

APPROUVÉ



Empirical Testing of a Model of Online Store Atmospherics and Shopper Responses

Sevgin A. Eroglu
Georgia State University

Karen A. Machleit
University of Cincinnati

Lenita M. Davis
University of Alabama

ABSTRACT

This study empirically tests a model that proposes that the atmospheric cues of the online store influence shoppers' emotional and cognitive states, which then affect their shopping outcomes. The results support the model propositions and show a significant effect of site atmospherics on shopper attitudes, satisfaction, and various approach/avoidance behaviors as a result of the emotions experienced during the shopping episode. In addition, the findings confirm the hypothesized moderating effects of two individual traits, namely, involvement and atmospheric responsiveness. The results underscore the role that online store atmospherics play in creating positive reactions from shoppers and demonstrate that these positive reactions will be more pronounced under certain conditions. © 2003 Wiley Periodicals, Inc.

As the retail store continues to evolve from a simple sales outlet to an “interactive theater” or “experience stager” (Mathwick, Malhotra, & Rigdon, 2001), the concept of atmospherics is receiving increasing man-

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agerial and research attention both in traditional and online retail contexts. A considerable body of literature has been accumulated on atmospheric effects in traditional stores; however, naturally, the impact of these factors in the online retail context has not yet been documented.

One recent research stream that indirectly addresses the importance of online atmospherics is the work on hedonic motivations (Childers, Carr, Peck, & Carson 2001) and experiential value (Mathwick, Malhotra, & Rigdon, 2001) of the Internet shopping environment. Both of these studies conclude that although the instrumental qualities of online shopping (such as ease and convenience) are important predictors of consumers' attitudes and purchase behaviors, the hedonic aspects of the Web medium play an equally important role in shaping these behaviors. Included in the hedonic/experiential qualities of the online store are all the elements of the virtual-environment counterpart to the physical environment of the retail atmosphere. Recognizing the significance of these qualities for online shopping, Childers and colleagues (2001) conclude that "much research is required into how these elements influence consumers' perceptions and satisfactions" (p. 528).

The present study addresses this call by empirically testing a model (Eroglu, Machleit, & Davis, 2001) that describes the effect of store atmospherics on shopping outcomes. The model posits that atmospheric cues of the online store, through the intervening effects of affective and cognitive states, influence the outcomes of online shopping in terms of approach/avoidance behaviors. In addition, the model hypothesizes that two individual traits, atmospheric responsiveness and involvement, moderate the relationship between atmospheric cues and shoppers' affective and cognitive reactions.

BACKGROUND

Atmospherics has been defined as "the conscious designing of space to create certain buyer effects, specifically, the designing of buying environments to produce specific emotional effects in the buyer that enhance purchase probability" (Kotler, 1973-1974). It was a decade later, however, before empirical work in this area began. Donovan and Rossiter (1982) provided the first empirical test of the effects of the retail atmosphere. Their model, based on literature from environmental psychology, was organized in a stimulus-organism-response (S-O-R) framework. The atmospheric cues were operationalized as the "stimuli," shoppers' emotional reactions as the "organism" and approach/avoidance behaviors as the "response." This study was instrumental in empirically showing that the environment of the retail store does indeed have significant and measurable effects on shopping behaviors. Following in the footsteps of this general study, subsequent work in the area began to focus on the impact of specific atmospheric cues, such as music

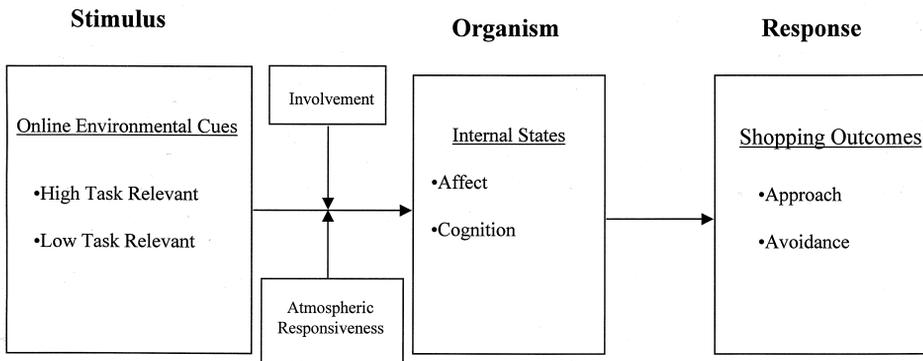
(Hui, Dube, & Chebat, 1997; Yalch & Spangenberg, 1990), lighting (Golden & Zimmerman, 1986), scent (Bone & Jamtrania, 1992; Spangenberg, Crowley, & Henderson, 1996), and color (Belizzi, Crowley, & Hasty, 1983).

As evidence accumulated regarding the effect of specific cues, researchers began to work on developing typologies and classification schemes. Baker (1986) proposed a general typology that includes social factors (the people in the store, customers, and employees), design factors (visual cues such as layout, clutter, cleanliness, color) and ambient factors (nonvisual cues such as smells and sounds). Bitner's (1992) typology, being more focused on the service retail context, was somewhat more extensive and included ambient cues (those cues that affect the five senses), layout, and functionality (store arrangement and ability to facilitate consumer goals), and signs, symbols, and artifacts (signals that communicate information to the shopper).

Ever since online shopping entered the commercial scene as the most rapidly growing form of retailing, researchers began to focus on various aspects of this new medium. As the atmospheric qualities of the online store emerged as a particularly interesting and important topic, research questions began to emerge: Does the demonstrated effect of in-store environment on shopping behaviors and outcomes in traditional retailing hold in the online context? What, if any, is the role of atmospherics in online shopping?

To address these questions, Eroglu et al. (2001) developed a model proposing that, like their offline counterparts, online retail stores also create an atmosphere that affects shopper reactions. Although this atmosphere lacks the tactical and olfactory cues of the offline store environment, the online retailer can manipulate the visual cues (and, to a limited extent, auditory cues) that can produce affective reactions in site visitors. Similar to traditional in-store stimuli, these online atmospheric cues (e.g., colors, graphics, layout, and design) can provide information about the retailer (e.g., the quality or type of retailer, the target audience of the retailer) as well as influencing shopper responses during the site visit. Drawing from the earlier study by Donovan and Rossiter (1982), Eroglu et al. (2001) based their model of online atmospherics on the S-O-R model from environmental psychology (Figure 1). They proposed that there are online environmental cues that lead to affective and cognitive internal states, which then result in approach/avoidance behaviors. They also proposed two moderators of the effect of the cues on the affective and cognitive internal states, namely, involvement and atmospheric responsiveness.

Of interest in this model is the nature of the cues that combine to create the online store atmosphere. Because neither Baker's nor Bitner's cue typologies fit the online store environment, a different cue typology was proposed. Eroglu, Machleit, and Davis (2000) hypothesized that the online store atmosphere is comprised of high and low task-relevant in-



Source: Eroglu, Machleit, and Davis 2001

Figure 1. An S-O-R model of consumer response to online shopping.

formation. High task-relevant cues include “all the site descriptors (verbal or pictorial) that appear on the screen which facilitate and enable the consumer’s shopping goal attainment” and low task-relevant cues refer to “site information that is relatively inconsequential to the completion of the shopping task” (p. 180). Examples of high task-relevant cues are descriptions of the merchandise, the price, terms of sale, delivery and return policies, pictures of the merchandise, and navigation aids to facilitate movement through the site (e.g., site map, frames). The purpose of these high task-relevant cues is to help the shopper achieve his or her shopping goal—that is, the utilitarian motive (Babin, Darden, & Griffin, 1994). Examples of low task-relevant cues are the colors, borders, and background patterns, timesteps and fonts, animation, music and sounds, entertainment (e.g., games or contests), pictures other than the merchandise (e.g., for decorative purposes), a Web counter, site awards, and affiliations (e.g., BBB). These cues are proposed to increase the hedonic (Babin, Darden, & Griffin, 1994; Childers et al., 2001) or experiential (Mathwick et al., 2001) value of shopping. In the case of traditional retailers with an online presence, the low task-relevant cues might even perhaps trigger memories of shopping in the offline store. Eroglu et al. (2000) have tested and found support for the high/low-task typology’s ability to represent the various online atmospheric cues.

HYPOTHESES

Because the purpose of this study is to empirically test the overall online atmospheric model (Eroglu et al., 2001) the stimulus-organism-response structure of the model is operationalized as shown in Figure 2. The focus is specifically on three major propositions from the model:

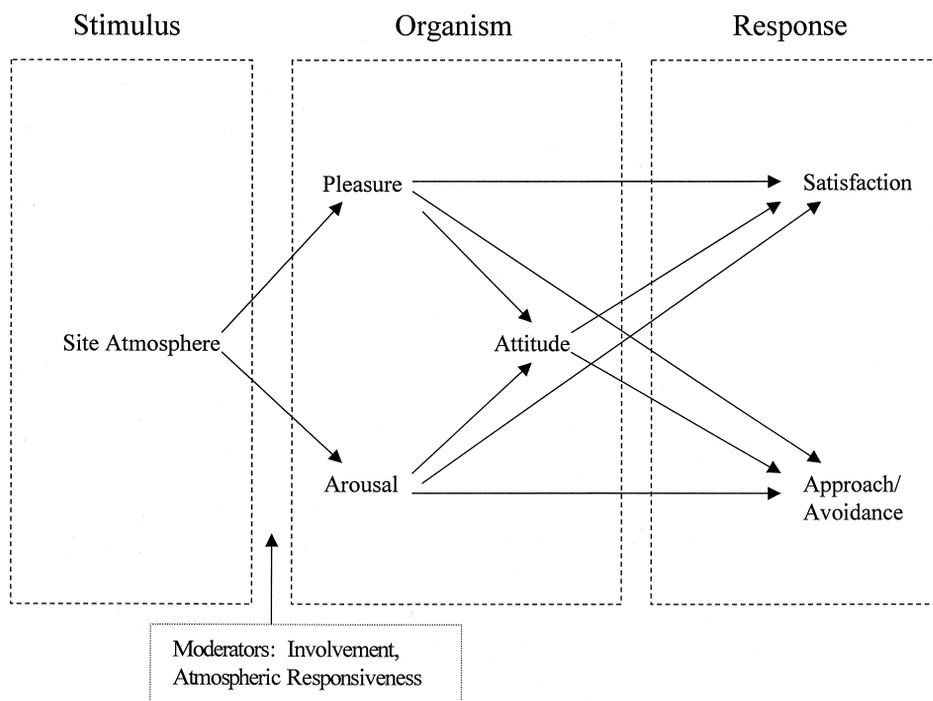


Figure 2. The model as empirically operationalized.

- H1:** The perceived online store environment will influence shoppers' organismic states (emotion and attitude), which then affects their shopping outcomes (satisfaction and approach/avoidance behaviors).
- H2:** The affective and cognitive internal states of online shoppers (emotion and attitude) mediate the relation between the perceived online store environment and shopping outcomes (satisfaction and approach/avoidance behaviors).
- H3:** Personality characteristics, such as involvement and atmospheric responsiveness, moderate the relationship between the perceived online store environment and online shoppers' affective and cognitive states.

The foundation and detailed support for the hypotheses can be found in the original article. A specific discussion of the atmospheric responsiveness construct is warranted, however, as this construct has not been readily examined in this literature.

McKechnie (1974), an environmental psychologist, defines atmospheric responsiveness as one's tendency to be influenced by the qualities of his or her immediate physical environment. In the retail context, the atmospheric responsiveness trait can be reflected in the extent to which environmental characteristics influence customers' decisions on

where and how to shop as well as the outcomes of the shopping experience (Eroglu et al., 2001). For shoppers who value the environmental quality of a shopping encounter, it is more likely that the store atmosphere will lead to the affective states it is designed to produce. On the other hand, for those who do not have heightened sensitivity to their surroundings, the effect of the site design on their affective reactions would not be significant.

METHOD

In order to eliminate the effects of prior experience with a retailer, a Web site for a fictitious retailer was developed. The retailer was the XYZ Shirt Co., a maker of high-quality shirts (including t-shirts and sweatshirts, among others), which offered the option of custom imprinting. In addition to descriptions of the merchandise and ordering options/policies, the site contained discussions of the imprinting design options and a profile of three employees of the firm who specialize in creating custom designs.

Atmospheric cues (the “stimulus” part of the S-O-R model) were manipulated such that one site contained high task-relevant cues only, while the other contained both high and low task-relevant cues. The content, which was same across both sites, began with an introduction page that included links to “About Us” (a description of the company and testimonials from satisfied customers), “Design Options” (a description of the custom imprinting services and profiles of the three designers), “Shirts” (photographs and descriptions of seven different shirts and a link to see the available colors), “Monthly Specials,” “Ordering Policies” (extensive information about shipping times, charges, gift wrapping services, payment, and order tracking services), “Order Form,” and a “Customer Feedback Form.” The site with the low task-relevant cues had text in a dark green color (rather than black), a pale gray background image of a sweatshirt (with the XYZ logo) on most pages, a green graphic surrounding the links section, photographs of the design employees to go along with their profiles, a Better Business Bureau affiliation graphic, and a small, animated Visa/Mastercard logo on the ordering policies page.

To test for its moderating influence, involvement was also manipulated. In a questionnaire that was randomly ordered, respondents were asked to either “Browse and look around the site” (low involvement) or to “Imagine that you have been given a \$100 gift certificate to make purchases at the Web site. Identify the items you want to purchase, and complete the order form” (high involvement). The questionnaire listed the URL for the Web site (one of the two atmospheric cue manipulations), and the respondent was asked to visit the site before completing the questionnaire. The rest of the questionnaire included measures of

satisfaction, attitude, emotional responses, approach/avoidance behaviors, the atmospheric responsiveness measure, and Web familiarity questions.

Three hundred twenty-eight respondents (61% male) completed the questionnaire. In general, they rated themselves as very familiar with the World Wide Web and moderately familiar with retail Web sites. Of these, 48% have never purchased online, but 12% have purchased online more than five times.

RESULTS

Confirmatory factor analysis was conducted on all the measures. Emotional responses were measured with the Mehrabian and Russell (1974) pleasure-arousal-dominance (PAD) scale. This scale is widely used in studies of environmental psychology and, although it is meant to represent the dimensions of emotional response rather than a complete typology of emotional responses, its simple structure and widespread use made it the appropriate choice in this context. Some scale items were deleted per the CFA, leaving three items per dimension. Pleasure was measured with the 7-point semantic differential items happy/unhappy, pleased/annoyed, contented/melancholic ($\alpha = 0.85$) and arousal was captured with the items stimulated/relaxed, excited/calm, aroused/unaroused ($\alpha = 0.80$). Dominance was measured with controlling/controlled, influential/influenced, dominant/submissive; however, because reliability was low ($\alpha = 0.56$), and because Russell (1979) posits that pleasure and arousal adequately capture the range of appropriate emotional responses, the dominance dimension was not included in further analysis.

Satisfaction was measured with 7-point Likert-format items: "I enjoyed visiting the site," "I was satisfied with my shopping experience at the site," "Given a choice, I would probably **not** go back to the site," and "I would recommend the site to other people" ($\alpha = 0.81$). Approach/avoidance behavior was measured with semantic differential items "How much time would you like to spend with this Website? lots of time/very little time," "Once at the site, how much did you enjoy exploring around? enjoyed exploring/did not enjoy exploring," "How much would you like to either approach or avoid this particular site while shopping? approach/avoid," and "How much would you avoid looking around or exploring the site? approach/avoid" ($\alpha = 0.88$). Attitude was measured with the items favorable/unfavorable, like/dislike, negative/positive, and good/bad ($\alpha = 0.86$). Atmospheric responsiveness was captured with the scale items: "When I go shopping, I pay attention to the store 'environment'," "Things like music, colors, lighting in a store make a difference to me in deciding which store I will shop at," "I find myself making shopping decisions based on how the store

looks,” and “Store décor influences my decision about where I shop.” (alpha = 0.79.).

Figure 2 shows the model as it has been empirically operationalized. The site atmosphere manipulation represents the stimulus part of the S-O-R model. The organism variables are represented by the pleasure/arousal emotional responses and attitude as a cognitive reaction. A number of studies support the emotion → attitude sequence used here (e.g., Abelson, Kinder, Peters, & Fiske, 1982; Brown & Stayman, 1992; Cohen & Areni, 1991). Finally, satisfaction and approach/avoidance behaviors are the outcome variables. Note that involvement and atmospheric responsiveness are shown as moderators only at the S-O junction—they are hypothesized to have moderating effects on only the relationships between site atmosphere and emotion/attitude.

Figure 3 shows the coefficients (corrected for attenuation) obtained from a structural equations analysis (via Lisrel 8.30). Each construct is represented by the sum of the scale items and the error terms are set to (1 – alpha)(variance) to correct for measurement error in the coefficients (Anderson & Gerbing, 1988). Results show that that site atmosphere affects the level of pleasure that was felt, which in turn influences attitude, which has strong effects on satisfaction and approach/avoidance behavior (H1). Testing for the mediating effect (Baron & Kenny, 1986) of the organism part of the model (H2), showed that although site atmosphere has significant effects on satisfaction and approach/avoidance behavior, these effects disappear when the mediating emotion and attitude organism responses are included in the model. Thus, H1 and H2 are supported.

