

# THE EFFECT OF AMBIENT SCENT ON MOVIEGOERS' BEHAVIOR

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## **Abstract**

Atmospheres influence behavior, create a positive image, and influence consumer purchasing patterns and retail perceptions. Nonetheless, the physical environment is a potential source of competitive advantage, though neglected more often than not. In particular, research on the effects of aroma as an independent variable in natural settings is very limited and requires further research. A sample of 407 moviegoers participated in a “natural experiment” in a cinema complex, using scented and unscented conditions. Findings show that scent produces significant positive differences in the evaluation of the theater, its environment, and on intention to return. No significant differences are found in the evaluations of concession products sold, despite the fact that spectators in scented rooms considered product prices to be significantly cheaper than did spectators in unscented rooms. A major implication of this study is that scent significantly affects emotional reactions to atmospheres. Retailers can thus improve environments to create enjoyable experiences and positively influence consumer responses.

**Key Words:** Atmosphere, Ambient Scent, Movie Theater, Consumer Behavior.

## **Introduction**

Creating market differentiation is becoming increasingly difficult. Retailers are thus looking towards “sensory marketing” (Krishna, 2012) as a source of competitive advantage that may ultimately determine success or failure. The environment transmits tangible and intangible clues that help consumers, employees, partners, and opinion makers to understand the concept and character of a service. Ambient factors, such as scents, condition atmospheres, which affect consumers rationally, emotionally, behaviorally, and physiologically (Mudie & Pirrie, 2006).

The study of ambient scent in retail premises is rare in the literature (Ward, Davies & Kooijman, 2007). Smell is acknowledge, but is seldom used as an independent variable (Teller & Denis, 2012), and requires further research (Bitner, 1992; Gulas & Bloch, 1995; Bone & Ellen, 1999; Mattila & Wirtz, 2001; Bosmans, 2006; Ward, Davies, & Kooijman, 2007; Mari & Poggesi, 2013), especially in retail contexts (Turley & Milliman, 2000; Morrison, Gan, Dubelaar, & Oppewal, 2011). This study researches the influence of ambient scent on behavior in retailing. This research contributes twofold to the relevant literature. Firstly, it addresses Teller & Dennis’ (2012) call for additional empirical work on the effects of smell as an independent variable. It does so by empirically testing the effects of an ambient scent on the environment, on the concession products available, and on spectator behavior. Secondly, it moves the experimental setting from controlled simulated environments to a natural context.

## **Theoretical framework**

Atmospheres influence buying behavior by highlighting, informing, and provoking consumer emotions (Kotler, 1973). Mehrabian and Russell (1974) summarize the effects of environmental variables on consumers in the stimulus-organism-response (S→O→R) model, whereby the environment stimulates (S) individuals with information that affects their internal evaluations (O), which results in organismal responses (R) of approach (e.g., the desire to stay longer), or avoidance (e.g., not exploring the service or product). Bitner (1992) further explores the effect of the physical environment on consumer and employee behavior. The physical environment of a store is a form of “oral” communication (Kooijman, 2003), that includes words, attitudes, gestures, smells, tastes, and non-verbal messages (Ward, Davis, & Kooijman, 2003).

### **Scent and the physical environment**

It is almost impossible to disregard the sense of smell, as it provokes immediate emotions (Bradford & Desrochers, 2009). Scents are present in ambient environments and are relevant to the evaluation of products and environments (Gueguen & Petr, 2006; Ryu & Han, 2011; Clarke, Perry, & Denson, 2012). Scents can positively stimulate consumer behavior by creating a pleasant atmosphere and by

conveying a sense of pleasure and well-being. Scents also promote nostalgic memories of emotions (Davies, Kooijman, & Ward, 2003; Orth & Bourrain, 2008; Lwin, Morrin, & Krishna, 2010; Krishna, Lwin, & Morrin, 2010). The physical environment influences behavior, creates a positive image, and shapes consumer purchasing patterns and perceptions of store environments (McGoldrick & Pieros, 1998). Atmospheric perception and performed behaviors are consequences of these emotional states (Mehrabian & Russell, 1974), causing human approach, or avoidance behaviors.

The presence (as opposed to the absence) of scent improves consumer evaluations, thus, the prevalence of an appropriate ambient scent should increase the level of interest and pleasantness of the experience. In other words, the presence of scent could influence the overall evaluation of the physical environment. Accordingly, the following hypotheses are formulated:

*H1.* The presence of scent generates a more positive overall evaluation of the movie theater than does the absence of scent.

*H2:* The presence of scent generates a more positive evaluation of the movie theater's environment than does the absence of scent.

### **Scent and concession products**

A product's quality corresponds to judgments of its superiority or excellence (Zeithaml, 1988). Since scent significantly influences perception of a store's environment and the quality of its merchandise (Bitner, 1992; Baker, Grewal & Parasuraman, 1994; Chebat & Michon, 2003), it may modulate evaluations of both these features. Spangenberg, Crowley, and Henderson (1996) and Parsons (2009) show that significant improvements in the evaluations of products occur in scented stores. Hultén (2012) concludes that visual and olfactory sensory cues exert a positive impact on shoppers' touching behavior. Doucé et al. (2013) argues that scent positively affects the sales of the store. Since products are an integral component of stores, scents should influence perceptions of their products. This study therefore develops the following hypothesis:

*H3:* The presence of scent generates a more positive evaluation of concession products than does the absence of scent.

### **Scent and Intention to Return**

Pleasant environments are capable of producing approach behaviors and greater return intentions (e.g., Chebat & Michon, 2003; McDonnell, 2007; Walsh, Shiu, Hassan, Michaelidou, & Beatty, 2011). A study by Spangenberg, Crowley and Henderson (1996) of undergraduate students shows more intent to visit the store in the scented scenario. Similarly, Heung and Gu (2012) defend that atmospherics have a direct influence on customers' return intention. A review of retailing-relevant olfaction research (Bone and Ellen, 1999) concurs with the previous findings,

whereby aroma effects on intentions to visit retail store. Accordingly, this study develops the following hypothesis:

*H4:* The presence of scent generates greater intent to return to the theatre than does the absence of scent.

## Method

### Selection of aroma

The scenting of spaces involves some risk, as it may be inappropriate in a given context (MacInnis & Park, 1991). The ambient should be congruent with products undergoing consumer evaluation (Fiore, Yah, & Yoh, 2000; Mattila & Wirtz, 2001; Spangenberg, Grohmann & Sprott, 2005; Michon, Chebat, & Turley, 2005; Spangenberg, Sprott, Grohmann, & