The effects of wait expectations and store atmosphere evaluations on patronage intentions in service-intensive retail stores

Dhruv Grewal [a,*], Julie Baker [b], Michael Levy [c], Glenn B. Voss [d]

[a] *Toyota Chair of Commerce and Electronic Business, Marketing Department, Babson College, Babson Park, MA 02468, USA*
[b] *University of Texas at Arlington, Arlington, TX, USA*
[c] *Charles Clarke Reynolds Professor of Marketing, Babson College, Babson Park, MA 02468, USA*
[d] *North Carolina State University, Raleigh, NC 27695-7229, USA*

Abstract

Many factors, both obvious and subtle, influence customers' store patronage intentions. Using videotape technology that enabled us to experimentally manipulate the number of visible store employees, number of customers, and music, we test the relative importance of wait expectations and store atmosphere evaluations on patronage intentions. These constructs are found to be critical antecedents of store patronage intentions in the context of the service-intensive retail store at which the model was tested. We also find support for the direct effects of gender on wait expectations and store atmosphere evaluations. We discuss some implications for retailing research and practice.
© 2003 by New York University. Published by Elsevier. All rights reserved.

Keywords: Atmosphere; Customer; Service; Patronage

Waiting for service in a retail store is an experience that can lead to consumer dissatisfaction (Katz, Larson, & Larson, 1991), which in turn can result in negative effects on store patronage behavior (Hui, Dubé, & Chebat, 1997). Previous studies on the effects of waiting have tended to focus on consumer responses to delays under conditions of actual or simulated waits (e.g., Chebat, Gelinas-Chebat, & Filiatrault, 1993; Hui et al., 1997; Taylor, 1994, 1995). In these studies, subjects actually experience a wait situation. However, before retail customers choose to wait, they are likely to estimate (quantitatively or qualitatively) how long that wait will be on the basis of cues they observe and/or experience in the store environment. If their perceptions lead to an expectation that the wait will be too long, they may not even enter the store or, if they have entered, stay long enough to experience a wait. This is a critical phase of any purchase decision.

Retailers might spend millions of dollars getting potential customers to visit a store only to be foiled by in-store issues. Stories abound about customers terminating the purchase process because check-out lines are too long or sales assistance is inadequate. This "curb appeal" is especially important for small retailers in large malls who rely on enticing a fairly large number of recreational shoppers to give them a try. One component of a store's curb appeal is the consumer's evaluation of the likelihood of receiving attention from store personnel, a factor that may be critical for a store that requires a high level of interaction between customers and employees.

Although understanding consumers' wait expectations (including antecedents and consequences) is critical to retailers, previous models of store patronage (e.g., Baker, Parasuraman, Grewal, & Voss, 2002) do not include this construct. Our study fills a gap in understanding store patronage decisions by integrating the literature on waiting and environmental psychology. We explicitly manipulate three factors: number of visible employees, number of customers, and the presence (or absence) of music. The number of customers should increase perceptions of customer density (measured by perceived physical density in our study) and, therefore, wait expectations. Two possible ways to combat the adverse effects of high wait and customer density expectations are by having more employees visible on the retail floor and/or adding enhancing elements

* Corresponding author. Tel.: +1-781-239-3902.
E-mail address: dgrewal@babson.edu (D. Grewal).

to the store environment (e.g., music). Zeithaml, Berry, and Parasuraman (1993) suggest that service expectations are influenced by cues in the store environment. Furthermore, store environment elements have been found to influence store patronage intentions (e.g., Baker et al., 2002).

In addition, we explore the effects of gender on wait expectations and store atmosphere. Whereas researchers have long called for an investigation of how personal factors may moderate the influence of store environment on consumers' responses, very few studies have been conducted with this focus. There is evidence in the literature that men and women perceive time differently (e.g., Krishnan & Sexena, 1984; Rammsayer & Lustnauer, 1989) and that they may also evaluate store environments differently (Otnes & McGrath, 2001).

The setting for our study is a jewelry store. In retail stores that are mostly self-served, such as supermarkets or discount stores, customers may need service only at the point of executing the actual transaction but not necessarily during the entire shopping process (including browsing, gathering product information, or trying products). Therefore, the context for our study is a retail store from which customers purchase expensive, or luxury, goods and must have help from salespeople throughout the shopping process. We call this context "intensive service." Customers purchasing products such as cars, furniture, or jewelry require time and attention from employees. In a typical jewelry store, for example, customers cannot touch, try on, or even price jewelry without talking to a salesperson. In stores in which customers require time with salespeople, the likelihood is higher that other customers will have to wait.

The structure of the paper is as follows: We present the hypotheses within a conceptual framework that is based on inference theory. Then, we describe an experiment that uses videotapes of store scenarios and present the results. Drawing from the findings, we offer implications for retailers and propose avenues for further research.

Conceptual framework

Our model is couched in inference theory, which argues that people make inferences about the unknown on the basis of information they receive from cues available to them (Huber & McCann, 1982; Monroe & Krishnan, 1985; Nisbett & Ross, 1980). Prior research has developed and tested conceptual frameworks that integrate the role of information cues on customers' affective and cognitive assessments and patronage intentions (e.g., Compeau, Grewal, & Monroe, 1998; Grewal, Monroe, & Krishnan, 1998; Zeithaml, 1988).

A store's environment offers a rich set of informational cues that consumers use to make inferences about products and service (Baker, 1998). Several studies have empirically supported the notion that store environment cues lead to consumer inferences and expectations about a store's merchan-

dise, service, prices, and shopping experience costs (such as waiting time), which in turn influence store patronage intentions (Baker, Grewal, & Parasuraman 1994; Baker et al., 2002; Chebat et al., 1993; Grewal & Baker, 1994; Mazursky & Jacoby, 1986).

We propose that consumers' decisions to stay and shop in a store where they need salespeople to help them through the shopping process (particularly in a store they have not previously patronized) are based on the inferences they make from in-store cues about waiting time and the overall atmosphere of the store. Specifically, we seek to determine if the number of customers, number of visible employees in the store, and presence of music influence consumer perceptions of customer density, wait expectations, and evaluation of the store's atmosphere. We also consider whether these perceptions influence customers' store patronage intentions. We examine whether the consumer's gender influences wait expectations and store atmosphere evaluations. The development of our conceptual framework and hypotheses for the linkages shown in Fig. 1 are presented next.

Wait expectations

A recent study by Kumar, Kalwani, and Dada (1997) finds that wait length expectations influence satisfaction with the waiting experience. It is also important to understand how consumer expectations of a wait influence their store patronage decisions and what store environment cues may influence those expectations.[1]

In retail stores in which intensive service is a critical component, such as the jewelry store used in this study, it is essential to consider how employees may affect customers' impressions of the store (Solomon, 1998). One store cue that should influence customer wait expectations is how many employees the customer sees on the sales floor.

"Undermanning" has been defined by Barker's (1965) theory of behavioral ecology as a condition that occurs when the number of people in a space is less than the setting needs to function properly. The undermanning framework suggests that, because more employees in a store should help a store function properly by shortening customer wait times, customers' wait expectations will be more positive (i.e., the wait is expected to feel shorter and judged to be more reasonable) if they can see more employees in the store. Therefore, we hypothesize:

H1. More visible employees in a store, compared with few visible employees, will result in lower customer wait expectations.

---

[1] We recognize that wait expectations are also influenced by factors such as past experience with the retailer or season (e.g., Christmas), but the focus of our study is on the effects of store environment cues on wait expectations.
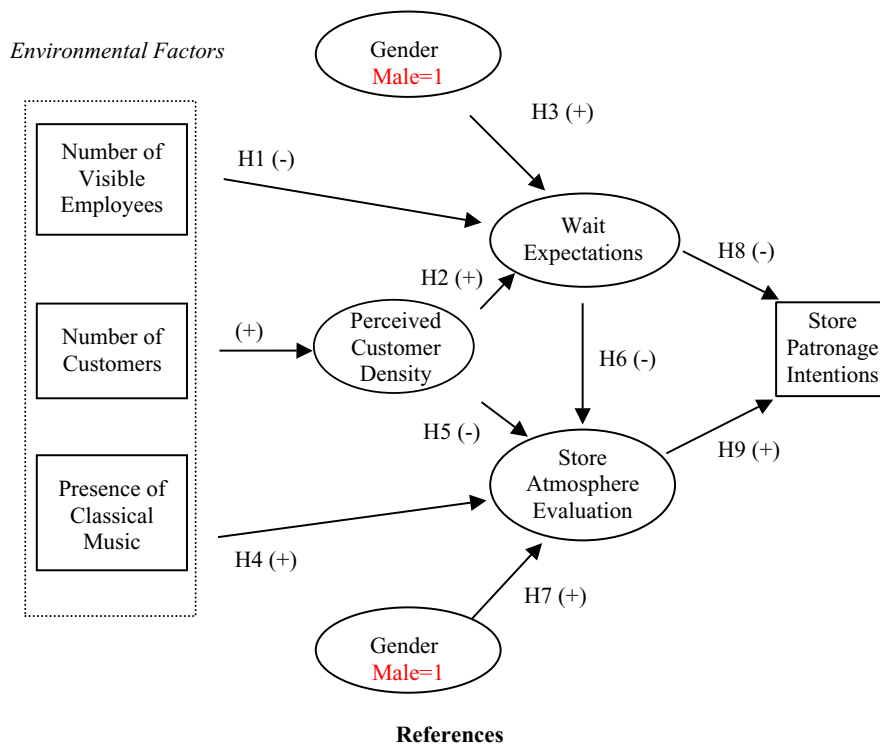
Fig. 1. A conceptual model of the prepurchase process of assessing a retail outlet on the basis of environmental cues.

Crowding is another factor that affects shoppers' selections of retail stores (Herrington & Capella, 1994). Crowding has been conceptualized to have two components (Stokols, 1972): *Physical density* refers to the objective conditions associated with the number of people per unit area, and *crowding* refers to the negative psychological reactions to density. Machleit, Kellaris, and Eroglu (1994) distinguish between human crowding and spatial crowding. Because we are interested in what inferences people make about a store under conditions of high human density, we vary the number of customers to verify the human density experimental manipulation.[2] Inference theory suggests that higher customer density in a store is a cue that will lead a potential customer to expect to wait longer to receive service than in a store with low customer density.

H2. The higher the perceptions of customer density, the longer the wait expectations will be.

The literature on gender differences indicates that men and women perceive time differently. Although we have found no academic studies that directly examine gender effects on wait expectations, two frameworks indirectly support this relationship. Research suggests that men estimate short time intervals more accurately than do women (Rammsayer & Lustnauer, 1989) and that women tend to underestimate time

intervals more than do men (Krishnan & Sexena, 1984). These results might be understood through socialization theory, which theorizes that men's social and work experiences, which have historically involved structured scheduling and time pressure, may socialize them to be more time-conscious than women (Kellaris & Mantel, 1994). Another perspective, proposed by Otnes and McGrath (2001), is that men are achievement oriented in the marketplace and "shop to win." Consequently, when their ability to achieve (in terms of shopping) is thwarted, men become bored and irritated.

Furthermore, a recent trade study by America's Research Group reports that 91% of men, compared with 83% of women, said long lines prompted them to stop patronizing a particular store (Nelson, 2000). Taken together, the evidence suggests that men have less tolerance for waiting than do women. Therefore, given the same environmental cues (employees and customers in a store setting),

H3. Men will have more negative wait expectations than will women.

Store atmosphere

Music has been shown to affect consumers' responses to retail environments, typically in a positive manner (e.g., Baker, Grewal, & Levy, 1992). Hui et al. (1997, p. 90) note that "playing music in the (service) environment is like adding a favorable feature to a product, and the outcome is

---

[2] We assess the effect of the number of visible customers (physical density) on perceived crowding (psychological density).

a more positive evaluation of the environment." This argument suggests that the mere presence of music will result in customers having more favorable evaluations of a store's environment compared with a store environment without music. Therefore, we compare store environments playing classical music with those not playing any music. Classical music was chosen because it "fits" the context of luxury goods (Areni & Kim, 1993; MacInnis & Park, 1991).

Our music hypothesis is stated in terms of a specific combination of music style and store, because using the more general terms "music" and "retail store" could result in any number of relationships depending on the combinations used (e.g., bluegrass or country-western music played in a jewelry store; classical music played in a Wal-Mart), and thus may lead to a different set of inferences than we wish to test in this study. We hypothesize that

H4. Compared with the presence of no music, classical music played in a luxury goods store will result in a more positive evaluation of the store's atmosphere.

We also examine how perceptions of customer density influence consumer evaluations of the overall store atmosphere. Environmental psychologists argue that a critical role of the physical environment is its ability to facilitate or hinder the goals of persons within that environment (Canter, 1983; Darley & Gilbert, 1985). Machleit et al. (1994) find that crowding has a negative influence on satisfaction with the shopping experience. Consumers who see a store with a high level of customer density may infer that their shopping goals will be more difficult to achieve, which in turn may translate into a negative response to the store environment. Machleit et al. (1994) also find that crowding has a negative influence on satisfaction with the shopping experience. Taken together, these studies suggest that consumers who perceive a high level of customer density may evaluate the store atmosphere more negatively.

H5. The higher the perceptions of customer density, the lower the evaluation of the overall store atmosphere will be.

Taylor (1995) finds that delayed customers provided lower ratings of the tangible aspects (including the physical environment) of service. Retail consumers may believe that a pleasant store atmosphere is a place in which they can easily move around and shop. Therefore, it is reasonable to assume that, if customers have higher expectations of waiting, they will evaluate the store as a less pleasant place to shop. We hypothesize:

H6. The higher the wait expectations, the lower the evaluation of the store's atmosphere will be.

Otnes and McGrath (2001) suggest that because men are achievement oriented in their marketplace transactions, retail managers should enable men to be in control of their interaction with the merchandise. Stores that require intensive service violate this parameter. Furthermore, Otnes and McGrath (2001) note that it is important to make men feel comfortable in retail settings that traditionally have been designed for women. For example, many luxury goods stores are typically more feminine than masculine in decor and atmosphere. Therefore, within the store context of our study,

H7. Men will have lower store atmosphere evaluations than will women.

Store patronage intentions

The poverty of time perspective (e.g., Berry & Copper, 1992), control theory (e.g., Haynes, 1990; Hui & Bateson, 1991), and studies on consumer responses to waiting (e.g., Hui et al., 1997; Taylor, 1994, 1995) all suggest that when consumers have little time to shop, they do not want to spend extra time waiting for service. Time-pressed consumers may therefore decline to patronize stores in which they expect to wait a long time. Customers may be least tolerant of waiting in stores that offer expensive products (Davis, 1991), such as the jewelry merchandise that is the context of our study. Stated more formally,

H8. The higher the wait expectations, the more negative the store patronage intentions will be.

The retail store atmosphere also has been shown to have a positive influence on consumers' patronage intentions (e.g., Baker et al., 1992; Darden, Erdem, & Darden, 1983; Donovan & Rossiter, 1982; Hui et al., 1997; Van Kehove & Desumaux, 1997). We expect this linkage in our study as well.

H9. The higher the overall store atmosphere evaluation, the more positive the store patronage intentions will be.

Method

To test the conceptual model, we used videotapes to simulate a store environment experience. This method has proven an effective medium for environmental representation (e.g., Baker et al., 1992, 1994; Bateson & Hui, 1992; Chebat et al., 1993; Voss, Parasuraman, & Grewal, 1998). Because we wanted to examine the influence of the store environment in the context of a luxury goods store where intensive service is required, the research setting was a jewelry store located in a southeastern U.S. city.

