

Effects of Gender-Congruent Ambient Scent  
on Approach and Avoidance Behaviors in a Retail Store

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Submitted to the 7<sup>th</sup> Annual Retail Strategy and Consumer Decision Research Symposium 2004

Consumer Decision Track

## Abstract

Ambient scent in a retail environment can influence consumers, with such effects likely moderated by congruity between the scent and the retailer's product offering. Unfortunately, minimal prior research has not documented such effects on a broader range of products and in real-world settings. This research addresses these shortcomings by exploring the evaluative and behavioral effects of congruity between the perceived gender of ambient scent and a store's gender-based products. A field experiment demonstrates scent congruity to influence perceptions of the store, its merchandise, and actual sales. Supporting an S-O-R interpretation, affective responses to the environment and arousal mediated these effects.

Keywords: Consumer psychology; retail environments; ambient scent; gender effects

## Effects of Gender-Congruent Ambient Scent on Approach and Avoidance Behaviors

Retailers' acquiescence to the importance of attending to environmental psychological variables is fueled by research showing that environmental cues affect critical consumer responses (e.g., Chebat and Michon, 2003; Mattila and Wirtz, 2001; Spangenberg, Crowley, and Henderson, 1996). The burgeoning investigation of such effects has identified olfactory cues as one of the many important components of the retail environment influencing people's perceptions of the store itself and products offered for sale therein (e.g., Bone and Ellen, 1999).

Although recognized as a moderator, the appropriateness (or congruity) of olfactory cues has been given limited empirical attention in prior research with only two published studies (Bone and Jantrania, 1992; Mitchell, Kahn, and Knasko, 1995). In these studies, congruity (as compared to incongruity) between a scent and a focal product has been shown to lead to favorable outcomes including improved information processing (Mitchell et al., 1995), enhanced product evaluations (Bone and Jantrania, 1992), and altered choice behavior (Mitchell et al., 1995). Existing research is limited, however, in that it has remained in the laboratory and has only examined stimuli with inherent scents (i.e., hand lotion and cleaning agents, Bone and Jantrania, 1992; chocolate, Mitchell et al., 1995). Of course in the real world, firms offer many products that do not have an expected scent associated with them (e.g., clothing).

The current research extends the extant prior research by exploring customers' responses to an ambient scent in an actual store: rather than focusing on scents inherent to products (e.g., floral scents in a florist), we investigate the effectiveness of ambient scents that do not originate from the product offering. More specifically, congruity between the gender-based product offerings of a retailer and the perceived femininity or masculinity of ambient scents is explored.

Consistent with prior conceptualizations of product-scent congruity (i.e., the correspondence or ‘fit’ of a particular scent with a target object, or its appropriateness in certain contexts; Bone and Ellen, 1999), *gender-scent congruity* is defined herein as correspondence of an ambient scent with the gender-based products offered for sale by a retailer. Following a review of pertinent literature and an overview of our theoretical expectations, we report the results of a field experiment conducted in a clothing store, where we examine the effects of congruent versus incongruent gender-based ambient scents on actual consumer response variables.

### Ambient Scent and the Retail Environment

Specialty stores like bakeries, chocolate shops and florists often carry product lines with inherent ambient scents (Mitchell et al., 1995) and have long relied on scents of their products to attract and influence customers (Bone and Ellen, 1999). Contemporary service providers and managers of stores carrying products not possessing an inherent (or ‘expected’) scent are also adding ambient scents to their retail environments (e.g., an artificially diffused floral scent).

The use of ambient olfactory cues by business practitioners has led to increased attention by scholars attempting to determine the psychological and behavioral effects of olfactory cues on people. Extant research demonstrates that ambient scents impact a variety of consumer perceptions and behaviors; a recent comprehensive review of the literature (Bone and Ellen, 1999) suggests that the presence of an ambient scent can elicit cognitive elaboration, affective and evaluative responses (e.g., Spangenberg et al., 1996), influence purchase intentions (e.g., Mitchell et al., 1995; Spangenberg et al., 1996), and possibly alter actual customer behavior (although this issue remains undemonstrated in the literature). These effects on consumers are theoretically supported by research in environmental psychology including works by Mehrabian

and Russell (1974), Bitner (1992), and Gulas and Block (1995). The theoretical mechanism underlying most of the published research in this area is the well-defined stimulus-organism-response (S-O-R) paradigm (a detailed review is provided by Spangenberg et al., 1996).

Regarding ambient scents in retail settings, the S-O-R model posits that environmental olfactory stimuli (S) (combined with other cues) affect consumers' internal evaluations (O) (e.g., affective responses), in turn eliciting approach or avoidance responses (R).

In particular, an environment's characteristics combine to create degrees of affective response and arousal in people. Affect is defined as the general positive or negative state of emotion or feeling and affective response in the context of this work is the emotional reaction to the environment that a person has come in contact with (Bower, 1981). According to the S-O-R model, pleasant scents should lead to pleasant affective (or mood) states while unpleasant odors result in unpleasant affective states (see Ehrlichman and Bastone, 1992). The term arousal refers to the psychological feeling state elicited by the environment (Mehrabian and Russell, 1974). The S-O-R model suggests that an arousing, affectively pleasant environment should produce approach behaviors while an arousing, affectively unpleasant environment should produce avoidance behaviors. The literature supports the S-O-R-based notion that pleasantly scented environments encourage approach behaviors while unpleasantly scented environments elicit avoidance behaviors (Bone and Ellen, 1999). Approach behaviors are positive responses directed at the environment or items within the environment; for example, intentions to remain in, or revisit a store, or actually spending money in a store. Avoidance behaviors reflect opposite responses; that is, a desire to leave a store, no intention to revisit, or failing to spend money.

Research on the effects of olfactory cues is relatively sparse and published work typically reports laboratory-based (as opposed to field) experiments. It has been shown, however, that an

important moderator of the demonstrated effects of olfactory cues is congruity between the scent and the product offering (Bone and Jantrania, 1992) or the environment in which the product is offered (Mitchell et al., 1995). Findings of two known studies suggest that scents congruent with product offerings may lead to favorable outcomes for business practitioners (also see Bone and Ellen, 1999). For example, Bone and Jantrania (1992) found that quality ratings of sunscreen and household cleaner were more favorable when scented in a manner congruent with the product category (i.e., coconut sunscreen and lemon cleaner) than when scented in an incongruent manner (i.e., lemon sunscreen and coconut cleaner). It is noteworthy that scent congruity had a significant and strong influence on product evaluations in this study whereas scent pleasantness did not.

While Bone and Jantrania's (1992) findings focus on scents emanating from the product, a paper by Mitchell et al. (1995) suggests that such congruity is important for ambient scents as well. In particular, Mitchell et al. demonstrated that ambient olfactory cues (i.e., chocolate or floral scents) impacted people's information processing and choice behavior regarding products either related or unrelated to the scents (i.e., candy assortments or floral arrangements). More specifically, this research indicates that congruent scents enhanced consumer judgments (e.g., research participants spent more time processing information in the presence of a congruent scent) and choice behavior (e.g., participants in the congruent scent condition made choices that were more evenly distributed across all options).

On the whole, extant research suggests that ambient scents in retail environments that are congruent with products offered should result in positive evaluative outcomes. Further, those shopkeepers manipulating their environments should avoid the use of product-incongruent ambient scents. When a cue doesn't "fit" the context, consumer cognition is potentially taxed to

the point of inhibiting attitude formation (Pomerantz, 1981). Thus, although an odor may be objectively judged as pleasant, if it is not contextually congruent, evaluation of stimuli associated with the odor may be counterproductive from the standpoint of a retailer.

The positive effect of congruence between ambient environmental scent and product offerings is interpretable within the S-O-R paradigm. Social psychology has a long-standing tradition of demonstrating that people generally seek out and embrace consistency (or congruency) in their lives and avoid inconsistency when they can (e.g., Cialdini, 1993; Festinger, 1957; Heider, 1958). In the context of the current work, an arousing environment (i.e., a store containing perceptible olfactory cues) will evoke positive affective responses if the cues are consistent (or congruent) with people's expectations. Arousal and positive affective response (as a result of cue congruence) should elicit approach behavior while arousal coupled with negative affective response (as a result of cue incongruence) should lead to a lower degree of approach behavior or a higher degree of avoidance behavior.

Historically, the strategic use of product congruent ambient scents would prove beneficial for retailers with only relatively narrow product offerings that have an associated scent (e.g., a florist, a bakery). The importance of ambient scent and product congruity is likely reduced for retailers who have product offerings without any, or with multiple, associated scents. Thus, while theme- or product-based scents may prove effective environmental cues for certain retailers, the pragmatic applicability of this finding is limited for retailers offering multi-line products with no single inherent or "expected" scent (e.g., discount and department stores).

The current research takes an approach differing from published studies by focusing on congruity between ambient scent and products with no naturally occurring scent. In the retail environment, a variety of factors exist (outside of product offerings) that could be used as a basis

for selecting congruent ambient scents. In the current research, we explore the congruity between ambient scents and a non-scent characteristic of the retail product offering—namely, gender associated with the items for sale. As such, this work is the first to take into account the congruity of gender-based associations pertaining to ambient scents and gender-based associations with products. Our choice of gender as the basis for scent congruity is grounded in the pragmatic consideration that many multi-line retailers organize products in their stores based on gender. For example, many department stores separate product offerings by gender, such that women’s clothing occupies one floor of the store while male clothing occupies another. If proven beneficial, such a retailer could effectively use ambient scents to alter the retail atmosphere by infusing gender-congruent scents into each of the gender-oriented departments. Our general expectation is that ambient scent and product gender congruity should lead to favorable outcomes for the retailer.

Thus, building upon the foundational work in the literature on environmental psychology and extant findings on the effects of product and scent congruity, we expect ambient scents that are gender-congruent with product offerings to lead to enhanced evaluations and behavioral responses in a retail setting, as compared to gender-incongruent scents. Specifically, we expect people shopping in a gender-scent-congruent environment (i.e., a store where the merchandise and ambient scent are gender-consistent) will exhibit approach behaviors. In contrast, people shopping in a gender-scent-incongruent environment (i.e., where merchandise and scent are gender-inconsistent) will manifest avoidance behaviors. Furthermore, as suggested by the S-O-R model detailed previously, we expect that these effects of ambient scent are mediated through affect and arousal.

### Scent Selection Pretest

While the marketplace seeks to segment fragrances on the basis of gender (e.g., perfumes targeted toward men and women), empirical evidence is lacking regarding the perceived gender of ambient scents that could be used in retail settings. Although not all research agrees, it should be noted that documented gender differences exist regarding olfaction (Brand and Millot, 2001). For example, research indicates that women are more sensitive to certain odors and have greater abilities to identify scents than men (Wysocki and Gilbert, 1989). Research also demonstrates that males and females respond differentially to olfactory cues (Gustavson, Dawson, and Bonett, 1987; Jacob and McClintock, 2000; Kirk-Smith and Booth, 1980; Wysocki and Gilbert, 1989). For example, Kirk-Smith and Booth (1980) found that women were attracted to (and men avoided) chairs in a doctor's waiting room when saturated with an androstenone odorant (a musky odor that has been identified in human sweat and urine). Given the lack of research regarding gendered-aspects of scent, a pretest was required to identify scents that would serve as appropriate stimuli in the field experiment. In particular, we sought to determine the gender orientation of various scents and to select scents appropriately perceived as feminine and masculine.

### Stimuli, Participants, and Procedures

A commercial aroma distributor donated scents for the pretest based on two criteria. The first criterion was related to internal validity and required that the scents be gender-oriented. While the aroma distributor had no knowledge of any research documenting the gender of diffusible ambient scents, the firm suggested several scents likely to be gender-oriented based on their tacit knowledge. The second criterion was related to external validity and required the scents to be currently in use by retailers, such that managers would generally consider them to be commercially viable alternatives. Based on these criteria, twelve candidate scents were selected

and pretested; all were natural essential oils (plant extracts) donated by the single supplier.

Participants included 300 students, faculty, and staff (48 percent female;  $M = 27.2$  years) intercepted in the student union of a university located in the town where the main field study was conducted. Following Spangenberg et al. (1996), participants read and signed an informed consent screening for allergies and were given a vial containing a single olfactory stimulus and a one-page survey consisting of focal measures (detailed subsequently). Scents were placed in opaque vials to eliminate influence of different oil colors in evaluations (Zellner and Kautz, 1990). The vials (labeled 1 through 12 with no other descriptors) were tightly sealed and contained twelve drops of essential oil on a cotton ball. Participants were asked to open the vial and sniff as much as they liked while completing the survey; most individuals sniffed their vial at least twice. Each research participant evaluated only one randomly assigned scent.

Some concern may arise over the use of a pretest sample that appears to be largely student-based when the field experiment was conducted at a retail establishment open to the general population. This potential concern is alleviated in several ways. First, the pretest was conducted on an alumni weekend; the sample's average age (27.2 years) was significantly higher than the student population's average. Secondly, the *raison d'être* for the community in which the retail establishment is located is support of the university where the scent selection pretest was conducted (students make up approximately 70 percent of the town's population).

### Measures

Perceived gender orientation of the scents was measured with the sum of three semantic differential items: masculine/feminine, masculine/unmasculine, and feminine/unfeminine (cf. Friedman and Dipple, 1978). Pleasantness of the scents was measured with three summed items: bad/good, favorable/unfavorable, and positive/negative. Also measured was the perceived

intensity of the scents (very weak/very strong; Spangenberg et al., 1996). While perceived intensity in the pretest may not be representative of the intensity experienced in the main experiment, this measure was included to insure similar levels of intensity among those scents selected for inclusion in the main experiment. All items were measured on 7-point scales. Age and gender of research participants also were recorded.

### Results and Discussion

The primary goal of the pretest was to find one scent judged to be masculine and one judged to be feminine by both genders; that is, we sought strong manipulations for the main study that were unambiguously feminine or masculine. Further, we sought scents that businesses would actually consider using, based on criteria like pleasantness, expense, and intensity (Spangenberg et al., 1996). Summary of pretest results are provided in Table 1.

Of the twelve scents tested, 7 showed a significant gender orientation for the overall sample ( $\alpha = .83$  for three masculine-feminine items). When the scents were analyzed separately for male and female research participants, however, only three scents were perceived to have clear gender orientations. Of those, two scents were most clearly associated with masculinity and femininity respectively. As detailed in Table 1, rose maroc was rated significantly masculine and vanilla was rated significantly feminine by both genders, as compared to gender neutrality, all  $p$ 's < .05. In addition, a measure of the scents' pleasantness revealed that both rose maroc and vanilla were moderately pleasant. Pleasantness scores (neutral = 12) for rose maroc were 14.92 and 17.62 as rated by men and women respectively,  $t(23) = 2.49, p = .02$ , and intensity (on 7-point scale) was rated moderate by both genders (4.92 for men and 5.38 for women),  $p > .20$ . Pleasantness and intensity ratings of the vanilla scent did not differ across men and women: pleasantness was 14.77 and 12.73 as rated by men and women respectively,  $p > .10$ ,

with intensity ratings of 5.36 and 6.18 as rated by men and women respectively,  $p > .10$ . Rose maroc was associated with a higher level of pleasantness than vanilla,  $F(1,46) = 37.84, p = .001$ , yet an interaction effect of scent and gender on pleasantness scores did not emerge,  $p = .75$ .

Based on clear results for gender orientation and equivalent level of scent intensity, rose maroc was selected as the masculine scent and vanilla was selected as the feminine scent for use in the main field experiment. The moderately positive pleasantness scores for both of these scents suggested that they would also be realistic choices for retailers.

## Field Experiment

### Method

The effects of congruent versus incongruent gender-based ambient scents on consumer response variables were explored in a real clothing store. Ambient scents were manipulated in the store environment, actual shoppers served as experimental participants, and actual sales served as one of several dependent variables.

Design, Participants and Procedure. The field experiment employed a between-participants design with two conditions: feminine ambient scent (i.e., vanilla) versus masculine ambient scent (i.e., rose maroc).<sup>1</sup> The experiment was conducted in a retail clothier located in a small university-centered community. The retailer sold both men's and women's clothing within equivalent quadrature floor spaces; product mix was equally divided into areas targeted toward each gender. The experiment occurred during a two-week period when a storewide sale was held. The sale began two weeks before the beginning of the experiment and ran for several weeks after the

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<sup>1</sup> A control condition (i.e., no scent) was not included as part of the design due to concerns of the retailer where the study was conducted. In particular, the proprietor felt that the elimination of scent altogether would be incommensurate with his best interests since he normally diffuses a scent (not used in this study) in his store. Given

experiment was completed; such a time frame ensured consistent advertising, pricing, and product availability.

Participants were 181 shoppers (82 men and 99 women). The majority of customers were shopping for themselves; thus, male customers predominantly purchased men's clothing and female customers most often bought women's clothing. Of the 202 people visiting the store over the course of the study, only 10 exhibited cross-gender buying; this number did not allow for meaningful analyses with such a small cell size and thus these persons were dropped from further experimental consideration. Of persons entering the store over the course of the study, 11 refused to complete the dependent measure questionnaire (4 women and 7 men with no pattern associated with either scent). There were 92 participants visiting the store in the first week and 89 in the second. Gender of participants was consistently distributed across days and weeks during the experiment; 90 customers were exposed to the masculine scent, and 91 to the feminine scent. Thus, distribution of participants (across both genders) included 93 customers who shopped in the presence of a congruent ambient scent and 88 in the incongruent ambient scent. These two conditions served as the independent variable in subsequently reported analyses.<sup>2</sup>

Experimental scents were diffused throughout the entire store using a commercial scent diffuser designed for use by retailers. Based on the results of the pretest, the ambient scents included rose maroc as the masculine scent and vanilla as the feminine scent. Thus, scent was congruent when its perceived gender orientation (as determined by the pretest) matched the gender of the products offered (i.e., rose maroc for men's clothing, and vanilla for women's clothing), and incongruent when the scent's perceived gender did not correspond with the

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that prior research has demonstrated the basic effect of ambient scent on consumer reactions, we felt that exclusion of a control condition would not be unduly harmful to the study.

<sup>2</sup> An alternate analysis for the study would be a 2 x 2 ANOVA with shopper gender and ambient scent serving as the two independent variables. Results of those alternate analyses mirror those reported in this manuscript.

product offering (i.e., rose maroc for women's clothing and vanilla for men's clothing). In order to minimize any potential confounding effects of scent intensity and pleasantness, the proprietor and three researchers pretested and adjusted the intensity of the scent in the store environment to a mild intensity level. The two focal scents were counterbalanced during the two-week experiment. In particular, data were collected on the Tuesday, Wednesday, Friday, and Saturday of each week and the scents were changed each preceding Sunday and Thursday. Such a procedure allowed for the scents to be switched and manipulations to be counterbalanced between days and weeks. Data were not collected for at least one day after changing scents in order to allow the previous scent to dissipate and the new scent to diffuse fully throughout the store. Intensity of the scents was constantly maintained across the various experimental treatments, so as not to draw attention to the change in scents. Participants were unaware of the scent manipulation; that is, scent was not mentioned by the retailer or research assistants at any point in the procedure or by research participants in response to the open-ended hypothesis-guessing question at the end of the questionnaire.

Measures. Dependent measures included evaluations of the store and its merchandise, and customer approach/avoidance behaviors. Shopper's overall evaluation of the store was measured with sum of three items: bad/good, unfavorable/favorable, and negative/positive,  $\alpha > .90$ . Evaluation of the merchandise (Belizzi, Crowley, and Hasty, 1983) was assessed with a series of single items assessing: merchandise selection (adequate/inadequate), merchandise style (outdated/up-to-date), merchandise quality (low/high), and merchandise prices (low/high). All of the preceding items were measured on 7-point scales.

Actual time spent in the store was measured following prior research (Milliman, 1982, 1986; Spangenberg et al., 1996): a research assistant located at the store's entrance/exit measured

the actual time spent in the store, in seconds, for each shopper (i.e., the time from entering the store until beginning the survey). Intentions to visit the store (Spangenberg et al., 1996) were measured by asking the question: “Assuming you were going to purchase this type of merchandise and had the money, how likely would you be to visit this store?” (unlikely/likely; 7-point scale).

Because no known academic research has shown the effects of olfactory cues on actual behavioral measures of approach/avoidance, the measures for the present experiment were based on related research exploring the effects of music on consumers in actual retail settings (Milliman, 1982; 1986). In particular, the retailer provided the number of individual clothing items purchased and dollars spent by each individual customer; itemized sales records were matched with questionnaire responses to confirm accuracy of participant self-report.

Mediators and Other Measures. To provide process evidence, two mediators were also collected: (1) Affective reaction to the store’s environment was assessed using the sum of appropriate items from Fisher’s (1974) environmental quality scale (negative/positive, unattractive/attractive, tense/relaxed, uncomfortable/ comfortable, bad/good;  $\alpha = .83$ ), and (2) Arousal from the environment was measured using 5 additional items from the Fisher scale (boring/stimulating, unlively/lively, dull/bright, unmotivating/motivating, uninteresting/interesting;  $\alpha = .91$ ). Gender and age of all customers were recorded. Participants were also asked (for classification purposes): “What type of clothing did you buy today, men’s or women’s?”

## Results

Analyses include a MANOVA model assessing the impact of scent congruity on outcome variables (store evaluations, merchandise evaluations, and approach/avoidance behaviors). We also conducted a series of regression model estimations to assess mediation.

Influence of Gender Scent Congruity on Outcome Variables. The MANOVA model indicated that the nature of ambient scent (i.e., congruent or incongruent) had a significant impact on store and merchandise evaluation, and approach/avoidance behaviors, Wilk's  $\Lambda = .78$ ,  $p < .001$ . Summary statistics for all dependent measures are reported in Table 2.

As predicted, congruent ambient scent had a positive impact on all evaluative responses, all  $ps \leq .02$ . In particular, gender-congruent ambient scents led to positive significant effects on the overall evaluation of the store,  $F(1, 179) = 22.56$ ,  $p < .01$ . Further, gender-congruent ambient scents led to more favorable evaluations of the store's merchandise regarding: selection,  $F(1, 179) = 5.52$ ,  $p < .05$ ; style,  $F(1, 179) = 17.34$ ,  $p < .01$ ; quality  $F(1, 179) = 14.96$ ,  $p < .01$ ; and prices  $F(1, 179) = 9.87$ ,  $p < .01$ .

Gender-congruent ambient scents also had significant effects on approach/avoidance behaviors. Significant effects emerged for: actual time shopping in the store  $F(1, 179) = 19.99$ ,  $p < .01$ ; intentions to visit the store  $F(1, 179) = 10.95$ ,  $p < .01$ ; the number of items purchased  $F(1, 179) = 6.23$ ,  $p < .01$ ; and the amount of money spent in the store  $F(1, 179) = 10.59$ ,  $p < .001$ ). In the presence of gender-congruent ambient scent, shoppers spent more time in the store, bought more items, and spent more money on their purchases. In addition, they expressed stronger intentions to visit the store in the future. Taken as a whole the results overwhelmingly support our prediction of a positive effect of gender-congruent ambient scent on store evaluation, merchandise evaluations, and the measured approach/avoidance behaviors.

Mediation Analysis. The mediating role of affect and arousal in the preceding effects was tested via 4 sets of regression equations following Baron and Kenny (1986). To establish mediation the following conditions must be met: (1) the mediator must be related to the independent variable; (2) the dependent variable must be related to the mediator; (3) the

independent variable must influence the outcome variable; and (4) the once significant influence of the independent variable on the dependent variable weakens in the presence of the mediator.

Table 3 shows results of our mediation analyses indicating that congruity of ambient scent is positively related to affect,  $\beta = .347, p < .01$ , and arousal,  $\beta = .264, p < .01$ . In addition, with one exception, affect and arousal are each significantly related to the dependent variables at  $p < .01$  (the sole non-significant relationship is between price evaluation and arousal,  $p = .11$ ). As expected, ambient scent congruity is related to each of the dependent variables, all  $ps < .05$ . Importantly, the relationships between scent congruity and the dependent variables are reduced in the presence of affect and arousal, such that beta coefficients are reduced in all instances (and become non-significant in the majority of the cases). Overall, results of the mediation analysis provide evidence (in addition to the significant MANOVA results presented earlier) that the S-O-R model accounts for the findings of this field experiment.

### General Discussion

The current research demonstrates that shoppers evaluated the store and its merchandise more favorably, and were more likely to exhibit approach behaviors in the presence of an ambient scent that is congruent with gender-based products, as compared to an incongruent scent. These effects were obtained while other store factors like pricing and advertising were held constant. Of considerable practical interest was the finding that the presence of a gender-congruent scent increases the majority of approach behaviors for shoppers in an actual store, including money spent. Of theoretical importance, we provide the first clear empirical evidence that the S-O-R model of environmental psychology accounts for observed effects of environmental cue congruity (cf. North et al. 1999).

Clear implications for managers of retail and service outlets can be derived from the results of this experiment with regard to the benefits of including an appropriate ambient scent as an element of a store's environment. Our results advance the findings of Spangenberg et al. (1996) by showing that the presence of an ambient scent congruent with gender-based products enhances evaluations of the store, its merchandise and environment, as well as increases approach behaviors. Perhaps the most important substantive finding from the present research is the effect of congruent ambient scents on sales. Few controlled experimental studies of atmospheric effects have access to actual sales figures—indeed, we are not aware of any published research on olfaction demonstrating the effects of varying scents on actual sales.

The findings of the current experiment extend prior research by demonstrating that beyond merely incorporating ambient scent, managers would be well served to identify appropriately gendered scents to diffuse in their retail environments. Our findings also lend support to prior research indicating that scent “appropriateness” or congruity is an important evaluative determinant. A vital distinction between the current investigation and prior work is that our research focused on congruity between an ambient scent and a product category without an inherent scent. This distinction is of substantive importance in that not all retailers have scents inherently congruent with their product offerings; for retailers such as these who desire to use ambient scents, some other form of congruity, such as that between scent and product gender, is necessary for effective implementation of this atmospheric cue. As many retail outlets (or departments within outlets) physically separate gender-based product offerings (e.g., men's and women's clothing), the identification and implementation of gender-congruent scents may be an easily implemented, inexpensive, and effective way to enhance consumer reactions to store environment and merchandise.

A number of directions for future research emerge from the findings of the work reported herein. Most obvious are inquiries aimed at extending the findings of the current research. For example, future work should be done to determine additional scents exhibiting product gender congruity and to examine the effects of such scents in a wider array of retail outlets. Another practical direction for future research activity (motivated by retailers in multi-line stores) would be to consider the interactive effects of multiple scents within the retail environment and the potential for the “blending” of incongruent scents. Alternately, the findings of the present article could be extended to other environmental cues, such as music or décor. More broadly, the findings of the current field experiment may also be usefully applied in non-retail settings since ambient scent should influence approach/avoidance behaviors for other situations where people are surrounded by a controllable environment. One interesting direction for such research would be the use of ambient scent to influence the behaviors of workers in an organization’s office building or manufacturing facility (cf. Bitner 1992). Regardless of the direction this type of work may take, the ideas discussed above provide interesting opportunities for collaboration between academics and practitioners.

Research that is more theoretically oriented is also motivated. One area worthy of inquiry is to determine dimensions of scent congruity beyond perceived product gender. As noted previously, perhaps one of the most important findings of the current work is the notion that product gender congruity matters. Given this finding, what other dimensions might similarly be to the benefit of environmental psychologists? A variety of theoretically intriguing dimensions could be explored (e.g., geographic region, consumer gender, ethnicity, and age), however, it may not be easy to identify the “right smell” (as suggested by research on the effects of music; Yalch and Spangenberg, 1990). This stream of research is challenged, therefore, to

identify effective olfactory stimuli that can be used to identify and thereby target viable market segments.

Additional research could also investigate the use and coordination of multiple environmental cues (scents, sounds, décor, etc.) in a retail setting. Existing research has not addressed the interactive effects of multiple environmental cues. Similar to work in advertising and promotions (e.g., Schulz, Tannenbaum, and Lauterborn, 1993), it may be necessary to develop a theory of “integrated atmospherics” to help guide retailers choice and use of various environmental psychological cues. One useful direction for such research would be to explore the congruity of multiple environmental cues on consumer behavior.

In summary, the mere presence of an ambient scent clearly leads to important changes in consumers’ evaluation of retail outlets, the associated environment, and offered merchandise, in addition to changes of key behaviors. It is obvious that retailers should not use unpleasant ambient scents in their retail environments. It seems, however, that there is considerable latitude for managers when determining a “good smell” to implement and it is critical to consider important moderating factors in order to optimize the effects of this atmospheric variable. Our work suggests that retailers should consider the use of scents congruent with gender-based products as a method for increasing positive evaluations of their store environment, the merchandise contained therein, and ultimately increasing their bottom line.

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Table 1

*Results of Ambient Scent Selection Pretest*

Scent	Gender Orientation of Scent						Pleasantness
	<u>Total Sample</u>		<u>Female Sample</u>		<u>Male Sample</u>		
	<i>M</i>	<i>t</i> -value	<i>M</i>	<i>t</i> -value	<i>M</i>	<i>t</i> -value	
Cinnamon	11.76	.33	11.00	1.15	12.46	.41	12.92
E/O Blend	9.12	3.38**	9.39	2.28*	8.83	3.27**	8.92
Geranium	10.44	2.25*	11.56	.37	9.81	2.63*	13.80
Lavender	10.28	2.64**	10.69	1.57	9.83	2.09	12.44
Neroli	11.72	.36	11.53	.41	12.00	.00	9.52
Patchouly	12.24	.29	12.67	.54	11.85	.14	11.28
Rose Maroc	17.16	6.28**	18.69	7.87**	15.50	2.66*	16.32
Sage	11.16	1.12	9.71	1.64	11.72	.32	10.80
Vanilla	9.84	3.42**	8.46	3.38**	10.57	2.18*	13.84
Vetiver	14.08	2.29*	14.00	1.55	14.20	1.73	13.80
Winter Mint	9.84	3.29**	9.08	3.37**	10.54	1.50	10.28
Ylang Ylang	11.60	.44	10.50	1.19	12.62	.48	12.76

NOTE: Gender neutrality is equal to 12, values greater than 12 indicate masculinity. Cell entries include means and associated *t*-tests comparing mean against scale midpoint. Scent pleasantness is reported for both genders with neutrality equal to 12. Significance levels  $p < .05$  (2-tail) indicated by “\*” and  $p < .01$  (2-tail) indicated by “\*\*”.

Table 2

*Results of Field Experiment: Effects of Ambient Gender Scent on Store Evaluations, Merchandise Evaluations and Approach/Avoidance Behaviors*

Dependent Measure	Means for Ambient Scent		F-value
	Incongruent	Congruent	
	(n = 88)	(n = 93)	
<i>Evaluations of the Store and Merchandise</i>			
Overall Store Impression	18.53	20.02	22.56**
Merchandise Selection	5.72	6.12	5.52*
Merchandise Style	5.53	6.32	17.34**
Merchandise Quality	6.07	6.59	14.96**
Merchandise Prices	5.50	4.87	9.87**
<i>Approach/Avoidance Behaviors</i>			
Shopping Time Actual	15.95	23.95	19.99**
Intent to Visit Store	6.03	6.56	10.95**
Number of Items Purchased	.91	1.71	6.23*
Money Spent (sales)	\$23.01	\$55.14	10.59**

NOTE: All F-tests associated with (1,179) d.f. Significance levels  $p < .05$  (2-tail) indicated by “\*” and  $p < .01$  (2-tail) indicated by “\*\*.”

Table 3

*Tests of Mediation*

Dependent Variable	Independent Variable(s)				
	Affect	Arousal	Congruity	Congruity (w/ Affect)	Congruity (w/ Arousal)
Selection	.426**	.496**	.173*	.029	.045
Style	.574**	.622**	.297**	.111	.143*
Quality	.604**	.562**	.278**	.077	.139*
Prices	-.262**	-.119	-.229**	-.156*	NA
Actual Time	.305**	.350**	.317**	.240**	.242**
Intent	.541**	.511**	.240**	.060	.113
Items	.293**	.329**	.183*	.093	.104
Sales	.333**	.382**	.236**	.137	.146*

NOTE: Cell entries include standardized beta coefficients associated with appropriate independent and dependent variables. There is a positive relationship between ambient scent congruity and affect,  $\beta = .347, p < .01$ , and arousal,  $\beta = .264, p < .01$ . Significance levels  $p < .05$  (2-tail) indicated by “\*” and  $p < .01$  (2-tail) indicated by “\*\*.”