

**DINESCAPE, EMOTIONS AND BEHAVIORAL INTENTIONS
IN UPSCALE RESTAURANTS**

By

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B.S., Chonnam National University, Korea, 1999
M.S., Texas Tech University, Texas, 2002

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ABSTRACT

The physical environment may be an important determinant of customer satisfaction and subsequent behavior when services are consumed primarily for hedonic purposes and customers spend moderate to long periods of time in the physical surroundings. An example of this phenomenon would be in an upscale restaurant setting.

This study explored the domain of the physical environment in an upscale restaurant context to develop a DINESCAPE scale. Relevant literature was reviewed on architecture, environmental psychology, psychology, operations management, and marketing, highlighting empirical and theoretical contributions. Conceptualization and operationalization of the DINESCAPE dimensions is presented, and the procedures used in constructing and refining a multiple-item scale to assess DINESCAPE in an upscale restaurant setting are described.

DINESCAPE is a six-factor scale that was developed to measure facility aesthetics, ambience, lighting, service product, layout, and social factors. Evidence of the scale's reliability, validity, and factor structure is presented, along with potential applications of the scale.

The second phase of the study attempted to build a conceptual model of how the DINESCAPE factors influenced customers' behavioral intentions through their emotions. The Mehrabian-Russell environmental psychology model was adopted to explore the linkage of the six dimensions of DINESCAPE to customers' emotional states (pleasure and arousal) and the linkage between pleasure and arousal with customers' behavioral intentions. Structural equation modeling was used to test the causal relationships among the hypothesized relationships. Results revealed that facility aesthetics, ambience, and social factors affected the level of customers' pleasure and ambience and social factors influenced the amount of arousal. In addition, pleasure

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CHAPTER I

INTRODUCTION

The influence of the environment on behavior has long been acknowledged by landscapers, architects, interior designers, retailers, and environmental psychologists (Donovan & Rossiter, 1982; Turley & Milliman, 2000). Theoretical and empirical data from environmental psychology research suggests that customer reactions to the physical environment (also known as ‘atmospherics’ or ‘SERVICESCAPE’) may be more emotional than cognitive, particularly when hedonic consumption is involved. While consumption of many types of service is driven primarily by utilitarian (functional) purposes, such as fast food drive-through services, consumption of leisure services (e.g., dining at an upscale restaurant) is also driven by hedonic (emotional) motives. Hedonic consumption is more than just perceived quality of the service being offered (e.g., whether a meal was delivered quickly), influencing whether consumers are satisfied with the service experience. One of the main reasons customers seek out hedonic consumption is to experience pleasure and excitement (Wakefield & Blodgett, 1999). Previous research indicates that the degree of pleasure (e.g., unhappy-happy) and arousal (e.g., excited-calm) that customers experience during hedonic consumption may be a major determinant of their satisfaction and subsequent behavior such as repatronage and positive word-of-mouth (Mano & Oliver, 1993; Russell & Pratt, 1980). The atmosphere or the physical environment is important because it can either enhance or suppress these emotions (Wakefield & Blodgett, 1999).

The physical environment is an important determinant of customer satisfaction and behavior when the service is consumed primarily for hedonic reasons and customers spend moderate to long periods in the physical environment (Wakefield & Blodgett, 1996). For instance, in the case of upscale restaurants, customers may spend two hours or more, and they sense the physical surroundings consciously and unconsciously before, during, and after the meal. While the food and the service must be of acceptable quality, pleasing physical surroundings (e.g., lighting, décor, layout, employee appearance) may determine to a large extent the degree of overall satisfaction and subsequent behavior.

The National Restaurant Association (NRA) and CREST (Consumer Reports on Eating Share Trends), a national marketing research company, both identified the typology of independent restaurants in four segments: quick service, midscale, casual dining, and upscale. The upscale segment provides customers with a full menu, full table service, good food made with fresh ingredients, and personalized service (Goldman, 1993; Gordon & Brezinski, 1999; Muller & Woods, 1994; Siguaw, Mattila, & Austin, 1999). The average check for the upscale restaurant segment in 2004 was computed based on the following information: (1) the average check for upscale restaurant in 1992 (\$9.72) (Goldman, 1993) and (2) inflation rate from 1993 to 2004 (InflationData, 2005). The calculation was as follows:

(1) Average of Inflation Rate from 1993 to 2004 = 2.51%

(2) Average check of an upscale restaurant segment in 2004 = $(9.72) * (1 + .025)^{12} = \13.09

Thus, for the purposes of this study, \$13.09 is the average check for an upscale restaurant.

Since menu price varies from location to location, the average check should not be the only criterion in defining an upscale restaurant. Other important characteristics (choice of menu items, food quality, level of service, and ambiance) should also be incorporated. For the purpose

of this study, upscale restaurants were defined as those in which average per-person check was more than \$13.09 and offered a full menu, full table service, food made from the scratch, and personalized service.

Statement of Problems

Bitner (1992, p.57) claimed, “Managers continually plan, build, change, and control an organization’s physical surroundings, but frequently the impact of a physical design or design change on ultimate consumer satisfaction is not fully understood.” Despite the importance of the physical environment, its elements have not been empirically examined to any great extent. This concept has gained attention in areas such as environmental psychology, retailing, marketing, organizational behavior, and consumer research texts. Moreover, the empirical research conducted has primarily focused on individual elements (Areni & Kim, 1993; Mattila & Wirtz, 2001; Milliman, 1986). A concrete conceptual framework for the physical environment has been developed based on the foundation of environmental psychology and marketing. However, in hospitality literature there is a surprising lack of empirical or theoretical research addressing the role of the physical environment, particularly in upscale restaurants, despite the indication that tangible physical environment plays an important role in enhancing customer satisfaction and subsequent behavioral intention.

Since dimensions of service quality (SERVQUAL) vary depending upon settings and target populations (Bojanic & Rosen, 1995; Carmen, 1990; Fu & Parks, 2001), researchers have suggested that future research on service quality construct should be industry-specific (Babakus & Boller, 1992; Dabholkar et al., 1996). Moreover, research has shown that customers in various foodservice settings evaluate their needs and preferences in foodservice differently (Lehtinen &

Lehtinen, 1991; O'Hara et al., 1997). By the same token, development of industry-specific measures of man-made physical surroundings in the service industry is needed. The physical environment is an important determinant of customer satisfaction and subsequent behavioral intentions in the upscale restaurant context because the service is consumed primarily for hedonic (emotional) purposes instead of utilitarian (functional) purposes, and customers spend several hours observing and evaluating the physical surroundings. Despite its influence on customer satisfaction and its use in marketing, the physical environment in upscale restaurants has been the subject of little research. In addition, no instrument is available to specifically evaluate the physical environment in the upscale restaurant context. Thus, the goal of this research was to develop and validate an instrument that measures the physical environment provided in upscale restaurants.

Research on physical environment typically has studied the effect of one or several particular elements (e.g., lighting, music) of the physical environment on the customer's purchasing behavior. Little detailed investigation has been conducted on how the physical environment affects customer behavior within hospitality settings, specifically in upscale restaurants. Thus, the combined effect of the elements that make up the physical environment of upscale restaurants needs to be empirically tested to create an overall conceptual model. If the physical environment can indeed influence customer behavior within the restaurant, then a framework should be developed to study such effects. Although several researchers have attempted to explore various aspects of environmental and behavioral relationships, no previous studies have applied an overall environmental psychology framework to the upscale restaurant context.

Purposes and Objectives

This study aimed to fill these gaps by establishing reliable, valid, generalizable, and useful measures of the physical environment in the restaurant setting, especially in the upscale restaurant context, for both restaurateurs and researchers. DINESCAPE was the term coined in this study and has a similarity to the popular term “SERVICESCAPE” in describing characteristics of the physical environment, but its emphasis on physical surroundings is restricted to inside dining areas. DINESCAPE is primarily differentiated from SERVICESCAPE by the development of a scale to measure the physical environment in the dining area of a restaurant, especially an upscale restaurant. For this study, the DINESCAPE was defined as the man-made physical and human surroundings, not the natural environment in the dining area of upscale restaurants. This study did not focus on external environment (e.g., parking space, building design) and some internal environmental variables (e.g., restroom and waiting room) because the intent was to provide a more generalizable and parsimonious instrument for both practitioners and researchers.

The purposes of this study were to develop a DINESCAPE scale for the upscale restaurant context and to build a conceptual framework of how the DINESCAPE might influence customers’ emotional states and, in turn, how those emotions affect behavioral intentions. The first part of this study developed a multiple-item scale to measure the overall conceptual framework of DINESCAPE in the upscale restaurant setting. The second phase of the study investigated the causal relationships between DINESCAPE, emotions (e.g., pleasure and arousal) and behavioral intentions (e.g., repatronage, positive word-of-mouth, likelihood of staying longer than anticipated, and likelihood of spending more than anticipated) using the Mehrabian-Russell environmental psychology model.

The specific objectives of this study were (1) to establish a reliable, valid, and efficient measure of the DINESCAPE dimensions in the upscale restaurant context; (2) to adapt the Mehrabian-Russell model to the upscale restaurant context and test predictions from the model; (3) to investigate the effect of the DINESCAPE dimensions on customer emotional states; and (4) to examine the impact of customer emotions on their behavioral intentions.

Significance of This Study

This study is important both theoretically and practically. First, although theory related to the service environment has been well developed, little customer behavior research has been performed to test some of the basic relationships between the physical environment and the Mehrabian-Russell (1974) model. Second, little consumer research has been conducted in the upscale restaurant area of the hospitality industry. Results of this study may help restaurateurs determine how customers perceive the quality of the physical environment in their upscale restaurants. Findings of this study may provide insights into the various elements of the physical environment so that upscale restaurateurs might understand more fully how to enhance the perceived quality of their facilities. An understanding of the effect of changes in physical surroundings on customers' behavior might thus guide management's actions when making design or renovation decisions.

Upscale restaurateurs who devote resources primarily to maintaining and improving intangible service quality while allowing the tangible physical environment to deteriorate may lose customers without recognizing the cause. Thus, managers should accurately monitor customer perceptions of the physical environment, which may suggest maintenance, renovation, or relocation needs. In addition, upscale restaurateurs must consider what customers are seeking

through the dining experience. The physical environment can be a major tool for communicating these values. Managers must next identify the major variables of the physical environment that are available to generate the desired customer awareness and reaction. Sight, sound, scent, and texture can each contribute to attaining the desired total effect. Management needs to be sure that details of the physical environment have been implemented in a way that is effective, and superior to the competition. Finally, as other marketing tools (e.g., food quality, price) become neutralized in the competitive battle, especially in the restaurant industry, the physical environment may play a growing role by providing distinctive advantages.

Conceptual Model & Hypotheses

The underlying theoretical framework for the conceptual model of the physical environment originated with the Mehrabian-Russell (1974) model, which posited that emotional states mediated the relationship between the physical environment and an individual's response to that environment (see Figure 1). This framework has gained consistent empirical support in environmental psychology and marketing literature (Baker & Cameron, 1996; Baker, Levy, & Grewal, 1992; Donovan & Rossiter, 1982; Russell & Pratt, 1980).

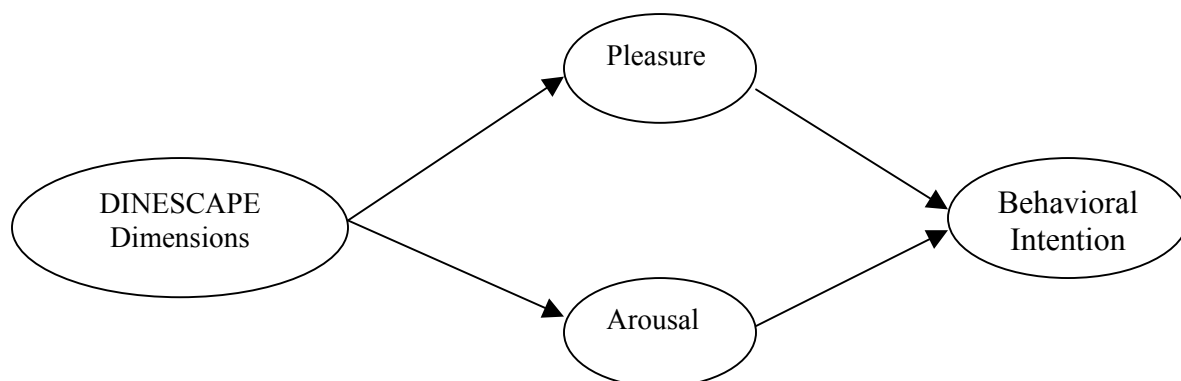


Figure 1. Proposed Model of the Relationships between DINESCAPE, Emotional States, and Behavioral Intention

To achieve the objectives of the study, the following tentative hypotheses were tested:

H1: Each DINESCAPE dimension will have a positive effect on pleasure.

H2: Each DINESCAPE dimension will have a positive effect on arousal.

H3: Pleasure will have a positive effect on behavioral intention.

H4: Arousal will have a positive effect on behavioral intention.

Definition of Terms

Arousal: The degree to which a person feels excited, stimulated, alert, or active in the situation (Mehrabian & Russell, 1974).

Atmospherics: The effort to design buying environments to produce specific emotional effects in the buyer that enhance his/her purchase probability (Kotler, 1973, p. 50).

Behavioral Intentions: Although the definition of behavioral intentions varies depending on research context, this study considers behavioral intentions as a customer's willingness to provide positive word of mouth, to visit the restaurant again in the future, to stay longer than anticipated, and to spend more than anticipated (Zeithaml et al., 1996).

Hedonic consumption: Those facets of consumer behavior that relate to the multi-sensory and emotive aspects of one's experience (Hirschman & Holbrook, 1982). Multi-sensory means the receipt of experience through multiple senses including tastes, sound, scents, tactile impressions and images.

Pleasure: The degree to which the person feels good, joyful, happy, or satisfied in the situation (Mehrabian & Russell, 1974).

Service encounter: "A period of time during which a consumer directly interacts with a service" (Shostack, 1985, p. 243).

Servicescape: “Built environment” or, more specifically, the “the man-made, physical surroundings as opposed to natural or social environment” (Bitner, 1992. p. 58).

Utilitarian: Useful and practical rather than being used for decoration or pleasure. For instance, utilitarian aspects of the shopping experience have often been characterized as task-related and rational (Batra & Ahtola, 1991) and related closely to whether or not a product acquisition “mission” was accomplished (Babin, Darden, & Grffin, 1994). While utilitarian evaluation is mostly functional and cognitive in nature, hedonic evaluation is more affective than cognitive (Arnold & Reynolds, 2003).

Delimitation and Limitation of the Study

A DINESCAPE scale was developed to assess the physical environment only within upscale restaurants. Thus, results of the study should not be generalized beyond the upscale restaurant setting. To evaluate the validity of our findings, the study should be replicated and conducted in other restaurant settings, such as casual dining restaurants. In addition, data were collected from three upscale restaurants in two Midwestern states. Thus, results of the study may not generalize to other upscale restaurants located in other geographic areas. Further studies should be conducted to determine whether our findings are restricted to certain geographic areas or types of restaurants. In addition, DINESCAPE items only captured the man-made physical surroundings inside the dining area of the upscale restaurant. The scale does not consider the external environment (e.g., ample parking) or some other aspects of the internal environment (e.g., restrooms).

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CHAPTER II

REVIEW OF LITERATURE

This chapter provides a brief review of environmental psychology literature with a focus on physical environment and the Mehrabian-Russell (1974) model. The rationale of the physical environment also an important determinant in the upscale restaurant context is then discussed. Finally, a more detailed summary of literature on the physical environment followed by emotions and behavioral intentions is presented.

Theoretical Background

The influence of the physical environment (also referred to as ‘atmospherics’ or ‘SERVICESCAPE’) on emotions and behavior has gained attention from architects and environmental psychologists (Donovan & Rossiter, 1982; Gilboa & Rafaeli, 2003; Mehrabian & Russell, 1974; Porteous, 1997). During the past several decades, physical environment has become an important area in the study of the retail environment, with researchers beginning to study the influence of the store environment on consumer behavior (Turley & Milliman, 2000). However, research on the physical environment still lacks a coherent framework for analyzing such environments (Baker et al., 1994) and has yet to incorporate into a framework the extensive developments in the analyses of physical environments (Bitner, 1992).

The Mehrabian-Russell (1974) model has received consistent empirical support in environmental psychology and marketing literature (Baker & Cameron, 1996; Baker, Levy, & Grewal, 1992; Donovan & Rossiter, 1982; Russell & Pratt, 1980). The model can be used to explore the relationships between the physical environment, emotions, and behavioral intentions.

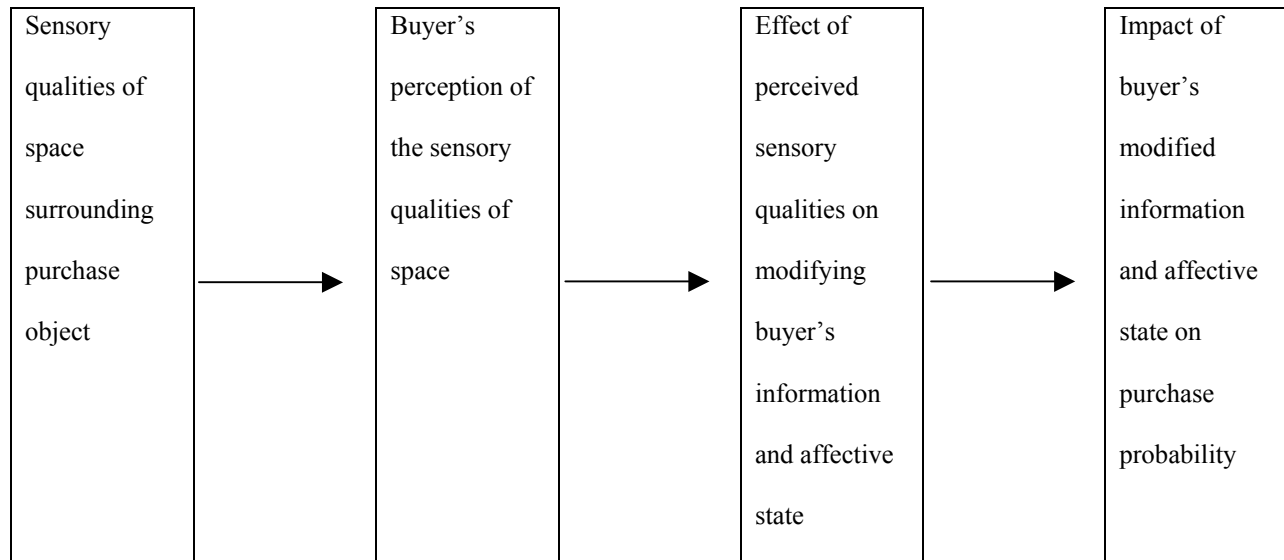
Physical Environment

Research has shown that consumers may respond to more than just the tangible product or service rendered when making a purchase decision (Kotler, 1973; Milliman, 1986). The tangible product may be only a small part of the total consumption experience. Instead, consumers respond to the total product. The *place* where the product or service is bought or consumed may be one of the most influential factors. The place, and more specifically the *atmosphere* of the place, can be more influential than the product itself (e.g., meal) in purchase decision-making. In some situations, atmosphere can be the primary influence (Kotler, 1973).

“Atmosphere is the effort to design buying environments to produce specific emotional effects in the consumer that enhance his/her purchase probability” (Kotler, 1973, p. 50). Technically, atmosphere refers to “the air surrounding a sphere.” It is also used more colloquially to represent the quality of the surroundings. For example, a restaurant described as having *atmosphere* has physical surroundings that evoke pleasant feelings. It is more appropriate to use a modifier, such as the restaurant has a “good” atmosphere or “busy” atmosphere. Atmosphere is always described as a quality of the surrounding space (Kotler, 1973). Atmosphere (also called SERVICESCAPE) can be generated through the senses. The main sensory channels for atmosphere include sight (e.g., color, brightness, size, shapes), sound (e.g., volume, pitch), scent, and touch (e.g., softness, smoothness, temperature) (Kotler, 1973). The fifth sense, taste, does not apply directly to atmosphere.

Kotler (1973) discussed how atmosphere (hereafter physical environment) could influence behavior. Figure 2 presents the mechanism by which the physical environment of a place influences purchase behavior based on the causal chain. Figure 2 shows how sensory

qualities of space (physical surroundings) have an effect on consumer information and affective state and subsequent consumer behavior (e.g., purchase probability).



Source: Adapted from Kotler (1973)

Figure 2. The Casual Chain Connecting Atmosphere and Purchase Probability

The concept of the physical environment has been acknowledged by a number of industries and companies. For instance, “People no longer buy shoes to keep their feet warm and dry. They buy them because of the way the shoes make them feel –masculine, feminine, rugged, different, sophisticated, young, glamorous, “in.” Buying shoes has become an emotional experience. Our business is now selling excitement rather than shoes” (Kotler, 1973 p. 55). The use of shoes has been moved from a *utilitarian* (functional) concept to a *pleasure* (emotional) concept. In this case, the physical environment is designed to give the buyer the feeling of being rich, important, and special (Kotler, 1973).

Dimensions of the Physical Environment

Considerable research has been conducted to determine what constitutes the physical environment (Baker, 1987; Baker, Levy, & Grewal; 1992; Berman & Evans, 1995; Bitner, 1992; Brady & Cronin, 2001; Parasuraman, Zeithaml, & Berry, 1988; Raajpoot, 2002; Stevens, Knutson, & Patton, 1995; Turley & Milliman, 2000; Wakefield & Blodgett; 1996, 1999). Table 1 presents a summary of dimensions related to the physical environment from the literature. The table shows that previous studies have revealed various aspects of physical environment. However, relatively slow progress has been made on developing a measurement scale for the physical environment. Only few scales (e.g., SERVQUAL and DINESERV) incorporate tangible physical environment as a part of the overall service quality measurement scheme. Even though Raajpoot (2002) developed a scale called TANGSERV, its findings might be not acceptable or reliable due to unclear methodology.

Baker (1987) classified three fundamental factors that affect the tangible portion of service quality dimensions: design, social, and ambient factors. Ambience includes background variables such as lighting, aroma, and temperature. These variables are not part of the primary service but are important because their absence may make customers feel concerned or uncomfortable. Design dimension represents the components of the environment that tend to be visual and more tangible in nature. Design dimension includes color, furnishings, and spatial layout. The design elements contain both the aesthetic aspects (e.g., beauty, décor) and the functional aspects (e.g., layout, ease of transaction, and waiting room design) that facilitate high quality service. The social factors relate to an organization's concern for the people in the environment, including customers and employees. Baker, Grewal, and Parasuraman (1994) also

Table 1

Literature Review of Dimensions Related to the Physical Environment

Authors		Dimensions
Baker (1987)	Atmospherics	Ambient factors Design factors (aesthetics & functional) Social factors
Parasuraman, Zeithaml, & Berry (1988)	SERVQUAL	Reliability Responsiveness Empathy Assurance Tangibility
Bitner (1992)	SERVICESCPE	Ambient conditions Spatial layout and functionality Sign, symbol and artifacts
Baker, Grewal, & Parasuraman (1994)	Store atmospherics	Ambient factors Design factors Social factors
Berman & Evans (1995)	Atmospherics	External variables General interior variables Layout and design variables Point of purchase & decoration variables
Stevens, Knutson, & Patton (1995)	DINESERV	Reliability Responsiveness Empathy Assurance Tangibles
Wakefield & Blodgett (1996)	SERVICESCPE	Layout accessibility Facility aesthetics Seating comfort Electronic equipment/displays Facility cleanliness
Wakefield & Blodgett (1999)	Tangible service factors	Building design & décor Equipment Ambience
Turley & Milliman (2000)	Atmospherics	External variables General interior variables Layout and design variables Point of purchase and decoration variables Human variables
Brady & Cronin (2001)	Service quality	Interaction quality Outcome quality Quality of physical environments
Raajpoot (2002)	TANGSERV	Ambient factors Design factors Product/service factors

classified store atmospherics into three categories: store functional/aesthetic design factors, store social factors, and store ambient factors.

Parasuraman et al. (1988) developed SERVQUAL to measure customer perceptions of service quality in service and retailing organizations. SERVQUAL captures five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. This scale is similar to DINESERV (Stevens, Knutson, & Patton, 1995). Like DINESERV, SERVQUAL includes tangibility as one of the five dimensions that describe overall service quality perceptions. This tangible dimension comprises four items in SERVQUAL, as opposed to 10 items in DINESERV, and is related to physical facilities, equipment, and personnel. The conceptualization and dimensionality of SERVQUAL generally has been accepted. However, Brady and Cronin (2001) argued in favor of three dimensions (i.e., interaction quality, outcome quality, and quality of physical environment) in presenting an alternative conceptualization of service quality instead of the five dimensions presented by SERVQUAL. Tangibility is the only common dimension of the two major conceptualizations of service quality by Parasuraman et al. (1988) and Brady and Cronin (2001). The objectives of SERVQUAL and DINESERV were to develop a scale for assessing the overall construct of service quality, of which tangibility was only one dimension. If one wished to develop a scale to capture various aspects of tangibility content, then further examination of the domain of tangibility only is necessary.