The influence of store environment cues on consumer inferences is likely to be stronger when consumers are unfamiliar with a store (Monroe & Krishnan, 1985). To ensure that the store was unfamiliar to respondents, the subjects were 213 graduate business students at a large southwest-

ern U.S. university located in an urban area several states away from the experimental store. Fifty-three percent were men, 88% were between 20 and 35 years of age and 12% were over 35 years of age; 71% reported household income greater than $26,000, and 77% indicated that they had visited a jewelry store in the past year to shop or purchase gifts or jewelry. Thus, they tended to be familiar with shopping in jewelry stores but not familiar with the experimental store.

Subjects viewed a five-minute videotape that visually "walked" them through the store environment, simulating a shopping or browsing experience. The video first showed the exterior of the store (with store name obscured), then started at the front of the store and moved around the perimeter, showing close-up shots of merchandise (jewelry and gift items), "customers," and "salespeople," as well as several views of the entire store. Near the end of the video, a salesperson addressed the camera, saying that he would be with the respondent (i.e., the customer) in a minute.

To provide realistic store settings and create variation in the environmental stimuli, eight videotapes were created and manipulated using three environmental components in a $2 \times 2 \times 2$ between-subjects, full factorial design. Specifically, the number of customers (one vs. eight), number of employees (one vs. three), and the presence versus the absence of classical music were manipulated across treatments. In the video scenarios with eight customers and three employees, one of three male employees was helping a couple choose jewelry, the other two were each helping a single customer, and the other customers (a mix of men and women) were scattered throughout the store browsing. In the tape with three employees and one customer, one employee was helping the customer, one was rearranging watches in a case, and the third was standing behind the counter. In the music con-

ditions, the classical music was played so that it was loud enough to be heard but soft enough to be in the background. Voices of the salespeople talking softly to customers were also apparent in the background, as they would be in a real shopping situation.

Subjects then completed a questionnaire that contained items measuring the model constructs. They were instructed as follows: "You have just watched a video that 'walked' you through a jewelry store to give you the feeling of going on a shopping trip. This questionnaire contains a series of questions that ask you about your perceptions of the store and your expectations if you were to shop in that store. Please base your answers on what you saw in the video. There are no right or wrong answers to the questions—we are interested in your opinions." Each latent construct in the proposed model was measured with multi-item scales. The literature provided the basis for developing multi-item scales to measure respondents' perceptions of customer density (Hui & Bateson, 1991) and overall store atmosphere (Baker et al., 1994), as well as their store patronage intentions (Dodds, Monroe, & Grewal, 1991).

The items for wait expectations were developed specifically for this study. Respondents were first instructed to estimate how long (in minutes) they would expect to wait for service in the store seen in the video. Because the same amount of wait time may seem short to one person and long to the next, we also were interested in measuring subjective expectations of the wait. Thus, the respondents were asked how short/long the estimated wait would feel and if the expected wait would be reasonable.

Following Anderson and Gerbing (1988), we conducted confirmatory factor analysis to assess the reliability and validity of the multi-item scales. This analysis indicated

Table 1
Standardized coefficients and fit statistics for the structural model

	Hypothesized paths	Expected sign	Structural coefficient
	Customers → perceived customer density	+	.34[a]
H1	Employees → wait expectations	−	−.14[b]
H2	Perceived customer density → wait expectations	+	.10[c]
H3	Gender (male = 1) → wait expectations	+	.22[a]
H4	Music → store atmosphere evaluations	+	.15[a]
H5	Perceived customer density → store atmosphere evaluations	−	−.26[a]
H6	Wait expectations → store atmosphere evaluations	−	−.29[a]
H7	Gender (male = 1) → store atmosphere evaluations	−	−.14[b]
H8	Wait expectations → store patronage intentions	−	−.20[a]
H9	Store atmosphere evaluations → store patronage intentions	+	.40[a]
	Fit statistics		
	df		15
	χ^2		19.15
	Goodness-of-fit index		.98
	Adjusted goodness-of-fit index		.95
	Non-normed fit index		.96
	Comparative fit index		.98
	Standardized root mean square residual		.05

[a] Significant at $p < .01$.
[b] Significant at $p < .05$.
[c] Significant at $p < .10$ (one-tailed tests).

Table 2
Examining indirect, direct, and total effects of predictor variables on store patronage intentions

Predictor variables	Store patronage intentions[*]		
	Indirect effect	Direct effect	Total effect
Music	.06[b] (2.31)		.06[b] (2.31)
Employees	.05[b] (1.90)		.05[b] (1.90)
Customers	−.05[a] (−2.97)		−.05[a] (−2.97)
Gender (male = 1)	−.13[a] (−3.47)		−.13[a] (−3.47)
Wait expectations	−.12[a] (−3.60)	−.20[a] (−3.03)	−.32[a] (−4.75)
Perceived customer density	−.14[a] (−3.63)		−.14[a] (−3.63)
Store atmosphere evaluations		.40[a] (5.94)	.40[a] (5.94)
Squared multiple correlation			.26

[*] Standardized path coefficients are reported with *t*-values in parentheses.
[a] Significant at *p* < .01.
[b] Significant at *p* < .05 (one-tailed tests).

satisfactory model fit, and all of the individual scales exceeded the recommended minimum standards proposed by Bagozzi and Yi (1988) in terms of construct reliability (i.e., greater than .60) and the percentage of variance extracted by the latent construct (greater than .50). Appendix provides descriptions of the scale items and the results of the confirmatory factor analysis, including additional evidence that supports the discriminant validity of our measures.

Analysis and results

We used maximum likelihood simultaneous estimation procedures (LISREL-VIII; Jöreskog & Sörbom, 1996) to test the model depicted in Fig. 1. Standardized estimates for the hypothesized paths are presented in Table 1. The various goodness-of-fit indexes suggest that the structural model fit the data well, and each of the predicted relationships is statistically significant (*p* < .10) in the hypothesized direction.

Next, we examined the predictive validity of the conceptual model and the relative contribution of each of the predictor variables in explaining variations in the key criterion variable, store patronage intentions. The results of this analysis are presented in Table 2.

The model explained a substantial percentage of the variation in store patronage intentions (26%). The two strongest predictors of store patronage intentions were store atmosphere perceptions (.40) and wait expectations (−.32), which had both direct and indirect effects. Perceived customer density (−.14) and gender (−.13), which indicated that men were less likely to patronize the jewelry store, had indirect effects on store patronage, as did each of the experimental manipulations: presence of music (.06), number of employees (.05), and number of customers (−.05).

Discussion

Early retail patronage studies focused on general atmospheric constructs such as the physical attractiveness of the

store, whereas more recent studies have examined how specific store environment elements (e.g., music, customer density) affect customers' attitudes toward a store using one element at a time. Although each of these studies is a contribution in its own right, this study examines the simultaneous impact of several store environmental elements on store patronage intentions. We empirically establish the relative importance of number of customers, number of visible employees, and presence of classical music on customers' wait expectations, store atmosphere evaluations, and store patronage intentions within the context of the jewelry store (a luxury goods store requiring intensive service) in which the model was tested. In addition, we examine the influence of customer gender on wait expectations and store atmosphere evaluations. We discuss specific findings pertaining to the impact of store environmental cues and the managerial implications of those findings, starting with the focal construct of store patronage intention.

Influences on patronage intentions

Retailers have a certain amount of control over factors that influence consumers' patronage decisions. Having a desirable product assortment where and when the customer wants it and priced at the level they are expecting to pay is fundamental to any retail strategy. Yet other, less obvious factors can influence customers' purchase intentions. In this study, we examined the impact of several factors that we expected would influence purchase intentions. We did so at the point of patronage, that is, while customers are in the store but before they purchase merchandise.

Specifically, we examined the relationships among three in-store cues (number of customers, number of visible employees, and the presence/absence of music), wait expectations, store atmosphere evaluation, and patronage intentions. The results of this study are fairly robust. Customers are more likely to shop at the jewelry store and recommend it to friends if they do not expect to have to wait (H8) and like the store's atmosphere (H9). What are some of the factors

that influence customers' wait expectations and store atmosphere evaluations?

Wait expectations

For the issue of waiting, we find that when customers perceive there are more (compared with fewer) employees visible in the store, their wait expectations are more positive. Customers believe that the employees will help them through the buying and checkout process. Customers have more negative expectations of the wait if they think the store is crowded, and men have more negative wait expectations than women. Finally, when customers' wait expectations are negative, their evaluations of the store's atmosphere are lower. In the eyes of customers, there is nothing positive about having to wait. Interestingly, there are serious profit implications to both sides of the waiting issue—making people wait can cost sales, but lowering wait times requires hiring more people and/or investing in technology, e.g., self checkout.

Wait expectations are a key determinant of store patronage

They have both a negative indirect and a negative total effect on patronage intentions. Therefore, it is important that store patronage models include wait expectations. Furthermore, it is critical that wait expectations be carefully managed by retailers given the importance of these expectations for consumers' patronage decisions.

There are three ways to reduce wait expectations

The first is to have sufficient sales and customer service employees on the sales floor, visible to customers, particularly when the store is crowded. Of course, employees are relatively expensive and, in many geographic regions, difficult to attract and retain. The second way to reduce waiting is to invest in technology, such as efficient checkout equipment and kiosks to provide customer information. The third method is to reduce the perception of waiting without necessarily reducing the actual wait. We discuss this strategy in the next section.

The results of this study suggest that managing wait expectations is particularly critical for male customers. Given the same environmental cues as women, men reacted more negatively in terms of wait expectations than did the women and thus were less likely to patronize the store. Retailers who target men should be aware that men may have a relatively strong negative reaction to even the expectation of waiting and attempt to find ways to manage expectations. For example, research has shown that preprocess service delays are perceived more negatively than are in-process service delays (Dubé, Schmitt, & Leclerc, 1991). Perhaps an effective strategy to deal with wait expectations would be to find creative ways to make customers (particularly men) feel as though the service process has begun.

How wait expectations are managed may also be situation specific. It may be disadvantageous for some retailers, such as a fancy restaurant, a spa, or a high involvement sporting goods store like REI, to bulk up the sales and service personnel to "improve" customers' wait expectations. Promotions illustrating a relaxed atmosphere in which customers can linger and experiment with the merchandise may actually be beneficial in these situations. The key is to manage those expectations proactively. For example, customers may not expect to wait more than three to five minutes at McDonald's but be willing to accept and even expect a longer wait at Burger King because they know their burger will be made "their way."

Store atmosphere

Managing consumer's perceptions of wait time is another strategy available to retail managers (Baker & Cameron, 1996). One comparatively inexpensive alternative for doing so and enhancing patronage intentions is to enhance the store's atmosphere. Atmospherics can make customers less aware of their wait because they are either distracted and/or entertained. Retailers have an arsenal of available alternatives in this regard (Levy & Weitz, 2004). Stores can creatively use a store's layout or method of displaying merchandise to alter customers' perceptions of the atmosphere. Alternatively, they can enhance the store's atmospherics through visual communications (signs and graphics), lighting, colors, and even scents. An important component of atmospherics is music—the element chosen for this study. It is less expensive to pipe appropriate music into a store to entertain and distract than it is to hire more service people.

In this study, classical music had a positive effect on store atmosphere evaluations, consistent with previous store atmosphere studies (e.g., Hui et al., 1997). Various types of music may have a differential effect on store atmosphere in other types of stores. For example, country-western music might contribute positively to the perception of a Wal-Mart store. In the future, researchers should look at the influence of other types of music in different retail formats, as well as the impact of different atmospheric issues on store patronage intentions.

Perceptions of customer density had a negative effect on store atmosphere. In a service-intensive setting in which customers must have help from salespeople throughout the shopping process, customer density (or crowding) must be proactively managed.

Finally, men evaluated the store atmosphere less positively than did women. Little empirical research exists that examines the relationship between gender and perceptions of the physical environment. Given the differences found in

this study, it is important for retail managers to investigate the store atmosphere from the male point of view.

Directions for further research

Similar to any research, this study has some limitations. Coupled with the new insights we have outlined from this research, we offer an agenda for those interested in examining how store environment affects customers' patronage intentions.

First, this study examines three specific store environment dimensions using videotaped scenarios. Although we believe our findings are exciting and significant, the robustness of our findings should be tested using store environment scenarios with alternative factors in the treatments (e.g., classical versus rock music) or different treatments altogether (e.g., friendliness of salespeople). It is also important to determine if our findings are the same in a different store context, such as a discount store instead of a jewelry store or any store that is not service intensive. Finally, the effects of different aspects of music, such as volume or tonality, should be investigated.

Second, though our study focuses on the negative aspects of customer density, a few studies have suggested that customer density may have positive affects as well (e.g., Machleit et al., 1994). For example, a crowded restaurant may lead people to infer that the restaurant is a popular and good place to eat. Similarly, an athletic event that is lightly attended lacks some of the excitement of a full stadium. Additional research should investigate the conditions in which high customer density is positive, as well as the inferences consumers make in a crowded situation.

Third, our research is based on perceptual and intention measures provided by respondents after they finished viewing videotaped scenarios. Other alternative methodologies, such as qualitative and observational techniques, could provide additional insights. Through these, we might gain a richer understanding of how consumers attend to environmental cues and what interpretations they draw from them.

Fourth, we believe the use of a videotape-based methodology is a huge improvement over verbal descriptions used in some previous research in this area. It might be interesting, however, to explore atmospheric issues using computer-aided design (CAD) technology. Potential shoppers could take a virtual tour of a store while seated at a computer terminal. Programs are readily available and currently being used for store design decisions. Because changing the scenarios using CAD is so easy, more complicated experimental designs could be employed. However, CAD does not portray the environment as realistically as videotape or a real store visit. Therefore, researchers should limit CAD applications to store environmental issues that would be less sensitive to the nuances of a real store visit.

Fifth, personal factors other than gender, such as motivation, age, or cultural differences, may influence consumers' wait expectations and store atmosphere evaluations. In addition, researchers should examine the effects of situational factors, such as browsing versus buying or purchasing gifts versus purchasing for oneself.

Sixth, though one of the differentiating contributions of this research is its breadth of inquiry, further research might use the videotape-based methodology to take a deeper look at any one of the issues examined in this study. For example, the issue of crowding, in terms of both customer density and fixture density, has become a fairly litigious issue in recent years. Consumer groups have brought suit against many national retailers for alleged violations of the Americans with Disability Act, arguing that people with disabilities, particularly those in wheelchairs, do not have access to stores because fixtures are too closely placed. Some retailers retort that their customers expect and enjoy the sense of "crowdedness" because of the excitement and perception of "getting a good deal" that it brings. A carefully crafted study examining this specific issue would be a significant contribution to settling this debate.

Acknowledgements

Appendix A. Scale items to measure the constructs

The scale items that measure each construct in the model are presented in Tables A.1 and A.2, along with confirmatory factor analysis results that indicate the scales are

Table A.1
Scale items and confirmatory factor analysis results

	Lambda loadings	Construct reliability	Variance extracted
1. Wait expectations		.81	.68
How short/long would this amount of time feel?	.85		
Would this amount of time be reasonable to wait for service in this store?[a]	.79		
2. Perceived customer density		.92	.79
Cramped/Not cramped	.80		
Restricted/Free to move	.93		
Confined/Spacious	.93		

Table A.1 (*Continued*)

	Lambda loadings	Construct reliability	Variance extracted
3. Store atmosphere evaluations		.90	.75
The store would be a pleasant place to shop.	.87		
The store had a pleasing atmosphere.	.93		
The store was attractive.	.79		
4. Store patronage intentions		.88	.70
The likelihood that I would shop in this store is very high.	.78		
I would be willing to buy merchandise at this store.	.80		
I would be willing to recommend this store to my friends.	.93		
Fit statistics			
χ (38 degrees of freedom)	72.17		
Goodness-of-fit index	.94		
Adjusted goodness-of-fit index	.90		
Non-normed fit index	.97		
Comparative fit index	.98		
Standardized root mean square residual	.05		

We assessed whether the measurement model satisfied three conditions that are commonly considered evidence of discriminant validity: (1) for each pair of constructs, the squared correlation between the two constructs is less than the variance extracted for each construct; (2) the confidence interval for each pairwise correlation estimate (i.e., $\pm$ two standard errors) does not include the value of one; and (3) for every pair of factors, the χ^2 value for a measurement model that constrains their correlation to equal one is significantly greater than the χ^2 value for the model that does not impose such a constraint. All of these tests supported the discriminant validity of our constructs. Table A.2 provides the means and standard deviations for each construct along the diagonal and construct correlation estimates along with standard errors in the off-diagonal.

[a] Reverse coded.

Table A.2
Construct means (with standard deviations) and correlations (with standard errors)[a]

		1	2	3	4
1.	Wait expectations	4.76 (1.67)			
2.	Perceived customer density	.12 (.08)	2.44 (1.28)		
3.	Store atmosphere evaluations	−.43 (.07)	−.32 (.07)	4.47 (1.48)	
4.	Store patronage intentions	−.43 (.07)	−.16 (.07)	.57 (.05)	3.32 (1.36)

[a] Construct means (with standard deviations) are presented on the diagonal and construct correlations (with standard errors) are presented on the off-diagonal.

unidimensional with satisfactory psychometric properties. The wait expectations and crowdedness items were measured on seven-point semantic differential scales. All other items were measured using seven point-scales anchored by "Strongly Agree" and "Strongly Disagree."

References

Anderson, James C., & Gerbing, David W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*(3), 411–423.

Areni, Charles S., & Kim, David. (1993). The influence of background music in shopping behavior: Classical versus top 40 music in a wine store. In Leigh McAlister & Michael L. Rothschild (Eds.), *Advances in consumer research* (Vol. 20, pp. 336–340). Provo, UT: Association for Consumer Research.

Bagozzi, Richard P., & Yi, Youjae. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, *16*(Spring), 74–94.

Baker, Julie. (1998). Examining the informational value of store environments. In John F. Sherry Jr. (Ed.), *Servicescapes: The concept of place in contemporary markets* (pp. 55–80). Lincolnwood, IL: NTC Publishing Group and American Marketing Association.

Baker, Julie, & Cameron, Michalle. (1996). The effects of the service environment on affect and consumer perception of waiting time: An integrative review and research propositions. *Journal of the Academy of Marketing Science*, *24*(4), 338–349.

Baker, Julie, Grewal, Dhruv, & Levy, Michael. (1992). An experimental approach to making retail store environmental decisions. *Journal of Retailing*, *68*(Winter), 445–460.

Baker, Julie, Dhruv, Grewal, & Parasuraman, A. (1994). The influence of store environment on quality inferences and store image. *Journal of the Academy of Marketing Science*, *22*(4), 328–339.

Baker, John, Parasuraman, A., Grewal, Dhruv, & Voss, Glenn. (2002). The influence of multiple store environment cues on perceived merchandise value and patronage intentions. *Journal of Marketing*, *66*(April), 120–141.

Barker, Roger G. (1965). Explorations in ecological psychology. *American Psychologist*, *20*, 1–14.

Bateson, John E. G., & Hui, Michael K. M. (1992). The ecological validity of photographic slides and videotapes in simulating the service setting. *Journal of Consumer Research*, *19*(September), 271–281.

Berry, Leonard L., & Cooper, Linda R. (1992). Competing with time-saving service. In Christopher Lovelock (Ed.), *Managing services* (pp. 169–175). Englewood Cliffs, NJ: Prentice-Hall.

Canter, David. (1983). The purposive evaluation of places. *Environment and Behavior*, *15*(3), 659–698.

Chebat, Jean-Charles, Gelinas-Chebat, Claire, & Filiatrault, Pierre. (1993). Interactive effects of musical and visual cues on time perception: An

application to waiting lines in banks. *Perceptual and Motor Skills*, 77, 995–1020.

Compeau, Larry D., Grewal, Dhruv, & Monroe, Kent B. (1998). The role of prior affect and sensory cues on consumers' affective and cognitive responses and overall perceptions of quality. *Journal of Business Research*, 42(3), 295–308.

Darden, William R., Erdem, Orhan, & Darden, Donna K. (1983). A comparison and test of three casual models of patronage intentions. In William R. Darden & Robert F. Lusch (Eds.), *Patronage behavior and retail management* (pp. 29–43). New York: North-Holland.

Darley, John M., & Gilbert, Daniel T. (1985). Social psychological aspects of environmental psychology. In Gardner Lindsey & Elliot Aronson (Eds.), *The handbook of social psychology* (pp. 949–991). New York: Random House.

Davis, Mark. (1991). How long should a customer wait for service? *Decision Sciences*, 22, 421–434.

Dodds, William B., Monroe, Kent B., & Grewal, Dhruv. (1991). The effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*, 28(August), 307–319.

Donovan, Robert J., & Rossiter, John R. (1982). Store atmosphere: An environmental psychology approach. *Journal of Retailing*, 58(Spring), 34–57.

Dubé, Laurette, Schmitt, Bernd H., & Leclerc, France. (1991). Consumers' affective response to delays at different phases of a service delivery. *Journal of Applied Psychology*, 21(10), 810–820.

Grewal, Dhruv, & Baker, Julie. (1994). Do retail store environmental factors affect consumers' price acceptability? An empirical examination. *International Journal of Research in Marketing*, 11(2), 107–115.

