T_{med}), thus partially supporting their respective hypotheses. These items were type of sign (SIGN), built elements (BUILT), and available seating (SEAT). This suggests that visitors are not influenced by the mediocre visual quality of these items; their perceptions are only influenced by these items when they are of high visual quality or low visual quality. Thus, incremental decreases in visual quality of these items may not be perceptible to visitors.

Table 27, which summarizes the hypotheses and outcomes, illustrates that Hypothesis 1, which was divided into eight sub-hypotheses representing each of the visual quality items, was relatively well supported. Only one of the eight sub-hypotheses was fully rejected, three were partially supported and four were supported.

The visual item maintenance and upkeep (MAINT), Hypothesis 1a, was significantly different across all three treatments. Thus, the incremental addition of trash to the scene influenced respondents' preference for the scene. As trash was added to the scene, respondents' preference for the scene decreased. This is consistent with previous literature (Schroeder and Anderson, 1984; Marans, 1976; Nasar, 1983).

The visual item signage (SIGN), Hypothesis 1b, was significantly different between T_{high} and T_{med} as well as between T_{high} and T_{low}. The more ornate sign with increased vegetation was preferred over the other two smaller, less ornate signs. This

indicates that the ornate nature of the sign in T_{high}, with rhinoceroses and embellished details was preferred to signs that lacked these details. Since wording on the signs remained consistent, the elaboration of the sign features in T_{high} influenced preference for the variable SIGN. This suggests the ornate sign helps to set the stage for the experience that is to follow and influences the visitor to predict a more positive experience. This is consistent with what Kaplan (1972) called "identity". Additionally, Kaplan, Kaplan and Ryan (1998) suggested that certain information needed to be emphasized for visitors to help set an understanding of setting. This includes landmarks and markers such as entrance signs.

The visual item BUILT, which referred to the built elements (Hypothesis 1c), was significantly different between T_{high} and T_{low}. Thus, wood decking and building materials were preferred over asphalt and concrete. This is consistent with results from Kaplan, Kaplan and Ryan (1998), who demonstrated that natural building materials could enhance restorative feelings and influence affect.

For the visual item CROWD (Hypothesis 1d), the three treatments were all significantly different. Thus, the addition of people in the scene appeared to lower respondents' preference for the scene. This could be attributable to the increased difficulty of viewing the scene. This finding is similar to those reported by Ulrich et al. (1991) and Graefe (2002). Scenes with high pedestrian traffic can be more stressful and cause a more negative perception of the environment.

For the visual item VEGET (Hypothesis 1e), which referred to the amount of vegetation present in the scene, the three treatments were all significantly different.

While zoos are mostly urban institutions, the presence of vegetation in the scene, particularly underfoot, is a preferable characteristic. This could be because the presence of vegetation is indicative of nature, and zoos feature wild animals which ordinarily live in natural settings. The lack of vegetation may seem too unnatural and may connote poor health or welfare of the animals (Finlay, James and Maple, 1988).

The visual item SEAT (Hypothesis 1f) referred to the amount of seating available in the scene. This item was significantly different between T_{high} and T_{med} as well as between T_{high} and T_{low}. This suggests that ample seating is preferred in a setting. However, the lack of differentiation between T_{med} and T_{low} suggests that the amount of seating available in a scene may not be as preferable visually as it may be when a person is actually in the zoo and in physical need of a place to sit and rest.

The visual item WATER (Hypothesis 1g) referred to the amount of water present in the scene. All three treatments were significantly different. Thus, the addition of water elements in the scene, both man-made and natural, improved respondents' preference for the scene. This is consistent with previous research (Schroeder and Anderson, 1984; Ulrich et al., 1991; Herzog and Barnes, 1999; Zube, Pitt and Anderson, 1974).

The visual element, urban skyline (URBAN), was the only visual quality element that showed no significant differences between treatments. This item was depicted by an urban skyline. While research has shown that urban environments are generally less pleasing than natural environments (Kaplan, Kaplan and Wendt, 1972), it has also been reported that the presence of an urban skyline on the horizon can be visually appealing if

context and complexity are taken into account (Heath, Smith and Lim, 2000). Thus, in an effort to create a scene in which the urban skyline was meant to be a detractor of preference, it is possible that it had no negative effect whatsoever. Heath, Smith and Lim (2000) argued that very little empirical research has focused on the urban skyline or tall buildings in the realm of environmental aesthetics.

Hypothesis 2

Hypothesis 2 stated that the dependent variables would differ by treatment. Thus, respondents' ratings of hedonic attitude, utilitarian attitude, overall quality, satisfaction and behavioral intentions would be highest for T_{high}, second highest for T_{med} and lowest for T_{low}. Table 27 illustrates that hypothesis 2, which was divided into five sub-hypotheses to represent each of the dependent variables, was relatively supported, with four of the five being fully supported and one being partially supported.
For all of these variables except utilitarian attitude, all three treatments were significantly different from each other.

For utilitarian attitude, there was a significant difference between T_{high} and T_{low} as well as between T_{med} and T_{low}, but no significant difference was found between T_{high} and T_{med}. This suggests that respondents' cognitive feelings (useless—useful, worthless—valuable, harmful—beneficial, and foolish—wise) may be most influenced by poor visual environments, and not until the visual environment becomes poor do

respondents' perceived abilities to make the most of their trip to the zoo become hindered.

With the exception of utilitarian attitude, modifying the visual environment had a significant influence on all the endogenous variables in the study. These results indicated that higher visual quality was positively related to higher perceptions of hedonic attitude, overall quality, satisfaction and behavioral intentions.

This lends credence to the impact of the visual environment on tourists' perceptions of destinations and their reactions to the site. It also lends support to findings reported in several bodies of literature, including environmental psychology and marketing. Literature in environmental psychology states that visually preferable settings encourage people to associate positive meaning to the settings, to stay longer and explore settings further (Kaplan, Kaplan and Ryan, 1998; Kaplan and Kaplan, 1982; Rapoport, 1982), while the marketing literature states that higher levels of quality (including the tangible components, which are predominantly visual items) lead to perceptions of satisfaction and positive behavioral intentions (Cronin, Brady and Hult, 2000; Baker and Crompton, 2000; Petrick, 2004).

Hypothesis 3

Hypotheses 3 through 6 referred to results obtained from structural equation modeling. Hypothesis 3 stated that hedonic attitude would be related to utilitarian attitude. The structural equation model confirmed this relationship. The correlation

coefficient between these two variables was r=.823 (Table 25). This supports Batra and Ahtola's (1991) work, as well as others (Voss, Spandenberg and Grohmann, 2003) who argue that hedonic and utilitarian attitudes are distinct constructs, but that they are correlated through a relationship to a common higher order construct of brand attitude. This finding also supports the findings of Zajonc and Markus (1992). They argued that the antecedents of preference are likely to involve cognitive and affective processes.

Hypothesis 4

Hypothesis 4 stated that hedonic attitude and utilitarian attitude would be positively related to quality and satisfaction; and that utilitarian attitude would have a stronger relationship to overall quality, while hedonic attitude would have a stronger relationship to satisfaction. This hypothesis was partially supported. The influence of hedonic attitude on overall quality and satisfaction was confirmed, but the influence of utilitarian attitude on overall quality and satisfaction was not. Utilitarian attitude was not a stronger predictor of overall quality than hedonic attitude. Additionally, while utilitarian attitude was related to overall quality, it was not related to satisfaction.

As previously mentioned, Zajonc and Markus (1992) argued that the antecedents of preference are likely to involve cognitive and affective responses in a variety of combinations. Additionally, Batra and Ahtola (1991) and Voss, Spandenberg and Grohmann (2003) argued that hedonic and utilitarian attitudes shape attitudes and opinions about products and services. The findings of Hypotheses 4a and 4b, that

hedonic and utilitarian attitudes were related to overall quality are congruent with this literature. This suggests that a pleasurable and emotionally engaging encounter at the zoo also contributes to the visitors' perceptions of the overall quality (or the quality of performance) of the zoo.

Batra and Ahtola (1991) argued that utilitarian attitude represents the functionality and usefulness of a service or product (the cognitive aspect). It was hypothesized that this would be highly related to quality of performance, or overall quality (Childress and Crompton, 1997; Baker and Crompton, 2000; and Tian-Cole, Crompton and Willson, 2002). Hypothesis 4c tested this notion. However, the hypothesis was rejected because utilitarian attitude was not a stronger predictor of overall quality than hedonic attitude. This is counter to the logic presented above. However, Voss, Spandenberg and Grohmann (2003) found that some products or services could be predominantly hedonic in nature or utilitarian in nature. This suggests that a trip to the zoo is much more of a hedonic experience than one focused on utility or functionality.

The result of hypothesis 4d (hedonic attitude was related to satisfaction) is congruent with the marketing literature previously mentioned (Zajonc and Markus, 1992; Batra and Ahtola, 1991; Voss, Spandenberg and Grohmann, 2003). Hedonic attitude, as described by Batra and Ahtola (1991) represents the pleasurable and experiential nature of a product or service (the affective aspect). This also alludes to tourism literature, which refers to satisfaction as the quality of experience, or

psychological outcome (Brown, 1988; Crompton and MacKay, 1989; Crompton and Love, 1995; Baker and Crompton, 2000; and Tian-Cole, Crompton and Willson, 2002).

The failure to accept Hypothesis 4e, which stated that utilitarian attitude would be related to satisfaction is counter to the some marketing literature stated above describing an affective and cognitive component to preference. However, this further reinforces the findings of Voss, Spandenberg and Grohmann (2003) that a trip to the zoo is a more hedonic experience.

Given the previous literature, Hypothesis 4f stated that hedonic attitude would be a stronger predictor of satisfaction than utilitarian attitude. Hedonic attitude was a stronger predictor of satisfaction (standardized path coefficient = .472) than was overall quality (standardized path coefficient = .442). This again lends support of the finding of Voss, Spandenberg and Grohmann (2003). It also supports Cronin, Brady and Hult's (2000) argument that satisfaction is an emotional response to the service experience.

Perhaps the most substantive finding of Hypothesis 4 was the strong influence of hedonic attitude on overall quality and particularly satisfaction. Voss, Spangenberg and Grohmann (2003) found that brands tended to vary on the hedonic dimension more so than on the utilitarian dimension. Thus, it is possible that a trip to the zoo focuses much more on the affective responses (spending time with family, relaxation and enjoyment) of visitors than it does on their ability to function in the zoo and the practical usefulness of the zoo. Perhaps this is because visitors expect relatively standard levels of usefulness from all zoos, but their affective gratification derived from the visit can vary

widely. This suggests that managers should pay particular attention to those elements of the zoo that influence visitors' positive hedonic attitudes.

Hypothesis 5

Hypothesis 5 stated that overall quality would be positively related to satisfaction. This hypothesis is congruent with previous literature confirming this relationship (Baker and Crompton, 2000; Tian-Cole, Crompton and Willson, 2002, Petrick, 2004). It is also congruent with Bagozzi's (1992) and Zajonc and Markus' (1982) proposition that cognitive responses precede emotional responses. The significant path estimate (.422) in this study (Table 25) provides further evidence to support this relationship suggesting that a high level of quality will result in a high level of satisfaction for visitors. Previous research has also suggested that satisfaction can be influenced by mood, weather, or other social factors (Baker and Crompton, 2000; Tian-Cole, Crompton and Willson, 2002). Thus, while providing a high level of quality is likely to result in a high level of satisfaction, it cannot ensure it. However, compared to other variables that contribute to satisfaction, quality indicators can be more easily manipulated by management.

Hypothesis 6

Hypothesis 6 stated that both overall quality and satisfaction would be positively related to behavioral intentions, and that overall quality would be a stronger predictor of behavioral intentions than satisfaction. The findings of Hypotheses 6a and 6b indicate that both overall quality and satisfaction are related to behavioral intentions. Table 25, which provides the standardized path coefficients for the structural model, indicates that overall quality (.416) and satisfaction (.486) were both found to be related to behavioral intentions. This finding is congruent with previous research (Baker and Crompton, 2000; Zeithaml, Berry and Parasuraman, 1996, Cronin, Brady and Hult, 2000, Tian-Cole, Crompton and Willson, 2002; and Petrick, 2004). Previous research has found that quality not only had an effect on satisfaction, but that it also had a direct relationship to behavioral intentions. Baker and Crompton (2000) and Petrick (2004) found that overall quality was a stronger predictor of behavioral intentions than was satisfaction.

Hypothesis 6c was rejected, which stated that overall quality would be a stronger predictor of behavioral intentions than satisfaction. This result is counter to findings reported by Baker and Crompton (2000) and Petrick (2004). However, the present study's finding that satisfaction was a stronger predictor of behavioral intentions supports the findings reported by Tian-Cole, Crompton and Willson (2002). Additionally, it lends further support for the findings of Voss, Spangenberg and Grohmann (2003). Again, a trip to the zoo might be a predominantly hedonic

experience, where affective or experiential gratification (satisfaction) is key in determining behavioral intentions.

Research Question

A research question was posed to ascertain managerial implications of the visual environment: *What are the key visual quality elements that contribute to respondents' hedonic and utilitarian attitudes as well as their ratings of overall quality and satisfaction?* The relatively high adjusted R^2 values (or percent of variance explained) across the three treatments (Table 31) suggests the strong influence of visual quality elements on hedonic (R^2 values ranging from .16 to .27) and utilitarian attitudes (R^2 values ranging from .16 to .24), and particularly on satisfaction (R^2 values ranging from .31 to .44) and overall quality (R^2 values ranging from .28 to .35).

For the first treatment, T_{high}, four visual quality items (SIGN, BUILT, VEGET, WATER) significantly affected satisfaction and explained 31% of the variance in satisfaction. The variable SIGN was the strongest predictor ($\beta = .29$). This could indicate that a visually appealing entrance sign to the zoo sets the stage for a satisfactory experience to follow. This is congruent with the findings of Kaplan, Kaplan and Ryan (1998). Additionally, natural building materials, ample vegetation and the presence of water elements also appear to help produce a satisfactory experience, as suggested by the literature (Kaplan, Kaplan and Ryan, 1998; Wilson, 1984; Schroeder and Anderson, 1984; Nasar, 1983; Ulrich, 1979; Kaplan, Kaplan and Wendt, 1972; Herzog and Barnes,

1999; and Zube, Pitt and Anderson, 1974). The high R^2 value suggests the visual quality items provide cues which help to shape respondents' affective responses and serve as indicators of the quality of experience respondents will have (Childress and Crompton, 1997; Baker and Crompton, 2000; and Tian-Cole, Crompton and Willson, 2002).

The visual quality items SIGN and BUILT significantly affected overall quality (OQ) in $T_{high.}$ The visual quality items accounted for 29% of the variance in overall quality. This may be because the type of sign (ornate) and the building materials (natural materials) used are direct visual indicators or cues used to assess the overall quality of the zoo by demonstrating management's attention to detail. This supports the relationship suggested in the literature (Kaplan, Kaplan and Ryan, 1998; and Herzog and Barnes, 1999). These findings suggest the visual quality items provide cues which help to shape respondents' cognitive responses and serve as indicators of the quality of performance provided by the zoo's management (Childress and Crompton, 1997; Baker and Crompton, 2000; and Tian-Cole, Crompton and Willson, 2002).

The strong influence of the visual quality items on satisfaction and overall quality suggests visual quality items provide cues which help to shape respondents' affective responses and serve as indicators of the quality of experience respondents will have; and they additionally provide cues which help to shape respondents' cognitive responses and serve as indicators of the quality of performance provided by the zoo's management (Childress and Crompton, 1997; Baker and Crompton, 2000; and Tian-Cole, Crompton and Willson, 2002).

For the first treatment, T_{high}, the visual quality items accounted for 16% of the variance explained in hedonic attitude; however, no visual quality items were statistically significant. This suggests that when quality is high, it might be the gestalt of all the visual quality elements that influences respondents' hedonic attitude, rather than each item individually. The visual quality items MAINT and WATER significantly affected utilitarian attitude. This could be because maintenance and upkeep, as indicated by litter, is likely to most influence effective use of the space. Additionally, the absence of litter may provide an indicator of the functionality of the zoo, suggesting the zoo has effective, reliable management (Bitner, 1992; and Batra and Ahtola, 1991). This finding is also consistent with previous literature that found litter to detract from preferences for scenes (Schroeder and Anderson, 1984). The visual quality items accounted for 24% of the variance in utilitarian attitude.

For the second treatment, $T_{med,}$ only the visual quality items of MAINT and WATER significantly affected the dependent variables. The variable MAINT significantly affected all the dependent variables. This could be because as maintenance and upkeep begin to decline, the declining visual attractiveness starts to negatively influence the effective use of the space. This finding supports previous research (Schroeder and Anderson, 1984; Marans, 1976; and Nasar, 1983). This may impede favorable opinions about the zoo's overall quality, particularly their ability to perform reliable service. The presence of trash may represent the management is slacking in its service performance. Reliability, or reliable service performances, has repeatedly been

found to be the most important service quality construct (Berry and Parasuraman, 1991; Petrick, 2004).

The variable WATER significantly affected all the dependent variables except satisfaction. This suggests the presence of water positively affects respondents. This finding is similar to previous research which demonstrated water features were a dominant visual element in a scene and consistently a main influence on scenic quality (Schroeder and Anderson, 1984; Ulrich et al., 1991; Herzog and Barnes, 1999; and Zube, Pitt and Anderson, 1974).

For the third treatment, $T_{low,}$ three visual quality items (CROWD, SEAT and SIGN) significantly affected satisfaction. The visual quality items accounted for 44%, or nearly half of the variation in satisfaction. This substantive finding suggests that when visual quality is poor, respondents anticipate a poor quality of experience. This finding supports previous research (Childress and Crompton, 1997; Baker and Crompton, 2000; and Tian-Cole, Crompton and Willson, 2002.) Thus, high levels of crowding, lack of seating, and poor signage had a significantly negative affect on satisfaction. This supports previous findings regarding the importance of these visual quality items in shaping respondents' perceptions of their visual environment (Lee and Graefe, 2002; Kaplan, Kaplan and Ryan, 1998; Nasar, 1983; and Nasar and Hong, 1999).

The variables CROWD, MAINT and SIGN significantly affected overall quality in T_{low}, and the visual quality items accounted for 35% of the variance in the variable—a substantive finding as well. Thus, when these items (CROWD, SIGN, and MAINT) are

poor, it is likely that they negatively affect the ways in which respondents react to the zoo, as well as respondents' assessments of the quality of performance provided by the zoo's management (Childress and Crompton, 1997; Baker and Crompton, 2000; and Tian-Cole, Crompton and Willson, 2002). This also supports previous findings regarding the importance of these visual quality items in shaping respondents' perceptions of their visual environment (Lee and Graefe, 2002; Kaplan, Kaplan and Ryan, 1998; Nasar, 1997; Nasar, 1983; Marans, 1976; Schroeder and Anderson, 1984; and Nasar and Hong, 1999).

The variable CROWD significantly affected hedonic attitude in T_{low}, and the visual quality items accounted for 19% of the variance in the latent variable. This suggests that increased crowding affected respondents' attitudes regarding the experiential and pleasurable nature of the zoo (Batra and Ahtola, 1991; Lee and Graefe, 2002). MAINT significantly affected utilitarian attitude and accounted for 16% of the variation in the variable. This suggests that the increase in litter affected respondents' assessments of the utility and functionality of the zoo (Batra and Ahtola, 1991).

The visual quality item MAINT significantly affected at least one dependent variable in all three treatments. This suggests that maintenance and upkeep, as indicated by the presence or absence of litter, is an important visual cue for visitors when making assessments about their environment, or a tourist destination. This supports research from the marketing and recreation and tourism literatures which have found reliability to be the most important dimension of quality (Berry and Parasuraman, 1991; Petrick, 2004). Maintenance and upkeep, particularly litter, are directly under the control of

management, and can be manipulated to ensure a more pleasurable outcome for visitors. The visual quality item BUILT only significantly affected the dependent variables in the first treatment, T_{high}. This suggests that the built or constructed elements in a setting are only visually influential when they are of high visual quality. The visual quality item CROWD only significantly affected the dependent variables in the third treatment, T_{low}. This suggests that as crowding increases, it negatively influences visitors' assessments of the zoo.

The visual quality item URBAN, or presence of urban skyline, was the only visual quality item that did not significantly affect any of the dependent variables. This may be attributable to the URBAN variable being difficult to decipher in a photograph alone, requiring a more dynamic environment (such as an actual trip to the zoo as opposed to a photograph) to capture the totality of the variable. For example, to fully perceive an urban setting is likely to embrace the sense of smell (exhaust, pollution) and sound (noise, traffic) in addition to visual perception.

Theoretical Implications

Results of the current study have both theoretical and managerial implications. Theoretically, the results provide support for previous research that has found overall quality and satisfaction to be related to behavioral intentions (Baker and Crompton, 2000; Tian-Cole, Crompton and Willson, 2002; and Petrick 2004). This study further explored this relationship, and found that overall quality was directly related to

behavioral intentions. This finding is consistent with previous research (Baker and Crompton, 2000; Zeithaml, Berry and Parasuraman, 1996, Cronin, Brady and Hult, 2000, Tian-Cole, Crompton and Willson, 2002; and Petrick, 2004). Validity of research findings increase with replication, thus this research helps to further support the influence of quality and satisfaction on behavioral intentions.

The finding that satisfaction was a stronger predictor of behavioral intentions than overall quality supports the findings reported by Tian-Cole, Crompton and Willson (2002) but is antithetical to the findings reported by Baker and Crompton (2000) and Petrick (2004). This suggests additional research is necessary to further explore the relationship between these three variables. This research should include further exploration of the antecedents of quality and satisfaction, such as hedonic and utilitarian attitudes, as well as affective and cognitive responses.

The inclusion of measures designed to capture respondents' hedonic and utilitarian attitudes was an attempt to gain further insights into the constructs of overall quality and satisfaction. Childress and Crompton (1997), Baker and Crompton (2000) and Tian-Cole, Crompton and Willson (2002) conceptualized overall quality as quality of performance, and satisfaction as quality of experience. These conceptualizations imply that overall quality has a cognitive component, while satisfaction is an affective response. Utilitarian attitude refers to functionality or usefulness of a product or service, while hedonic attitude refers to affective gratification of a product or service (Batra and Ahtola, 1991). Implicit in these constructs are the cognitive component of utilitarian

attitude and the affective component of hedonic attitude, which relate back to quality and satisfaction, respectively.

The relationship between hedonic attitude and satisfaction as well as the relationship between utilitarian attitude and overall quality held true in the current study. This suggests that the notion of hedonic and utilitarian attitudes as antecedents of quality and satisfaction should be explored further. Additionally, the strong relationship between hedonic attitude and satisfaction and quality suggests that a zoo experience is predominantly an hedonic experience, as suggested by Voss, Spandenberg and Grohmann (2003).

Voss, Spangenberg and Grohmann (2003) explored the relationship between affective and cognitive dimensions of involvement and the hedonic and utilitarian dimension of attitude. Their research indicated that while these constructs were correlated, hedonic/utilitarian attitude captured different information than the affective/cognitive component of product category involvement. Moreover, they found hedonic and utilitarian attitudes were linked to purchase intentions. Given their empirical findings, and the results of this study, more attention should be given to hedonic and utilitarian attitudes as antecedents of quality and satisfaction, as well as their role in the prediction of behavioral intentions.

From a holistic perspective, this research offers empirical evidence which supports the role of the visual environment in shaping tourists' hedonic and utilitarian attitudes, as well as their perceptions of quality, satisfaction and behavioral intentions. This notion relates back to early work on the visual environment by Gunn (1972), who

argued that "place qualities" were the very essence of the pulling power of destinations. It also relates to literature in environmental psychology which argues that the more pleasurable a setting, the more likely users are to engage and interact with the setting (Nasar, 1997; Kaplan, Kaplan and Ryan, 1998). The present study confirmed that seven of the eight visual quality items chosen had some type of significant affect on these constructs. This research supports the role of servicescapes and the influence of the physical environment identified in the marketing literature (Bitner, 1992; and Baker, Parasuraman, Grewal, and Voss, 2002).

This study further shows that research methods, particularly experimental design, used to study landscapes and environmental aesthetics may be successfully applied to other dimensions, including marketing and tourism. While a single study cannot conclusively demonstrate the validity of the constructs examined, the results of this study demonstrate the potential effectiveness of further research. These research methods can be applied to other attributes of destinations (such as building facades, spatial layouts, perceived safety or security, and intended recreational use) or other concepts in marketing including perceived value, branding, loyalty, and perceptions of price.

Managerial Implications

Zeithaml, Berry and Parasuraman (1996) argued that favorable behavioral intentions are associated with a service provider's ability to get customers to (1) say

positive things about them; (2) recommend them to other consumers, (3) remain loyal to them and thus repurchase from them, (4) spend more money with the provider, and (5) pay price premiums. These are critical to the success of any business or tourism destination. Given this, identifying the constructs that best predict behavioral intentions should be a primary concern for tourism providers (Petrick, 2004). The strong effect of quality and satisfaction on behavioral intentions confirmed the findings of previous research which suggested that improving perceptions of these constructs would positively affect behavioral intentions (Cronin, Brady and Hult, 2000; Baker and Crompton, 2000; Tian-Cole, Crompton and Willson, 2002; and Petrick, 2004).

Thus, managers should strive to provide quality performances for visitors as well as strive to ensure visitors will have a satisfying experience. The present research suggests attention to the visual quality elements can help ensure high quality, and satisfying experiences, given seven of the eight visual quality elements influenced some aspect of visitors' perceptions. Additionally, the visual quality elements accounted for a significantly large portion of the variance in satisfaction (ranging from 31% to 44% across the treatments) and overall quality (ranging from 28% to 35% across the treatments).

This study found that maintenance and upkeep had a significant effect on satisfaction and overall quality, as well as hedonic and utilitarian attitudes in all three treatments. This implies that overall appearance of tourism facilities is of central importance. While this construct was only measured by the presence and absence of trash, other research has found that well-maintained facilities (freshly painted, no

graffiti, etc.) evoke positive affect and are preferred over settings that seem to lack adequate maintenance (Nasar, 1997; Schroeder and Anderson, 1984, and Marans, 1976). Thus, ensuring a high level of upkeep is important in sending cues to tourists about the quality of service or experience provided. This supports findings in the marketing and recreation and tourism fields which have consistently found reliability to be the most important dimension of service quality (Berry and Parasuraman, 1991; Petrick, 2004). For management, this suggests that frequent monitoring and cleaning of trashcans, assigning staff to pick up litter with regularity, and careful attention to the cleanliness of public areas such as the food court and restrooms would be productive in generating better experiences for consumers.

Other visual quality items that had significance in the model included crowding and signage. Crowding can directly affect visitors' interactions at a zoo (Lee and Graefe, 2002). If an exhibit is too crowded, visitors may not be able to effectively view an exhibit, or maneuver through the zoo. Management has the ability to directly control crowding by creating exhibits that have multiple viewing areas to disperse crowds, as well as multiple walkways which encourage alternate travel patterns through the zoo. Additionally, visually pleasing signage at the entrance to the zoo may provide cues for visitors, which helps to define expectations and help set the stage for the experience they are about have.

The present study confirmed the importance of seven of the eight visual quality items in shaping respondents' perceptions. This is consistent with other research that has demonstrated the importance of the visual environment in shaping preference and

attitudes about destinations (Kaplan, Kaplan and Ryan, 1998; Schroeder and Anderson, 1984; Marans, 1976; Nasar, 1983; Nasar, 1997; Nasar and Hong, 1999; Ulrich, 1979; Kaplan, Kaplan and Wendt, 1972; Herzog and Barnes, 1999; Zube, Pitt, and Anderson, 1974; Lee and Graefe, 2002, to name just a few). The inability to confirm the influence of the variable URBAN on respondents' perceptions could be a result of how this item was operationalized, and not an indication of its importance in shaping preferences and perceptions.

Thus, if zoo managers were able to determine which attributes are best at providing cues about quality and satisfaction, it would be beneficial for them to shift resources to improving those visual elements. This study's findings suggest this would be a worthwhile investment, given the visual quality elements accounted for a significantly large portion of the variance in satisfaction (ranging from 31% to 44% across the treatments) and overall quality (ranging from 28% to 35% across the treatments). It has been argued that sight is the dominant sense (Nasar, 1997), so investments in improving the visual appearance of a destination are likely to lead to improved perceptions about a destination. However, as Schroeder and Anderson (1994) argued, it should be noted that perceptions of aesthetics are influenced by nearby, or outside features that are not part of the destination. Although managers have little or no control of these extraneous visual cues, they should take them into account when designing or manipulating a destination.

Table 28 listed the visual quality items that significantly regressed on the dependent variables of satisfaction, overall quality, hedonic attitude and utilitarian

attitude. Given these results, management should consider paying close attention to signage and the built elements of the zoo, as both of these items were significant in predicting overall quality and satisfaction.

Limitations of the Study

A primary limitation is the generalizability of the results. Because respondents were university students in selected courses, generalization of their responses is not possible. The study's manipulated photographs were from only one setting—a zoo. This raises two issues. First, because the photographs were digitally manipulated to create specific visual settings, they are not real settings. It is possible that results obtained from a hypothetical zoo may not be transferable to an actual zoo because of differences in contexts. Second, because these photographs represent scenes from a zoo, it is possible the results may not be transferable to other tourism settings.

While the use of photographs allowed for control of the visual environment, thus helping to identify the effect of selected elements, the outcome is a static setting. It is highly likely that perceptions of an environment are more dynamic and, thus, require either an actual encounter with a setting or viewing a video of a setting to more adequately capture the gestalt of the visual setting.

Ways in which the photographs were constructed may account for some of the ambivalent results. Perhaps the way in which the scenes were constructed did not clearly convey the dimensions of the attribute they were intended to convey. For

example, it is likely that when these items are experienced in a real context, they are more complex than just the visual component, since a full appreciation of the elements may require more than only the sense of sight. They may rely heavily on the senses of sound and smell.

The construction of the treatments allowed for other aspects of the visual environment to be disregarded. It is expected that more than eight visual elements provide cues for interpreting a setting. Further, the eight visual quality items could be operationalized in different ways. For example, signage was operationalized as an entrance sign and was modified across treatments by changing the ornate nature of the sign and the materials used. Signage could have been alternatively operationalized with informational signage or directional signage. Thus, the manner in which the eight visual quality items were constructed also inhibits generalization of the findings.

The visual item urban setting (URBAN) was depicted by only an urban skyline. While research has shown that urban environments are generally less pleasing than natural environments (Kaplan, Kaplan and Wendt, 1972), it has also been reported that the presence of an urban skyline on the horizon can be visually appealing if context and complexity are taken into account (Heath, Smith and Lim, 2000). Thus, in an effort to create a scene in which the urban skyline was meant to be a detractor of preference, it is possible that it had no negative effect whatsoever. The way in which the urban skyline was depicted could have been changed by adding unattractive, cluttered buildings to the horizon.