Bitner (1992) discussed the effect of tangible physical environment on overall development of service quality image. She coined the term “SERVICESCAPE” to describe the combined effect of all physical factors that can be controlled by service organizations to enhance customer and employee behaviors. SERVICESCAPE refers to the “built environment” or, more specifically, the “man-made, physical surroundings as opposed to the natural or social

environment” (Bitner, 1992, p. 58). She identified three primary dimensions of the SERVICESCAPE that influence consumers’ holistic perceptions of the SERVICESCAPE (i.e., perceived quality) and their subsequent internal (i.e., satisfaction with the SERVICESCAPE) and external responses (e.g., approach/avoidance, staying, repatronage). The three dimensions are (1) ambient conditions (elements related to aesthetic appeal); (2) spatial layout and functionality; and (3) signs, symbols, and artifacts. Ambient conditions include temperature, noise, music, odors, and lighting. Aesthetic appeal refers to physical elements such as the surrounding external environment, the architectural design, facility upkeep and cleanliness, and other physical elements that customers can see and use to evaluate the aesthetic quality of the SERVICESCAPE. Aesthetic factors are important because they influence ambience. Spatial layout and functionality refer to the ways in which seats, aisles, hallways and walkways, foodservice lines, restrooms, and the entrance and exits are designed and arranged in service settings. Layout and functionality factors are important in many leisure services (e.g., theaters, concerts, upscale restaurants) because they can affect the comfort of the customer. Signs, symbols, and artifacts include signage and décor used to communicate and enhance a certain image or mood, or to direct customers to desired destinations. These three dimensions are similar to those proposed earlier by Baker (1987). However, Bitner’s signs, symbols and artifacts dimension focuses more on explicit and implicit signals than Baker’s greater focus on people in the environment. In addition, Bitner (1992) argued that, based on their perceptions of the SERVICESCAPE, consumers will have certain thoughts and feelings (emotional and physical) that ultimately lead them to either approach or avoidance behavior.

Berman and Evans (1995) divided tangible quality clues into four categories: external, general interior, layout, and point of purchase dimensions. External variables include exterior

signs, building size and color, location, and parking. General interior variables include music, scent, lighting, temperature, and color scheme. The layout and design variables pertain to workstation placement, waiting facilities, and traffic flow. Finally, the point of purchase and decoration variables relate to displays, pictures, artwork, and product displays at point of purchase. The classification used in this study seems very practical in assisting marketing professionals to easily understand the classification. Based on this classification, managers can easily identify and adapt different atmospheric variables to improve service performance. However, the authors failed to mention the social aspect of tangible quality.

Based on Bitner's (1992) SERVICESCAPE framework, Wakefield and Blodgett (1996) examined the effects of layout accessibility, facility aesthetics, electronic equipment, seating comfort, and cleanliness on the perceived quality of the SERVICESCAPE. The findings revealed that perceived quality had a positive effect on customer satisfaction with the SERVICESCAPE, which in turn affected how long customers desired to stay in the leisure service setting and whether they intended to repatronize the service provider. However, this study did not focus on ambient conditions because they could be more difficult to control, particularly in some leisure field settings, such as amusement parks and other outdoor settings. Ambient conditions can be a very important factor in the upscale restaurant context and can also be controlled to a large extent by management.

Wakefield and Blodgett (1999) investigated whether the physical environment of service delivery settings influenced customer evaluations of service and subsequent behavioral intentions. Their research integrated environmental psychology into SERVQUAL to enable a fuller assessment of the role of the tangible aspects of service delivery in leisure service settings. The results showed that the tangible physical environment played an important role in creating

excitement in leisure settings. Excitement, in turn, played a significant role in determining customer repatronage intentions and willingness to recommend. In the Wakefield and Blodgett study, tangibility consisted of three factors: design, equipment, and ambient elements. They did not consider the social factors.

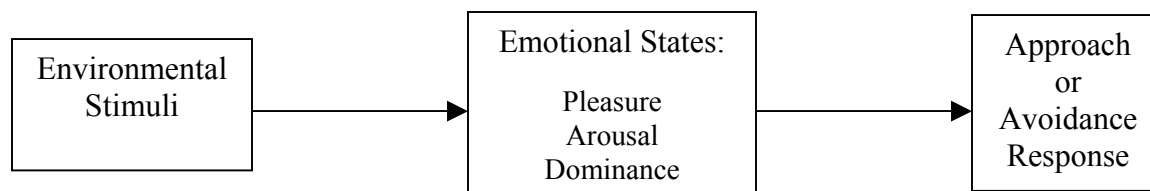
Turley and Miliman (2000) presented a review of the literature that attempted to further the theoretical and empirical understanding of atmospheric influences on multiple aspects of consumer behavior. They identified 58 variables in 5 categories: external; general interior; layout and design; point-of-purchase and decoration; and human. However, their classification lacks a theoretical frame (Gilboa & Rafaeli, 2003). Raajpoot (2002) developed a scale called TANGSERV for measuring tangible quality in foodservice industry. TANGSERV comprises ambient factors (e.g., music, temperature), design factors (e.g., location, seating arrangement), and product/service factors (e.g., food presentation, food variety). However, unclear methodology clouds the results of Raajpoot's study.

Mehrabian-Russell Model

Environmental psychologists (Mehrabian & Russell, 1974; Russell & Pratt, 1980) have proposed a valuable theoretical model for studying the effects of environment on human behavior. Using a Stimulus-Organism-Response (S-O-R) paradigm, they describe the relationship between environmental stimuli, intervening variables, and consumer behaviors. Stimulus, intervening, and response variables should be conceptually clear, comprehensive yet parsimonious, and operationally measurable (Donovan & Rossiter, 1982).

Mehrabian and Russell (1974) presented a theoretical model for studying the impact of environment on human behavior. Figure 3 presents the Mehrabian-Russell Model. The

application of this model facilitates predicting and understanding the effects of environmental changes on human behavior. The model has three parts: a stimulus taxonomy, a set of intervening variables, and a set of responses. The environment creates an emotional response in individuals, which in turn elicits either approach or avoidance behavior. The model claims that three basic emotional states mediate approach-avoidance behaviors in environmental situations. The three emotional responses are pleasure, arousal, and dominance. The model posits that any environment will generate in an individual an emotional state that can be characterized in terms of the three emotional states, which are factorially orthogonal. The pleasure-displeasure dimension refers to the extent to which a person feels happy, pleased, satisfied, or content. High arousal-low arousal distinguishes between feelings of high arousal (e.g., stimulated, excited, and aroused) and low arousal (e.g., relaxed, bored, or sleepy). The dominance dimension relates to the degree to which an individual feels dominance (e.g., influential, in control, important, and autonomous) or submissiveness (e.g., submissive, passive, and lacking control). Approach behaviors are seen as positive responses to an environment, such as a desire to stay in a particular facility and explore. Avoidance behaviors include not wanting to stay in a store to spend time looking or exploring.



Source: Adopted from Mehrabian and Russell (1974)

Figure 3. Mehrabian-Russell Model

Russell and Pratt (1980) proposed a modification of the Mehrabian-Russell (1974) environmental psychology model that deleted the dominance factor. Although evidence for the suitability of the pleasure and arousal dimensions appeared convincing over a broad spectrum of situations, evidence for the dominance dimension was more tenuous. The two orthogonal dimensions of pleasure and arousal were adequate to represent people's emotional or affective responses in any environmental situation. Moreover, Russell, in his later work, indicated that dominance required a cognitive interpretation by the person and was therefore not purely applicable in situations calling for affective responses (Donovan & Rossiter, 1982; Russell & Barrett, 1999).

Donovan and Rossiter (1982) tested the Mehrabian-Russell (1974) theory by studying approach-avoidance behavior in retail settings. The findings revealed that store SERVICESCAPE was represented psychologically by consumers in terms of two major emotional states—pleasure and arousal—and that these two emotional states were significant mediators between atmosphere and shopping behaviors within the store. Simple *affect*, or store-induced pleasure, was a very powerful determinant of approach-avoidance behaviors within the store. The influence of emotional affect might be often overlooked in retail store selection studies where cognitive influences (e.g., price, location, variety, and quality of product) are mainly emphasized. The study indicated that the emotional responses evoked by the environment within the store were primary determinants of the extent to which the individual spent beyond what he/she originally planned. Cognitive elements might largely account for store selection and for most of the planned purchases within the store. The study also suggested that *arousal*, or store-induced feelings of excitement, could increase time spent in the store as well as willingness

to interact with sales personnel. In-store stimuli that induced arousal were fairly easy to identify and included bright lighting and upbeat music.

The Importance of the Physical Environment in the Service Industry

Because delivering high quality service is crucial for success in the service industry, understanding the nature of service quality has been important (Parasuraman, Zeithaml, & Berry, 1985). Service is distinguished from goods because of its characteristics, such as intangibility, inseparability of production and consumption, heterogeneity, and perishability (Lovelock, 1991; Parasuraman et al., 1985). However, service could be better understood on a continuum ranging from tangible to intangible, since it can feature both aspects (Rushton & Carson, 1989). For instance, foodservice encompasses both tangible (food and physical environment) and intangible (employee-customer interaction) components. A proper combination of the tangible and intangible aspects should result in a customer's perception of high service quality.

The importance of intangible and tangible components in the service industry has been well documented in literature related to service. For instance, SERVQUAL has been widely accepted and used in many areas such as retailing, marketing, and leisure to assess customer perceptions of service quality in service organizations. The effect of the physical environment on consumer behavior related to services such as hotels (Countryman & Jang, 2004; Perran, 1995; Saleh & Ryan, 1991), restaurants (Millman, 1986; Stevens et al., 1995; Turley & Bolton, 1999), healthcare (Hutton et al., 1995; McAlexander & Kaldenberg, 1994), and leisure (Chang, 2000; Wakefield & Blodgett, 1996, 1999; Wakefield, 1994) also has been well documented in the service literature.

The ability of the physical environment to influence behavior and to create an image is particularly pertinent in the hospitality industry (hotels and restaurants) (Booms & Bitner, 1982). Because the service is generally produced and consumed simultaneously, the consumer is “in the factory,” experiencing total service within the property’s physical facility (Bitner, 1992). Dube and Renaghan (2000) examined how hotels created visible value, as determined by their customers, in the lodging industry. The results showed that the physical appearance of the hotel exterior and public spaces ranked third and the guest-room design ranked fourth, respectively, as driving attributes in the hotel-purchase decision, following location, brand name, and reputation. The study also revealed that close to 40% of customers considered the overall quality of a property’s physical attributes and the aesthetic quality of the exteriors and public spaces as sources of customer value underlying purchase decisions. Interestingly, the types of hotel attributes that created customer value during the hotel experience were not the same as those that drove the purchase. For instance, instead of location and brand name, which were attributes that drove value at purchase, the top two visible sources of value during the hotel experience pertained to the physical quality attributes of the property: guest-room design and physical property (exterior and public spaces).

The restaurant is a place where we experience excitement, pleasure and a sense of personal well-being. Restaurants offer both physical products (e.g., food) and culinary services (e.g., cooking, serving, and cleaning up). Food quality and price traditionally have been the decisive factors in restaurant choice. In recent years, however, an increasing number of “atmosphere” restaurants have opened (Kotler, 1973). Some restaurateurs argue that atmosphere can be the major determinant in making a successful restaurant. Customers may seek a dining experience totally different from home, and the atmosphere may do more to attract them than the

food itself. The importance of the physical environment in restaurant settings has been addressed by many researchers (Shostack, 1977, 1987; Ward, Bitner, & Barnes, 1992; Zeithaml, Parasuraman, & Berry, 1985). Services deliver benefits that are often intangible and difficult to evaluate prior to purchase and consumption. A restaurant's service and the quality of its food cannot be judged until those elements have been experienced. Thus, consumers seek tangible cues (e.g., lighting, table cloths) to predict what the restaurant will provide. In addition, environmental cues may be especially important in categorizing restaurants, such as quick service restaurants, fast-casual restaurants, family restaurants, casual restaurants, and upscale restaurants.

As the restaurant industry has grown and more consumers increasingly expect a more entertaining atmosphere to enhance the dining experience, restaurateurs are making the effort to meet that desire with innovative and exciting designs. Innovative restaurant design makes dining out more exciting for customers. According to the National Restaurant Association's 2001 Restaurant Industry Forecast, restaurant operators are investing more than ever before in restaurant design and décor as they strive to create a setting that will set them apart from the competition (Hamaker, 2000). Aesthetics have become an integral part of dining out, and more operators and marketers place growing importance on the interior design and decor. Sparks, Bowen, and Klag (2003) explored the influence of restaurant characteristics on customers' choices of restaurant. Display of the menu was considered the most important determinant by 58.8% of tourists when selecting restaurants while on holiday. Attractive décor or atmosphere was considered very influential by 55.4%. Ward, Bitner, and Barnes (1992) indicated that much effort and expense has been devoted to store design in fast food restaurant settings. Auty (1992) identified three customer segments: students, "well-to-do" middle-aged people, and older people.

Image and atmosphere were found to be the most critical factors in the final choice between similar restaurants among the three customer segments.

Particular physical environmental variables have been discussed in the literature. For instance, color can enhance or detract from the dining experience and can cause customers to linger over dinner. Color can be one of the most significant aspects of design. A manager of a P.F.Chang's restaurant was quoted as saying "Colors can make or break a restaurant." P.F.Chang's uses color to create a "warm and comfortable feeling." Research has shown that warm earth tones are more appealing in dining establishments, enhancing the physical environment, and making customers feel more comfortable and attractive. Cool tones such as blues, greens and steely earth tones, when used in great quantities, can make a space feel cold and uninviting (Hamaker, 2000). In addition, music tempo affects pace of shopping, length of stay, and amount of money spent in restaurant settings (Milliman, 1986). Blackmon (2001) also discussed the power of music to create an excitement level and ambiance that helped patrons enjoy food and spirits, while encouraging repeat business.

The importance of the physical environment has been discussed in the scope of the overall service industry, the hospitality industry, and the restaurant industry. In the next section, the importance of the physical environment in the upscale restaurant context is discussed.

The Importance of the Physical Environment in the Upscale Restaurant Segment

The level of importance of the physical environment can vary under the combined effects of the following characteristics: time spent in the facility, consumption purpose, and different sellers and societies. The extent of the influence of physical environments on customer affective responses may be especially pronounced if the service is consumed primarily for hedonic

motives rather than utilitarian purposes, as is the case in an upscale restaurant. Hedonic consumption looks for pleasure or emotional fulfillment, as opposed to functional usefulness, from the service experience (Babin, Darden, & Griffin, 1994). Because of the hedonic or emotional context, customers of the upscale restaurant are likely to be more sensitive to the aesthetic qualities of their surroundings (Wakefield & Blodgett, 1994).

The amount of time spent in a facility influences the extent to which the physical environment influences customer attitudes or satisfaction with service. The physical environment may have little impact on service encounters of relatively short duration as in fast food restaurants (Wakefield & Blodgett, 1996). Here, service encounter refers to “a period of time during which a consumer directly interacts with a service” (Shostack, 1985, p. 243). This definition encompasses all aspects of the service with which the consumer may interact including personnel, physical facilities, and other tangible elements during a given time. In service encounters of relatively short duration, customers typically spend only a short time inside the restaurant (Bitner, 1990). In these situations, customers perceive service quality based mainly on intangible aspects (e.g., reliability, assurance, responsiveness, empathy) and less on the tangible aspects (physical surroundings) (Wakefield & Blodgett, 1996). For instance, customers of fast-food restaurants are likely to put more emphasis on how long it takes to have the meal served (e.g., reliability and responsiveness) and how courteous the personnel are (e.g., assurance) than on the aesthetics of the restaurant. However, service in the upscale restaurants generally requires customers to spend several hours in the physical surroundings of the service provider (Wakefield & Blodgett, 1996). In such situations, where the customer spends an extended period of time observing and experiencing the physical environment, the importance of the physical environment increases with time. For instance, since customers often wait a long time for their

food after being seated in an upscale restaurant, it is important that they do not feel bored. The physical environment might be used to enhance stimulation and prevent boredom.

Figure 4 presents various types of service settings combining the effects of longer stays in the service environment with consumers' hedonic motives (e.g., as when customer spends all week at a vacation resort). Typology clearly shows that the physical environment is more critical in those settings in which consumers patronize service providers more for emotional motives than for functional purposes, and for which they spend more time in the service facility than for shorter stays (Wakefield & Blodgett, 1999).

Time Spent in Facility	Consumption Purpose	
	Utilitarian	Hedonic
	Importance of the Physical Environment Low —————> High	
Low (minutes)	Fast food restaurants	Miniature golf
Moderate (hours)	Health clinics	Upscale restaurants
Extended (days)	Hospitals	Resorts

Source: Wakefield & Blodgett (1999)

Figure 4. Typology of Service Environments

Wakefield and Blodgett (1996) argued that the physical environment is an important determinant of customers' behavioral intentions when the service is primarily for hedonic purposes and customers spend moderate to long periods in the physical surroundings. In the context of upscale restaurants, customers may spend several hours or more. The primary foodservice offering must be of acceptable quality, but pleasing physical environments (e.g.,

lighting, décor, layout, employee appearance) may determine, to a large extent, the degree of overall satisfaction and repatronage.

Finally, the importance of SERVICESCAPE varies among service providers or societies. Kotler (1973) proposed that SERVICESCAPE can be an important marketing tool in situations (1) where the product is purchased or consumed and where the seller has design options; (2) where product and/or price differences within the same industry are small; and (3) when product entries are aimed at distinct social classes or lifestyle buyer groups. Most of these are true in upscale restaurants. The first situation is true for upscale restaurants because the meal is purchased and consumed simultaneously and restaurateurs have considerable control over the physical surroundings. In this case, the physical environment is part of the total “product.” Second, product or price differences might be minimal within the upscale restaurant industry. Thus, restaurateurs should have some uniqueness to differentiate themselves from competitors. Customers need further discriminant criteria, and the physical environment can be an important one. Finally, upscale restaurants should be designed to attract customers in the intended market segment (e.g., upper-class patrons). In short, the physical environment can be a crucial part of the total dining experience.

Variables Related to the Physical Environment

Facility Aesthetics

Facility aesthetics refers to a function of architectural design, along with interior design and décor, all of which contribute to the attractiveness of the physical environment (Wakefield & Blodgett, 1994). From an external viewpoint, as customers approach or drive by an upscale restaurant, they are likely to evaluate the attractiveness of the exterior of the restaurant. Once

inside the dining area, customers often spend hours observing (consciously and subconsciously) the interior of the dining area. These evaluations are likely to affect their attitudes towards the restaurant (Baker et al., 1988). In addition to the appeal of the dining area's architectural design, customers may be influenced by the color schemes of the dining area's walls and floor coverings. Other aspects of interior design, such as pictures/paintings, plants/flowers, ceiling decorations, and/or wall decorations may also serve to enhance the perceived quality of the physical environment.

Color

People see and interact with color within both natural and built environments. About 80% of the information that people assimilate through the senses is visual (Khouw, 2004). However, color does more than just give people objective information. It actually influences how people feel. The presence of color becomes even more important in interior environments in generating positive feelings.

Color is one of the obvious visual cues in the physical surroundings. According to Eiseman (1998), color is a strong visual component in a physical setting, particularly in an interior setting. Research has shown that different colors stimulate different personal moods and emotions. Many researchers assume that environmental cues within the physical environment directly stimulate emotional response. Hamid and Newport (1989) examined the effect of color on physical strength and mood in preschool children. The results found that children showed greater strength and a more positive mood in a pink room than in a blue room. Bellizzi and Hite (1992) found that consumers react more favorably to a blue environment in retail settings, and that warm-colored backgrounds seem to elicit attention and attract people to approach a store. Findings showed that "blue stores" had higher simulated purchase rates. Colors also influenced

emotional pleasure more strongly than arousal or dominance. Boyatzis and Varghese (1994) found that children often related positive emotions with light colors and negative emotions with dark colors.

Furnishings

Furnishings in a service setting encompass the objects and materials that are used within the environment (e.g., furniture). The impact of furnishings can be manifested through the affective response of comfort. For instance, seating comfort has been found to affect pleasure in football and baseball stadium facilities (Wakefield, Blodgett, & Sloan, 1996). Consumers who are comfortable should experience more positive affective states (Baker & Cameron, 1996). Creating dining environments that make customers feel comfortable is a key goal of designers and operators.

Seating comfort is likely to be a particularly salient issue for customers in the upscale restaurant context where customers may sit for a number of hours. Seat comfort can be influenced by the physical seat itself as well as the space between the seats. Some seats may be uncomfortable because of their design (e.g., hard benches without back support) or condition (deteriorating or wet). Seats may be also uncomfortable because of their proximity to other seats. Customers may physically and psychologically uncomfortable (Barker & Pearce, 1990) if they sit too close to the customers next to them. Previous research related to perceived crowding suggested that cramped seating quarters were likely to be perceived as displeasing and of poor quality (Eroglu & Machleit, 1990; Hui & Bateson, 1991). Therefore, comfortable seats with ample space might reduce the feeling of being crowded.

Layout

Spatial layout refers to the way in which objects (e.g., machinery, equipment, and furnishings) are arranged within the environment. Just as the layout in discount stores facilitates the fulfillment of functional needs (Baker et al., 1994), an interesting and effective layout may also facilitate fulfillment of hedonic or pleasure needs (Wakefield & Blodgett, 1994). Spatial layout that makes people feel constricted may have a direct effect on customer quality perceptions, excitement levels, and indirectly on their desire to return. This implies that service or retail facilities that are specifically designed to add some level of excitement or arousal to the service experience such as in an upscale restaurant should provide ample space to facilitate exploration and stimulation within the physical environment (Wakefield & Blodgett, 1994).

Ambience

Ambient elements are intangible background characteristics that tend to affect the nonvisual senses and may have a subconscious effect. These background conditions include temperature, lighting, noise, music, and scent (Baker, 1987).

Music

Music has been known for centuries to have a powerful impact on human responses. For more than 50 years, academicians in diverse disciplines, such as music, psychology, medicine, management, and sociology have studied the effects of music on various aspects of behavior (Bruner, 1990). However, in the past two decades, there has been an explosion of research on the effects of music on consumer perception and behavior (North & Hargreaves, 1998). Particular emphasis has been given to *atmospheric* music designed to create commercial environments that “produce specific emotional effects in the buyer that enhance his purchase intentions” (Kotler,

1973, p. 50). Previous research has shown that atmospheric music can (1) increase sales (Areni & Kim, 1993; Mattila & Wirtz, 2001; Milliman, 1982, 1986; North & Hargreaves, 1998; Yalch & Spangenberg, 1993); (2) influence purchase intentions (Baker et al., 1992; North & Hargreaves, 1998); (3) produce significantly enhanced affective response such as satisfaction and relaxation (Oakes, 2003); (4) increase shopping time and waiting time (Milliman, 1982, 1986; North & Hargreaves, 1998; Yalch & Spangenberg, 1993, 2000); (4) decrease perceived shopping time and waiting time (Chebat et al., 1993; Kellaris & Kent, 1992; Yalch & Spangenberg, 2000); (5) influence dining speed (Roballey et al., 1985; Milliman, 1986); (6) influence customer perceptions of a store (Hui et al., 1997; Mattila & Wirtz, 2001; North & Hargreaves, 1998; Yalch & Spangenberg, 1993); and (7) facilitate customer-staff interaction (Chebat et al., 2000; Dube et al., 1995; Hui et al., 1997).

Milliman (1986) examined the effect of background music on the behavior of restaurant customers. Findings indicated that music tempo variations could significantly affect number of bar purchases, length of stay at table, and estimated gross margin of the restaurant. In addition, music is a more highly controllable physical element than other atmospheric elements. Music may range from soft to loud, slow to fast, vocal or instrumental, light rock to heavy rock, or classical to contemporary urban.

Baker, Levy, and Grewal (1992) argued that music has been shown to affect consumers' responses to retail environments, typically in a positive manner. Hui et al. (1997, p. 90) noted that, "playing music in the (service) environment is like adding a favorable feature to a product, and the outcome is a more positive evaluation of the environment." This argument suggests that the presence of music will result in customers having more favorable evaluations of a store's environment compared with a store environment without music. In addition, the music must

match customers' demographic profiles and the restaurant's image (Areni & Kim, 1993; Grewal et al., 2003; MacInnis & Park, 1991). For instance, classical music is widely used in the context of upscale restaurants (Areni, 2003).

Tansik and Routhieaux (1999) investigated the impact of music on people awaiting the outcomes for surgical patients in a hospital's waiting room, an inherently stressful environment. In self-reports from persons using the waiting room, the use of music was related to decreased stress and increased relaxation in comparison to times when no music was played. These findings support the role of atmospherics or ambience of a service system in customer quality/satisfaction evaluations.

Sweeney and Wyber (2002) conducted a study that extended the Mehrabian-Russell (1974) model to include both emotional states and cognitive processing as mediators of the music approach behaviors. The study found that liking the music had a primary influence on consumer evaluations (pleasure, arousal, service quality, and merchandise quality), while the music characteristics (specifically slow pop or fast classical) had an additional effect on pleasure and service quality. In addition, pleasure, service quality and merchandise quality influenced music-intended behaviors (e.g., desire to browse in and explore the store, spend more than anticipated, recommend the store, buy at the store, and enjoy the store). Arousal also contributed to these behaviors when the store environment was considered pleasant. The overall results reinforced the importance of understanding the effect of music on both consumer internal evaluations as well as intended behaviors.