Grewal, Dhruv, Monroe, Kent B., & Krishnan, R. (1998). The effects of price comparison advertising on buyers' perceptions of acquisition value, transaction value, and behavioral intentions. *Journal of Marketing*, 62(April), 46–59.

Haynes, Paula J. (1990). Hating to wait: Managing the final service encounter. *Journal of Services Marketing*, 4(4), 20–26.

Herrington, J. Duncan, & Capella, Louis M. (1994). Toward an explanatory model of retail crowding. In Elizabeth J. Wilson & William C. Black (Eds.), *Developments in marketing science* (pp. 133–138). Academy of Marketing Science.

Huber, Joel, & McCann, John. (1982). The impact of inferential beliefs on product evaluations. *Journal of Marketing Research*, 19(August), 324–333.

Hui, Michael K., & Bateson, John E. G. (1991). Perceived control and the effects of crowding and consumer choice on the service experience. *Journal of Consumer Research*, 18(September), 174–184.

Hui, Michale K., Laurette, Dubé, & Chebat, Jean-Charles. (1997). The impact of music on consumers' reactions to waiting for services. *Journal of Retailing*, 73(1), 87–104.

Jöreskog, Karl G., & Sörbom, Dag. (1996). *LISREL 8 User's Reference Guide*. Chicago: Scientific Software International.

Katz, Karen, Blaire, M. Larson, & Richard, C. Larson. (1991). Prescription for the waiting-in-line blues: Enlighten, entertain, and engage. *Sloan Management Review*, 32(2), 44–53.

Kellaris, James J., & Mantel, Susan Powell. (1994). The influence of mood and gender on consumers' time perceptions. In Chris T. Allen & Deborah Roedder John (Eds.), *Advances in consumer research* (Vol. 21, pp. 514–518). Provo, UT: Association for Consumer Research.

Krishnan, Lila, & Sexena, Neelaksh Kumar. (1984). Perceived time: Its relationship with locus of control, filled versus unfilled time intervals, and perceiver's sex. *The Journal of General Psychology*, 110(2), 275–281.

Kumar, Piyush, Kalwani, Manohar U., & Dada, Maqbool. (1997). The impact of waiting time guarantees on customers' waiting experiences. *Marketing Science*, 16(4), 295–314.

Levy, Michael, & Weitz, Barton A. (2004). *Retailing management*. Burr Ridge, IL: McGraw-Hill/Irwin.

Machleit, Karen A., Kellaris, James J., & Eroglu, Sevgin A. (1994). Human versus spatial dimensions of crowding perceptions in retail environments: A note on their measurement and effect on shopper satisfaction. *Marketing Letters*, 5(2), 183–194.

MacInnis, Deborah J., & Park, Whan C. (1991). The differential role of characteristics of music on high- and low-involvement consumers' processing of ads. *Journal of Consumer Research*, 18(2), 161–173.

Mazursky, David, & Jacoby, Jacob. (1986). Exploring the development of store images. *Journal of Retailing*, 62(Summer), 145–165.

Monroe, Kent B., & Krishnan, R. (1985). The effect of price on subjective product evaluation. In J. Jacoby & J. Olson (Eds.), *Perceived quality* (pp. 209–232). Lexington, MA: Lexington Books.

Nelson, Emily. (2000). Mass-market retailers look to bring checkout lines into the 21st century. *The Wall Street Journal Interactive Edition* (March 13), http://interactive.wsj.com.

Nisbett, Richard E., & Ross, Lee. (1980). *Human inference: Strategies and shortcomings of social judgment*. Englewood Cliffs, NJ: Prentice Hall.

Otnes, Cele, & McGrath, Mary Ann. (2001). Perceptions and realities of male shopping behavior. *Journal of Retailing*, 77(1), 111–137.

Rammsayer, Thomas, & Lustnauer, Sebastian. (1989). Sex differences in time perception. *Perceptual and Motor Skills*, 68, 195–198.

Solomon, Michael R. (1998). Dressing for the part: The role of costume in the staging of the servicescape. In John F. Sherry Jr. (Ed.), *Servicescapes: The concept of place in contemporary markets* (pp. 81–108). Lincolnwood, IL: NTC Publishing Group and American Marketing Association.

Stokols, Daniel. (1972). On the distinction between density and crowding: Some implications for future research. *Psychological Review*, 79(3), 275–277.

Taylor, Shirley. (1994). Waiting for service: The relationship between delays and the evaluation of service. *Journal of Marketing*, 58(April), 56–69.

Taylor, Shirley. (1995). The effects of filled waiting time and service provider control over the delay on evaluation of service. *Journal of the Academy of Marketing Science*, 23(1), 38–48.

Van Kenhove, Patrick, & Desumaux, Patrick. (1997). The relationship between emotional states and approach or avoidance responses in a retail environment. *The International Review of Retail Distribution and Consumer Research*, 7(October), 351–368.

Voss, Glenn B., Parasuraman, A., & Grewal, Dhruv. (1998). The roles of price, performance, and expectations in determining satisfaction in service exchanges. *Journal of Marketing*, 62(October), 46–61.

Zeithaml, Valarie A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing*, 52(July), 2–22.

Zeithaml, Valarie A., Berry, Leonard L., & Parasuraman, A. (1993). The nature and determinants of customer expectations of service. *Journal of the Academy of Marketing Science*, 21(1), 1–12.