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An Experimental Approach to Making Retail Store Environmental Decisions

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Retailers spend millions of dollars each year designing, building, and refurbishing stores. Millions more are spent hiring, training, and compensating employees that interact with retail customers. Yet retailers do not generally engage in systematic research that enables them to determine the appropriate mix of environmental factors that may influence the patronage decision. This paper extends the extant literature on retail store atmospherics with the express purpose of providing an experimental method that can be utilized by retailers to examine various aspects of store atmospherics and their impact on the retail patronage decision. As an application of this methodology, the Mehrabian and Russell (1974) affect model is examined. Specifically, the effects of two retail atmospheric factors: (1) ambient cues (lighting and music), and (2) social cues (number/friendliness of employees) on respondents' pleasure, arousal, and willingness to buy were examined. The results indicate that the ambient cues interact with the social cues to influence respondents' pleasure and the social cues influence arousal in the store environment. These affective states (pleasure and arousal) are in turn

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found to have a positive relationship with respondents' willingness to buy. Finally, the results provide initial support that arousal and pleasure may mediate the effects of store environment on respondents' willingness to buy.

INTRODUCTION

In a time when retailers are finding it increasingly difficult to create a differential advantage on the basis of merchandise, price, promotion, and location, the store itself becomes a fertile opportunity for market differentiation. Millions of dollars are spent each year by retailers designing, building, and refurbishing stores. For instance, Neiman Marcus will spend more than $200 million within five years to renovate its 23 stores (Lawson 1990). In an era of increasing competition, retailers must be certain that their stores are up-to-date and portray an image that is appealing to their target markets. Despite these large investments, retailers do not generally engage in systematic research that enables them to examine the environmental factors that may influence the patronage decision.

In the academic environment, several factors have been shown to affect the retail patronage decision. Among these factors are: location, service level, pricing policies, and merchandise assortment (e.g., Craig, Ghosh, and McLafferty 1984; Morey 1980; Schary and Christopher 1979). The patronage decision has been shown to also be influenced by the store environment. For instance, a study by Darden et al. (1983) found that consumers' beliefs about the physical attractiveness of a store had a higher correlation with patronage intentions than did merchandise quality, general price level, selection, and six other store/product beliefs. This lends support to the notion that store patronage is influenced, at least to some degree, by the store environment. It may be that this influence is manifested more when consumers are choosing between stores of the same type rather than between stores in different categories. For example, the store environment may create a significant margin of difference when consumers are choosing between a Kmart and a Wal-Mart, but not when the choice is between Kmart and Neiman Marcus. To improve its competitive position vis-a-vis Wal-Mart, Kmart has embarked on an image improvement strategy that emphasizes the store's atmosphere (*Discount Store News* 1990).

The influence of retail store environments on consumer perceptions and behavior is a topic that has received relatively little attention since Kotler (1973) introduced the "atmospherics" concept. The retailing literature has supported the notion that store image is an important component in the store choice decision (e.g., Stanley and Sewall 1976, Nevin and Houston

1980, Malhotra 1983) and elements of the physical environment are important components of store image (e.g., Lindquist 1974, Darden et al. 1983; Zimmer and Golden 1988), but these studies provide neither a framework nor a methodology to determine how these cues might impact store patronage.

This paper describes an experimental procedure using videotapes that retailers may use to utilize scarce financial resources more efficiently. First, the methodological approaches used by retailers and academicians to develop and test store environments are described. Then, an adaptation of the Mehrabian and Russell (1974) affect model is presented and five hypotheses are proposed. The videotape methodology is then applied to test these hypotheses.

APPROACHES FOR DEVELOPING AND TESTING STORE ENVIRONMENTS

In practice, retailers utilize several disparate methods for making store design decisions. The most expensive and time consuming is the prototype. Available to multiple store chains such as The Limited, a prototype store is developed and customer acceptance is determined before the new design is adopted throughout the chain. Other retailers, such as General Nutrition Centers, develop prototypes for each section of the store (*Chain Store Age Executive* 1988).

At the other end of the expense/time continuum, stores can be designed on computers with input from executives, buyers, store planners, and/or customers. Computer assisted design (CAD) drawings make this method relatively inexpensive and quick. Yet, since the techniques and software of CAD are relatively new, its full potential for experimental purposes has yet to be tapped (*Visual Merchandising and Store Design* 1990).

Another relatively inexpensive and quick approach is to use a lab experiment in which subjects respond to verbal descriptions of a store (Gardner and Siomkos 1985). The external validity of this type of research is limited because the verbal descriptions can be value laden. While this approach allows researchers to examine the effects of specific design/atmosphere elements in a lab setting, it has limited application for retailers. This approach has also been used to examine the effects of retail store environment on consumers' brand evaluations (e.g., Akhter, Andrews, and Durvasula 1991).

In addition to the prototype, CAD, and scenario approaches to store design, psychologists have examined several environmental factors in controlled laboratory settings. For example, Griffitt (1970) examined the ef-

fects of temperature. In another experiment, Bellizzi, Crowley, and Hasty (1983) found that color can physically attract shoppers to a retail display. Showing pictures to manipulate retail or service environments seems to be growing in popularity. For example, Hui and Bateson (1991) used slides to manipulate levels of consumer density in a service setting. Finally, Carpman, Grant, and Simmons (1985) used a videotape method to examine hospital design issues.

Today, the availability, low cost, and relative simplicity of using video technology enables researchers to gather data from multiple respondents easily. As noted earlier, the use of video technology in an experimental setting has been used effectively to examine hospital design issues (Carpman et al. 1985). To our knowledge, however, it has not been embraced by store planners or academics doing research on store atmospheric issues. This approach is much less expensive and quicker to implement than developing prototypes. In addition, crucial input from customers is utilized. This videotape methodology is used to test a set of hypotheses based on the Mehrabian and Russell (1974) affect model.

THE MEHRABIAN-RUSSELL AFFECT MODEL

Research in environment psychology has produced a body of knowledge that has examined the interaction between the physical environment and human behavior in many different settings (e.g., housing, offices, schools, prisons). Remarkably, however, little research has been conducted regarding the effect of store environments on customer attitudes and/or behavior. Given that store choice may precede brand choice (Darden et al. 1983), and that many purchase decisions are made within the retail store (Keller 1987), this lack of attention in both marketing and environmental psychology is surprising. The store environment has the potential to be an effective and powerful marketing tool if retailers can better understand how to utilize it.

Originating in environmental psychology, an affective approach has been used to study store environments (Donovan and Rossiter 1982). This approach maintains that an individual's perceptions of, and behavior within, a given environment are the result of emotional states created by that environment (e.g., Mehrabian and Russell 1974). Specifically, environmental stimuli are said to affect the emotional states of pleasure and arousal, which, in turn, affect approach or avoidance behaviors.

The stimulus factors in the model are physical features (e.g., color, store layout, lighting, etc.) in the environment. The emotional states that are induced by the physical environment are pleasure and arousal (Mehrabian

and Russell 1974, Russell and Pratt 1980, Donovan and Rossiter 1982). Pleasure refers to the extent to which a person feels good in the environment, and arousal relates to the extent to which a person feels excited or stimulated. Approach behavior includes a willingness or desire to move towards and explore the environment (e.g., propensity to buy).

Environmental Stimuli (Physical Features)	→	Emotional States (Pleasure and Arousal)	→	Approach/Avoidance Behaviors (Willingness to Buy)

Several marketing studies have explored the effects of store environment-induced emotional states on consumers. Donovan and Rossiter (1982) found support for the Mehrabian-Russell model in a retailing context by investigating the relationship between emotional states induced by eleven different store environments and statements of behavioral intention in those environments. They found that store-induced pleasure was positively associated with willingness to buy. Store-induced arousal influenced the time spent in the store and willingness to interact with sales personnel. A crowded service environment reduced consumers' pleasure (Hui and Bateson 1991). Yalch and Spangenberg (1990) found that different types of music in a store setting created different emotional responses in consumers. Similarly, subjects in an experimental study reacted emotionally to warm and cool-colored walls (Bellizzi et al. 1983).

Donovan and Rossiter's (1982) study made a major contribution to the literature regarding retail environmental effects by establishing the validity of the relationship between store environments, emotional states, and behavioral intentions. A limitation of the study, however, was that store atmosphere was examined at a global level, but didn't offer guidelines to retailers regarding which environmental elements create different types of affective responses. The studies that examined single elements of the environment have provided some guidelines, but only two address elements (music and color) that retailers can easily control. Furthermore, the single-element studies do not take into consideration the interactive effects likely to occur between different elements in the same store environment.

The next logical step is to examine some of the specific stimulus variations in retail settings that are thought to produce changes in store-induced emotions, and hence, behaviors. Our study refines and extends Donovan and Rossiter's work by testing the Mehrabian-Russell model through the manipulation of two specific store environment factors in an experimental setting. Retailers can use this experimental method to explore other environmental factors that may be germane to their particular environment.

HYPOTHESES

One of the limitations of the Mehrabian-Russell (1974) model is the lack of a classification system of specific environmental features. This study attempts to overcome that limitation by using a framework of environmental factors developed by Baker (1986) to examine the effects of specific environmental stimuli on emotional states. The variables included in this study are easily controlled by retailers.

The Baker framework suggests that three critical dimensions of the store environment are ambient, social, and design factors. Ambient factors are background conditions in the environment (e.g., temperature, scent, noise, music, and lighting). Customers may notice ambient factors when they exceed an acceptable range, such as when the lighting becomes too bright or the music too loud. Social factors represent the "people" component of the environment, including both store employees and customers. The number, type, and behavior of people is proposed to influence consumers' perceptions of stores. Design factors include functional and aesthetic elements such as architecture, style, and layout. Retailers could choose various combinations of these factors according to their needs. For illustration purposes, we chose to look only at ambient and social factors. These factors are relatively easier and less expensive to change for most retailers than are the design factors.

The Ambient Factor

Music and lighting were the variables chosen to operationalize the ambient factor in this study. We operationalize a high ambient store environment as one playing background classical music with soft lighting, and a low ambient store environment as one using foreground top-40 music and bright lighting. Foreground music uses original artists and lyrics; whereas background music uses studio musicians playing instrumentals. It should be noted that the tempo of the music was held constant.

Music is capable of evoking affective and behavioral responses in consumers (Bruner 1990). An ethnographic study of a gift store found that music was played by the store owner to manipulate customers' feelings (McGrath 1989). Background music tends to be soothing, which creates a pleasurable atmosphere (Milliman 1982, 1986). Yalch and Spangenberg (1990) found that background music produced a more pleasant mood than did foreground music (although the difference was statistically nonsignificant). Similarly, peaceful classical music created positive moods in experimental subjects, leading to greater helping behavior (Fried and Berkowitz 1979).

Individuals' preference for lighting levels has been shown to differ for various behaviors and situations (Butler and Biner 1987). Furthermore, soft lighting tends to create a more relaxing, pleasant mood than does bright lighting (Meer 1985).

The two emotional responses in the Mehrabian and Russell (1974) model of interest are arousal and pleasure. We expect the ambient factor to affect only pleasure in this study. No predictions were made regarding the relationship between the ambient factor and arousal because the tempo of the music was kept constantly at a relatively slow level. Thus, it is proposed that:

H1: A high-image ambient store environment will provide greater pleasure than a low-image ambient store environment.

The Social Factor

The social factor in this study was operationalized in terms of the number and affability of retail salespeople. The high social store environment was operationalized using three employees, one of whom greeted the respondents as they "entered the store." The low social store environment had only one employee who ignored the respondents. Retailers of all types are paying more attention to customer service as a method of establishing a differential advantage. The number, appearance, and behavior of store employees may help shape a customer's perception of the service level within a retail store (Baker 1986). The social factor has been investigated in terms of other customers in the store, as exemplified by crowding research (e.g., Harrell et al. 1980).

The model predicts that a store environment that is complex, novel, surprising, and active will increase feelings of arousal (Mehrabian and Russell 1974). An environment that creates a high level of arousal is likely to be more interesting to customers, thus they may stay longer in the store. Retailers may benefit when customers stay longer because they may purchase more (Milliman 1986). The greater the number of store employees, the more active and arousing the store environment. In addition, employees whose behavior is friendly would be likely to create a more active, arousing store environment than would employees who are aloof or unfriendly. Thus, it is proposed that:

H2: A high-image social store environment will provide greater arousal than a low-image social store environment.

Undermanning theory suggests that the number of employees present in a store setting is important to consumers' satisfaction. Wicker (1973) iden-

tified undermanning as a condition that occurs when the number of people in an environment is less than the setting requires. The result of undermanning is dissatisfaction, because the setting is not functioning as it should. Thus, a more pleasant shopping atmosphere is likely to result when an adequate number of employees are present (a high social store environment). It is also likely that the friendly employees in the high social store environment result in a more pleasant shopping experience for customers. Thus, it is proposed that:

H3: A high-image social store environment will provide greater pleasure than a low-image social store environment.

Behavioral Intention

The final two hypotheses address the effects of arousal and pleasure on consumers' approach/avoidance behaviors (Mehrabian and Russell 1974). As did Donovan and Rossiter (1982), we measured intentions to behave rather than actual behavior. Specifically, we chose to measure store patronage intentions, which is a type of approach behavior. Thus, it is proposed that:

H4: There will be a positive relationship between consumers' arousal and their willingness to buy.

H5: There will be a positive relationship between consumers' pleasure and their willingness to buy.

Mediation Issues

The Mehrabian and Russell (1974) model suggests that the effects of store environment factors on approach/avoidance behavior is mediated by their affective responses (i.e., arousal and pleasure). In this study, we specifically test whether the effect of the ambient and social factors on respondents' willingness to buy is mediated by their arousal and pleasure.

RESEARCH METHOD

Research Design

The hypotheses were tested using a 2 × 2 between subjects factorial design, with two store ambient levels (low and high) and two store social levels (low and high). The characteristics for the ambient and social levels were derived from the literature (e.g., Levy and Weitz 1992). In addition, two focus groups (one student and one non-student) and a pretest were

conducted. The results of this preliminary investigation indicated that the attributes used to manipulate the ambient and social factors were appropriate.

Videotape Experimental Procedures

The 2 × 2 factorial design used 147 undergraduate students (35–39 subjects/cell). This sample is appropriate in this illustration since a retail card and gift store (the context for this study) is within the realm of shopping experiences for students. Retailers embracing this method would, of course, choose samples that closely reflected characteristics of their target markets.

Four videotape versions of a retail card and gift store were developed to represent the four experimental treatments. A professional video technician slowly walked through the store with a videocamera to simulate a shopping trip. The tape was approximately five minutes long. No customers were present in the store when the tape was made. Actual store employees were used. The number and friendliness (greeting at the door) were manipulated to create the low and high social conditions. The music selections were dubbed on the tapes at a later time by the technician. Lighting levels were manipulated by changing the brightness controls on the television monitor during the experiment, since it was not possible to physically change the lighting in the store.

Each group of subjects was exposed to one of the four videotapes in a laboratory setting. After the subjects viewed the videotape, they completed a self-administered questionnaire containing items measuring pleasure, arousal, and willingness to buy. In addition, the questionnaire contained items to assess the effectiveness of the manipulations.

Dependent Variables

Willingness to buy was assessed using the scale developed by Dodds, Monroe, and Grewal (1991). The scale was reliable ($\alpha = 0.86$). Using a seven-point scale (7 = strongly agree and 1 = strongly disagree), subjects indicated their level of agreement to the following three statements:

- The likelihood that I would shop in this store is high;
- I would be willing to buy gifts at this store; and
- I would be willing to recommend this store to my friends.

Subjects evaluated their affective response to the store's environment using Russell and Pratt's (1980) scales. They rated how accurately the particular items represented the physical environment using a six-point

scale (6 = extremely accurate and 1 = extremely inaccurate). Arousal was measured using the following six items: alive, inactive (r), drowsy (r), idle (r), lazy (r), and slow (r). Pleasure was measured using the following six items: nice, dissatisfying (r), displeasing (r), repulsive (r), unpleasant (r), and uncomfortable (r). (r is used to indicate the item was reverse scored).

As suggested by Churchill (1979), the six indicators for arousal and six indicators for pleasure were assessed for internal and external consistency using correlation analysis, confirmatory factor analysis and Cronbach's α. The inter-item correlations within the measures of arousal and pleasure were higher than the intra-item correlations across those measures. Causal modeling procedures (see Bagozzi 1980, Bagozzi and Yi 1988, Finn 1992, Joreskog and Sorbom 1986) with LISREL indicated that the two factor model, arousal and pleasure were separate, yet correlated factors ($r = .18$, $p < .05$), fit the data better than a one factor model ($\chi^2_{difference} = 191.32$, $df = 1$, $p < .001$). Furthermore, Anderson (1987) has suggested the following criterion for discriminant validity: the correlation between two latent constructs plus or minus two standard errors does not include one. The data met this criterion. Also, for the two factor model, the factor loadings (lambda's) were high and significant ($p < .01$). Finally, the reliability estimates were acceptable (arousal $\alpha = 0.80$ and pleasure $\alpha = 0.84$).