Lighting

Research indicates that there is the relationship between lighting level preferences and individuals' emotional responses and approach-avoidance behaviors. Baron (1990) showed that

subjects had more positive affect in conditions of low levels of lighting compared to high levels of lighting. The level of comfort was increased at relatively low levels of light, while comfort decreased with high levels of light (Hopkinson, Petherbridge, & Longmore, 1966). In addition, higher levels of illumination are associated with increased physiological arousal (Kumari & Venkatramaiah, 1974).

Gifford (1988) investigated the influence of lighting level and room decor on interpersonal communication, comfort, and arousal. Results showed that general communication was more likely to occur in bright environments, whereas more intimate conversation occurred in softer light. Steffy (1990) suggested that environments in which the lighting is designed to harmonize with furniture and accessories are perceived as more pleasant than environments in which lighting does not harmonize with other elements of the room.

Travelers reported that soft lighting made a motel look somewhat lifeless. Another large motel chain was preferred where the bright lighting of the motel offices seen from the road indicated a bright, busy, and cheerful place. The type of lighting in an environment could directly influence an individual's perception of the definition and quality of the space, influencing his/her awareness of physical, emotional, psychological, and spiritual aspects of the space (Kurtich & Eakin, 1993). Areni and Kim (1994) identified the impact of in-store lighting on various aspects of shopping behavior (e.g., consumer behavior, amount of time spent, and total sales) in a retail store setting. The results revealed that brighter lighting influenced shoppers to examine and handle more products but did not have an impact on sales or time spent in the store.

Aroma

The influence of pleasant scents as a powerful tool in increasing sales has gained much attention in the retail businesses (Bone & Ellen, 1999; Hirsch, 1991, 1995; Lin, 2004; Mattila &

Wirtz, 2001). Retailers know that aroma can have an impact on a consumer's desire to make a purchase. For example, Knasko (1989) found that ambient aroma influenced how long consumers remained at a jewelry counter. Hirsch (1991) showed that pleasant scents could increase a bakery's sales by as much as 300%. Hirsch and Gay (1991) discovered that consumers were more likely to purchase a well-known brand of athletic shoes displayed in a perfumed room than identical shoes displayed in an unperfumed room. In addition, Hirsch (1995) examined the effects of two ambient odors on the amounts of money gambled in slot machines in a Las Vegas casino. They found that gamblers spent more money by an average of 45.11% in the slot machines when the surrounding areas of those were pleasantly scented than when there was no odor. The effective odorant apparently enhanced the casino patrons' desire to gamble. Ambient odors might also simply influence a consumer's mood, emotion or subjective feelings (Bone & Ellen, 1999; Hirsch, 1995).

Similar to other environmental stimuli (e.g., music), scent should be evaluated with other environmental cues when examining the impact of the physical surroundings on customer behavior. Individuals do not evaluate the physical environment based on only one environmental stimulus. All discrete pieces combine to form a holistic picture. In this case, it is through various environmental cues that individuals receive input through their sensory systems to form a mental picture, which then stimulates an emotional response (Lin, 2004).

Temperature

Psychological research suggests that certain temperatures are associated with negative affect. Bell and Baron (1977) argued that low temperatures (e.g., around 62°F) are associated with negative affective states. Both heat and cold are more intense stimuli than temperatures that are considered comfortable. A positive association between high effective ambient temperatures

and antisocial behavior has been demonstrated in laboratory experiments (Griffitt & Veitch, 1971).

Service Product

Raajpoot (2002) explored the domain of tangible quality construct known as TANGSERV in foodservice industry. The results found that TANGSERV captured three dimensions: ambient factors (e.g., music, temperature), design factors (e.g., location, seating arrangement), and product/service factors (e.g., food presentation, food variety). The findings proved that product/service were very important aspects of tangible quality. The study also indicated that elements related to product/service dimensions such as food presentation, serving size, menu design, and food varieties were part of tangible quality clues.

The service product dimension should be an especially important determinant in the upscale market. Upscale restaurants should be designed to deliver a prestigious image to attract upper-class customers, their intended market. Thus, variety of wines, high quality flatware (e.g., knives, spoons, forks), china (e.g., plate/china, dishes, cups), glassware (e.g., glass), linen (white table cloths, napkin presentation) as well as attractive food presentation, food variety, and innovative menu design will affect customer perceptions of quality. The way in which the table is decorated can also make customers feel prestigious or elegant. For example, an attractive candle on the table may be appealing, especially to female customers.

Social Factors

Social elements are the people (i.e., employees and their customers) in the service setting (Baker, 1987). The social variables include employee appearance, number of employees, gender of employees, and dress or physical appearance of other customers.

Employees

The physical appearance of retail employees is critical because it can be used to communicate to customers a firm's ideals and attributes (Solomon, 1985). For instance, airline personnel are selected to generate confidence. Bitner (1990) found that a disorganized environment, featuring an employee in less than professional attire could influence a customer's attribution and satisfaction when a service failure occurred. The effects of social cues (number/friendliness of employees) was investigated as a part of a study conducted by Baker, Levy, and Grewal (1992); they found that the more social cues present in the store environment, the higher the subject's arousal. A subsequent study conducted by Baker et al. (1994) examined the effects of sales personnel on consumer inferences about merchandise and service quality and store image in a retail store setting. A card and gift store with prestige-image social factors (e.g., more sales personnel on the floor, sales personnel wearing professional attire, and a salesperson greeting customers at the entrance to the store) were perceived as providing of higher service quality than a store with discount-image social factors (e.g., one salesperson on the floor, sales personnel not wearing professional attire, and no greeting offered at the entrance to the store).

Fischer et al. (1997) explored whether the gender of the service provider should be regarded as an element of the physical environment that influences perceptions of service quality in fast food restaurants, hair cutting salons, and dental offices. For each setting, two possibilities were explored. First, in-group bias might led to men believe that male servers provide higher

quality while women might believe females servers did. Second, consumers' server stereotypes about which gender does a better job of serving could also influence perceived quality. Across the settings studied, server stereotypes were found to interact with the gender of the server and/or the gender of the consumer to affect ratings on some dimensions of service quality.

Nguyen and Leblanc (2002) evaluated the impact of contact personnel and physical environment on the perception of new clients on corporate image. With data collection in two service industries (a life insurance company and a hotel), the results showed the significant effect of both contact personnel and physical environment, as well as their interactive effects on corporate image.

Other Customers

Chebat et al. (1995) proposed a key strategic element: service quality is not evaluated by consumers only in terms of what they receive at the end of the service delivery process, but also in terms of the process itself. In an open service encounter site (e.g., banks, restaurants) where consumers could observe service delivery to other consumers, the way services were delivered influenced not only the opinions of the consumers who received the service, but also the opinions of other consumers who observed service delivery.

Emotional States

The effects of the parts of the physical environment that are more aesthetic in nature (e.g., décor, colors, music, lighting) have been widely documented in literature. Research in environmental psychology has shown that properly designed physical environments may create feelings of excitement, pleasure, or relaxation (Mehrabian-Russel, 1974; Russell & Pratt, 1980). Wakefield and Blodgett (1999) noted that the physical environment might directly influence

consumers' *affective* responses while service quality perceptions related to reliability, assurance, responsiveness, and empathy might generate *cognitive* evaluations.

The Mehrabian-Russel (1974) model, which presented a basic model of human emotion, has received strong support in environmental psychology, retailing, and marketing. The model claims that any environment will generate an emotional state in one of three ways: pleasure, arousal, and dominance. Those three emotional states mediate approach-avoidance behaviors in a wide range of environments. Pleasure refers to the extent to which individuals feel good, happy, pleased, or joyful in a situation, while arousal refers to the degree to which individuals feel stimulated, excited, or active. The dominance dimension relates to the extent to which a person feels influential, in control, or important. Studies designed to test the model have found that the pleasure and arousal dimensions underlie any affective responses to any environments, while dominance was not found to have a significant effect on approach or avoidance behaviors (Russell & Pratt, 1980; Ward & Russell, 1981). Thus, the role of dominance in relation to approach or avoidance behavior has received little attention in more recent studies. More recent studies have defined two dimensions (pleasure and arousal) rather than three basic dimensions of the model. For instance, Menon and Kahn (2002) examined the effect of atmospherics and service on consumer shopping behavior from online retailers. The results showed that pleasurable initial experiences in a simulated Internet shopping trip had a positive impact on approach behaviors, and subjects engaged in more arousing activities (e.g., more exploration, more tendencies to examine novel products and stores, higher response to promotional incentives).

The Mehrabian-Russel (1974) model claimed that pleasure and arousal were the two orthogonal dimensions representing individual emotional or affective responses to a wide range

of environments. For instance, Prendergast and Man (2002) used eight questions to measure the psychological attributes of fast-food restaurants. Factor analysis generated two underlying factors that were clearly identifiable as pleasure (unhappy-happy, unsatisfied-satisfied, annoyed-pleased, hopeful-despairing) and arousal (excited-calm, overcrowded-uncrowded). However, several studies suggested caution about the orthogonal independency of pleasure and arousal dimensions. Donovan and Rossiter (1982) discovered a positive relationship between pleasure and arousal dimensions and intentions to remain in a retail setting and spend more money. Donovan et al. (1994) also pointed out a possible failure to construct an unambiguous arousal factor, possibly because the pleasure and arousal factors are independent, yet correlated factors. They further argued that failure to measure adequately and distinguish between the two factors could result in serious measurement and fit errors. In addition, Kenhove and Desrumaux (1997) examined the relationship between the emotional states (feelings of pleasure and arousal) evoked in a retail environment and behavioral intentions (approach–avoidance behaviors) in that environment. The study especially focused on unidimensionality, construct validity, reliability, and discriminant validity of measures. The results showed that the two independent constructs (pleasure and arousal) were highly correlated. Confirmatory factor analysis results showed that many of the original measures of pleasure and arousal were not very good indicators for the underlying constructs. Unidimensionality of certain measures was problematic. In addition, a number of marketing studies found that arousal influenced pleasure (Babin & Attaway, 2000; Chebat & Michon, 2003; Wakefield & Baker, 1998)

The Mehrabian and Russell (1974) model specified a conditional interaction between pleasure and arousal in determining approach–avoidance behavior. In pleasant environments, an increase in arousal was argued to increase approach behaviors, whereas, in unpleasant

environments, an increase in arousal was suggested to motivate more avoidance behaviors (Donovan & Rossiter, 1982, p. 39). In addition, Wirtz, Mattila, and Tan (2000) introduced a moderating variable called “target-arousal level” to advance the understanding of the role of pleasure and arousal in the satisfaction evaluation process. The results indicated that the traditional pleasure-arousal interaction effect might be limited to high target arousal situations.

Approach & Avoidance Behaviors

A wealth of literature exists on the effect of the physical environment on consumer behaviors (Baker et al., 1992; Donovan & Rossiter, 1982; Mehrabian & Russell, 1974; Russell & Pratt, 1980; Turley & Millman, 2000). Mehrabian and Russell (1974) postulate that all consumer responses to an environment can be considered as either approach or avoidance behaviors. They argued that approach/avoidance behaviors have four aspects: (1) a desire *physically* to stay in (approach) or to get out of (avoid) the environment; (2) a desire or willingness to look around and to *explore* the environment (approach) versus a tendency to avoid moving through or interacting with the environment or a tendency to remain inanimate in the environment (avoidance); (3) a desire or willingness to *communicate* with others in the environment (approach) as opposed to a tendency to avoid interacting with others or to ignore communication attempts from others (avoidance); and (4) the degree of enhancement (approach) or hindrance (avoidance) of *performance* and *satisfaction* with task performance. All these aspects can be appropriate for describing behaviors in the upscale restaurant context. First, physical approach and avoidance can be related to restaurant patronage intentions at a basic level. Second, exploratory approach and avoidance can be related to the customers’ willingness to visually look around before, during, and after the meal. Third, communication approach and avoidance can be

related to interaction with employees. Finally, performance and satisfaction approach and avoidance can be related to frequency of visiting as well as the amount of time and money spent in the restaurant (Donovan & Rossiter, 1982).

The Mehrabian-Russell (1974) model proposed that emotions such as pleasantness-unpleasantness and arousal- nonarousal influenced people's responses to environments. The model was used to determine the factors which influenced purchasing behavior in retail stores. The results showed that general feelings of pleasantness increased the time and money shoppers spent in the stores (Baker et al., 1992; Donovan & Rossiter, 1982; Donovan, Rossiter, & Nesdale, 1994).

Store environment is one of several inputs into the consumer's overall store image, or overall attitude toward the store (Darden, Erdem, & Darden, 1983; Zimmer & Golden, 1988). Furthermore, store image is an important determinant of store choice decision (Malhotra, 1983). Darden, Erdem, and Darden (1983) found that consumer beliefs about the physical attractiveness of a store had a higher correlation with patronage intentions than did merchandise quality, general price level, or selection.

A growing recognition that store interiors and exteriors can be designed to generate specific feelings in shoppers means that design can have an important cuing or reinforcing effect on consumers' purchase behavior (Kotler, 1973). Environmental psychologists (Donovan & Rossiter, 1982; Mehrabian & Russell, 1974; Russell & Pratt, 1980) assume that people's feelings and emotions ultimately determine what they do and how they do it and, further, that people respond with different sets of emotions to different environments. This in turn, prompts them to approach or avoid the environment. Swinyard (1993) proposed that consumer mood, involvement level, and the quality of the shopping experience had significant effects on shopping

intentions. Results revealed that mood interacted with involvement and shopping experience. Involved subjects were found to magnify their evaluations of the shopping experience. Subjects in a good mood evaluated good experiences as still better, and a bad shopping experience appeared to cause mood-protection mechanisms to fail. Finally, consumer mood was shown to be affected by a bad shopping experience.

Retailers want to design store environments so that they will enhance positive feelings, assuming this will lead to desired consumer behaviors, such as higher willingness to purchase or longer stays (Mano, 1999). In the upscale restaurant, longer stays might impact revenues because customers are more likely to consume more wine and dessert, which provides a high profit margin. In addition, the retail store atmosphere has been shown to have a positive influence on customers' patronage intentions (Baker et al., 1992; Darden, Erdem, & Darden, 1983; Donovan & Rossiter, 1982; Grewal et al., 2003; Hui et al., 1997; Van Kehove & Desumaux, 1997). We expect to confirm these findings in this study as well.

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CHAPTER III

METHODOLOGY

This chapter consists of four sections: description of the sample and survey procedure, scale development procedures, measurement of variables, and data analysis.

Sample and Survey Procedure

A field study approach was used in this study for the several reasons. First, subjects were in a position where they could spend several hours observing and experiencing the physical surroundings directly. This process offered more valid responses than if they had been surveyed outside the service encounter (Wakefield & Blodgett, 1996). Second, Donovan and Rossiter (1982) discussed reasons that researchers have been unable to document the strong effects of the physical environment despite some retailers' claims that these effects exist. The physical environment cause basically emotional states that (1) are difficult to verbalize, (2) are transient and therefore difficult to recall, and (3) influence behaviors within the store rather than gross external behaviors such as choosing whether or not to patronize the store. The physical environment and emotional states in this study are difficult to verbalize, are transient, and therefore difficult to recall. Thus, a field study was the best methodology for this research to reduce these difficulties in measuring the physical environment and customer emotions.

The survey approach was used to collect the data. Bitner (1992, p. 68) noted, "It may be necessary to vary several environmental dimensions simultaneously to achieve an overall perception of the surroundings that will significantly influence behavior. User surveys are likely to be most appropriate in assessing basic customer/employee needs and preferences prior to the

design of experimental stimulations, and later for postdesign evaluation.” Therefore, data was collected via a self-report questionnaire at three different upscale restaurants. The restaurants for data collection were selected based on average check, characteristics of menu items, perceived food quality, level of service, and ambience. Actual customers at selected upscale restaurants were asked toward the end of their meal if they were willing to complete a questionnaire. Participation was voluntary. As an incentive, two approaches were made. In two upscale restaurants, customers at a table would receive a dessert of their choice to share. They would complete the questionnaire while they were waiting for the dessert. In addition, in one upscale restaurant, each survey participant received a \$10 dining coupon, courtesy of the restaurant owner.

Scale Development Procedures

This study was based on the accepted paradigm for scale development suggested by Churchill (1979) and other previous literature (e.g., Anderson & Gerbing, 1988; Arnold & Reynolds, 2003; Bentler & Bonnet, 1980; Gerbing & Anderson, 1988; Nunnally & Bernstein, 1994; Peter, 1981). Figure 4 summarizes the scale development procedures used. The procedures are discussed in more detail in subsequent sections.

Step 1: Domain of Constructs

The first step in the development of measures involved specifying the domain of the constructs (Churchill, 1979). It is imperative that researchers search the literature when conceptualizing constructs and specifying domains. Based on the review of a large base of relevant literature, five broad categories of the physical environment (i.e., facility aesthetics,

layout, ambience, service product, social factors) emerged. The objective at this stage was to find commonalities that allowed the most accurate representation of each domain and allowed development of conceptual definitions of each dimension of the physical environment. In addition, labels for each dimension were constructed.

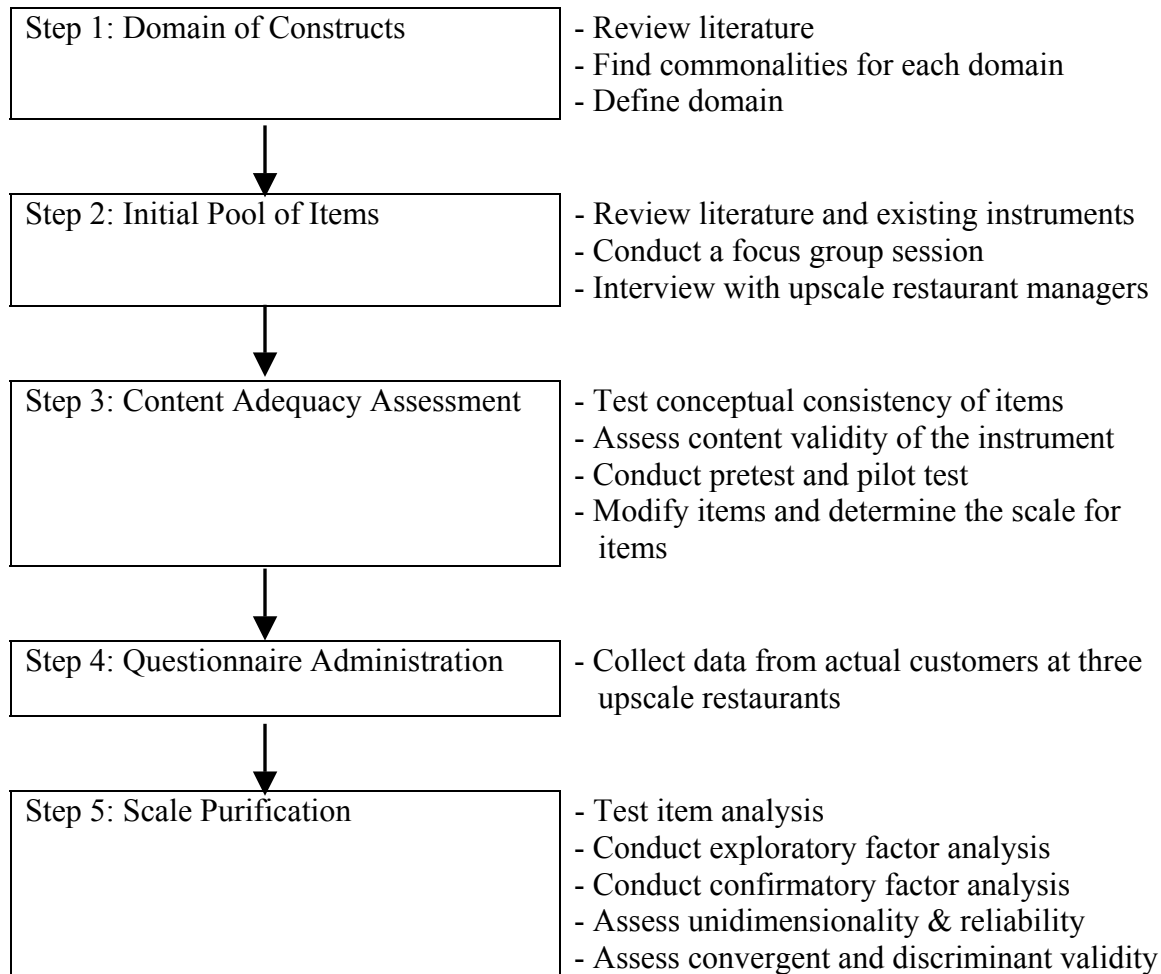


Figure 4. Scale Development Procedures

Step 2: Initial Pool of Items

The second step in the procedure for developing measures was to generate initial items that could capture the domain of the physical environment. The emphasis at the early stages of

item generation was to develop a set of items that elucidated each of the dimensions. The specification of those items which reflected the dimensionality of the physical environment at an upscale restaurant context were based on intense review of previous studies, a focus group session, and interviews with the managers of the upscale restaurants. An extensive literature review was conducted at this item-generation stage.

A focus group interview was conducted to fully specify the content areas of the physical environment. The focus group consisted of faculty members and graduate students who were customers at any local upscale restaurants within the past six months. The use of a focus group helped construct and refine the questionnaire. The moderator distributed the list of physical environmental elements (e.g., color, lighting) that had been developed based on the literature review. The moderator also distributed general color photographs of dining areas in any upscale restaurants to help focus group members recall their experience with the physical surroundings in the upscale restaurants. After participants viewed the photographs, they were asked to list additional physical environmental elements he/she thought important in upscale restaurants. In addition, interviews with the managers at the upscale restaurants were conducted to generate additional items that were not captured through the literature review and the focus group session.

Step 3: Content Adequacy Assessment

Based on the initial item-generation process, preliminary scale items were generated. Several faculty members in Kansas State's Department of Apparel, Textiles & Interior Design (ATID) and in the Department of Hotel, Restaurant, Institution Management and Dietetics (HRIMD) who were familiar with the topic area evaluated the measurement items for content and face validity. This process ensured that the items were representative of the scale's domains.

The use of faculty members as judges of a scale's domain has been frequently used in previous studies (Arnold & Reynolds, 2003; Babin & Burns, 1998; Sweeney & Soutar, 2001; Zaichowsky, 1985). The faculty members were given the conceptual definitions of each of the five DINESCAPE dimensions and asked to evaluate the items based on their representation of the DINESCAPE domain. They also checked clarity of wording. In addition, a pretest was performed to refine the survey instrument. In all, approximately 20 faculty members, graduate students, and actual customers participated in evaluating the instrument. Items were eliminated that were not clear, not representative of the domain, or that were open to misinterpretation (Babin et al., 1994).

Additionally, a pilot test of the research instrument was performed as a preliminary evaluation of the final questionnaire. A total of 41 actual customers at an upscale restaurant participated in the content adequacy assessment. Coefficient alpha and factor analysis were performed with responses at this stage. In summary, based on the results of content adequacy assessment, modifications of items were made. The resulting item pool then was submitted to a multi-sample scale purification.

Step 4: Questionnaire Administration

The questionnaire administration process is discussed in the Sample and Survey Procedure section and Measurement of Variables section (see pages 61-62 and 69-71).

Step 5: Scale Purification

Quantitative analyses were conducted to purify the measures and to examine the scale's psychometric properties as suggested by many previous studies (Arnold & Reynolds, 2003;

Churchill, 1979; Sweeney & Soutar, 2001). Each item was rated on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). The scale purification processes included item analysis, exploratory factor analyses, confirmatory factor analyses, unidimensionality and reliability, and convergent and discriminant validity.

Item Analysis

Corrected item-total correlations were examined for each set of items representing a dimension within the physical environment. Items not having a corrected item-total correlation over .50 were candidates for removal (Arnold & Reynolds, 2003; Tian, Bearden, & Hunter, 2001; Zaichowsky, 1985).

Exploratory Factor Analysis

Following item analysis, the item content for each domain representation was inspected. Remaining items were subjected to a series of exploratory factor analyses with varimax rotation, aiming to reduce the set of observed variables to a smaller, more parsimonious set of variables. Eigenvalues and variance explained were used to identify the number of factors to extract (Bearden et al., 1989; Hair et al., 1998; Nunnally & Bernstein, 1994). After the number of factors in the DINESCAPE model was estimated, items exhibiting low factor loadings ($<.40$), high cross-loadings ($>.40$), or low communalities ($<.50$) were candidates for deletion (Hair et al., 1998). The remaining items were submitted to further exploratory factor analysis. In addition, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of Sphericity were conducted to see if the distribution of values were adequate for conducting factor analysis.

Confirmatory Factor Analysis

A confirmatory factor analysis (CFA) was performed to verify the factor structure in the proposed scale and to improve the measurement properties of the scale (Anderson & Gerbing,

1988; Bearden et al., 1989; Gerbing & Anderson, 1988). A confirmatory factor model using the maximum likelihood technique was estimated via LISREL 8.54. Items with low squared multiple correlations (individual item reliabilities) were deleted. Through CFA, each item tapped into a unique facet of each DINESCAPE dimension and thus provided good domain representation.

Unidimensionality and Reliability

The evidence that the measures were unidimensional, with a set of indicators sharing only a single underlying construct, was assessed using CFA (Gerbing & Anderson, 1988). The items should load as predicted and with minimal cross-loading to provide evidence of unidimensionality. After the unidimensionality of each scale was acceptably established, reliability was tested through Cronbach's alphas, item reliabilities, composite reliabilities, and average variance extracted (AVE) to assess the internal consistency of multiple indicators for each construct in the DINESCAPE model (Fornell & Larcker, 1981; Gerbing & Anderson, 1988; Hair et al., 1998; Nunnally & Bernstein, 1994). LISREL 8.54 version provides individual item reliabilities computed directly and listed as squared multiple correlations for the x and y variables. However, since LISREL does not compute composite reliability and AVE for each construct directly, they were calculated using the following formulas:

$$\text{Composite Reliability} = \frac{(\sum \text{standardized loadings})^2}{(\sum \text{standardized loadings})^2 + (\sum \text{indicator measurement error})}$$

$$\text{AVE} = \frac{(\sum \text{squared standardized loadings})}{(\sum \text{squared standardized loadings}) + (\sum \text{indicator measurement error})}$$

Convergent and Discriminant Validities

Churchill (1979) suggested that convergent validity and discriminant validity should be assessed in investigations of construct validity. Convergent validity involves the extent to which

a measure correlates highly with other measures designed to measure the same construct.

Discriminant validity involves the extent to which a measure is novel and does not simply reflect other variables.

The evidence of convergent validity was checked in two ways. First, convergent validity was assessed from the measurement model by determining whether each indicator's estimated loading on the underlying dimension was significant (Anderson & Gerbing, 1988; Netemeyer, Johnston, & Burton, 1990; Peter, 1981). Second, AVE was used to test the convergent validity. It has been suggested that the AVE value exceed .50 for a construct (Fornell & Larcker, 1981). To assess the discriminant validity between constructs, the procedure suggested by Fornell and Larcker (1981) was used. The test requires that the AVE for each construct be higher than the squared correlation between the two associated latent variables.

Measurement of Variables

The questionnaire designed for this study was divided into three parts. Part 1 of the questionnaire consisted of physical DINESCAPE items. Respondents were asked to rate each statement item using a 7-point Likert scale (1 = extremely disagree, 7 = extremely agree). Part 2 contained emotional states: four pleasure and four arousal items (Mehrabian & Russell, 1974). All eight items were measured on a 7-point semantic differential scale. Part 3 of the questionnaire consisted of general approach–avoidance behavior. Specifically, behavioral intentions were measured using four items. The items were assessed on a 7-point Likert scale.

DINESCAPE

Measurement items relevant to facility aesthetics, layout, ambience, service product, and social factors were included. The list of relevant physical environmental items was generated from reviews of previous studies, the focus group, and discussions with several managers at upscale restaurants. This resulted in a list of 34 items related to the physical environment at the upscale restaurants.

In developing the measurement items, many combined issues were incorporated. The fact that the physical environment has both affective and cognitive characteristics in nature was considered. Some researchers (Bitner, 1992; Kaplan & Kaplan, 1982) have demonstrated that the perceived physical environments might elicit cognitive responses, influencing people's beliefs about a place and their beliefs about the people and products noticed in that place. For example, particular environmental cues such as the quality of furniture and the type of décor used in the dining areas may have an effect on customers' beliefs about whether the restaurant is expensive or not expensive. In contrast, some physical elements capture affective content. For instance, color does more than just give people objective information. It actually influences how people feel (Khouw, 2004). Research has shown that different colors stimulate different personal moods and emotions (e.g., warm, comfortable, inviting, pleasant). Environmental cues within the physical environment can directly stimulate emotional response (Eiseman, 1998). Mattila and Wirtz (2001) adapted Fisher's (1974) environmental quality scale and used a seven-item (pleasant/unpleasant; unattractive/attractive; uninteresting/interesting; bad/good; depressing/cheerful; dull/bright; and uncomfortable/comfortable) scale to obtain respondents' evaluation of a store environment. An example: "The slow-tempo music played at the store was pleasant."

Second, both practical and theoretical meanings of each one of the variables was also taken into consideration to most appropriately capture the importance of that particular item. For instance, the literature has shown that color is an important element of physical surroundings in the restaurant facility. Instead of just simply using the statement, “Colors used are appropriate,” this study used, “Colors used makes me feel warm,” which was more affective in nature. The first statement could just indicate if color was important attribute to customers and how relatively it is important compared to other elements. The later statement could also provide management with a more practical understanding of how color influences customers.

Emotional States

Emotions were measured with eight items representing the pleasure and arousal dimensions derived from the scale suggested by Mehrabian and Russell (1974) and adapted to fit the upscale restaurant context. Subjects evaluated their feelings, moods, and emotional responses to the physical environment at the upscale restaurant. All items were rated on a 7-point semantic differential scale, in which an emotion and its opposite set the two ends of the scale. Pleasure was measured with the following four items: unhappy—happy; annoyed—pleased; bored—entertained; disappointed—delighted. The measure of arousal comprised the following four items: depressed—cheerful; calm—excited; indifferent—surprised; sleepy—awake.

Behavioral Intentions

Behavioral intentions (BI) were measured based on Mehrabian and Russell’s (1974) four aspects of approach-avoidance behaviors and the scale suggested by Zeithaml et al. (1996). The scales were adapted to fit the upscale restaurant context. Subjects were asked to react to the

following three statements: “I would like to come back to this restaurant in the future,” “I would recommend this restaurant to my friends,” “I am willing to stay longer than I planned at this restaurant,” and “I am willing to spend more than I planned at this restaurant.” Participants responded to these items on a scale bounded by a 7-point Likert scale (1 = extremely disagree, 7 = extremely agree).

Data Analysis of Study 2

In the second phase of the study, data were analyzed using the two-step approach recommended by Anderson and Gerbing (1988). In the first step, a confirmatory factor analysis (CFA) was performed to identify whether the measurement variables reliably reflected the hypothesized latent variables (DINESCAPE dimensions, pleasure, arousal, behavioral intentions) using the covariance matrix. All latent variables were allowed to intercorrelate freely without attribution of a causal order.

In the second step, a structural equation modeling (SEM) with latent variables via LISREL 8.54 was tested to determine the adequacy of the Mehrabian-Russell (1974) model by representing the constructs of the model and testing the hypotheses. The main advantage of using SEM over using factor analysis and regression analysis separately to test the model was that it could simultaneously estimate all path coefficients and test the significance of each causal path (Bentler, 1980; Chang, 1998; Lee & Green, 1991). The DINESCAPE dimensions were predictor variables (e.g., exogenous variables) and pleasure, arousal, and behavioral intention were criterion variables (e.g., endogenous variables) in the analysis. Besides Cronbach’s alphas, item reliabilities, composite reliabilities, and AVE for the measures were also computed to check the

reliability of this Mehrabian-Russell model. Furthermore, AVE was used to check the convergent validity and discriminant validity of the model.

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CHAPTER IV:

DINESCAPE: A SCALE FOR MEASURING CUSTOMER PERCEPTIONS OF PHYSICAL ENVIRONMENT IN UPSCALE RESTAURANTS

Abstract

This study explored the domain of the physical environment in the upscale restaurant context to develop a DINESCAPE scale. Relevant literature from environmental psychology and marketing was reviewed, highlighting empirical and theoretical contributions. Conceptualization and operationalization of the DINESCAPE dimensions is discussed, and the procedures used in constructing and refining a multiple-item scale to assess the DINESCAPE in the upscale restaurant setting are described. Based on quantitative analyses, a six-factor scale was developed consisting of facility aesthetics, ambience, lighting, service product, layout, and social factors. Evidence of the scale's reliability, factor structure, and validity are presented, along with potential applications of the scale.

KEYWORDS: DINESCAPE, Aesthetic Design, Lighting, Ambience, Layout, Product, Social Factors.

INTRODUCTION

Kotler (1973) first introduced concepts relating to “physical environments” (also known as ‘atmospherics’ or ‘SERVICESCAPE’) more than three decades ago. Kotler (1973) argued that consumers might respond to more than just the tangible product (e.g., meal) or service rendered (e.g., promptness) when making a purchase decision. The tangible product might be only a small part of the total consumption experience. Indeed, consumers respond to the total product. The *place*, and more specifically the *atmosphere* of the place, where the product or service is purchased or consumed may be one of the most influential factors in purchase decision-making. Atmosphere refers to the conscious design of a buying environment, intended to generate specific emotional effects in the consumer that would enhance his/her purchase probability (Kotler, 1973). Atmosphere can be produced through the four main sensory channels: sight (e.g., color, lighting, décor), sound (e.g., music, noise level), scent (e.g., pleasing aroma), and touch (e.g., comfortable seating).

Since Kotler (1973) first introduced the significance of the store environment in stimulating a customer’s desire to purchase, retailers, marketers, and environmental psychologists have acknowledged the role of physical environment as a central element in understanding consumer responses (Baker, 1987; Bitner, 1992; Kotler, 1973; Mehrabian & Russell, 1974; Turley & Milliman, 2000). Physical environment affects the degree of customer’s emotions (Bitner, 1990; Donovan & Rossiter, 1982; Kotler, 1973; Mehrabian & Russell, 1974), satisfaction (Bitner, 1990; Chang, 2000), the perception of the service quality (Parasuraman et al., 1988; Wakefield & Blodgett, 1999), and subsequent behavior (Mehrabian & Russell, 1974; Sayed et al., 2003).

The importance of physical surroundings in creating an image and in influencing customer behavior is particularly pertinent to the restaurant industry (Hui et al., 1997; Millman, 1986; Raajpoot, 2002; Robson, 1999). Because the service is generally produced and consumed simultaneously, the consumer is “in the factory,” often experiencing the total service within the property’s physical facility (Bitner, 1992). Foodservice in the restaurant industry encompasses both tangible (food and physical environment) and intangible (employee-customer interaction) components. A proper combination of the tangible and intangible aspects should result in a customer’s perception of high service quality.

Food quality and price traditionally have been the decisive factors in restaurant choice. However, as the restaurant industry has grown and more consumers increasingly expect a more entertaining atmosphere to enhance the dining experience, restaurateurs are making efforts to meet that expectation with innovative and exciting physical surroundings. In recent years, an increasing number of “atmosphere” restaurants have opened in the marketplace. Some restaurateurs may argue that atmosphere can be the major determinant in a successful restaurant. Its importance as a marketing tool has been thoroughly discussed in previous studies (Kotler, 1973). More importantly, customers may seek a dining experience totally different from the home environment, and the atmosphere may do more to attract them than the food itself.

From a practical standpoint, there was a need for developing an instrument to assess the physical environment in an upscale restaurant context. Although the concept of atmosphere is important in most restaurant settings, customers may differentiate the relative importance of environmental cues based on the categorization of restaurants, such as quick service, fast-casual, family casual, and upscale restaurants. Atmosphere in the upscale restaurant context is a relatively influential determinant of customer satisfaction and subsequent behavior because the

service is consumed primarily for hedonic (emotional) purposes not utilitarian (functional) purposes, and customers spend several hours observing and evaluating physical surroundings (Wakefield & Blodgett, 1996). In addition, the overall quality of the physical environment should be congruent with prestige to meet customer expectations. Despite its importance in customer satisfaction and in marketing, little research has been done to explain how customers perceive the physical environment in the upscale restaurant context. In addition, no measurement instrument is available to specifically evaluate the physical environment in the upscale restaurant context. Thus, it was necessary to develop and validate an instrument to measure the physical environment in an upscale restaurant setting. For this study, upscale restaurants were defined as those in which the average per-person check was more than \$13.09 and which offered a full menu, full table service, food made from the scratch, and personalized service (Goldman, 1993; Gordon & Brezinski, 1999; Muller & Woods, 1994; Siguaw, Mattila, & Austin, 1999).

From the perspective of research, clearly there was a need for developing a reliable and valid scale to measure the physical environment in research areas. Although a concrete conceptual framework for the physical environment has been developed based on environmental psychology and marketing (Baker, 1987; Baker, Grewal, & Parasuraman, 1994; Berman & Evans, 1995; Bitner, 1992; Turley & Miliman, 2000; Wakefield & Blodgett, 1996), the validity and reliability of the measures used to assess dimensions of the physical environment have rarely been examined in previous studies. The selections of measures were based mainly on the definition of constructs without applying scale development process. Therefore, identifying of the indicators that best represent those dimensions continues to challenge researchers. Developing a reliable and valid scale of measurement remains a key issue facing academia.

This study aimed to fill these managerial and research gaps by establishing reliable, valid, generalizable, and useful measures of customers' perceived quality of physical environments in the restaurant setting, especially in the upscale restaurant context, for both restaurateurs and researchers. In the first step of developing a scale for the physical environment in the restaurant industry, this author first coined the term "DINESCAPE." "DINESCAPE" is similar to the popular term "SERVICESCAPE" in describing characteristics of the physical environment, but its emphasis is restricted to inside dining areas. DINESCAPE was primarily differentiated from SERVICESCAPE by developing a scale for measuring the physical environment in the dining area of a restaurant, especially an upscale restaurant. In this study, DINESCAPE was defined as the man-made physical and human surroundings, not the natural environment in the dining area of upscale restaurants. This study did not focus on external environmental variables (e.g., parking space, building design) or contain some internal environmental variables (e.g., restroom and waiting area) in an attempt to provide a more generalizable and parsimonious instrument for both practitioners and researchers.

Therefore, the purpose of this study was to develop a multiple-item scale to measure the overall conceptual framework of DINESCAPE. In this paper, the existing literature on physical environment as it related to DINESCAPE is reviewed. Then, the procedures used to empirically develop DINESCAPE are presented. Finally, the managerial and research implications of the research are discussed.

REVIEW OF LITERATURE

Physical Environment in the Upscale Restaurant Context

The level of importance of the physical environment can vary because of the combined effects of the following characteristics: time spent in the facility and the consumption purpose. The influence of the physical environment on customers' affective responses may be especially pronounced if the service is consumed primarily for hedonic rather than utilitarian purposes, as is the case for patronizing an upscale restaurant. Hedonic consumption seeks pleasure or emotional fulfillment, as opposed to functional usefulness, from the service experience (Babin, Darden, & Griffin, 1994). Because of the hedonic context, customers of an upscale restaurant are likely to be more sensitive to the aesthetic qualities of their surroundings (Wakefield & Blodgett, 1994).

The amount of time spent in the facility changes the extent to which the physical environment influences customers' attitudes or satisfaction with the service. The physical environment may have little impact on short service encounters, such as those in fast food restaurants (Wakefield & Blodgett, 1996). In these types of service encounters, customers typically spend only a short time inside the restaurant (Bitner, 1990). In these situations, evaluation of service quality is based primarily on intangible aspects (e.g., reliability, assurance, responsiveness, empathy) and less on the tangible aspects (the physical environment) (Wakefield & Blodgett, 1996). Customers of fast-food restaurants are more likely to emphasize the time it takes to have the meal served (e.g., reliability and responsiveness) and how courteous the personnel are (e.g., assurance) than the aesthetics of the restaurant. However, upscale restaurants generally require customers to spend several hours in the physical surroundings of the service provider. In such situations, where the customer spends an extended period observing and experiencing physical surroundings, the importance of the physical environment increases with

the time spent. For instance, because customers may spend a long time waiting for their food after they have ordered, it is important that they do not feel bored while waiting. Some approaches (e.g., jazz music as background music) enhance stimulation and prevent boredom. Thus, the physical environment can be used to stimulate customers and to prevent boredom.

Domain of the Physical Environment

Considerable progress has been made in determining what constitutes the physical environment (Baker, 1987; Baker, Levy, & Grewal; 1992; Berman & Evans, 1995; Bitner, 1992; Brady & Cronin, 2001; Parasuraman, Zeithaml, & Berry, 1988; Raajpoot, 2002; Turley & Milliman, 2000; Wakefield & Blodgett; 1996, 1999). Table 1 presents a summary of the dimensions related to the physical environment in previous research. Baker (1987) classified three fundamental factors that affect the tangible portion of service quality dimensions: design, social, and ambient factors. Ambience includes background variables such as lighting, aroma, and temperature. These variables are not part of the primary service but are important because their absence may make customers feel concerned or uncomfortable. The design dimension represents the components of the environment that tend to be visual and more tangible in nature. This dimension includes color, furnishings, and spatial layout. Design elements contain both aesthetic aspects (e.g., beauty, décor) and functional aspects (e.g., layout, ease of transaction, and waiting area design) that facilitate high quality service. The social factor relates to an organization's concern for the people in the environment, including both customers and employees. Baker, Grewal, and Parasuraman (1994) also classified store atmospherics into three categories: store functional/aesthetic design factors, store social factor, and store ambient factor.

Bitner (1992) discussed the effect of tangible physical environment on overall development of service quality image. She coined the term “SERVICESCAPE” to describe the combined effect of all physical factors that can be controlled by service organizations to enhance customer and employee behaviors. SERVICESCAPE is defined as the “built environment” or, more specifically, the “man-made, physical surroundings as opposed to the natural or social environment” (Bitner, 1992, p. 58). She identified three primary dimensions of the SERVICESCAPE that influence customer perception of the service provider and subsequent cognitive, affective, and conative responses of the customer. The three dimensions are (1) ambient conditions (elements related to aesthetic appeal); (2) spatial layout and functionality; and (3) signs, symbols, and artifacts. Ambient conditions include temperature, noise, music, odors, and lighting. Aesthetic appeal refers to physical elements such as the surrounding external environment, the architectural design, facility upkeep and cleanliness, and other physical elements by which customers view and evaluate the aesthetic quality of the SERVICESCAPE. Aesthetic factors are important because they influence ambience. Spatial layout and functionality refer to the ways in which seats, aisles, hallways and walkways, foodservice lines, restrooms, and the entrance and exits are designed and arranged in service settings. Signs, symbols, and artifacts include signage and décor used to communicate and enhance a certain image or mood or to direct customers to desired destinations.

Berman and Evans (1995) divided tangible quality clues into four categories: external, general interior, layout, and point of purchase dimensions. External variables relate to exterior signs, building size and color, location, and parking. General interior variables include music, scent, lighting, temperature, and color scheme. The layout and design variables pertain to workstation placement, waiting facilities, and traffic flow. Finally, the point of purchase and

decoration variables relate to displays, pictures, artwork, and product displays at point of purchase. However, the authors failed to mention the social aspect of tangible quality.

Insert Table 1

Wakefield and Blodgett (1996) examined the effects of layout accessibility, facility aesthetics, electronic equipment, seating comfort, and cleanliness on the perceived quality of the SERVICESCAPE. This study first introduced the facility aesthetic dimension, which captured a broad scope of the SERVICESCAPE. Facility aesthetics was defined as a function of architectural design, along with interior design and décor, all of which contribute to the attractiveness of the SERVICESCAPE (Wakefield & Blodgett, 1994). This study did not focus on ambient conditions, which are more difficult to control, particularly in such leisure field settings as amusement parks and other outdoor settings. However, ambient conditions can be a very important factor in the upscale restaurant context because they can be controlled to a large extent by management. In their later work, Wakefield and Blodgett (1999) investigated whether the physical environment of service delivery settings influenced customers' evaluations of the service experience and subsequent behavioral intentions. In this study, tangibility consisted of three factors: design, equipment, and ambient elements. They did not consider the social factor.

Turley and Miliman (2000) presented a review of the literature that attempted to further the theoretical and empirical understanding of atmospheric influences on multiple aspects of consumer behavior. These researchers identified 58 variables in five categories: external; general

interior; layout and design; point-of-purchase and decoration; and human. However, their classification lacks a theoretical framework (Gilboa & Rafaeli, 2003). Raajpoot (2002) developed a scale called TANGSERV for measuring the tangible quality in foodservice industry. TANGSERV comprised ambient factors (e.g., music, temperature), design factors (e.g., location, seating arrangement), and product/service factors (e.g., food presentation, food variety). The study first introduced the product/service dimension. Findings suggested that product/service was a very important aspect of tangible quality in the foodservice industry. The study indicated that elements related to product/service dimensions such as food presentation, serving size, menu design, and food varieties were also part of tangible quality clues. However, unclear methodology calls into question the results of Raajpoot's study.

In conclusion, much of previous research on the physical environment has focused on identifying the dominant dimensions of the physical environment and clarifying their nature (Baker, 1987; Berman & Evans, 1995; Bitner, 1992; Parasuraman, Zeithaml, & Berry, 1988; Raajpoot, 2002; Turley & Milliman, 2000). However, the reliability and validity of many of these measures should be questioned. More specifically, relatively little research has been done on developing a measurement scale of the physical environment. Only few scales (e.g., SERVQUAL and DINESERV) incorporate the aspects of the tangible physical environment as a part of overall service quality measurement scheme. In addition, although Raajpoot (2002) developed a scale called TANGSERV, its findings might be unacceptable or unreliable because of the unclear methodology of the study. Therefore, clearly there is a need for reliable and valid DINESCAPE scale that is also brief and easy to administer.

METHODOLOGY

This study was based on the scale development procedures advocated by Churchill (1979) and techniques described by other previous literature (Anderson & Gerbing, 1988; Arnold & Reynolds, 2003; Bentler & Bonnet, 1980; Gerbing & Anderson, 1988; Nunnally & Bernstein, 1994; Peter, 1981). Figure 1 summarizes the scale development procedures to be used, and the procedures are discussed in more detail in subsequent sections.

Step 1: Domain of Constructs

The first step in the development of measures involved specifying the domain of the constructs (Churchill, 1979). Researchers must search the literature when conceptualizing constructs and specifying domains. Based on a review of relevant literature, five broad categories of the physical environment (facility aesthetics, layout, ambience, service product, social factors) emerged. The objective at this stage was to find commonalities that allowed the most accurate representation of each domain and to develop conceptual definitions of each dimension of the physical environment. In addition, labels for each dimension were created.

Insert Figure 1

Step 2: Initial Pool of Items

The emphasis in the second step of developing measures was to construct initial items that represent the five domains of the physical environment. The items that reflected the

dimensionality of the physical environment in an upscale restaurant context were based on the review of literature, a focus group session, and interviews with the managers of the upscale restaurant used in this study. An extensive literature review was conducted at this item-generation stage and many items were modified from earlier studies that measured the physical environment and related constructs.

A focus group interview was then conducted to fully define the content areas of the physical environment. The focus group consisted faculty members and graduate students who had been customers at any local upscale restaurants within the past six months. The use of a focus group helped in constructing and refining the questionnaire. The moderator distributed the list of physical environmental elements that had been developed from the literature review. The moderator also distributed color photographs of dining areas in upscale restaurants to help focus group members recall their experiences with physical surroundings in the upscale restaurants. After participants viewed the photographs, they were asked to list additional physical environmental elements he/she thought important in upscale restaurants. In addition, several managers at upscale restaurants were interviewed to generate additional initial items that were not captured in the literature review and the focus group session. The initial item-generation produced 52 items.

Step 3: Content Adequacy Assessment

Based on the initial item-generation process discussed above, preliminary scale items were defined. Several faculty members in the Department of Apparel, Textiles & Interior Design (ATID) and the Department of Hotel, Restaurant, Institution Management and Dietetics (HRIMD) who were familiar with the topic area evaluated the measurement items for content

and face validity. This process ensured that the items represented the scale's domains. Faculty members have often acted as judges of a scale's domain in previous studies (Arnold & Reynolds, 2003; Babin & Burns, 1998; Sweeney & Soutar, 2001; Zaichowsky, 1985). Our faculty members were given the conceptual definitions of each of the five dimensions of the physical environment and asked to evaluate them based on each item's representation of the physical environment domain. They also checked clarity of wording. A pretest refined the survey instrument. In all, 20 faculty members, graduate students, and actual customers participated in evaluating the instrument. A few corrections of the wording of questions were made after the pretest. Finally, items that were redundant, ambiguous, not representative of the domain, or that were open to misinterpretation were eliminated (Babin et al., 1994; Richins & Dawson, 1992).

Next, a pilot test of the research instrument was performed on the final questionnaire. Early data collection for item refinement was undertaken with 41 actual customers at an upscale restaurant. Reliability assessment (Cronbach alphas) and exploratory factor analysis were performed with the responses. Based on the results of content adequacy assessment, items were modified. Results provided a pool of 34 items, with 12 items for aesthetic design, 8 items for ambience, 4 items for layout, 6 items for service product, and 4 items for social factor. The resulting item pool then was submitted to a scale purification step through the actual administration of the questionnaire.

Step 4: Questionnaire Administration

Measurement of Variables

The questionnaire consisted of 34 items relevant to facility aesthetics, layout, ambience, service product, and social factors. Respondents were asked to rate each statement item using a

7-point Likert scale (1 = extremely disagree, 7 = extremely agree). To reduce the potential bias of forced response, an option marked “N/A” was included for each question (Gunderson, Heide, & Olsson, 1996).

In developing the measurement items, many combined issues were incorporated. First, the fact that physical surroundings have both affective and cognitive characteristics was considered. Some researchers (Bitner, 1992; Kaplan & Kaplan, 1982) demonstrated that the perceived physical environments might elicit cognitive responses, influencing people’s beliefs about a place and their beliefs about the people and products noticed in that place. For example, particular environmental cues such as the quality of furniture and the type of décor used in the dining areas may have an effect on customers’ beliefs about whether the restaurant is expensive or not expensive. In contrast, some elements capture affective content. For instance, color does more than just give objective information. Color actually influences how people feel (Khouw, 2004). Research has shown that different colors stimulate different personal moods and emotions (e.g., warm, comfortable, inviting, pleasant). In fact, environmental cues within the physical environment may directly stimulate emotional response (Eiseman, 1998).

Both practical and theoretical meaning of the each variable of the physical environment was also considered to most appropriately capture the importance of that particular item. For instance, the literature has shown that color is an important element of the physical environment in the restaurant facility. Instead of just simply using the statement, “Colors used are appropriate,” this study used, “Colors used make me feel warm,” eliciting more affective response. The first statement indicates that color maybe an important attribute to customers and how important it is relative to other elements. The later statement provides management with more practical information for understanding how color influences the customers.

Sample and Survey Procedure

A field study approach was used in this study because subjects were actually dining in an upscale restaurant where they were directly observing and experiencing physical surroundings. This process offered more valid responses than a survey outside the service encounter (Wakefield & Blodgett, 1996). A total of 319 responses were collected via a self-report questionnaire at three different upscale restaurants in Midwest and Northwest states. Toward the end of their meal, customers at these upscale restaurants were asked if they would complete a questionnaire. Thus, participation was voluntary. Two participation incentives were offered. In two of the upscale restaurants, customers received a dessert of their choice to share. They completed the questionnaire while waiting for their dessert. In the third restaurant, each survey participant received a \$10 dining coupon, courtesy of the restaurant owner.

Step 5: Scale Purification

Quantitative analyses were conducted to purify the measures and to examine the scale's psychometric properties (Arnold & Reynolds, 2003; Churchill, 1979; Sweeney & Soutar, 2001).

Item Analysis

Corrected item-total correlations were examined for each set of items representing a dimension within the physical environment. Items not having a corrected item-total correlation over .50 were candidates for removal (Arnold & Reynolds, 2003; Tian, Bearden, & Hunter, 2001; Zaichowsky, 1985).

Exploratory Factor Analysis

Following the item analysis, the item content for each domain representation was inspected. Remaining items were subjected to a series of exploratory factor analyses with

varimax rotation to reduce the set of observed variables to a smaller, more parsimonious set of variables. Eigenvalues and variance explained were used to identify the number of factors to extract (Bearden et al., 1989; Hair et al., 1998; Nunnally & Bernstein, 1994). After the number of factors in the model was estimated, items exhibiting low factor loadings ($<.40$), high cross-loadings ($>.40$), or low communalities ($<.50$) were candidates for deletion (Hair et al., 1998). The remaining items were submitted to further exploratory factor analysis. In addition, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of Sphericity were conducted to ascertain if the distribution of values was adequate for conducting factor analysis.

Confirmatory Factor Analysis

Gerbing and Anderson (1988) suggested using confirmatory factor analysis (CFA) for scale development because it affords stricter interpretation of unidimensionality than what is provided by more traditional approaches, such as coefficient alpha, item-total correlations, and exploratory factor analysis. CFA could thus provide different conclusions about the acceptability of a scale. A confirmatory factor model using the maximum likelihood technique was estimated via LISREL 8.54. Items with low squared multiple correlations (individual item reliabilities) were deleted. Through CFA, each item tapped into a unique facet of each DINESCAPE dimension and thus provided good domain representation.

Unidimensionality and Reliability

The evidence that the measures were unidimensional, where a set of indicators shares only a single underlying construct, was assessed using CFA (Gerbing & Anderson, 1988). The items loaded as predicted with minimal cross-loadings, providing evidence of unidimensionality. After the unidimensionality of each scale was established, reliability was tested through Cronbach's alphas, item reliabilities, composite reliabilities, and average variance extracted

(AVE) to assess the internal consistency of multiple indicators for each construct in the DINESCAPE model (Fornell & Larcker, 1981; Gerbing & Anderson, 1988; Hair et al., 1998; Nunnally & Bernstein, 1994). The LISREL 8.54 version provides individual item reliabilities computed directly and listed as squared multiple correlations for the x and y variables. However, because LISREL does not compute composite reliability and AVE for each construct directly, these measures were calculated with the following formulas:

$$\text{Composite Reliability} = \frac{(\sum \text{standardized loadings})^2}{(\sum \text{standardized loadings})^2 + (\sum \text{indicator measurement error})}$$

$$\text{AVE} = \frac{(\sum \text{squared standardized loadings})}{(\sum \text{squared standardized loadings}) + (\sum \text{indicator measurement error})}$$

Convergent and Discriminant Validity

Churchill (1979) suggested that convergent validity and discriminant validity should be assessed in investigations of construct validity. Convergent validity involves the extent to which a measure correlates highly with other measures designed to measure an underlying construct. Discriminant validity involves the extent to which a measure is novel and does not simply reflect other variables.

The evidence of convergent validity was checked in two ways. First, convergent validity was assessed from the measurement model by determining whether each indicator's estimated loading on the underlying dimension was significant (Anderson & Gerbing, 1988; Netemeyer, Johnston, & Burton, 1990; Peter, 1981). Second, AVE was used to test the convergent validity. The AVE value should exceed .50 for a construct (Fornell & Larcker, 1981). To assess the discriminant validity between constructs, Fornell and Larcker's (1981) procedure was used. The

test requires that AVE for each construct should be higher than the squared correlation between the two associated latent variables.

RESULTS

Sample Characteristics

Table 1 shows sample characteristics of respondents. They varied in age (≤ 25 years age = 28.8%; 26-35 years of age, 17.6%; 36-45 years of age, 17.3%; 46-55 = 21.3%; ≥ 56 years of age, 15.0%), gender (female = 41.9%; male = 58.1%), household income level (less than \$19,999 = 15.4%; \$20,000-\$59,999 = 35.9%; \$60,000-\$100,000 = 24.1%; more than \$100,000 = 24.6%), majority of Caucasian (87.8%), past experience (first time visitors = 45.5%; repeat visitors = 54.5%), and home ownership (owners, 60.3%; non-owners, 39.1%).

Descriptive Information

Independent samples t-tests were used to identify the statistical differences in customers' perceived quality of physical environments between gender (male vs. female) and frequency of visit (first-time visitors vs. repeat visitors) to upscale restaurants. In terms of gender, five physical environmental elements (plants/flowers, comfortable lighting, warm lighting, feeling of being crowded due to seating arrangement, and attractive employees) showed statistically significant differences between male and female. Interestingly, the higher mean values indicated that females were more sensitive than males in four significant physical environmental elements. It was also very interesting to notice that gender influenced perceived quality of human surroundings ("Attractive employees make me feel good"). More specifically, as expected males ($\mu = 5.91$) rated higher than females ($\mu = 5.53$), indicating males were more sensitive than

females to the attractiveness of employees. In addition, three physical elements (plants/flowers, table setting, neat and well dressed employees) showed significant differences between the first visitors and repeat visitors. Similar to the gender difference, higher mean values indicated that females were more sensitive than males to all three physical and human surroundings.

Insert Table 2

Item Analysis

This study retained 34 items to capture the five domains of DINESCAPE for scale purification steps. After careful inspection of item content for domain representation, 9 items with low corrected item-total correlations were deleted: (1) 4 items representing facility aesthetics, (2) 1 item representing ambience, (3) 3 items representing service product, and (4) 1 item representing social factors. Thus, the item analysis resulted in a pool of 25 items retained for further analysis.

Exploratory Factor Analysis

Following item analysis, exploratory factor analyses with varimax rotation and additional reliability assessments were undertaken on the remaining 25 items. Eigenvalue and variance explained were used to identify the number of factors to extract (Bearden et al., 1989; Hair et al., 1998). After inspecting item content for domain representation, we eliminated 4 items: (1) two items for low communalities and two items for high cross-loadings. A total of 21 DINESCAPE

items were retained after these analyses. The 21 DINESCAPE items were then subjected to further exploratory factor analysis. The final scale consisted 21 items representing a six-factor model that behaved consistently and had adequate reliability.

Kaiser-Meyer-Olkin (KMO) and Bartlett's test of Sphericity indicated that the distribution of values was adequate for conducting factor analysis. The KMO measure of sampling adequacy was .885, indicating a meritorious acceptance (George & Mallery, 2001; Hair et al., 1998). In addition, a significance value ($< .05$) of Bartlett's Test of Sphericity indicated that the data set of distributions was acceptable for factor analysis because the multivariate normality of the set of distributions was satisfied and the correlation matrix was not an identity matrix. All communalities, ranging from .52 to .86, were acceptable for all 21 items.

Table 3 presents the results of the six-factor structure delineated by exploratory factor analysis with varimax rotation. The 21 DINESCAPE items yielded six factors with eigenvalues more than 1.0, and these factors explained 74.55% of the overall variance. Each factor name was based on the characteristics of its composite variables. The first DINESCAPE factor contained five items and was labeled, "Facility Aesthetics." Facility aesthetics represented a function of architectural design, along with interior design and décor (Wakefield & Blodgett, 1994). Its definition of the construct domain of architectural design and interior design was relatively large compared to the other five dimensions of DINESCAPE. The five items in facility aesthetics comprised paintings/pictures, wall décor, plants/flowers, color, and furniture, all of which were aesthetic elements in the creation of aesthetic image or atmosphere. As expected, it captured the largest variance of DINESCAPE among the six dimensions, accounting for 16.06% of the total variance.

Insert Table 3

The second factor, “Ambience,” included intangible background characteristics that tend to affect the nonvisual senses (Baker, 1987). It contained four items: background music relaxes me, background music is pleasing, temperature is comfortable, and aroma is enticing. The third factor, “Lighting,” relates to the perception of lighting and its influence on feelings such as warmth, welcome (weaker expression than inviting), and comfort. Contrary to the expectation, lighting, which was a part of original dimension of ambience, was found to be a single dimension. One reason may be found in Carman’s (1990) work. He indicated that when one of the dimensions of quality was particularly important to customers, they were likely to break that dimension into subdimensions. The significance of lighting and other ambience elements, such as music, in restaurants is found in many previous studies (Hui et al., 1997; Kurtich & Eakin, 1993; Mattila & Wirtz, 2001; Milliman, 1982; Robson, 1999). In upscale restaurants, customers found lighting and ambience to be key and distinct dimensions in their customer’s perceptual map. From a practical standpoint, lighting can influence other dimensions, such as facility aesthetics, ambience, service product, and social factors. For instance, the lighting level can congruently interact with color to create a synergy in creating aesthetic atmosphere.

The fourth factor, “Service Product,” represented products or materials used to serve every customer whenever a turnover occurs. In this study, service product featured three attributes: (1) tableware, such as high quality glass, china, silverware; (2) linens, such as white table cloths and appealing napkin arrangement; and (3) overall table setting using such elements

as an appealing candle. It was worth noticing that service product was delineated separately from facility aesthetics in the customers' perceptual map of DINESCAPE. This unique construct, as distinct from general dimensions of physical environment, can probably be attributed to a specific setting where forms and deliver prestigious image for the customer.

The fifth construct, "Layout," featured the seating arrangement within the environment. The layout dimension contained three items: (1) seating arrangement gives me enough space, (2) seating arrangement makes me feel crowded, and (3) layout makes it easy for me to move around. These items captured both the psychological (e.g., crowded) and the physical (easy to move around) properties of spatial layout inside the dining area. Some previous studies included layout in facility aesthetics or even interior design. However, layout was a dimension distinct from the domain of facility aesthetics in this study.

Finally, the last DINESCAPE factor, "Social Factors," included the characteristics of employees and other customers in the service setting. It featured three items: attractive employees, adequate number of employees, and neat and well-dressed employees. Although the aspect of customers was technically deleted in the purification processes, that aspect should still be a concern. Toms and McColl-Kennedy (2003) argued that research to date has focused on the effects of the physical elements, with the social aspects (customers and service providers) of the environment largely ignored. The results of this study provided evidence that the domain of the physical environment should capture not only the facility aspects but also the social aspects of physical surroundings.

Customers rated all the DINESCAPE items highly because of the perceived quality of the physical environment in upscale restaurants. There were some items that customers especially saw as relatively positive rating them at equal or higher than 5.80: colors as part of warm

atmosphere (5.82), comfortable temperature (5.81), welcoming lighting (5.91), lighting as part of comfortable atmosphere (5.94), spacious seating arrangement (5.80), attractive employees (5.87), an adequate number of employees (5.98), and neat and well dressed employees (6.18).

Interestingly, customers rated all three social factor items higher than 5.80, and the third item (employees are neat and well dressed) was rated the highest among all DINESCAPE items.

These findings indicated that restaurateurs in upscale restaurants considered those eight elements important and paid relatively great attention to them. Therefore, customers perceived those elements relatively positive. Finally, grand means indicated that all six dimensions of the DINESCAPE were consistently highly rated (5.67 to 6.1). The aspects of social factor were especially focused on by restaurateurs in an upscale restaurant setting, as illustrated by the highest grand mean of social factor (6.1).

The overall patterns of factor loadings were consistent with the literature on the physical environment except for the separation of lighting from ambience and service product and layout from facility aesthetics. Items assigned to each construct had relatively high loadings on only one of the six dimensions extracted. Factor loadings of all 21 items were fairly high, ranging from 0.66 to 0.87, indicating a reasonably high correlation between the delineated dimensions and their individual items. The Cronbach's alphas, which were designed to check the internal consistency of items within each dimension, ranged from .80 to .92, indicating good reliability (Hair et al., 1998). In summary, the reliabilities and factor structures indicated that the final 21-item scale and its six factors had sound, psychometric properties. Subsequently, 21 items with 6 DINESCAPE dimensions were subjected to confirmatory factor analysis (CFA).

Confirmatory Factor Analysis

CFA was performed to verify the factor structure and improve measurement properties in the proposed scale (Anderson & Gerbing, 1988; Bearden et al., 1989; Gerbing & Anderson, 1988). A CFA with 21 items representing a six-dimension model was estimated using LISREL 8.54. Several widely used goodness-of-fit statistics were employed: root mean square error of approximation (RMSEA), normed fit index (NFI), Tucker-Lewis index (TLI), comparative fit index (CFI), and goodness-of-fit index (GFI). These fit indices consistently indicated the confirmatory factor model adequately reflected a good fit to the data (RMSEA = 0.074; NFI = 0.95; TLI = 0.97; CFI = 0.97; GFI = 0.86). In addition, measurement equations showed all acceptable levels of item squared multiple correlations for all 21 items, ranging from .52 to .89.

Unidimensionality and Reliability

Given the results of CFA, the measures were unidimensional because a set of indicators shared only a single underlying construct and the items were loaded as predicted with minimal cross-loadings (Bollen, 1989; Gerbing & Anderson, 1988). As illustrated in Table 4, Cronbach's alpha estimates, ranging from .80 to .92, were acceptable (Fornell & Larcker, 1981; Nunnally & Bernstein, 1994). Table 4 also shows the measurement statistics for model variables. The standardized factor loadings of the observed items on the latent constructs as estimated from CFA met the minimum criterion of .40; they ranged from 0.72 to 0.94 (Ford et al., 1986). The item reliabilities, which are the squared multiple correlations of an individual indicator, ranged from .52 to .88, indicating acceptable levels of reliabilities (Hair et al., 1998). The composite reliabilities of constructs ranged from .84 to .95. Adequate internal consistency of multiple items

for each construct in the six-factor model all exceeded .60, the minimum criterion suggested by Bagozzi and Yi (1988).

Insert Table 4

Figure 2 shows the estimated measurement model in the form of a structural diagram so that the relationships between indicators (observed variables) and constructs (unobserved variables) can be seen in the standardized factor loadings in addition to error variance for measurement items.

Insert Figure 2

Convergent and Discriminant Validity

Convergent validity was first estimated from the measurement model by determining if each indicator's estimated factor loading on the underlying construct was significant (Anderson & Gerbing, 1988; Netemeyer, Johnston, & Burton, 1990; Peter, 1981). Convergent validity was indicated since all lamdas (indicator factor coefficients) on their underlying constructs were significant. In addition, AVE of all six constructs exceeded the minimum criterion of 0.5 (Fornell & Larcker, 1981), ranging from 0.56 to 0.86. AVE also was used to test discriminant validity. Since the lowest AVE (.56) among all the constructs in Table 3 exceeded the highest square of

the estimated correlation between the latent variables (the square of the correlation between facility aesthetic and lighting = 0.50), discriminant validity also was satisfied (Fornell & Larcker, 1981).

DISCUSSIONS AND IMPLICATIONS

This paper shows the development of a multiple-item scale to measure physical and human surroundings in dining areas of upscale restaurants (DINESCAPE). Results of DINESCAPE showed reliable, valid, and useful measures of physical and human surroundings in the upscale restaurant context from the customer point of view. This is one of few exploratory studies to suggest a reliable and valid scale that can be used to measure customers' perceived performance level of physical environments in restaurant business settings, particularly under the upscale restaurant context.

This study has theoretical and managerial implications for both researchers and practitioners. From a theoretical perspective, above all, the availability of this instrument will stimulate much-needed empirical research focusing on physical environments and its impacts on image, mood, emotions, satisfaction, perception of overall service quality, and approach/avoidance behaviors in a variety of fields. The DINESCAPE scale can be applied to examine the interrelationships between DINESCAPE, emotional responses, and approach/avoidance behaviors not only in an upscale restaurant context but also in other restaurant segments like fast-casual dining restaurants (e.g., Panera Bread). Prior research indicated that some elements (e.g., music) in DINESCAPE had strong effects on customer emotional states and approach/avoidance behaviors through both direct and/or indirect links (Bitner, 1992; Chang, 2000; Mehrabian & Russell, 1974).

From a practical standpoint, DINESCAPE is a concise multiple-item scale with acceptable reliability and validity that restaurateurs can employ to better understand how customers perceive the quality of physical surroundings inside the dining area. The classification used in this study can help restaurateurs understand the DINESCAPE dimensions, and based on the classification, managers can identify and modify different DINESCAPE variables to improve the perceived quality of the physical environment.

Restaurateurs could also use the instrument to investigate the direction and strength of DINESCAPE elements and dimensions among their current customers. In addition, restaurateurs can determine the relative importance of the six dimensions affecting overall customer quality perceptions or even other outcomes like customer satisfaction. A DINESCAPE profile can be constructed using a restaurant's current customer base, thereby providing restaurateurs with additional understanding of their customers' perceptions.

Another application of the scale is its use in categorizing a restaurant's customers into several segments based on demographics (e.g., gender, age) as well as relative importance of the six dimensions in influencing customers' overall quality perceptions. For instance, suppose a manager discovered that older women prefer listening to classical music while young males wish to listen to top 40 music. When there is a birthday celebration for a man just turning 21, the management should play top 40 music instead of classical music as background. The restaurateur could, thus, focus on any of the DINESCAPE elements to investigate how the physical environment affects customer groups of different age or gender to satisfy the specific needs of different customer groups.

Using scales developed in this study, restaurateurs can use dimension scores to benchmark previous scores or even principal competitors. In multiunit operations, restaurateurs

can also compare one unit's results with another unit's scores. Then, they can analyze strengths and weakness and have a sense of what priorities should be set up. Each time the survey is administered, improvement strategies can be refined. DINESCAPE can be most valuable when the survey is used periodically to help users track changes in customer perceptions as well as trends in physical surroundings. In addition, restaurateurs who redesigning their facilities can assess customer perceptions before making any significant investment. However, DINESCAPE is a useful starting point, not the final answer in evaluating and improving the quality of the physical environment. Its standard six-factor structure serves as a meaningful framework for tracking an upscale restaurant's performance in physical environment over time and comparing performance against competitors.

In summary, DINESCAPE has a variety of potential applications in helping researchers and restaurateurs to better understand how customers perceive the physical environment. It is believed that this pioneering work can make the literature regarding the physical environments step forward and help restaurateurs assess customer perceptions of the quality of physical surroundings inside the dining area of upscale restaurants.

LIMITATIONS AND SUGGESTIONS FOR FUTURE STUDY

As with any scale development research, practitioners or researchers should use caution when applying the scale to other restaurant segments. First, this study was intended to tap a broad range of elements of the physical environment in the restaurant industry. The scale was specifically developed for the upscale restaurant context, however, caution should be taken in applying the scale to other restaurant segments. The efficiency of the DINESCAPE instrument requires modification to better assess the physical environment of a specific setting. For instance,

while slow tempo of classical music can be used as background music to relax customers in upscale restaurants, fast contemporary music might be preferred in the quick service restaurant to elicit fast turnover increasing the dining speed (Milliman, 1986). Second, this scale was developed only to address the internal environment, not the external environment because the latter was considered relatively less important than the former, and one goal of the research was to establish a parsimonious scale. Therefore, the domain of DINESCAPE is somewhat narrow. It was not intended to capture all aspects of the physical environment at any restaurants. External environmental cues might be actually salient issues for customer satisfaction and approach behaviors. For example, Chili's assigns some parking spaces especially for "To Go" customers. This may increase the satisfaction of their customers because such a service allows customers to pick up their food quickly. Clearly, scale development needs more research so that a broader range in restaurant settings can be included. Finally, with any factor analysis, a certain amount of subjectivity was necessary in identifying and labeling constructs. Finally, a few confounding effects (e.g., alcohol, incentives, premood), which could not be controlled during data collection, could affect the results. For instance, some customers might be pleasant or excited because of alcohol (e.g., wine), not because of the physical and human surroundings while they were completing the questionnaire. In addition, some incentives (free dessert or \$10 dining coupon) provided to customers could elicit pleasant feelings from some customers.

We hope this work will spawn more research on DINESCAPE by providing researchers with a reliable, valid, and parsimonious scale to measure the physical environment. The nature of the relationships between the DINESCAPE, such antecedents as premood, and such consequences as customer satisfaction need additional exploration. The relationships between the DINESCAPE and customer psychology as well as customer behavior could also be investigated

using environmental psychology theories. These future studies will enhance our understanding of the role of the DINESCAPE.