Figures 4 and 5 show support for H3— involvement and atmospheric responsiveness moderate the effect of site atmosphere. The sample was

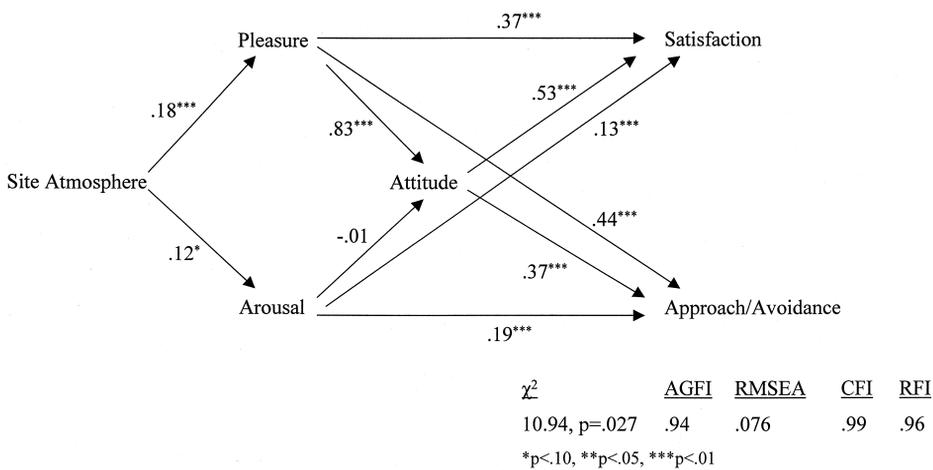


Figure 3. Structural coefficients.

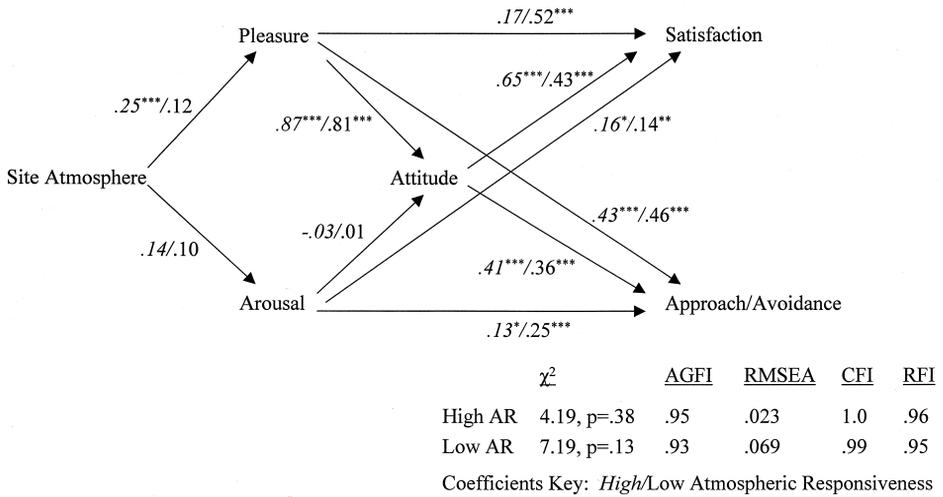


Figure 4. Coefficients split by atmospheric responsiveness.

split by high-/low-involvement manipulation, and the path model (corrected for attenuation) was estimated for each group. Note that the effect of site atmosphere on pleasure is significant only in the low-involvement condition, supporting a moderating effect. Also note that this moderating influence only occurs at this point in the model ($S \rightarrow O$) and not at the $O \rightarrow R$ point in the model. The results are similar when the sample is split into low/high atmospheric responsiveness groups—the effect of site atmosphere on pleasure is, as hypothesized, significant only for those high in atmospheric responsiveness.

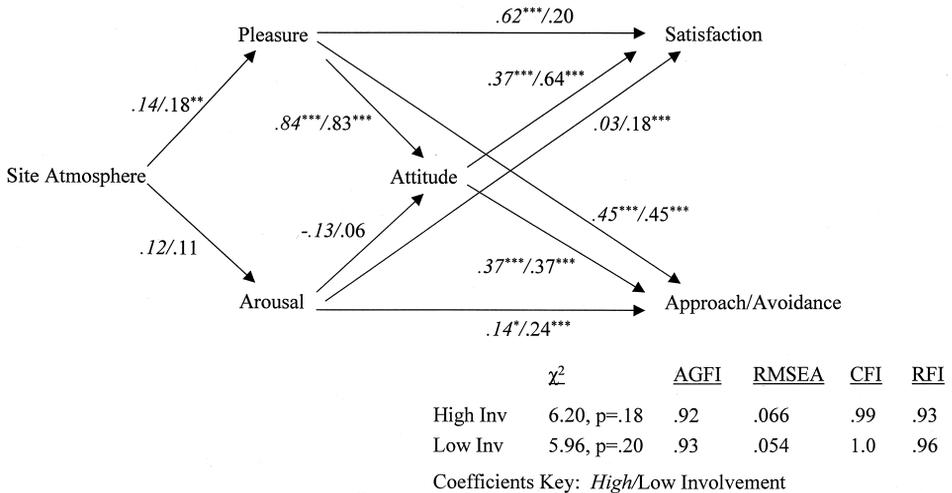


Figure 5. Coefficients split by involvement.

DISCUSSION AND LIMITATIONS

The major conclusion from this work is that online store atmosphere does indeed make a difference. It was seen that increasing the atmospheric qualities of the online store Web site increases the level of pleasure felt by the shopper. Interestingly, this effect is moderated by involvement and atmospheric responsiveness. In addition, the effect of the site atmosphere on attitude, satisfaction, and approach/avoidance behavior is not direct and appears to be the result of the emotions experienced by the shopper.

At least two limitations are evident. The first is that the PAD emotion scheme did not capture much of the effect of site atmosphere. An emotion scheme that is more comprehensive in nature (such as one that includes likely emotional reactions such as interest, surprise, anger/frustration, disgust) is recommended (see, e.g., Machleit & Eroglu, 2000). A second limitation is the student sample and the hypothetical shopping situation. Online shopping is no longer the exclusive outlet of the young, male, and early adopters, nor is it the toy of the technologically savvy student body. The typical shopper profile, in fact, is the college-educated, married, middle-aged woman (Cyr, 2000). Future studies should use samples to reflect this new profile. From a design point of view, a study that manipulates cues unobtrusively via random changes to an existing site and then requests participation in the study as the visitor leaves the site would provide a superior test of the model.

Having empirically established that, in general, the online atmosphere affects shopper responses, researchers are encouraged to move on, similar to the movement in the traditional store atmospherics literature, to questions of the effects of specific cues on shopper responses. For example, how do specific cues, such as structural design attributes, media, and layout dimensions (Childers et al., 2001) affect shoppers' cognitive and behavioral responses to the online retailer? What impact do they have on store image, store patronage, and satisfaction with the store and the shopping experience? In a similar vein, how does the memory for a brick and mortar store play a role in shopper reactions to its online counterpart? Taking this a step further, what are the effects on multichannel retailers, which, in addition to traditional stores, operate via online stores, catalogs, kiosks, and so forth? Industry experts believe that in the near future most of the major players in the retail industry will maintain at least an online and offline presence. Yet, they are also quick to add that, to date, very few are clear as to how and how much their online presence will affect their volumes and their operations. Hence, research on any aspect of online shopping is bound to have serious managerial as well as research implications.

Another interesting research avenue includes questions regarding other possible effects of the online store atmosphere. For example, confidence in the retailer, more frequent site visits and more time spent at

the site could be relevant outcomes in addition to satisfaction and approach/avoidance behaviors. Similarly, other moderating effects and boundary conditions can be studied. Consumer characteristics such as risk aversiveness, style of processing (visual/verbal), and experiential value (Mathwick et al., 2001) may play a moderating role. Finally, the role and relevance of atmospheric cues in business-to-business transactions or in Web sites that perform an information-providing function rather than a retail function is another promising research avenue.

This work represents an empirical verification of the effect of online atmospherics on shopper outcomes and responses. The results are not only promising, but also offer a number of research possibilities in an area which, although in its infancy, has significant implications for retail managers and researchers alike. Further study will help us to more fully understand the psychological processes by which the online atmosphere affects shopper responses.

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- Correspondence regarding this article should be sent to: Karen A. Machleit, Department of Marketing, University of Cincinnati, P.O. Box 210145, Cincinnati, OH 45221-0145 (karen.machleit@uc.edu)