RESULTS AND ANALYSES

Manipulation Checks

Subjects evaluated the store ambient factor using three items (alpha = .91) and the store social factor on a four item scale (alpha = .86). Analysis of the manipulation check scores suggested that the manipulations of the two independent variables were perceived as intended (ambient: $F_{(1,145)} = 18.33$, $p < .001$, and social: $F_{(1,145)} = 40.65$, $p < .001$).

Hypotheses Tests

The hypotheses were tested using ANOVA and regression (Table 1). The results are discussed next.

Ambient Factor. There was a statistically significant ambient/social interaction on subjects' pleasure ($F_{(1,143)} = 4.91$, $p < .05$). Thus, the ambient effect was interpreted within levels of the social factor (see Rosenthal and Rosnow 1984). The effect of the ambient environment factor on subjects' pleasure was significant for the low social factor (means

TABLE 1

ANOVA and Moderator Analysis[a]

	ANOVA Arousal	ANOVA Pleasure	ANOVA Willingness to Buy	ANCOVA Willingness to Buy
Ambience (A)	1.02	3.46	.14 $\omega^2 = 0.0$	0.40 $\omega^2 = 0.0$
Sociability (S)	4.10*	3.48	2.46 $\omega^2 = .01$	0.23 $\omega^2 = 0.0$
A × S	1.58	4.91*	13.39** $\omega^2 = .078$	7.98** $\omega^2 = .036$
Covariates				
—Arousal	—	—	—	4.85*
—Pleasure	—	—	—	32.34**
Error (df)	143	143	143	141

[a] Table contains F-values unless indicated otherwise.
* $p < .05$
** $p < .01$

were 5.04 versus 5.47, $F_{(1,143)} = 8.23$, $p < .005$), but not significant for the high social factor (means were 5.46 versus 5.43, $F_{(1,143)} = 0.07$, n.s.). This provides partial support for the first hypothesis.

Social Factor. The results indicated that the high social store environment enhances subjects' arousal (means were 3.14 versus 3.47, $F_{(1,143)} = 4.10$, $p < .05$). Thus, hypothesis 2 was supported. As mentioned earlier, there was a significant ambient/social interaction on subjects' pleasure. The effect of the social factor on subjects' pleasure was significant for the low ambient factor (means were 5.04 versus 5.46, $F_{(1,143)} = 8.23$, $p < .005$) but not significant for the high ambient factor (means were 5.47 versus 5.43, $F_{(1,143)} = 0.07$, n.s.). Thus, the third hypothesis was partially supported.

Willingness to Buy. The effects of arousal and pleasure on subjects' willingness to buy are examined using regression analysis ($F_{(2,144)} = 23.73$, $p < .001$, adjusted $R^2 = .25$). The results support the hypotheses that as pleasure and arousal increase, subjects willingness to buy is en-

hanced (arousal; beta = .43, $t_{(144)} = 2.52, p < .01$: pleasure; beta = .19, $t_{(144)} = 5.84, p < .001$), thus supporting H4 and H5.

Mediation Tests

Procedures suggested by Baron and Kenny (1986) and Hastak and Olson (1989) were followed to assess whether arousal and pleasure mediate the effects of the environmental stimuli (ambient and social) on subjects' willingness to buy. The results, presented in Table 1, indicate that the store environment factors affect both the mediators (arousal and pleasure) and willingness to buy. Furthermore, when the mediators (arousal and pleasure) are included as covariates, the effect of the store environment on willingness to buy is reduced (i.e., a reduction in F-values and ω^2). For example, the interaction of the ambient and social factors on subjects' willingness to buy was reduced from $F_{(1,143)} = 13.39$ ($\omega^2 = .078$) to $F_{(1,141)} = 7.98$ ($\omega^2 = .036$). This is a 53.85% reduction in ω^2. Thus, the results provide some support that arousal and pleasure may mediate the effect of store environment on subjects' willingness to buy, although they are not perfect mediators. Therefore, other factors, such as perceived quality, value and price may also mediate the store environment/willingness to buy relationship.

LIMITATIONS AND AVENUES FOR FUTURE RESEARCH

To achieve a more realistic environmental simulation, we simultaneously manipulated several store ambient and social elements. As a result, some technical and interpretational clarity is sacrificed since it is difficult to separate the effects of each element. For example, we did not separate the effects of music and lighting since they were combined to operationalize the ambient factor. This and other similar issues, however, could be addressed in future research.

A related concern is that certain elements in the environment naturally covary, and thus it may be difficult to separate these effects. For example, color perceptions are determined by the color (cool vs. warm) as well as the level of lighting in a room. This concern will be important to address in future research.

The domain of applicability is also limited in this experiment. Clearly, there are choice variables other than the physical environment that influence consumers' willingness to buy in a retail store. Some of these variables include merchandise assortment, relative pricing levels, location, service, and overall store image. This study did not address the importance of store environment in conjunction with these other variables. Future

research should focus on how these other variables interact with the store environment in affecting patronage decisions.

Retailers have several options for utilizing the research approach presented here. First, because emotional states induced by the store environment influence consumers' willingness to buy, it is important to continue trying to determine which environmental elements produce positive and negative affective responses so that retailers have some guidance in planning pleasant, arousing environments. Ambient elements other than music and lighting should be explored (e.g., scent, temperature). Design elements such as color, layout, architectural style, or type of furnishings may also be important factors in affective response. Second, retailers interested in the music factor should explore other aspects such as loudness, tempo, or respondents' liking/disliking of specific music selections. Third, future research should also pay attention to the specific atmospheric cues provided by the store exterior. Finally, retailers should explore how these factors impact specific target markets. Although this study used a student sample, other market segments might react differently to the stimuli.

Computer aided design (CAD) is a relatively new method of exploring retail environmental alternatives that shows great promise for future research as computer software becomes more readily available. Researchers can maintain the realistic strength of the videotapes, yet the experimental manipulations can be achieved with greater ease.

DISCUSSION

The use of experiments using videotapes provides retailers with a relatively easy, inexpensive, and realistic method of examining the impact of several store environmental situations on customers. Our refinement of the Mehrabian-Russell (1974) model and the Donovan and Rossiter's (1982) methodology shows promise for both retailers and consumer researchers. We have applied a strong theoretical base from environmental psychology, examined the effects of *specific* ambient and social variables, and utilized an experimental laboratory/store environment to systematically measure the impact of various atmospheric factors on purchase intentions. Other ambient, design, and social factors could be easily manipulated in a store setting using the theory and methodology discussed in this study.

Overall, this study supports Donovan and Rossiter's (1982) finding that the Mehrabian-Russell model is applicable to a retail setting: affective states produced by the store environment do influence consumers' willingness to buy. Brinberg and McGrath (1985) emphasize the need to examine research issues using different methodologies—triangulation of methods. Since Donovan and Rossiter's (1982) correlational methodology

and the experimental methodology in this study found similar results, it strengthens the conclusions. While the relationship between ambient and social conditions on arousal were clear, results were more ambiguous for the effects of these conditions on pleasure.

The model predictors for the social factor on subjects' arousal was supported. The high social store environment (more employees on the floor, friendly employees) initiated greater feelings of arousal in respondents than did the low social store environment (one employee, ignoring customers). This result has important implications for retailers. Donovan and Rossiter (1982) argue that arousal can increase time spent in the store and a willingness to interact with store personnel. By controlling the number of employees in the store, and rewarding pleasant, helpful behavior in employees, retailers can create an environment that is arousing.

Retailers utilizing this experimental approach can uncover some interesting relationships that may not be apparent otherwise. For instance, the interactive effects of the ambient and social factors on respondents' pleasure indicate that when the social environment is low, the ambient factor becomes important. Similarly, when the ambient environment is low, the social factor becomes important. This result suggests that creating a store environment that is high on one of these factors may be as good at providing a pleasurable shopping experience as creating one that is high on both factors. Retailers should evaluate the costs associated with the various alternatives and offer a high level on the atmospheric characteristics that are most cost efficient.

The videotape methodology is ideal for smaller retailers with only one or a few outlets. In addition to being relatively quick and inexpensive, it is unobtrusive. These retailers cannot afford to disrupt their operations by experimenting with alternative prototypes. This method can also be utilized by multi-unit retailers in conjunction with the more costly and time consuming prototype method. After obtaining results from videotape experiments, these retailers can roll out changes in store configurations one store at a time or even part of a store at a time.

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