Additionally, a full experience of an urban setting is likely to employ the sense of smell (pollution, trash) and of sounds (traffic, commotion). These are also other visual elements that connote urban settings, such as the addition of cars, streets, utility poles, or billboards. Perhaps if these items had been depicted in the photographs they would have been a stronger indicator of an urban environment.

The visual element URBAN was the only visual quality element that showed no significant differences between treatments. In addition to the visual construction of this item, it is possible that the way in which the question asked respondents to rate the item was worded inappropriately. They were asked to rate "How removed do you feel from the city?" This may not have been the best way to ascertain whether respondents felt a sense of escape or relief from the plights of urban life. Perhaps the question would have been better phrased: "Do you consider this scene to be an urban or rural scene?" Further research is needed to gain more understanding of the influence of an urban skyline on visual quality. Heath, Smith and Lim (2000) suggested that very little research has focused on the urban skyline or tall buildings in the realm of environmental aesthetics.

Only half of the items (four of eight) were significantly different across all treatments. These were maintenance and upkeep (MAINT), level of crowding (CROWD), amount of vegetation (VEGET) and amount of water present (WATER). This suggests that these items were the most pervasive cues in influencing assessments of the visual environment. It could also suggest that these items were easiest to identify and rate visually, which could be reflective of treatment construction, meaning the

discrepancies between the treatment manipulations were obviously indicative of high, mediocre and low visual quality, leaving little to be deciphered by the respondents.

The eight visual quality items were measured using four photographs, which included two items in each photograph. It is possible that the preference ratings of the elements were confounded by the presence of two items in each photograph, thus muting the significance of these constructs that has been indicated in previous research (Nasar, 1997; Nasar and Hong, 1999; and Kaplan, Kaplan and Ryan, 1998). For example, the photograph that contained the variable BUILT also contained the variable CROWD. Perhaps as the scene became overly crowded, it became difficult to decipher differences in the building materials used; and if BUILT was paired in a photograph with a different variable (for example SEAT) it might have been easier to decipher differences in the building materials. Further, it is possible that extraneous visual elements in the background of the photographs (those elements not of interest) could have confounded preference ratings of the selected visual quality items.

Another limitation to the study may be the way in which the constructs of hedonic and utilitarian attitude, overall quality, satisfaction and behavioral intentions were measured. Previous researchers have measured these constructs using different scales. For example, Cronin, Brady and Hult (2000) measured overall quality by a three-item scale. The present study measured quality using a single-item scale. Alternate scales exist for all of these constructs. It is possible that operationalizing these constructs differently would have yielded different results.

While structural equation modeling is useful in allowing a model to be tested in its entirety, and allows for causal models to be tested, the technique does not establish causal relationships (Bollen, 1989). At best, structural equation modeling shows "whether the causal assumptions embedded in a model match a sample of data" (Bollen, 1989, p. 4). While the study results generally supported the proposed relationships among the constructs in the model, the validity of the model can only be confirmed when it is tested with other data.

Suggestions for Future Research

Several suggestions for future research are offered here. First, experiments are not widely used as a research tool in the tourism field, whereas they are widely used in environmental psychology and marketing. It is suggested the use of experimental designs be used to better explore the relationships between the visual environment and tourists' perceptions of quality, satisfaction and behavioral intentions. While there were limitations associated with the experimental design used in this study, improvements to the design would allow for further examination of these relationships.

Data analysis could incorporate conjoint analysis as an alternative tool to allow further exploration of relationships within the data. Conjoint analysis, as coined by Green and Srinivasan (1978) is used to estimate attribute utilities based on subjects' responses to combinations of multiple decision attributes. It deals with "complex decision making, or the process of assessment, comparison, and/or evaluation in which

consumers decide which aspects of products or services are important, compare products or services on each of the important aspects, and decide which one(s), if any, to choose" (Louviere, 1998 p.9). Thus, conjoint analysis would allow for varying levels of each of the visual quality items to be presented to the respondents, as opposed to the respondents only viewing one treatment, as in this study.

Operationalizing the constructs differently may change the results of the study, so alternative scales for the various constructs should be evaluated to see if other operationalizations are more effective or meaningful when examining the visual environment. The retailing literature has examined the physical store environment in effecting purchase behaviors (Manolis, Keep, Joyce and Lambert, 1994; Amirani and Baker, 1995). It would be useful to examine if scales utilized in retailing research are applicable to tourism settings.

The importance of the visual environment in tourism settings has received much attention (Gunn, 1979; Gunn 1997; Echtner and Ritchie, 1993; Vogt and Fesenmaier, 1995; Fodness, 1990; MacKay and Fesenmaier, 1997); however, little work has examined the impact of the visual environment to on-site tourism experiences. This area of research deserves more attention. Continuation of this line of research on on-site visual quality will complement the robust body of literature that has investigated marketing effectiveness and destination image. It may usefully be extended to explore the congruence or misalignment of destination image as produced in advertising with on-site assessments of the destination image.

The study contributes to the tourism and marketing literatures and helps to bridge gaps between the environmental psychology, tourism, and marketing literatures. It further examined the relationships between quality, satisfaction and behavioral intentions; and explored the potential of hedonic and utilitarian attitudes as antecedents of these constructs. It also investigated how the visual environment influences our perceptions of all these constructs. The model tested in this study has a theoretical foundation; it was empirically tested; and it was generally found to support the research hypotheses.

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APPENDIX A

QUESTIONNAIRE FOR T_{high}

Introduction and Instructions

Imagine that you are going on a trip to a zoo. The following four pictures represent a visual tour of the zoo you will encounter. Please examine each of the four following pictures and answer the respective questions. A number of different features are represented in each of the four photographs of the zoo.

For each of the following four pictures, please tell us how you would rate each of the items listed. If you feel a feature was extremely good, choose number 7. If you feel a feature was extremely poor, choose number 1. If your feelings are less strong, choose one of the numbers in the middle. Please try to differentiate your responses, since we are trying to determine the features that should receive priority in investing our limited resources. If you choose all of these features as a "6" or "7", it does not help us to identify which are the most important to you.

Please rate the following features in the picture above.

	Extremely Poor			Neither Good Nor Poor			Extremely Good
	1	2	3	4	5	6	7
Maintenance and Upkeep	☐	☐	☐	☐	☐	☐	☐
Type of sign	☐	☐	☐	☐	☐	☐	☐

Please rate the following features in the picture above.

	Extremely Poor			Neutral			Extremely Good
	1	2	3	4	5	6	7
Built or constructed elements	☐	☐	☐	☐	☐	☐	☐

	Extremely Uncomfortable			Neutral			Extremely Comfortable
	1	2	3	4	5	6	7
Level of crowding	☐	☐	☐	☐	☐	☐	☐

Please rate the following features in the picture above.

	Extremely Poor			Neutral			Extremely Good
	1	2	3	4	5	6	7
Amount of Vegetation	☐	☐	☐	☐	☐	☐	☐
Available Seating	☐	☐	☐	☐	☐	☐	☐

Please rate the following features in the picture above.

	Extremely Poor			Neither Good Nor Poor			Extremely Good
	1	2	3	4	5	6	7
Amount of water present	☐	☐	☐	☐	☐	☐	☐

	Not At All Removed			Neutral			Extremely Removed
	1	2	3	4	5	6	7
How removed do you feel from the city?	☐	☐	☐	☐	☐	☐	☐

Please rate how well each of the following adjectives describes your overall impression of this zoo.

	Does Not Describe at all						Describes Very Well
	1	2	3	4	5	6	7
Complex	☐	☐	☐	☐	☐	☐	☐
Dense	☐	☐	☐	☐	☐	☐	☐
Surprising	☐	☐	☐	☐	☐	☐	☐
Crowded	☐	☐	☐	☐	☐	☐	☐
Symmetrical	☐	☐	☐	☐	☐	☐	☐
Common	☐	☐	☐	☐	☐	☐	☐
Patterned	☐	☐	☐	☐	☐	☐	☐
Cluttered	☐	☐	☐	☐	☐	☐	☐

Harmonious	☐	☐	☐	☐	☐	☐	☐
Varied	☐	☐	☐	☐	☐	☐	☐
Familiar	☐	☐	☐	☐	☐	☐	☐
New	☐	☐	☐	☐	☐	☐	☐

Based on the tour of the zoo, please rate your overall impressions.

	Extremely Poor			Neither Good Nor Poor			Extremely Good
	1	2	3	4	5	6	7
Your understanding of the zoo scenes	☐	☐	☐	☐	☐	☐	☐
Your likelihood of exploring the zoo further	☐	☐	☐	☐	☐	☐	☐

The following set of statements relate to your overall feelings about the zoo. For each statement, please choose the number that best reflects your feelings.

	1	2	3	4	5	6	7	
Dissatisfied	☐	☐	☐	☐	☐	☐	☐	Satisfied
Displeased	☐	☐	☐	☐	☐	☐	☐	Pleased
Unfavorable	☐	☐	☐	☐	☐	☐	☐	Favorable
Negative	☐	☐	☐	☐	☐	☐	☐	Positive
Useless	☐	☐	☐	☐	☐	☐	☐	Useful
Worthless	☐	☐	☐	☐	☐	☐	☐	Valuable
Harmful	☐	☐	☐	☐	☐	☐	☐	Beneficial
Foolish	☐	☐	☐	☐	☐	☐	☐	Wise
Unpleasant	☐	☐	☐	☐	☐	☐	☐	Pleasant
Awful	☐	☐	☐	☐	☐	☐	☐	Nice
Disagreeable	☐	☐	☐	☐	☐	☐	☐	Agreeable
Sad	☐	☐	☐	☐	☐	☐	☐	Happy

Using the scale provided, please rate the OVERALL quality of zoo.

Extremely Low Quality						Extremely High Quality
1	2	3	4	5	6	7
☐	☐	☐	☐	☐	☐	☐

Please rate your responses to the following statements.

1. The zoo has a:

	1	2	3	4	5	6	7	
Bad selection of exhibits	☐	☐	☐	☐	☐	☐	☐	Good selection of exhibits

2. The zoo has a:

	1	2	3	4	5	6	7	
Bad reputation	☐	☐	☐	☐	☐	☐	☐	Good reputation

3. Overall, I have a:

	1	2	3	4	5	6	7	
Bad impression	☐	☐	☐	☐	☐	☐	☐	Good impression

4. The zoo is:

	1	2	3	4	5	6	7	
Low class	☐	☐	☐	☐	☐	☐	☐	High class

5. The zoo is:

	1	2	3	4	5	6	7	
In trouble	☐	☐	☐	☐	☐	☐	☐	Doing well

6. The zoo's layout is:

	1	2	3	4	5	6	7	
Bad	☐	☐	☐	☐	☐	☐	☐	Good

7. The zoo has a:

	1	2	3	4	5	6	7	
Bad appearance	☐	☐	☐	☐	☐	☐	☐	Good appearance

8. The zoo is in:

	1	2	3	4	5	6	7	
Good physical condition	☐	☐	☐	☐	☐	☐	☐	Bad physical condition

Based on your tour of the zoo, please choose the number that indicates how likely you are to take each of the following actions.

Actions you might take	Not at all Likely			Somewhat Likely			Extremely Likely
	1	2	3	4	5	6	7
Say positive things about the zoo to other people	☐	☐	☐	☐	☐	☐	☐
Visit the zoo again in the future	☐	☐	☐	☐	☐	☐	☐
Encourage friends and relatives to visit this zoo	☐	☐	☐	☐	☐	☐	☐
Will not come back to this zoo	☐	☐	☐	☐	☐	☐	☐
Would just go to another zoo if this zoo was not available	☐	☐	☐	☐	☐	☐	☐
Continue to visit if the admission price was increased	☐	☐	☐	☐	☐	☐	☐

Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree			Neutral			Strongly Agree
	1	2	3	4	5	6	7
Currently, I am in a good mood	☐	☐	☐	☐	☐	☐	☐
As I answer these questions I feel cheerful	☐	☐	☐	☐	☐	☐	☐
For some reason, I am not very comfortable right now	☐	☐	☐	☐	☐	☐	☐
At the moment I feel very "edgy" or irritable	☐	☐	☐	☐	☐	☐	☐

Have you been to a zoo before? ☐ YES ☐ NO

If yes, how many times? ☐

How many different zoos have you visited in your lifetime? ☐

Are you? ☐ MALE ☐ FEMALE

From which state are you responding to this survey? ☐ TEXAS ☐ NORTH CAROLINA

Which degree plan do you most identify with?

☐ Recreation/Sport Management ☐ Natural Resources ☐ Tourism ☐ Other

Submit Query Reset **(Please, Only Click the Submit Button Once)**

Thank you for taking time to complete this survey!

APPENDIX B

QUESTIONNAIRE FOR T_{med}

Introduction and Instructions

Imagine that you are going on a trip to a zoo. The following four pictures represent a visual tour of the zoo you will encounter. Please examine each of the four following pictures and answer the respective questions. A number of different features are represented in each of the four photographs of the zoo.

For each of the following four pictures, please tell us how you would rate each of the items listed. If you feel a feature was extremely good, choose number 7. If you feel a feature was extremely poor, choose number 1. If your feelings are less strong, choose one of the numbers in the middle. Please try to differentiate your responses, since we are trying to determine the features that should receive priority in investing our limited resources. If you choose all of these features as a "6" or "7", it does not help us to identify which are the most important to you.

Please rate the following features in the picture above.

	Extremely Poor			Neither Good Nor Poor			Extremely Good
	1	2	3	4	5	6	7
Maintenance and Upkeep	☐	☐	☐	☐	☐	☐	☐
Type of sign	☐	☐	☐	☐	☐	☐	☐

Please rate the following features in the picture above.

	Extremely Poor			Neutral			Extremely Good
	1	2	3	4	5	6	7
Built or constructed elements	☐	☐	☐	☐	☐	☐	☐

	Extremely Uncomfortable			Neutral			Extremely Comfortable
	1	2	3	4	5	6	7
Level of crowding	☐	☐	☐	☐	☐	☐	☐

Please rate the following features in the picture above.

	Extremely Poor			Neutral			Extremely Good
	1	2	3	4	5	6	7
Amount of Vegetation	☐	☐	☐	☐	☐	☐	☐
Available Seating	☐	☐	☐	☐	☐	☐	☐

Please rate the following features in the picture above.

	Extremely Poor			Neither Good Nor Poor			Extremely Good
	1	2	3	4	5	6	7
Amount of water present	☐	☐	☐	☐	☐	☐	☐

	Not At All Removed			Neutral			Extremely Removed
	1	2	3	4	5	6	7
How removed do you feel from the city?	☐	☐	☐	☐	☐	☐	☐

Please rate how well each of the following adjectives describes your overall impression of this zoo.

	Does Not Describe at all						Describes Very Well
	1	2	3	4	5	6	7
Complex	☐	☐	☐	☐	☐	☐	☐
Dense	☐	☐	☐	☐	☐	☐	☐
Surprising	☐	☐	☐	☐	☐	☐	☐
Crowded	☐	☐	☐	☐	☐	☐	☐
Symmetrical	☐	☐	☐	☐	☐	☐	☐
Common	☐	☐	☐	☐	☐	☐	☐
Patterned	☐	☐	☐	☐	☐	☐	☐
Cluttered	☐	☐	☐	☐	☐	☐	☐
Harmonious	☐	☐	☐	☐	☐	☐	☐

Varied	☐	☐	☐	☐	☐	☐	☐
Familiar	☐	☐	☐	☐	☐	☐	☐
New	☐	☐	☐	☐	☐	☐	☐

Based on the tour of the zoo, please rate your overall impressions.

	Extremely Poor			Neither Good Nor Poor			Extremely Good
	1	2	3	4	5	6	7
Your understanding of the zoo scenes	☐	☐	☐	☐	☐	☐	☐
Your likelihood of exploring the zoo further	☐	☐	☐	☐	☐	☐	☐

The following set of statements relate to your overall feelings about the zoo. For each statement, please choose the number that best reflects your feelings.

	1	2	3	4	5	6	7	
Dissatisfied	☐	☐	☐	☐	☐	☐	☐	Satisfied
Displeased	☐	☐	☐	☐	☐	☐	☐	Pleased
Unfavorable	☐	☐	☐	☐	☐	☐	☐	Favorable
Negative	☐	☐	☐	☐	☐	☐	☐	Positive
Useless	☐	☐	☐	☐	☐	☐	☐	Useful
Worthless	☐	☐	☐	☐	☐	☐	☐	Valuable
Harmful	☐	☐	☐	☐	☐	☐	☐	Beneficial
Foolish	☐	☐	☐	☐	☐	☐	☐	Wise
Unpleasant	☐	☐	☐	☐	☐	☐	☐	Pleasant
Awful	☐	☐	☐	☐	☐	☐	☐	Nice
Disagreeable	☐	☐	☐	☐	☐	☐	☐	Agreeable
Sad	☐	☐	☐	☐	☐	☐	☐	Happy

Using the scale provided, please rate the OVERALL quality of zoo.

Extremely Low Quality						Extremely High Quality
1	2	3	4	5	6	7
☐	☐	☐	☐	☐	☐	☐

Please rate your responses to the following statements.

1. The zoo has a:

	1	2	3	4	5	6	7	
Bad selection of exhibits	☐	☐	☐	☐	☐	☐	☐	Good selection of exhibits

2. The zoo has a:

	1	2	3	4	5	6	7	
Bad reputation	☐	☐	☐	☐	☐	☐	☐	Good reputation

3. Overall, I have a:

	1	2	3	4	5	6	7	
Bad impression	☐	☐	☐	☐	☐	☐	☐	Good impression

4. The zoo is:

	1	2	3	4	5	6	7	
Low class	☐	☐	☐	☐	☐	☐	☐	High class

5. The zoo is:

	1	2	3	4	5	6	7	
In trouble	☐	☐	☐	☐	☐	☐	☐	Doing well

6. The zoo's layout is:

	1	2	3	4	5	6	7	
Bad	☐	☐	☐	☐	☐	☐	☐	Good

7. The zoo has a:

	1	2	3	4	5	6	7	
Bad appearance	☐	☐	☐	☐	☐	☐	☐	Good appearance

8. The zoo is in:

	1	2	3	4	5	6	7	
Good physical condition	☐	☐	☐	☐	☐	☐	☐	Bad physical condition

Based on your tour of the zoo, please choose the number that indicates how likely you are to take each of the following actions.

Actions you might take	Not at all Likely			Somewhat Likely			Extremely Likely
	1	2	3	4	5	6	7
Say positive things about the zoo to other people	☐	☐	☐	☐	☐	☐	☐
Visit the zoo again in the future	☐	☐	☐	☐	☐	☐	☐
Encourage friends and relatives to visit this zoo	☐	☐	☐	☐	☐	☐	☐
Will not come back to this zoo	☐	☐	☐	☐	☐	☐	☐
Would just go to another zoo if this zoo was not available	☐	☐	☐	☐	☐	☐	☐
Continue to visit if the admission price was increased	☐	☐	☐	☐	☐	☐	☐

Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree			Neutral			Strongly Agree
	1	2	3	4	5	6	7
Currently, I am in a good mood	☐	☐	☐	☐	☐	☐	☐
As I answer these questions I feel cheerful	☐	☐	☐	☐	☐	☐	☐
For some reason, I am not very comfortable right now	☐	☐	☐	☐	☐	☐	☐
At the moment I feel very "edgy" or irritable	☐	☐	☐	☐	☐	☐	☐

Have you been to a zoo before? ☐ YES ☐ NO

If yes, how many times? ☐

How many different zoos have you visited in your lifetime? ☐

Are you? ☐ MALE ☐ FEMALE

From which state are you responding to this survey? ☐ TEXAS ☐ NORTH CAROLINA

Which degree plan do you most identify with?

☐ Recreation/Sport Management ☐ Natural Resources ☐ Tourism ☐ Other

Submit Query Reset **(Please, Only Click the Submit Button Once)**

Thank you for taking time to complete this survey!

APPENDIX C

QUESTIONNAIRE FOR T_{low}

Introduction and Instructions

Imagine that you are going on a trip to a zoo. The following four pictures represent a visual tour of the zoo you will encounter. Please examine each of the four following pictures and answer the respective questions. A number of different features are represented in each of the four photographs of the zoo.

For each of the following four pictures, please tell us how you would rate each of the items listed. If you feel a feature was extremely good, choose number 7. If you feel a feature was extremely poor, choose number 1. If your feelings are less strong, choose one of the numbers in the middle. Please try to differentiate your responses, since we are trying to determine the features that should receive priority in investing our limited resources. If you choose all of these features as a "6" or "7", it does not help us to identify which are the most important to you.

Please rate the following features in the picture above.

	Extremely Poor			Neither Good Nor Poor			Extremely Good
	1	2	3	4	5	6	7
Maintenance and Upkeep	☐	☐	☐	☐	☐	☐	☐
Type of sign	☐	☐	☐	☐	☐	☐	☐

Please rate the following features in the picture above.

	Extremely Poor			Neutral			Extremely Good
	1	2	3	4	5	6	7
Built or constructed elements	☐	☐	☐	☐	☐	☐	☐

	Extremely Uncomfortable			Neutral			Extremely Comfortable
	1	2	3	4	5	6	7
Level of crowding	☐	☐	☐	☐	☐	☐	☐

Please rate the following features in the picture above.

	Extremely Poor			Neutral			Extremely Good
	1	2	3	4	5	6	7
Amount of Vegetation	☐	☐	☐	☐	☐	☐	☐
Available Seating	☐	☐	☐	☐	☐	☐	☐

Please rate the following features in the picture above.

	Extremely Poor			Neither Good Nor Poor			Extremely Good
	1	2	3	4	5	6	7
Amount of water present	☐	☐	☐	☐	☐	☐	☐

	Not At All Removed			Neutral			Extremely Removed
	1	2	3	4	5	6	7
How removed do you feel from the city?	☐	☐	☐	☐	☐	☐	☐

Please rate how well each of the following adjectives describes your overall impression of this zoo.

	Does Not Describe at all						Describes Very Well
	1	2	3	4	5	6	7
Complex	☐	☐	☐	☐	☐	☐	☐
Dense	☐	☐	☐	☐	☐	☐	☐
Surprising	☐	☐	☐	☐	☐	☐	☐
Crowded	☐	☐	☐	☐	☐	☐	☐
Symmetrical	☐	☐	☐	☐	☐	☐	☐
Common	☐	☐	☐	☐	☐	☐	☐
Patterned	☐	☐	☐	☐	☐	☐	☐
Cluttered	☐	☐	☐	☐	☐	☐	☐
Harmonious	☐	☐	☐	☐	☐	☐	☐

Varied	☐	☐	☐	☐	☐	☐	☐
Familiar	☐	☐	☐	☐	☐	☐	☐
New	☐	☐	☐	☐	☐	☐	☐

Based on the tour of the zoo, please rate your overall impressions.

	Extremely Poor			Neither Good Nor Poor			Extremely Good
	1	2	3	4	5	6	7
Your understanding of the zoo scenes	☐	☐	☐	☐	☐	☐	☐
Your likelihood of exploring the zoo further	☐	☐	☐	☐	☐	☐	☐

The following set of statements relate to your overall feelings about the zoo. For each statement, please choose the number that best reflects your feelings.

	1	2	3	4	5	6	7	
Dissatisfied	☐	☐	☐	☐	☐	☐	☐	Satisfied
Displeased	☐	☐	☐	☐	☐	☐	☐	Pleased
Unfavorable	☐	☐	☐	☐	☐	☐	☐	Favorable
Negative	☐	☐	☐	☐	☐	☐	☐	Positive
Useless	☐	☐	☐	☐	☐	☐	☐	Useful
Worthless	☐	☐	☐	☐	☐	☐	☐	Valuable
Harmful	☐	☐	☐	☐	☐	☐	☐	Beneficial
Foolish	☐	☐	☐	☐	☐	☐	☐	Wise
Unpleasant	☐	☐	☐	☐	☐	☐	☐	Pleasant
Awful	☐	☐	☐	☐	☐	☐	☐	Nice
Disagreeable	☐	☐	☐	☐	☐	☐	☐	Agreeable
Sad	☐	☐	☐	☐	☐	☐	☐	Happy

Using the scale provided, please rate the OVERALL quality of zoo.

Extremely Low Quality						Extremely High Quality
1	2	3	4	5	6	7
☐	☐	☐	☐	☐	☐	☐

Please rate your responses to the following statements.

1. The zoo has a:

	1	2	3	4	5	6	7	
Bad selection of exhibits	☐	☐	☐	☐	☐	☐	☐	Good selection of exhibits

2. The zoo has a:

	1	2	3	4	5	6	7	
Bad reputation	☐	☐	☐	☐	☐	☐	☐	Good reputation

3. Overall, I have a:

	1	2	3	4	5	6	7	
Bad impression	☐	☐	☐	☐	☐	☐	☐	Good impression

4. The zoo is:

	1	2	3	4	5	6	7	
Low class	☐	☐	☐	☐	☐	☐	☐	High class

5. The zoo is:

	1	2	3	4	5	6	7	
In trouble	☐	☐	☐	☐	☐	☐	☐	Doing well

6. The zoo's layout is:

	1	2	3	4	5	6	7	
Bad	☐	☐	☐	☐	☐	☐	☐	Good

7. The zoo has a:

	1	2	3	4	5	6	7	
Bad appearance	☐	☐	☐	☐	☐	☐	☐	Good appearance

8. The zoo is in:

	1	2	3	4	5	6	7	
Good physical condition	☐	☐	☐	☐	☐	☐	☐	Bad physical condition

Based on your tour of the zoo, please choose the number that indicates how likely you are to take each of the following actions.

Actions you might take	Not at all Likely			Somewhat Likely			Extremely Likely
	1	2	3	4	5	6	7
Say positive things about the zoo to other people	☐	☐	☐	☐	☐	☐	☐
Visit the zoo again in the future	☐	☐	☐	☐	☐	☐	☐
Encourage friends and relatives to visit this zoo	☐	☐	☐	☐	☐	☐	☐
Will not come back to this zoo	☐	☐	☐	☐	☐	☐	☐
Would just go to another zoo if this zoo was not available	☐	☐	☐	☐	☐	☐	☐
Continue to visit if the admission price was increased	☐	☐	☐	☐	☐	☐	☐

Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree			Neutral			Strongly Agree
	1	2	3	4	5	6	7
Currently, I am in a good mood	☐	☐	☐	☐	☐	☐	☐
As I answer these questions I feel cheerful	☐	☐	☐	☐	☐	☐	☐
For some reason, I am not very comfortable right now	☐	☐	☐	☐	☐	☐	☐
At the moment I feel very "edgy" or irritable	☐	☐	☐	☐	☐	☐	☐

Have you been to a zoo before? ☐ YES ☐ NO

If yes, how many times? ☐

How many different zoos have you visited in your lifetime? ☐

Are you? ☐ MALE ☐ FEMALE

From which state are you responding to this survey? ☐ TEXAS ☐ NORTH CAROLINA

Which degree plan do you most identify with?

☐ Recreation/Sport Management ☐ Natural Resources ☐ Tourism ☐ Other

Submit Query Reset **(Please, Only Click the Submit Button Once)**

Thank you for taking time to complete this survey!

APPENDIX D

LETTERS GIVEN TO STUDENTS

Dear Student,

NC State University Department of Parks, Recreation and Tourism Management and Texas A&M University of Department of Recreation, Park and Tourism sciences invites you to participate in a study which will examine the effect of visual cues on tourists' preferences. The study consists of viewing pictures of a virtual zoo on-line and answering questions related to the pictures. The time estimated to complete this survey is 10 minutes. The link for the survey is as follows:

http://survey.tamu.edu/zootour/index1.asp

Only a small number of people have been included in this study, so your response is crucial to our success. Please take the time to help us complete this questionnaire. After you have completed the survey, click the "SUBMIT" button. Then, print the page that appears and return to your instructor for credit.

All information you provide will be treated anonymously. If you have any questions feel free to contact Stacy Tomas at NC State University at (919) 513-7407. Thank you for taking the time to help us!

Sincerely,

Stacy Tomas
Tourism Extension Specialist
Dept. of Parks, Recreation and Tourism Management
NC State University

Dear Student,

NC State University Department of Parks, Recreation and Tourism Management and Texas A&M University of Department of Recreation, Park and Tourism sciences invites you to participate in a study which will examine the effect of visual cues on tourists' preferences. The study consists of viewing pictures of a virtual zoo on-line and answering questions related to the pictures. The time estimated to complete this survey is 10 minutes. The link for the survey is as follows:

http://survey.tamu.edu/zootour/index2.asp

Only a small number of people have been included in this study, so your response is crucial to our success. Please take the time to help us complete this questionnaire. After you have completed the survey, click the "SUBMIT" button. Then, print the page that appears and return to your instructor for credit.

All information you provide will be treated anonymously. If you have any questions feel free to contact Stacy Tomas at NC State University at (919) 513-7407. Thank you for taking the time to help us!

Sincerely,

Stacy Tomas
Tourism Extension Specialist
Dept. of Parks, Recreation and Tourism Management
NC State University

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http://survey.tamu.edu/zootour/index3.asp

Only a small number of people have been included in this study, so your response is crucial to our success. Please take the time to help us complete this questionnaire. After you have completed the survey, click the "SUBMIT" button. Then, print the page that appears and return to your instructor for credit.

All information you provide will be treated anonymously. If you have any questions feel free to contact Stacy Tomas at NC State University at (919) 513-7407. Thank you for taking the time to help us!

Sincerely,

Stacy Tomas
Tourism Extension Specialist
Dept. of Parks, Recreation and Tourism Management
NC State University

VITA

Stacy Renee Tomas

Address

Department of Parks, Recreation and Tourism Management
North Carolina State University
Box 8004, NCSU
Raleigh, NC 27695-8004
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Education

Ph.D., Recreation, Park and Tourism Sciences, Texas A&M University, 2007
Emphasis: Tourism and Statistics
M.S., Recreation, Park and Tourism Sciences, Texas A&M University, 2000
Emphasis: Marketing
B.S., Wildlife and Fisheries Sciences, Texas A&M University, 1997
Emphasis: Wildlife Ecology, *Cum Laude Graduate*

Recent Academic Experience

Sustainable Tourism Extension Specialist, Department of Parks, Recreation and Tourism Management, NC State University, 2003-present
Research Associate, Department of Recreation, Park and Tourism Sciences, Texas A&M University, 2002
Graduate Assistant Lecturer, Department of Recreation Park and Tourism Sciences, Texas A&M University, 2002

Publications

Tomas, S., Scott, D. & Crompton, J. L. (2002) An Investigation of the Relationships Between Service Quality, Satisfaction, and Intention to Visit Among Visitors to a Zoo. *Managing Leisure, 7, 239-250.*
Tomas, S. R., Crompton, J. L., and Scott, D. (2003) Assessing Service Quality and Benefits Sought Among Zoological Park Visitors. *Journal of Park and Recreation Administration, 21*(2), 105 – 124.
Tomas, S. R. and Crompton, J. L. (2004) Repositioning Texas State Parks. *Journal of Park and Recreation Administration, 22*(1), 115 – 128.