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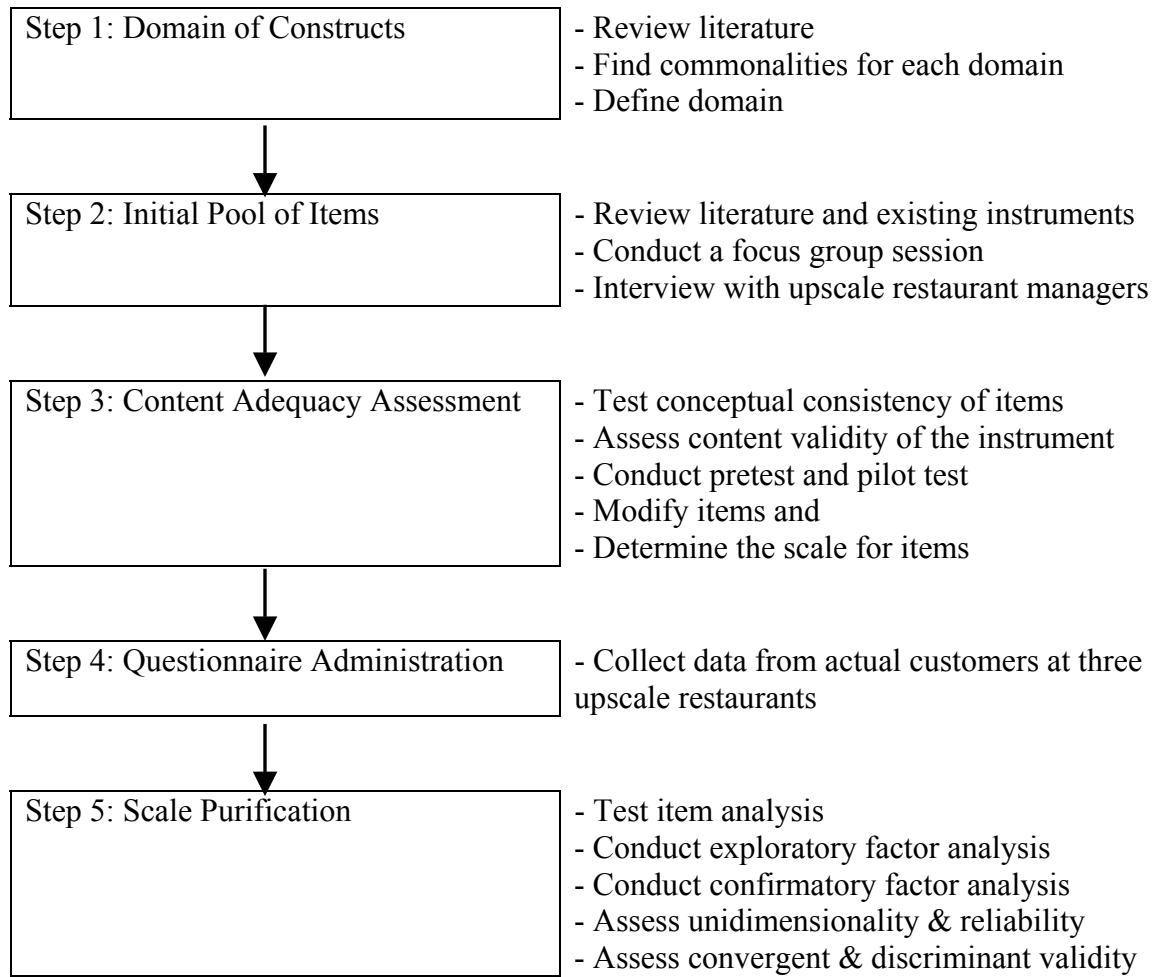


Figure 1. Scale Development Procedures

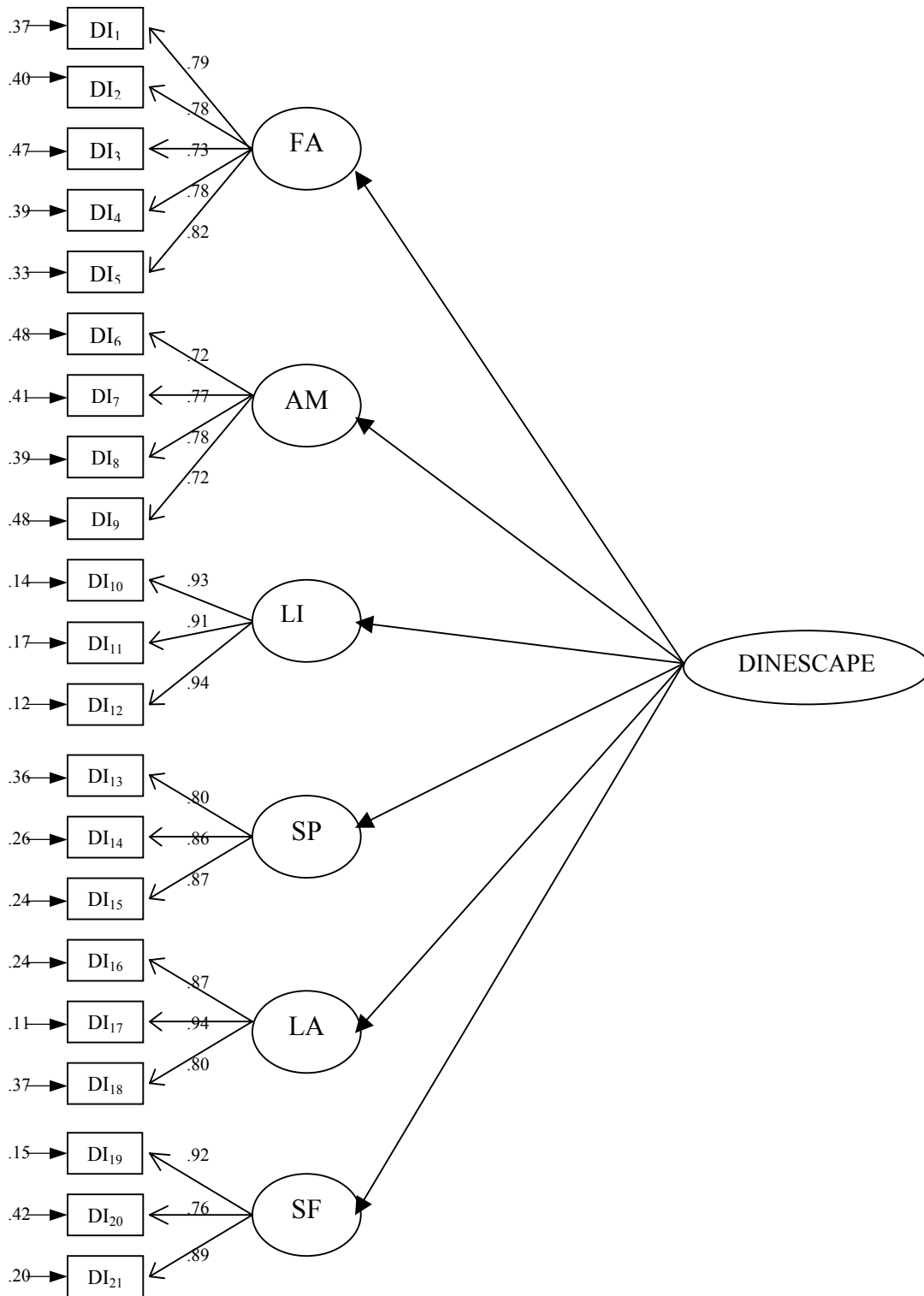


Figure 2. Measurement Model of DINESCAPE

Table 1
Literature Review of Dimensions Related to the Physical Environment

Authors	Terminology Used	Dimensions
Baker (1987)	Atmospherics	Ambient factors Design factors (aesthetics & functional) Social factors
Bitner (1992)	SERVICESCPE	Ambient conditions Spatial layout and functionality Sign, symbol and artifacts
Baker, Grewal, & Parasuraman (1994)	Store atmospherics	Ambient factors Design factors Social factors
Berman & Evans (1995)	Atmospherics	External variables General interior variables Layout and design variables Point of purchase & decoration variables
Stevens, Knutson, & Patton (1995)	DINESERV	Reliability Responsiveness Empathy Assurance Tangibles
Wakefield & Blodgett (1996)	SERVICESCPE	Layout accessibility Facility aesthetics Seating comfort Electronic equipment/displays Facility cleanliness
Wakefield & Blodgett (1999)	Tangible service factors	Building design & décor Equipment Ambience
Turley & Milliman (2000)	Atmospherics	External variables General interior variables Layout and design variables Point of purchase and decoration variables Human variables
Raajpoot (2002)	TANGSERV	Ambient factors Design factors Product/service factors

Table 2
Sample Characteristics of Respondents

Characteristic	Percentage
Age	
≤ 25	28.8
26-35	17.6
36-45	17.3
46-55	21.3
≥ 56	15.0
Gender	
Male	41.9
Female	58.1
House hold income (\$)	
< 20,000	15.4
20,000-59,999	35.9
60,000-99,999	24.1
>100,000	24.6
Race	
Caucasian	87.8
Other	12.2
Past experience	
First time visitors	45.5
Repeat visitors	54.5
Ownership of house	
Owners	60.3
Non-owners	39.7

Table 3
Exploratory Factor Analysis for DINESCAPE Factors

DINESCAPE Factors (Reliability Alpha)	Factor Loadings	Eigenvalues	Variance Explained	Item means	S.D.
F1: Facility Aesthetics (.87)		3.37	16.06		
Paintings/pictures are attractive.	.83			5.59	1.09
Wall décor is visually appealing.	.81			5.69	1.12
Plants/flowers make me feel happy.	.76			5.58	1.14
Colors used create a warm atmosphere.	.68			5.82	0.90
Furniture (e.g., dining table, chair) is of high quality.	.66			5.66	1.08
Grand mean				5.67	
F2: Ambience (.83)		2.77	13.18		
Background music relaxes me.	.87			5.73	1.04
Background music is pleasing.	.85			5.63	1.15
Temperature is comfortable.	.67			5.81	1.03
Aroma is enticing.	.62			5.50	1.07
Grand mean				5.67	
F3: Lighting (.92)		2.56	12.19		
Lighting creates a warm atmosphere.	.85			5.76	1.02
Lighting makes me feel welcome.	.83			5.91	0.93
Lighting creates a comfortable atmosphere.	.82			5.94	0.92
Grand mean				5.87	
F4: Service Product (.85)		2.43	11.55		
Tableware (e.g., glass, china, silverware) is of high quality.	.83			5.76	1.06
The linens (e.g., table cloths, napkin) are attractive.	.82			5.73	1.04
The table setting is visually attractive.	.77			5.71	0.99
Grand mean				5.73	
F5: Layout (.86)		2.35	11.20		
Seating arrangement gives me enough space.	.86			5.80	1.08
Seating arrangement makes me feel crowded.*	.83			5.59	1.21
Layout makes it easy for me to move around.	.76			5.69	1.10
Grand mean				5.69	
F6: Social Factors (.80)		2.18	10.36		
Attractive employees make me feel good.	.87			5.87	1.05
An adequate number of employees makes me feel cared for.	.80			5.98	0.94
Employees are neat and well dressed.	.71			6.18	0.81
Grand mean				6.01	
Total Variance			74.55%		

Note. *Reverse scored; Only loadings greater than .40 are shown. An asterisk indicates reverse scored items; A seven-point Likert scale response format was used.

Table 4
Measurement Properties

Factors (Cronbach's Alphas)	Standardized Factor Loadings	Item Reliabilities	Composite Reliabilities	AVE
Facility aesthetics (.87)			.89	.61
DS ₁	.79	.62		
DS ₂	.78	.61		
DS ₃	.73	.53		
DS ₄	.78	.61		
DS ₅	.82	.67		
Ambience (.83)			.84	.56
DS ₆	.72	.52		
DS ₇	.77	.59		
DS ₈	.78	.61		
DS ₉	.72	.52		
Lighting (.92)			.95	.86
DS ₁₀	.93	.86		
DS ₁₁	.91	.83		
DS ₁₂	.94	.88		
Service product (.85)			.88	.71
DS ₁₃	.80	.64		
DS ₁₄	.86	.74		
DS ₁₅	.87	.76		
Layout (.86)			.90	.76
DS ₁₆	.87	.76		
DS ₁₇	.94	.88		
DS ₁₈	.80	.64		
Social factor (.80)			.90	.74
DS ₁₉	.92	.85		
DS ₂₀	.76	.58		
DS ₂₁	.89	.79		

CHAPTER V:
**THE INFLUENCE OF DINESCAPE ON BEHAVIORAL INTENTIONS THROUGH
EMOTIONAL STATES IN UPSCALE RESTAURANTS**

Abstract

The purpose of this research was to build a conceptual model showing how the DINESCAPE influences customer behavioral intentions through emotions in an upscale restaurant setting. Based on the DINESCAPE scale developed in the first phase of this study, the Mehrabian-Russell environmental psychology framework was adopted to explore the linkage between the six DINESCAPE dimensions and customer emotional states (pleasure and arousal) and the linkage between pleasure and arousal and behavioral intentions. Structural equation modeling was used to test the causal relationships among the hypothesized relationships. Results revealed that the facility aesthetics, ambience, and social factor affected the level of customer pleasure while ambience and social factor influenced the amount of arousal. In addition, pleasure and arousal significantly affected on subsequent behavioral intentions. Finally, implications for restaurateurs and researchers are discussed.

INTRODUCTION

In recent years, growing attention has focused on the influence of perceived physical environments on human psychology and behavior in diverse areas, such as architecture, environmental psychology, psychology, retailing, and marketing (Donovan & Rossiter, 1982; Turley & Milliman, 2000). Theoretical and empirical literature suggests that customer reactions to the physical environment (also known as ‘atmospherics’ or ‘SERVICESCAPE’) may be more emotional than cognitive, particularly in hedonic consumption. While consumption of many types of service (e.g., using a McDonald’s drive-thru service) is driven primarily by utilitarian (functional) purposes, consumption of leisure services (e.g., dining at an upscale restaurant) is also driven by hedonic (emotional) motives. Hedonic consumption involves more than just the perceived quality of service (e.g., whether a meal was delivered fast), influencing whether consumers are satisfied with the service experience. One of the main reasons customers seek out hedonic consumption is to experience specific emotions such as pleasure and excitement (Wakefield & Blodgett, 1999). Previous research indicates that the degree of pleasure (e.g., unhappy-happy) and arousal (e.g., excited-calm) that customers experience in a hedonic service encounter may, at least in part, determine their satisfaction and subsequent behavior (Mano & Oliver, 1993; Russell & Pratt, 1980). The physical environment is important because it can either enhance or suppress these feelings and emotions (Wakefield & Blodgett, 1999).

SERVICESCAPE refers to the “built environment” or, more specifically, “the man-made, physical surroundings as opposed to the natural or social environment” (Bitner, 1992, p. 58). SERVICESCAPE is an important determinant of customer psychology (e.g., satisfaction, emotion) and behavior (e.g., repatronage, positive word-of-mouth) when the service is consumed primarily for hedonic reasons and customers spend moderate to long periods in

SERVICESCAPE (Wakefield & Blodgett, 1996). For instance, in the case of upscale restaurants, customers may spend two hours or more in the establishment, sensing physical surroundings consciously and unconsciously before, during, and after the meal. While the food and the service must be of acceptable quality, a pleasing SERVICESCAPE (e.g., lighting, décor, layout, employee appearance) may determine to a large extent the degree of positive emotions and approach behavior (Donovan & Rossiter, 1982; Hui & Bateson, 1991; Mehrabian & Russell, 1974).

While there is a significant body of research on the impact of the physical environment on human psychology and behavior, little research has been conducted on understanding how the physical environment affects customers within the hospitality industry, particularly in upscale restaurants. In addition, the physical environment typically has been studied by looking at the effect of one or several particular physical environmental elements (e.g., lighting, music) on the customer's purchase behavior. Thus, the combined effect of these elements that make up the physical environment of an upscale restaurant needs to be empirically tested to create an overall conceptual model. If the physical environment can indeed influence a customer's psychology and behavior in an upscale restaurant, then a framework should be developed to study such effects. Although several researchers have attempted to explore various aspects of environmental and behavioral relationships, no previous studies have applied an overall environmental psychology framework to the upscale restaurant context. Thus, this study attempted to fill these research gaps by assessing the effects of customer perceptions of the physical environment on their emotions, which is expected to have an impact on their intended behaviors.

The purpose of this study was to build a conceptual framework for how the physical environment influences customers' behavioral intentions through their emotions. To achieve this

purpose, based on the DINESCAPE scale developed in study 1, this study examined the impacts of DINESCAPE on emotions and in turn, the effects of emotions on behavioral intentions using the Mehrabian-Russell (1974) environmental psychology framework. Specifically, the effects of facility aesthetic, lighting, ambience, layout, service product, and social factor on customer pleasure and arousal and the impact of pleasure and arousal on behavioral intentions were examined. The specific objectives of this study were (1) to adapt the Mehrabian-Russell (1974) environmental psychology framework to the upscale restaurant context and test predictions from the model; (2) to investigate the impact of DINESCAPE on customers' emotional states: pleasure and arousal; and (3) to determine the relative importance of pleasure and arousal on customers' behavioral intentions. In the rest of this article, the term "DINESCAPE," rather than "SERVICESCAPE," is used to distinguish our work from previous studies. In this study, DINESCAPE is defined as man-made physical and human surroundings in the dining areas of the upscale restaurants. This study does not focus on external environment (e.g., parking space, building design) and some internal environmental variables (e.g., restroom and waiting room).

THEORETICAL BACKGROUND

The Mehrabian-Russell (1974) environmental psychology framework provided the theoretical framework of this study for examining the effects of the physical environment on emotions and, in turn, the impact of emotions on behavioral intentions. Mehrabian and Russell (1974) first introduced a theoretical model for studying the impact of environment on human behavior. This model is divided into three parts: environmental stimuli, emotional states, and approach or avoidance responses. In this model, the environment creates an emotional response in individuals, which in turn elicits either of an approach or avoidance behavior. This model has

received consistent empirical support in environmental psychology and marketing literature (Baker & Cameron, 1996; Baker, Levy, & Grewal, 1992; Donovan & Rossiter, 1982; Russell & Pratt, 1980; Sayed, Farrag, & Belk, 2003).

During the past several decades, the importance of a more aesthetic physical environment has been studied in a variety of research fields such as the retail environment, with researchers studying the influence of the physical environment on human psychology and behavior (Bitner, 1992; Donovan & Rossiter, 1982; Gilboa & Rafaeli, 2003; Mehrabian & Russell, 1974; Turley & Milliman, 2000). More specifically, based on Mehrabian and Russel (1974) model, research in environmental psychology has shown that properly designed physical environments may create feelings of excitement, pleasure, or relaxation, which, in turn, may elicit either an approach or avoidance behavior (Mehrabian-Russel, 1974; Russell & Pratt, 1980). Here it is important to notice that the physical environment should be considered the same as the first component of the Mehrabian and Russell (1974) model: environmental stimuli. In addition, the feature of behavioral intention in this study is congruent with aspects of approach/avoidance behavior, which is the third component of Mehrabian-Russel (1974) model.

Therefore, the Mehrabian-Russell (1974) environmental psychology model, which incorporates the concepts of the physical environment, emotions, and approach/avoidance behaviors, could be used as a theoretical framework for this study to explore the impact of the physical environment on emotions, and, in turn, the effects of emotions on behavioral intentions. Based on Mehrabian-Russel (1974) model, it was assumed that the physical environment (also called DINESCAPE in this study) should influence a customer's approach/avoidance behavior toward restaurant experience only through his/her emotions in upscale restaurants in this study.

Mehrabian-Russell Model

The Mehrabian-Russell (1974) environmental psychology framework has strong support in many areas, among them environmental psychology, retailing, and marketing. Figure 1 presents the Mehrabian-Russell Model. The application of this principle facilitates predicting and understanding the effects of environmental changes on human behavior. The model is divided into three parts: a stimulus taxonomy, a set of intervening variables, and a set of responses. The model claims that that any environment will generate an emotional state in an individual that can be characterized as one of three emotional states: pleasure, arousal, and dominance, and those three emotional states mediate approach-avoidance behaviors in a wide range of environments.

Insert Figure 1

Pleasure refers to the extent to which individuals feel good, happy, pleased, or joyful in a situation, while arousal refers to the degree to which individuals feel stimulated, excited, or active. The dominance dimension is the extent to which a person feels influential, in control, or important. However, studies that tested the model have found that the pleasure and arousal dimensions underlie any affective responses to any environments, while dominance did not have a significant effect on approach or avoidance behaviors (Russell & Pratt, 1980; Ward & Russell, 1981). Thus, the role of dominance in relations to approach or avoidance behavior has received little attention in more recent studies. More recent researchers have defined two (pleasure and arousal) rather than three (pleasure, arousal, and dominance) basic dimensions of the model.

Environmental psychologists (Donovan & Rossiter, 1982; Mehrabian & Russell, 1974; Russell & Pratt, 1980) assume that people's feelings and emotions ultimately determine what they do and how they do it. Further, people respond with different sets of emotions to different environments, and that these, in turn, prompt them to approach or avoid the environment. Approach behaviors are seen as positive responses: a desire to stay in a particular facility and explore it. Avoidance behaviors include not wanting to stay in a facility not wanting exploring. The Mehrabian-Russell (1974) model proposed that emotions such as pleasantness-unpleasantness and arousal- nonarousal influenced people's responses to environments. The model was used to determine the factors that influenced purchasing behavior in retail stores. The results showed that general feelings of pleasantness increased the time shoppers spent in the stores as well as the amount of money they spent (Baker et al., 1992; Donovan & Rossiter, 1982; Donovan, Rossiter, & Nesdale, 1994). Therefore, two of the hypotheses are proposed here for the purposes of confirmatory testing of Mehrabian-Russell (1974) model.

H1: Pleasure will have a positive effect on behavioral intention.

H2: Arousal will have a positive effect on behavioral intention.

DINESCAPE Variables

In this study DINESCAPE is defined as the man-made physical and human surroundings in the dining area of upscale restaurants.

Facility Aesthetics

Facility aesthetics refer to a function of architectural design, along with interior design and décor, all of which contribute to the attractiveness of the DINESCAPE (Wakefield & Blodgett, 1994). Once customers are inside the dining area, they may spend hours observing

(consciously and subconsciously) the interior of the dining area, which is likely to affect their attitudes towards the restaurant (Baker et al., 1988). In addition to the appeal of the dining area's architectural design, customers may be influenced by the color schemes of the dining area. Different colors stimulate different moods, emotions, and feelings (Bellizzi & Hite, 1992; Gorn et al., 1997; Mikellides, 1990). Other aspects of interior design, such as furniture, pictures/paintings, plants/flowers, ceiling decorations, or wall decorations may also serve to enhance the perceived quality of the DINESCAPE, creating emotions (pleasure and arousal) in a customer. Thus, it is proposed that:

H3a: Facility aesthetics will have a positive effect on pleasure.

H3b: Facility aesthetics will have a positive effect on arousal.

Lighting

Lighting can be one of the most salient physical stimuli in the upscale restaurant. Restaurateurs know that subdued lighting symbolically conveys full service and relatively high prices, whereas bright lighting may symbolize quick service and lower prices. Research has shown the impact of lighting level preferences on individuals' emotional responses and approach-avoidance behaviors. Baron (1990) showed that subjects had more positive affect under low lighting levels than high lighting levels. Hopkinson, Petherbridge, and Longmore (1966) found that the level of comfort was increased at relatively low levels of light, while comfort decreased with high levels of light. Higher levels of illumination are also associated with increased physiological arousal (Kumari & Venkatramaiah, 1974). In addition, the type of lighting could directly influence an individual's perception of the definition and quality of the space, influencing his/her awareness of physical, emotional, psychological, and spiritual aspects of the space (Kurtich & Eakin, 1993). Thus, it is proposed that:

H4a: Lighting will have a positive effect on pleasure.

H4b: Lighting will have a positive effect on arousal.

Ambience

Ambient elements are intangible background characteristics that tend to affect the nonvisual senses and may have a subconscious effect. These background conditions include temperature, noise, music, and scent (Baker, 1987). For instance, in the past two decades, research on the effects of music on consumer perception and behavior has expanded greatly (North & Hargreaves, 1998). Particular emphasis has been given to *atmospheric* music, designed to create commercial environments that “produce specific emotional effects in the buyer that enhance his purchase intentions” (Kotler, 1973, p. 50). Previous research has shown that atmospheric music can (1) increase sales (Areni & Kim, 1993; Mattila & Wirtz, 2001; Milliman, 1982, 1986; North & Hargreaves, 1998; Yalch & Spangenberg, 1993); (2) influence purchase intentions (Baker et al., 1992; North & Hargreaves, 1998); (3) produce significantly enhanced affective response such as satisfaction and relaxation (Oakes, 2003); (4) increase shopping time and waiting time (Milliman, 1982, 1986; North & Hargreaves, 1998; Yalch & Spangenberg, 1993, 2000); (5) decrease perceived shopping time and waiting time (Chebat et al., 1993; Kellaris & Kent, 1992; Yalch & Spangenberg, 2000); (6) influence dining speed (Roballey et al., 1985; Milliman, 1986); and (7) influence customers’ perceptions of a store (Hui et al., 1997; Mattila & Wirtz, 2001; North & Hargreaves, 1998; Yalch & Spangenberg, 1993).

The influence of pleasant scents as a powerful tool to increase sales has gained much attention in the retail businesses (Bone & Ellen, 1999; Hirsch, 1991, 1995; Hirsch & Gay, 1991; Lin, 2004; Mattila & Wirtz, 2001). Ambient odors might also influence a consumer’s mood, emotion, or subjective feeling state (Bone & Ellen, 1999; Hirsch, 1995). Psychological research

suggests that certain temperatures are associated with a negative emotion. For example, Bell and Baron (1977) argued that low temperatures (e.g., around 62°F) were associated with negative affective states. Thus, it is proposed that:

H5a: Ambience will have a positive effect on pleasure.

H5b: Ambience will have a positive effect on arousal.

Layout

Spatial layout refers to the way in which objects (e.g., machinery, equipment, and furnishings) are arranged within the environment. Just as the layout in discount stores facilitates the fulfillment of functional needs (Baker et al., 1994), an interesting and effective DINESCAPE layout may also facilitate fulfillment of hedonic or pleasure needs (Wakefield & Blodgett, 1994). A spatial layout that makes people feel constricted may have a direct effect on customers' quality perceptions, excitement levels, and indirectly on their desire to return. Service or retail facilities that are specifically designed to add some level of excitement or arousal to the service experience, such as in upscale restaurants, should take care that ample space is provided to facilitate exploration and stimulation within the DINESCAPE (Wakefield & Blodgett, 1994).

H6a: Layout will have a positive effect on pleasure.

H6b: Layout will have a positive effect on arousal.

Service Product

Raajpoot (2002) found that product/service was a very important tangible quality. Service product dimension should be an especially important determinant in the upper-class market. Upscale restaurants should be designed to deliver a prestigious image to attract upper-class customers as to their intended market. Thus, high quality flatware, china, glassware, and linen

will affect customer perceptions of quality. The way in which the table is decorated (for instance, with an attractive candle) can also make customers feel prestigious or elegant.

H7a: Service product will have a positive effect on pleasure.

H7b: Service product will have a positive effect on arousal.

Social Factors

Social elements are the people (e.g., employees and customers) in the service setting (Baker, 1987). The social variables include employee appearance, number of employees, and the dress or physical appearance of other customers. The effects of social cues (number/friendliness of employees) was investigated as a part of a study conducted by Baker, Levy, and Grewal (1992) in which they found that the more social cues present in the store environment, the higher the subjects' arousal. Tombs and McColl-Kennedy (2003) argued that the social environment dictated the desired social density, which influenced customers' affective and cognitive responses as well as repurchase intentions. In addition, other customers played a key role in affecting the emotions of others, either positively or negatively, and this largely influenced repatronage.

H8a: Social factors will have a positive effect on pleasure.

H8b: Social factors will have a positive effect on arousal.

METHODOLOGY

Data Collection

Data were collected from upscale restaurants in which average per-person check was more than \$20 and which offered a full menu, full table service, food made from the scratch, personalized service, and acceptable ambience. Using a convenience sampling approach, 319

responses were collected at three upscale restaurants in two Midwest and Northwest states. Customers were given surveys at the end of their main entrée and asked to participate in the study. After deleting incomplete responses, 253 questionnaires were used for further analysis.

Measurement of Variables

The questionnaire designed for this study was divided into three parts: DINESCAPE items, emotional states, and behavior intentions.

DINESCAPE. Respondents were asked to rate each statement item using a 7-point Likert scale (1 = extremely disagree, 7 = extremely agree). To reduce the potential bias of forced response, an option marked “N/A” was included for each question (Gunderson, Heide, & Olsson, 1996). The questionnaire included measurement items relevant to six dimensions (facility aesthetics, lighting, ambience, layout, service product, and social factor) of the DINESCAPE scale developed in the first study. The list of relevant physical environmental items was generated from reviews of previous studies, focus group, and discussions with several managers at upscale restaurants. This resulted in a list of 34 items related to the physical environment.

Emotional States. Emotions were measured using eight items representing the pleasure and arousal dimensions derived from the scale suggested by Mehrabian and Russell (1974) and adapted to fit the upscale restaurant context. Subjects evaluated their feelings, moods, and emotional responses to the physical environment of the upscale restaurant. All items were rated on a 7-point semantic differential scale, in which an emotion and its opposite constituted the two ends of the scale. The scale of pleasure consisted of four bipolar measures coded on a seven-point scale: unhappy—happy; annoyed—pleased; bored—entertained; disappointed—delighted.

The measure of arousal was comprised of the following four items: depressed—cheerful; calm—excited; indifferent—surprised; sleepy—awake.

Behavioral Intentions. To measure general approach–avoidance behavior, specifically, behavioral intentions were operationalized using four items. The items were assessed on a 7-point Likert scale. Behavioral intentions (BI) were measured based on Mehrabian and Russell’s (1974) four aspects of approach-avoidance behaviors and the scale suggested by Zeithaml et al. (1996) and adapted to fit the upscale restaurant context. Subjects were asked to react to the following four statements: “I would like to come back to this restaurant in the future,” “I would recommend this restaurant to my friends,” “I am willing to stay longer than I planned at this restaurant,” and “I am willing to spend more than I planned at this restaurant.” Participants responded to these items using a 7-point Likert scale (1 = extremely disagree, 7 = extremely agree).

Data Analysis

Following the procedure suggested by Anderson and Gerbing (1988), data were analyzed using the two-stage approach to causal modeling, in which the measurement was first confirmed and then the structural model was built. In the first step, a confirmatory factor analysis (CFA) was performed to identify whether the measurement variables reliably reflected the hypothesized latent variables (aesthetic design, lighting, ambience, layout, service product, social factor, pleasure, arousal, behavioral intention) using the covariance matrix. All latent variables were allowed to intercorrelate freely without attribution of a causal order. Cronbach’s alphas, item reliabilities, composite reliabilities, and average variance extracted (AVE) for the measures were also computed to check the reliability of this Mehrabian-Russell model. Furthermore, convergent

validity and discriminant validity of the model were tested by using AVE, which reflects the overall amount of variance captured by the construct. The AVE value should exceed .50 for a construct to meet convergent validity (Hair et al., 1998). Fornell and Larcker's (1981) discriminant validity test was also conducted. This test requires that, when taking any pair of constructs, the AVE for each construct should be higher than the squared correlations between the two associated constructs.

In the second step, a structural equation modeling (SEM) with latent variables via LISREL 8.54 was tested to determine the adequacy of the Mehrabian-Russell (1974) model by representing the constructs of the model and testing the hypotheses. The facility aesthetics, lighting, ambience, layout, service product, and social factors were predictor variables (exogenous variables) and pleasure, arousal, and behavioral intention were criterion variables (endogenous variables) in the analysis.

RESULTS

Measurement Model

Following the recommendation of Anderson and Gerbing (1988) the measurement model was first confirmed. A series of CFA using maximum likelihood estimation on the covariance matrix were conducted to test the factor structure of the measures used (Anderson & Gerbing, 1988). More specifically, the measurement model allowed assessment of convergent and discriminant validity of the construct measures. Based on the results of the first CFA, item SF₃ was deleted because of its low squared multiple correlation ($R^2 = 0.33$). Once this item was deleted, CFA was conducted again. Table 1 presented the Cronbach's alphas and factor loadings of the observed items on the latent constructs as estimated by the CFA, in addition to the

measurement statistics for the model variables. Cronbach's alphas of latent variables were satisfactory for all seven constructs (0.70-0.93), indicating acceptable internal consistency (Nunnally, 1978). Moreover, all standardized factor loadings ranged from 0.67 to 0.99, which met the minimum criterion of .40 (Ford et al., 1986).

As observed in Table 1, the item reliabilities, the squared multiple correlations of the individual items, gave the lower bound of the reliability of the measures. These ranged from .45 to .98, indicating an acceptable level of reliability (Hair et al., 1998). The composite reliabilities of the latent variables were computed by the formula: $\rho = (\sum \lambda_i)^2 / (\sum \lambda_i)^2 + (\sum \theta_i)$, where λ_i refers to i th standardized loading and θ_i refers to the i th measurement error variance. Although this coefficient is similar to Cronbach's alpha, it relaxes the assumption that each item is equally weighted in determining the composite (Perugini & Bagozzi, 2001). The composite reliabilities of constructs ranged from 0.80 to 0.95. These values indicated adequate internal consistency of multiple indicators for each construct in the model; composite reliabilities should exceed .70 (Hair et al., 1998).

Insert Table 1

Convergent validity was indicated by all lamdas (factor loadings or indicator factor coefficients) on their underlying constructs; they were significant at .05 (Anderson & Gerbing, 1988). Moreover, AVE in all nine constructs by items was more than the unexplained variance (AVE > 0.50) (Fornell & Larcker, 1981). In addition, all factors met the criteria for discriminant validity because AVE for each construct in Table 1 was more than the variance explained

between the associated constructs (r^2) (Fornell & Larcker, 1981). In sum, the assessment of the measurement of the Mehrabian-Russell (1974) model showed good evidence of reliability and validity for the operationalization of the latent constructs.

Table 2 presents the intercorrelations among the latent variables. Most of the correlations between constructs were in the expected direction, and all were significant ($\alpha = 0.05$). The correlations indicated that pleasure (0.64) played a more important role than did arousal (0.44) in determining behavioral intentions. Pleasure was most highly correlated with ambience (0.66), followed by facility aesthetic (0.52), layout (0.52), and social factor (0.52). Similarly, arousal was also most highly associated with ambience (0.56), followed by social factor (0.49), facility aesthetic (0.48), and layout (0.45). Finally, it was worth noting that the two independent constructs (pleasure and arousal) were somewhat highly correlated ($r = 0.44$). Based on the Mehrabian-Russell (1974) model, pleasure and arousal should emerge as highly distinctive dimensions that can be meaningfully represented as orthogonal dimensions in factor analytic studies of emotion, and no causal relationship exists between two independent dimensions. However, here the significant positive correlation indicated that pleasure and arousal might be causally related, which has been argued by some researchers. More specifically, the path from arousal to pleasure was verified in previous studies (Babin & Attaway, 2000; Chebat & Michon, 2003; Donovan et al., 1994; Wakefield & Baker, 1998).

Insert Table 2

The overall model fit was evaluated statistically by the chi-square test and heuristically using a number of goodness-of-fit statistics. The chi-square test of measurement model was significant ($\chi^2_{(396)} = 906.96, p = .00$); that is, statistically the model did not fit the data. However, since chi-square statistic is very sensitive to sample size, researchers typically tend to discount the chi-square test and resort to other methods for evaluating the fit of the model to the data (Bearden, Sharma, & Teel, 1982; Bentler & Bonett, 1980). Consequently, other widely used goodness-of-fit indices were evaluated to evaluate the fit of the model. Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI) are generally regarded as superior indicators of the overall fit of the model (Bentler, 1990; Marsh et al., 1988). Good fits are indicated when Normed Chi-square ($\chi^2 / \text{d.f.}$) is less than three (Bearden et al., 1982). In addition, satisfactory fits are obtained when the TLI and CFI are greater than or equal to .90 and the Root Mean Square Error of Approximation (RMSEA) is less than or equal to .08 (Bentler, 1990; Marsh et al., 1988). These fit indices consistently showed that the measurement model fit the data very well ($\chi^2 / \text{d.f.} = 2.29$; CFI = 0.97; TLI = 0.96; RMSEA = 0.07).

Structural Equation Model

After confirming the measurement model, the structural model was then examined. Anderson and Gerbing (1988) suggest using two criteria to evaluate the causal model: fit indices and path significance. Both criteria were advocated because fit indices alone did not assess all aspects of a model's appropriateness to the data. It is possible to obtain acceptable levels of fit for models in which all the structural paths hypothesized are found not significant. Thus, causal parameter estimates should be examined in conjunction with model fit statistics (Anderson & Gerbing, 1988).

The results of the standardized parameter estimates and t-values are reported in the upper portion of Table 3, and those of the model fit estimates of the structural model are shown in the lower portion of Table 3. For the overall model, the chi-square statistic indicated a not-good fit ($\chi^2_{(403)} = 1021.41, p = 0.00$). However, as mentioned, the χ^2 statistic is very sensitive to sample size (Bearden et al., 1982; Bentler & Bonett, 1980; Hair et al., 1998). To reduce the sensitivity of the chi-square statistic, a common practice is to divide its value by the degrees of freedom: Normed Chi-square. The commonly used cut-off point of Normed Chi-square is three (Hair et al., 1998). By this standard, the value for the Mehrabian-Russell (1974) model ($\chi^2 / \text{d.f.} = 2.53$) showed an acceptable model fit. All fit indexes consistently indicated that the estimated model provided a good fit to the data (RMSEA = 0.078; TLI = 0.96; CFI = 0.96). The amount of variance explained in pleasure and in arousal by facility aesthetic, lighting, ambience, layout, product, and social factor was 49% and 39%, respectively. The overall variance explained for behavioral intention was 44%, indicating the model could predict and explain fairly well customer behavioral intentions in this study.

Insert Table 3

Figure 2 presents the estimated model in the form of a structural diagram for the structural equation modeling, showing the direction and magnitude of the direct impact through the standardized path coefficients in addition to error variance for measurement items. Looking at specific links in the structural path model, Figure 2 highlights the statistically significant paths with solid lines and the nonsignificant paths with dashed lines. The primary interest of this study

was to examine the relative impact of pleasure and arousal on behavioral intention. As can be observed in Table 3 and Figure 2, both pleasure and arousal were statistically significant predictors of customers' behavioral intentions in the upscale restaurant. In terms of the relationship between pleasure and customers' behavioral intentions, the results showed that pleasure influenced behavior intentions in a positive way ($\beta = 0.56$; $t = 9.94$), supporting Hypothesis 1. Moreover, significant regression weight of arousal on behavior intentions ($\beta = 0.20$; $t = 3.31$) in the estimated model suggested that arousal was a good predictor of the behavior intentions, supporting Hypothesis 2.

The results revealed a pattern of causal relationships that was partly consistent with the all theoretically hypothesized paths between DINESCAPE and emotional states. First, the causal relationships from perceived physical environments to pleasure are shown in Figure 2 and Table 3. The estimate of the standardized path coefficient indicated that the linkage between facility aesthetics and pleasure was significant ($\beta = 0.19$; $t = 2.23$), which supported Hypothesis 3a. However, the linkage between lighting and pleasure was not significant ($\beta = 0.02$; $t = 0.27$). Therefore, Hypothesis 4a was not supported. The parameter estimate for the path linking from ambience to pleasure was significant ($\beta = 0.41$; $t = 3.69$), which supported Hypothesis 5a. This estimate showed the greatest standardized parameter estimate among all the paths in DINESCAPE and pleasure and arousal. This indicates that ambience is the dimension that most influences customers' pleasure and arousal. This provides restaurateurs with practical information on how important ambience is in creating a pleasant and arousing environment. The path from layout to pleasure and the path from service product to pleasure were not significant, so Hypothesis 6a ($\beta = 0.11$; $t = 1.34$) and Hypothesis 7a ($\beta = -0.10$; $t = -1.14$) were not supported. The path from social factors to pleasure was significant ($\beta = 0.20$; $t = 2.25$), which

supported Hypothesis 8a. In short, as the perceived quality of the facility aesthetics, ambience, and social factors increased, customer pleasure became stronger.

Insert Figure 2

Mixed support was also found for the hypothesized relationships between DINESCAPE dimensions and arousal in the estimated model. As shown in Figure 2 and Table 3, the four hypothesized paths from perceived physical environments to arousal revealed as not significant, which did not support Hypotheses: H3b (standardized coefficient of .15); H4b (standardized coefficient of .11); H6b (standardized coefficient of .06); and H7b (standardized coefficient of -.07). In contrast, Hypothesis 5b (ambience to arousal) was supported ($\beta = 0.27$; $t = 2.22$) and Hypothesis 8b (social factors to arousal) was also supported ($\beta = 0.23$; $t = 2.29$). In short, as the perceived quality of ambience and social factor increased, the magnitude of arousal was enhanced.

In examining the relative contribution of each dimension of the DINESCAPE to emotional states, the structural equation model indicated that the three variables (facility aesthetic, ambience, social factor) should be a major source of variation in pleasure and/or arousal. The ambience ($\beta = 0.41$) was the primary explanatory variable for pleasure, followed by social factor ($\beta = 0.20$) and facility aesthetic ($\beta = 0.19$). Similarly, the ambience ($\beta = 0.27$) was the major explanatory variable for arousal, followed by social factor ($\beta = 0.23$). Interestingly, facility aesthetic was a significant predictor only for pleasure ($\beta = 0.19$), not for arousal ($\beta =$

0.15). Previous research indicated that facility aesthetic like color influenced emotional pleasure more strongly than arousal (Bellizzi & Hite, 1992). The other three causal paths—lighting, layout, and service product—were not significant, which indicated these aspects did not influence customer emotional states.

Indeed, results showed that the betas linking pleasure and arousal to behavior intentions had significant coefficients, with rather high positive values for the causal path linking pleasure and behavior intentions ($\beta = 0.56$) and relatively much lower positive values ($\beta = 0.20$) for the causal path linking arousal and behavior intentions. That is, pleasure was a more powerful determinant of behavioral intentions than arousal, which was consistent with some previous studies (Chebat & Michon, 2003; Donovan & Rossiter, 1982). Because pleasure proved to be a major contributor to behavioral intentions, marketing strategies should be directed toward generating pleasurable environment by the means of enhancing perceived quality of facility aesthetic, ambience, and social factor. That is, to enhance customers' approach behavioral intentions, it is important for restaurateurs to emphasize their efforts on the quality of facility aesthetic, ambience, and social factor.

DISCUSSIONS AND IMPLICATIONS

With the respect to the topic of physical environment, this study attempted to explain the effects of physical cues on consumer responses based on environmental psychology literature. More specifically, the purpose of this study was to examine the impact of DINESCAPE on pleasure and arousal and the influences of the pleasure and arousal on behavioral intentions based on the Mehrabian and Russell (1974) model. A model was proposed and tested in the upscale restaurant setting. The most important contribution of this research was its empirical

demonstration of how customers perceived physical environments and how that perception directly influenced customers' emotion and indirectly affected their future intentions.

The findings indicated which environmental elements produced pleasure and arousal so that restaurateurs could have some guidance in planning a pleasant and arousing environment. Certain attributes were more important than others in enhancing the customer perception of the physical environment and in turn, their emotions so that the results have implications for determining how management focuses physical resources. The results showed that the facility aesthetics, ambience, and social factor had a significant effect on customers' pleasure and/or arousal and the pleasure and arousal had a significant role in determining their behavioral intentions. Generally, management should allocate resources primarily for facility aesthetics, ambience, and social factor at upscale restaurants.

First, this study showed that one of the most significant factors affecting customers' pleasure and arousal was ambience. It is very important to notice that the physical elements (e.g., music, aroma, temperature) of ambience can be controlled to a large extent by management, and it is probably among one of the least expensive ways to enhance customer perceptions of physical surroundings. For instance, music can be a more highly controllable physical element than other physical elements without costing a lot. Restaurateurs can easily control background music, varying its volume (soft to loud), genre (classical or jazz), tempo (slow to fast) based on the customers' preferences to help them feel pleased or relaxed. Thus, restaurateurs should seriously consider physical elements related to ambience as a marketing and operational tool.

In addition to the effect of ambience, the other major DINESCAPE feature directly influencing customers' pleasure and arousal was social factor. In the eyes of the customer, the social factor could be an important dimension of an upscale restaurant's image. The employees

could maintain this important role until the completion of the service delivery process. Since there was evidence supporting the strong influence of social factor (employees) on a customer's pleasure and arousal, a service organization wanting to enhance customers' pleasure and arousal must choose the right style for its employees. This style can be achieved in two ways: professional appearance and attractiveness. In any situation, the style of the employees should be completely congruent with the restaurant image to maximize the effect upon customer perceptions.

Finally, another element directly influencing customers' pleasure with the DINESCAPE was facility aesthetics. Therefore, marketing needs to create an environment that enhances customer attitudes and beliefs about the restaurant, and consequently, their perception of physical environment, their satisfaction, and their behavioral intentions. Particularly, DINESCAPE elements of facility aesthetics (e.g., paintings/pictures, plants/flowers, furniture, color, and wall décor) are likely to differentiate a restaurant from the competition in part because of atmosphere (Menon & Kahn, 2002). While the more costly aspects of special issues, such as major renovation or replacement of the architectural design, would be a major decision, restaurateurs should not overlook some simple uses of aesthetics such as replacing plants/flowers on table.

The overall results reinforced the importance of understanding the impact of emotion on consumers' intended behaviors. This study revealed that both pleasure and arousal derived from the DINESCAPE were significant determinants of behavior intentions, and the results have implications for both practitioners and researchers. Some restaurateurs might overlook emotional impact when cognitive elements (e.g., quality of food, food variety, price, and location) are largely emphasized. Our findings indicated that the emotional responses evoked by the DINESCAPE within an upscale restaurant were determined the extent to which the customers

intended: to come back, to recommend the restaurant to friends or others, to stay longer than anticipated, and to spend more than originally planned expenditure. Thus, restaurateurs should emphasize DINESCAPE elements to generate positive emotions in customers that can have an important cuing or reinforcing effect on consumers' positive approach behavior. The results also have implications for researchers. Most researchers in the hospitality area have gained much attention to service assessment and management, relying on measurement of satisfaction or service quality without taking customer emotions into account. As an alternative, future studies should determine key emotions driving positive approach behaviors and then provide implications for designing and managing service processes that positively influence those emotions.

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

Several potential limitations of this study should be noted. The data were collected from convenience samples of customers in three upscale restaurants located in Midwest and Northwest states. As such, the study may not generalize results across other upscale restaurants located in other geographic locations. Nevertheless, our results show promise in modeling the combination of DINESCAPE and Mehrabian-Russell Model and provide several suggestions for management of upscale restaurants.

Future research should look beyond the primary objective of this study. The mediating role of emotions between the DINESCAPE and behavioral intentions was not investigated in this study because we assumed, based on the Mehrabian-Russell (1974) model, that physical environment affects approach/avoidance behaviors only via emotions. In addition, many previous studies have shown the direct impact of physical environment on intended behaviors,

such as return intentions. Therefore, we did not investigate the mediating role of emotions in this study. However, some previous studies demonstrated that the path from perceived physical environment to future intentions was not significant within an environmental psychology model (Chang, 200). Thus, it might be interesting to test the impact of the DINESCAPE on behavioral responses as mediated through emotion.

Given the great diversity of service industries, there is a need for research that will illuminate the effects of physical surroundings across types of service industries in which physical environment is important. The multidimensional nature of facility aesthetics, ambience, and social factors may be important determinants of customer pleasure and arousal in other fields and thus would provide future research. Individual differences (gender and age) could be also pursued in further research because individual reactions to environment may differ substantially. For instance, although findings are ambiguous, many investigations have indicated that men and women prefer different colors (Khouw, 2004). In addition, future studies could assess some DINESCAPE items (e.g., lighting), emotions, and behavioral intentions through some form of simulated environment (verbal descriptions, photos/slides, videos) rather than real restaurant settings. Because of the expense involved in constructing actual environments, those simulated environment could be used in experimental studies. In addition, the environmental psychology tradition has shown that simulated environments work well in achieving generalized results (Bateson & Hui, 1992; Chebat et al., 1995; Gilboa & Rafaeli, 2003). Although some research progresses have been made in verifying the Mehrabian-Russell (1974) model and in exploring the impacts of physical environments on customer responses, most have been largely conducted in Western cultures (Chan & Tai, 2001; Tang et al., 2001). As such, further research may externally validate the Mehrabian-Russell model in conjunction with DINESCAPE in Asian or

other cultural settings. Finally, it is also worthwhile to pay attention to longitudinal study. The fact that there is relatively little empirical research in any field to draw on allows for true pioneering work to be done. For instance, future researchers can attempt to explore how customers' perceived quality of physical environmental elements holistically change over time (e.g., opening time and one or two years later), and how those perceptions can influence customer responses, such as restaurant image, customer emotions, customer satisfaction, and finally their approach/avoidance behaviors.

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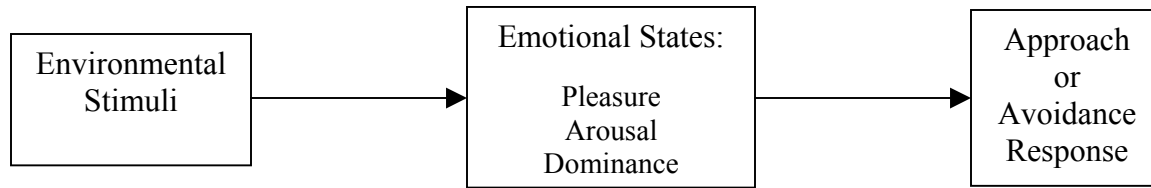
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Source: Adopted from Mehrabian and Russell (1974)

Figure 1. Mehrabian-Russell Model

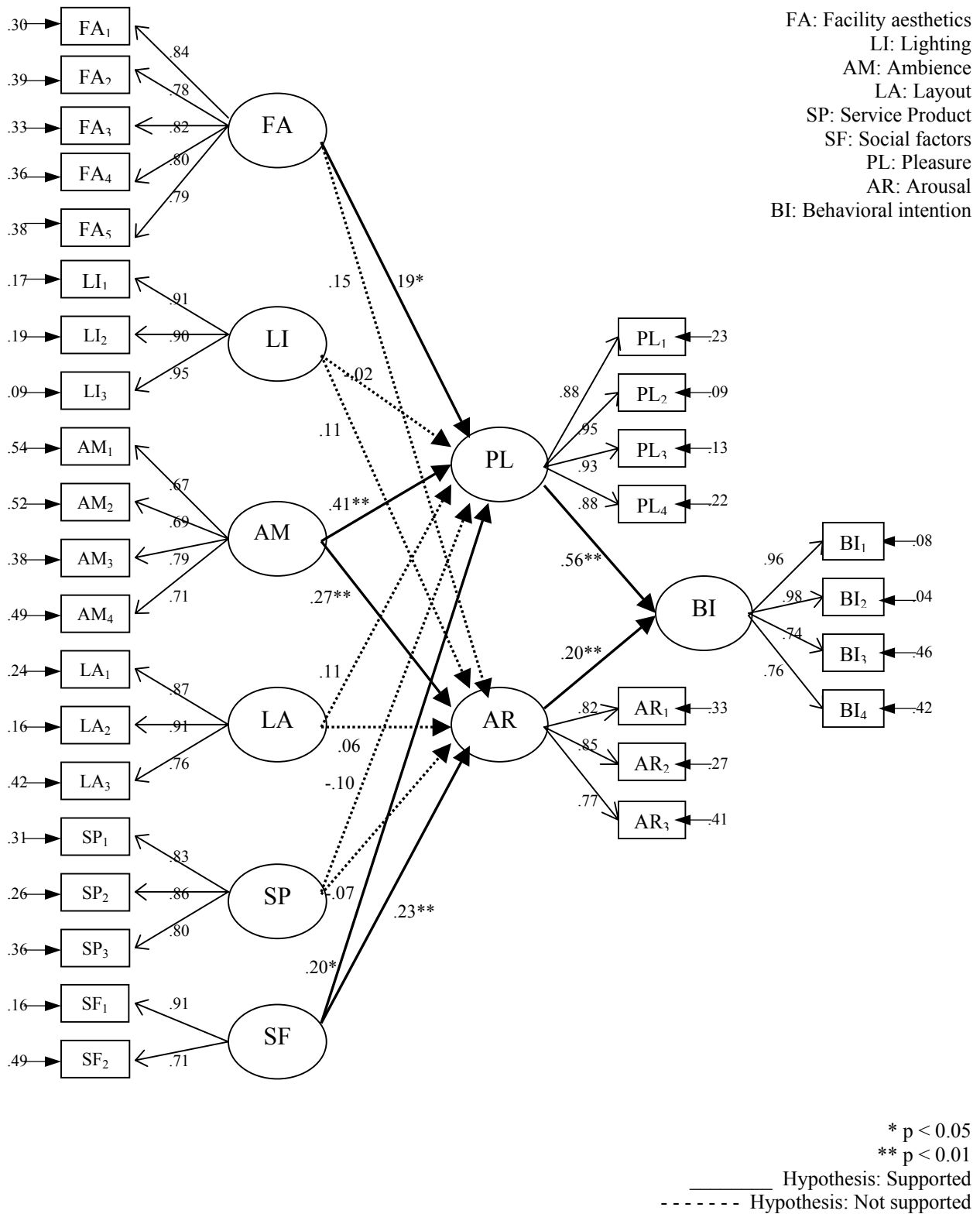


Figure 2. Causal Relationships Between Latent Variables

Table 1
Measurement Properties

Factors	Cronbach's Alphas	Standardized Factor Loadings	Item Reliabilities	Composite Reliabilities	AVE
Facility aesthetics	.87			.90	.65
FA ₁ /FA ₂ /FA ₃ /FA ₄ /FA ₅		.84/.78/.82/.80/.79	.71/.61/.67/.64/.62		
Lighting	.91			.94	.85
LI ₁ /LI ₂ /LI ₃		.91/.90/.95	.83/.81/.90		
Ambience	.82			.81	.52
AM ₁ /AM ₂ /AM ₃ /AM ₄		.67/.69/.79/.71	.45/.48/.62/.50		
Layout	.85			.89	.73
LA ₁ /LA ₂ /LA ₃		.87/.91/.76	.76/.83/.58		
Service product	.83			.87	.69
SP ₁ /SP ₂ /SP ₃		.83/.86/.80	.69/.74/.64		
Social factor	.70			.80	.67
SF ₁ /SF ₂		.91/.71	.83/.50		
Pleasure	.93			.95	.83
PL ₁ /PL ₂ /PL ₃ /PL ₄		.88/.95/.93/.88	.77/.90/.86/.77		
Arousal	.81			.85	.66
AR ₁ /AR ₂ /AR ₃		.82/.85/.77	.67/.72/.59		
Behavior intention	.90			.92	.76
BI ₁ /BI ₂ /BI ₃ /BI ₄		.96/.99/.74/.76	.92/.98/.55/.58		

Note: AVE = Average variance extracted.

Table 2
Correlations Among the Latent Constructs

Construct	1	2	3	4	5	6	7	8	9
1 Facility aesthetics	1								
2 Lighting	.68	1							
3 Ambience	.57	.63	1						
4 Layout	.51	.48	.63	1					
5 Product	.58	.52	.50	.56	1				
6 Social factors	.45	.35	.58	.54	.62	1			
7 Pleasure	.52	.48	.66	.52	.41	.52	1		
8 Arousal	.48	.46	.56	.45	.39	.49	.44	1	
9 Behavior intention	.38	.35	.48	.38	.30	.39	.64	.44	1

Note: All correlations are significant at $p = 0.05$.

Table 3
Structural Parameter Estimates

Hypothesized Path	Standardized path coefficients	t-value	Results
H1: Pleasure → Behavior intention	.56	9.94**	Supported
H2: Arousal → Behavior intention	.20	3.31**	Supported
H3a: Facility aesthetic → Pleasure	.19	2.23*	Supported
H4a: Lighting → Pleasure	.02	0.27	Not supported
H5a: Ambience → Pleasure	.41	3.69**	Supported
H6a: Layout → Pleasure	.11	1.34	Not supported
H7a: Product → Pleasure	-.10	-1.14	Not supported
H8a: Social factors → Pleasure	.20	2.25*	Supported
H3b: Facility aesthetic → Arousal	.15	1.61	Not supported
H4b: Lighting → Arousal	.11	1.08	Not supported
H5b: Ambience → Arousal	.27	2.22*	Supported
H6b: Layout → Arousal	.06	0.71	Not supported
H7b: Product → Arousal	-.07	-0.70	Not supported
H8b: Social factors → Arousal	.23	2.29*	Supported
R ² (Pleasure)	.50		
R ² (Arousal)	.39		
R ² (Behavior intention)	.44		
Goodness-of-fit statistics:	$\chi^2_{(376)} = 969.74$ (p = 0.00) $\chi^2 / \text{d.f.} = 2.58$ RMSEA = 0.079 TLI = 0.96 CFI = 0.96		

Note: *p < 0.05; **p < 0.01.

RMSEA = Root Mean Square Error of Approximation; TLI = Tucker-Lewis Index; CFI = Comparative Fit Index.

CHAPTER VI

SUMMARY AND CONCLUSIONS

The purpose of this study was to develop a DINESCAPE scale to assess the man-made physical and human surroundings in the dining area of upscale restaurants and build a conceptual framework of how the DINESCAPE might influence customers' behavioral intentions through emotions. To achieve this purpose, the first phase of this study developed a multiple-item scale to measure the overall conceptual framework of DINESCAPE in the upscale restaurant setting. Then, based on the DINESCAPE developed, the second phase of the study investigated the effects of DINESCAPE on emotions (pleasure and arousal) and the impact of these emotions on behavioral intentions (repatronage, positive word-of-mouth, desire to spend more than anticipated, desire to spend longer than anticipated) using the Mehrabian-Russell (1974) environmental psychology model.

The contribution of this paper was to suggest a scale that can be used to measure the physical environment reliably and validly in the upscale restaurant context and to empirically test if the theoretical notion of the Mehrabian-Russell (1974) environmental psychology framework would work in an upscale restaurant setting. From a practical perspective, the results of this research provide guidance to help managers look at their facility from the viewpoint of the customer. By focusing on the specific elements of the DINESCAPE, management can determine how their customers perceive the physical environment and predict their emotional and behavioral responses. While the qualities of some of these factors could be judged by management observations, employees (as well as long-time customers) of an establishment might become so accustomed to their environment that they do not recognize layout and interior design problems. Thus, research into the perceptions of current customers is recommended.

Although several researchers have attempted to explore various specific aspects of the physical environment and behavior relationships in a variety of fields, no one to our knowledge has applied environmental psychology to the upscale restaurant setting. In conclusion, this exploratory study took the beginning steps toward understanding how customers perceive the physical environment and how physical environment could contribute toward behavioral intentions through emotions.

Major Findings

Scale Development: DINESCAPE

Study 1 established reliable, valid, and useful measures of the DINESCAPE dimensions in the upscale restaurant context. Principal components analysis, with a varimax rotation, identified six factors that explained 74.55% of the total variance. The first DINESCAPE factor was labeled “Facility aesthetic,” which featured a function of architectural design, along with interior design and décor. The second factor (“Ambience”) featured intangible background characteristics that tend to affect the nonvisual senses, and the third (“Lighting”) demonstrated that lighting could influence feelings. The fourth factor (labeled “Service product”) represented the product or material used to serve every customer whenever a turnover occurred. The fifth construct, titled “Layout,” represented the way in which seats were arranged within the environment. Finally, the last DINESCAPE factor was titled “Social factor,” which highlighted the characteristics of employees in the service setting. The Cronbach’s alphas for six dimensions ranged from .80 to .92, which indicated good reliability for the scale (Hair et al., 1998).

A confirmatory factor analysis (CFA) with 21 items representing a six-dimension model was estimated using LISREL 8.54. Several widely used goodness-of-fit statistics indicated the

confirmatory factor model adequately reflected a good fit to the data (RMSEA = 0.074; NFI = 0.95; TLI = 0.97; CFI = 0.97; GFI = 0.86). In addition, measurement equations showed all acceptable levels of item squared multiple correlations for 21 items, ranging from .52 to .89.

Unidimensionality was assured because a set of indicators shared only a single underlying construct and the items loaded as predicted with minimal cross-loading (Bollen, 1989; Gerbing & Anderson, 1988). Reliability was further tested through Cronbach's alphas, item reliabilities, composite reliabilities, and average variance extracted (AVE). Cronbach's alpha estimates were acceptable (Nunnally & Bernstein, 1994). The item reliabilities ranged from .52 to .88 and indicated acceptable levels of reliability (Hair et al., 1998). The composite reliabilities of constructs ranged from .84 to .95. These values indicated adequate internal consistency of multiple items for each construct in the six-factor model since composite reliabilities exceeded .70 (Hair et al., 1998).

Convergent validity indicated by all lamdas (indicator factor coefficients) on their underlying constructs was significant. In addition, the results showed that convergent validity was satisfied because AVE, ranging from 0.56 to 0.86, of all six constructs exceeded the minimum criterion of 0.5 (Fornell & Larcker, 1981). Since the lowest AVE (.56) in each latent variable exceeded the highest square of the estimated correlation (square of the correlation between facility aesthetic and lighting = 0.50) between the constructs, discriminant validity was also satisfied (Fornell & Larcker, 1981).

The Influence of DINESCAPE on Pleasure and Arousal and the Impact of Pleasure and Arousal on Behavioral Intention

To achieve the objectives in study 2, the following 14 hypotheses were tested using structural equation modeling. The letter “S” showed the hypothesis was supported and “NS” indicated the hypothesis was not supported.

H1: Pleasure will have a positive effect on behavioral intention. (S)

H2: Arousal will have a positive effect on behavioral intention. (S)

H3a: Facility aesthetics will have a positive effect on pleasure. (S)

H3b: Facility aesthetics will have a positive effect on arousal. (NS)

H4a: Lighting will have a positive effect on pleasure. (NS)

H4b: Lighting will have a positive effect on arousal. (NS)

H5a: Ambience will have a positive effect on pleasure. (S)

H5b: Ambience will have a positive effect on arousal. (S)

H6a: Layout will have a positive effect on pleasure. (NS)

H6b: Layout will have a positive effect on arousal. (NS)

H7a: Service product will have a positive effect on pleasure. (NS)

H7b: Service product will have a positive effect on arousal. (NS)

H8a: Social factor will have a positive effect on pleasure. (S)

H8b: Social factor will have a positive effect on arousal. (S)

The causal relationships from perceived physical environments to pleasure were first found. The estimate of the standardized path coefficient indicated that the linkage between facility aesthetics and pleasure was significant ($\beta = 0.19$; $t = 2.23$), which supported the hypothesis 3a. However, the linkage between lighting and pleasure was not significant ($\beta = 0.02$;

$t = 0.27$). Therefore, the hypothesis 4a was not supported. The parameter estimate for the path linking from ambience to pleasure was significant ($\beta = 0.41$; $t = 3.69$), which supported the hypothesis 5a. The path from layout to pleasure and the path from service product to pleasure was revealed as non significant, which did not support the hypothesis 6a ($\beta = 0.11$; $t = 1.34$) and hypothesis 7a ($\beta = -0.10$; $t = -1.14$). In sum, as the perceived quality of the facility aesthetics, ambience, and social factor increased, customers' pleasure was enhanced in the upscale restaurant context.

Mixed support was also found for the hypothesized relationships between DINESCAPE dimensions and arousal in the estimated model. The four hypothesized paths from perceived physical environments to arousal revealed as not significant, so Hypotheses H3b (standardized coefficient of .15); H4b (standardized coefficient of .11); H6b (standardized coefficient of .06); and H7b (standardized coefficient of -.07) were not supported. In contrast, the hypothesis 5b (ambience to arousal) was supported ($\beta = 0.27$; $t = 2.22$), and the hypothesis 8b was also supported ($\beta = 0.23$; $t = 2.29$). In sum, as the perceived quality of ambience and social factor increased, the magnitude of arousal became stronger.

In terms of the relationship between pleasure and customer behavior intentions, the results showed that pleasure influenced behavior intentions positively ($\beta = 0.56$; $t = 9.94$), supporting the hypothesis 1. Moreover, significant regression weight of arousal on behavior intentions ($\beta = 0.20$; $t = 3.31$) in the estimated model suggested that arousal was a good predictor of the behavior intentions, supporting hypothesis 2.

Limitations

Several potential limitations of this study should be noticed. First, since a scale was specifically developed for the upscale restaurant context, applying the scale to different restaurant segments such as fast-food restaurants and casual dining restaurants should be approached with cautions. With any factor analysis, a certain amount of subjectivity is necessary to identify and label constructs. This scale was developed only to address the internal environment, not the external environment. Nevertheless, our results show promise in modeling the combination of DINESCAPE and the Mehrabian-Russell Model, and we can provide several suggestions for management of upscale restaurants.

Conclusion and Implications

This study first reviewed the construct and measurement of the physical environment and the establishment of reliable, valid, and useful measures of the DINESCAPE dimensions in study 1. Then, based on the DINESCAPE scale, study 2 examined effects of DINESCAPE on customers' pleasure and arousal and the impact of pleasure and arousal on behavioral intentions. The findings indicated that facility aesthetics, ambience, and social factor could significantly affect customers' pleasure or arousal, and the pleasure and arousal could significantly influence their intended behaviors, such as revisit, positive word-of-mouth, length of stay, and expenditure at the restaurant.

By adopting, modifying, or applying the questionnaire used in this study, restaurateurs can use dimension scores, comparing them with previous ones. In multiunit operations, restaurateurs can also compare the results from one unit to other units. Then, they can analyze problem scores and develop strategies for improvement. Each time the survey is administered,

strategies can be refined (Stevens et al., 1995). It would be helpful if the instrument could be used in periodic surveys. Users of the DINESCAPE could then track changes in their customers' perceptions in the quality of facilities or physical surroundings. In addition, restaurateurs who contemplate changes in their facilities can assess customer perceptions of the facility before making significant investments. With this in mind, restaurateurs could administer the survey instrument at their facility and get their customers' perspectives.

With the respect to the physical environment, study 2 attempted to explain the effects of physical cues on customer responses. More specifically, the purpose of this article was to examine the impact of the DINESCAPE on pleasure and arousal and the influences of pleasure and arousal on behavioral intentions using the Mehrabian and Russell (1974) model. A model was proposed and tested in an upscale restaurant setting. The most important contribution of this research was its empirical demonstration of how customers perceived physical environments directly influenced customers' emotion and indirectly affected their intentions by influencing their emotion level.

In conclusion, the results clearly showed solid support for the linkages between emotions and behavioral intention. Pleasure and arousal derived from the DINESCAPE was shown to strongly influence customers' intentions. However, mixed results on DINESCAPE dimensions and emotions (pleasure and arousal) were found. While facility aesthetics, ambience, and social factor contributed to one or both emotions, lighting, layout, and service product did not have significant relationships with either emotion.

Consistent with previous studies (Barsky & Nash, 2002; Chebat & Michon, 2003), this study found that the level of pleasure and arousal evoked by the DINESCAPE significantly influenced behavioral intentions. The importance of emotional impact might be often overlooked

by some restaurateurs when they focus primarily on cognitive aspects (e.g., quality of food, food variety, price, and location). The findings indicated that pleasure and arousal evoked by the DINESCAPE within an upscale restaurant were main determinants of whether customers intended to (1) come back, (2) recommend the restaurant to friends or others, (3) stay longer than anticipated, and (4) spend beyond his or her originally planned expenditure. Thus, restaurateurs should pay attention on the DINESCAPE elements to produce positive emotions that can have an important cuing or reinforcing effect on consumers' positive approach behaviors.

The findings determined which environmental elements produced pleasure and arousal, and these results have clear implications for restaurateurs wanting to generate pleasant and arousing environment through DINESCAPE. The relationships between DINESCAPE dimensions and customers' pleasure and arousal were not surprising. The results discovered that the facility aesthetics, ambience, and social factor significantly influenced customer pleasure and/or arousal and the pleasure and arousal significantly affected their subsequent behavioral intentions. Because lighting, layout, and service product were not significant, the findings may indicate that they are not directly associated with the quality of the DINESCAPE. Also, they may not be a particularly salient issue at an upscale restaurant as in some other service settings (e.g., luxurious hotels).

Suggestions and Future Research

Future research could use this instrument across a variety of different DINESCAPE settings, likely resulting in further refinement of the scale and adding to the validity of the salient factors. Administrating the scales (with perhaps some slight adaptation) in other restaurant settings (e.g., fast-food restaurants, casual restaurants) would be useful to determine the

generalizability of the model. More needs to be done to determine the effect of lighting, layout, and service product on customer pleasure or arousal in other settings or even in some other upscale restaurants.

Future researchers may wish to use the scale to measure the impact of different elements or dimensions of DINESCAPE on important dining outcomes, such as customer satisfaction, perception of service quality, approach/avoidance behaviors. Research suggests a direct link between DINESCAPE and outcomes such as customer satisfaction and behavioral intentions (Chang, 2000; Chebat & Michon, 2003). For example, are customers who are strongly motivated by the social factor dimension more likely to be satisfied, repatronize the restaurant, and engage in behaviors such as talking positively about their experience? Prior research suggests that perceived physical environment was a direct indicator of a customer's satisfaction, thereby suggesting that customer satisfaction was directly and positively associated with aspects of positive approach behaviors (Chang, 2000). Thus, restaurateurs could potentially have another tool to manage customer satisfaction and positive approach behavior. In addition, future research work can focus on other emotions. Because measuring emotion is quite complex, there are many challenging opportunities available for both qualitative and quantitative research. Research might also focus on exploring how the physical environment helps a firm achieve particular objectives, and at what cost. Finally, this promising model should be tested not just with customer-stated intentions but also with actual purchasing behavior.

The research framework offered in this study took a few steps toward by providing a more complete picture of how perceived physical environments, emotions, and behavioral intentions were related. However, the mediating role of emotions between DINESCAPE and behavioral intentions was not investigated in this study since we assumed that physical

environment affects approach/avoidance behaviors only via emotions as in the Mehrabian and Russell environmental psychology model. Many previous studies have shown the direct impacts of physical environment on behavioral intentions such as return intentions. Therefore, the authors did not consider the mediating role of emotions. However, some previous studies have demonstrated that the path from perceived physical environment to future intentions was not significant in the environmental psychology model (Chang, 200). Thus, future researchers might carry out studies that test emotion as a mediator of the physical environment on behavioral responses.

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APPENDIXES

Appendix A

Survey Questionnaire

**SECTION I: Your Perception about the Physical Environment,
Emotional States, and Behavioral Intentions**

INSTRUCTION: This section asks questions which use rating scales: please circle the number that best describes your opinion. There are no right or wrong answers. Your opinions are valuable to this study.

1. Physical Environment:

In the following statements, we are interested in **your feelings about the physical surroundings in the dining area of this restaurant.** For each statement, please use the following scale:

1 = extremely disagree, 2 = strongly disagree, 3 = somewhat disagree, 4 = neither agree nor disagree, 5 = somewhat agree, 6 = strongly agree, 7 = extremely agree.

	Extremely Disagree			Neutral	Extremely Agree			N/A
1) Dining areas are thoroughly clean.	1	2	3	4	5	6	7	N/A
2) Carpeting / flooring is of high quality.	1	2	3	4	5	6	7	N/A
3) Carpeting / flooring makes me feel comfortable.	1	2	3	4	5	6	7	N/A
4) Ceiling decor is attractive.	1	2	3	4	5	6	7	N/A
5) Wall decor is visually appealing.	1	2	3	4	5	6	7	N/A
6) Furniture (e.g., dining table, chair) is of high quality.	1	2	3	4	5	6	7	N/A
7) Paintings / pictures are attractive.	1	2	3	4	5	6	7	N/A
8) Plants / flowers makes me feel happy.	1	2	3	4	5	6	7	N/A
9) Exposed kitchens/glass wine cellars create a pleasing mood	1	2	3	4	5	6	7	N/A
10) Colors used create a warm atmosphere.	1	2	3	4	5	6	7	N/A
11) Colors used create a comfortable atmosphere.	1	2	3	4	5	6	7	N/A
12) Colors used make me feel calm.	1	2	3	4	5	6	7	N/A
13) Lighting creates a comfortable atmosphere.	1	2	3	4	5	6	7	N/A
14) Lighting creates a warm atmosphere.	1	2	3	4	5	6	7	N/A
15) Lighting makes me feel welcome.	1	2	3	4	5	6	7	N/A
16) Background music relaxes me.	1	2	3	4	5	6	7	N/A
17) Background music is pleasing.	1	2	3	4	5	6	7	N/A
18) Temperature is comfortable.	1	2	3	4	5	6	7	N/A
19) Aroma is enticing.	1	2	3	4	5	6	7	N/A
20) Noise level is <u>unpleasant</u> .	1	2	3	4	5	6	7	N/A
21) Layout makes it easy for me to move around.	1	2	3	4	5	6	7	N/A

22) Seating arrangement gives me enough space.	1	2	3	4	5	6	7	N/A
23) Seating arrangement makes me feel crowded.	1	2	3	4	5	6	7	N/A
24) Seats are comfortable.	1	2	3	4	5	6	7	N/A
25) Menu design is attractive.	1	2	3	4	5	6	7	N/A
26) Food presentation is visually attractive.	1	2	3	4	5	6	7	N/A
27) The restaurant offers a wide variety of wines.	1	2	3	4	5	6	7	N/A
28) The table setting is visually attractive.	1	2	3	4	5	6	7	N/A
29) Tableware (e.g., glass, china, silverware) is of high quality	1	2	3	4	5	6	7	N/A
30) The linens (e.g., table cloths, napkin) are attractive.	1	2	3	4	5	6	7	N/A
31) Employees are neat and well dressed.	1	2	3	4	5	6	7	N/A
32) Attractive employees make me feel good.	1	2	3	4	5	6	7	N/A
33) An adequate number of employees makes me feel cared for.	1	2	3	4	5	6	7	N/A
34) The appearance of the other customers makes me feel important.	1	2	3	4	5	6	7	N/A

2. Emotional States:

In the following statements, we are interested in **your feelings, moods and emotional reactions about the physical environment while you experience the restaurant's service.** For each statement, place a check mark below the number where indicates your emotional reaction.

In this restaurant, I feel

.....

1)	unhappy	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	happy
2)	annoyed	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	pleased
3)	depressed	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	cheerful
4)	disappointed	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	delighted
5)	bored	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	entertained
6)	calm	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	excited
7)	indifferent	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	surprised

Appendix B

Cover Letter to the Manager

January 19, 2005

3033 Anderson Ave. Manhattan, Kansas

Dear Scott Benjamin & Eric Winter:

We are asking for your help in a research study to look at the influence of the man-made physical environment (sometimes called the “atmosphere” or “servicescape”) on customers’ emotions and behavior in upscale restaurants. This study will help restaurateurs like you determine how customers perceive the quality of physical environments in upscale restaurants. An understanding of the effect of physical surroundings on customers’ behavior may help guide restaurateurs in decision-making concerning facility renovation or redesign.

Your help is essential for the success of this study. We would like to collect data from your customers at your restaurant using a questionnaire. Customers would be asked toward the end of their meal if they would be willing to complete the questionnaire. A copy of the questionnaire is attached and pilot tests indicate that approximately a 7 minutes are needed to complete the instrument. All responses will remain confidential and anonymous. This project has received the approval of the KSU Committee on Research Involving Human Subjects (Dr. Rick Sheidt, 785-532-3224; 1 Fairchild Hall, Kansas State University, Manhattan, KS 66506).

Asking customers to complete a questionnaire at the conclusion of their dining out experience is the only way we can gain the kind of information we need since it is important for the questions to be posed while the customer is actually in the restaurant environment. We do not want to disrupt a customer’s special evening in your establishment, so we will work closely with you to determine the best way to approach your customer to solicit their participation.

Our goal is to collect data during the weeks of January 19 to February 5, 2005. Working with your restaurant, we hope to collect around 120 completed questionnaires over the study period.

You will be contacted in person shortly to answer other questions you may have about participating in this study. Thank you so much for considering collaborating with us in this important project.

Sincerely,

Kisang Ryu, M.S.
Ph.D. Candidate
785-532-2213

SooCheong Jang, Ph.D.
Assistant Professor
785-532-2207

Deborah Canter, Ph.D.
Professor, Department Head
785-532-5507

Appendix C

Cover Letter for Questionnaire

Date:

Dear Participants,

We are conducting a research project to better understand the complexity of the physical environment, customer emotions, and subsequent behavior in the restaurant industry. The results of this study will help restaurateurs develop better marketing and service strategies for retaining customers.

Your help is important for the success of this study. Please take about 7 minutes to complete this questionnaire. Your participation is strictly voluntary. All responses will remain confidential and anonymous. No individual responses will be reported. Only aggregate responses will be reported.

Your cooperation and contribution for this study is greatly appreciated.

Sincerely,

Kisang Ryu, M.S.
Ph.D. Candidate

SooCheong Jang, Ph.D.
Assistant Professor

Deborah Canter, Ph.D.
Professor

For additional information about the research study, please feel free to contact Kisang Ryu at (785) 532-2213, Dr. SooCheong Jang at (785) 532-2207 or Dr. Deborah Canter at (785) 532-5507.

If you have any questions regarding to the rights as a participant or the manner in which the study is conducted, please contact the Kansa State University Institutional Review Board at (785) 532-3224. 1 Fairchild Hall, Kansas State University, Manhattan, KS 66506.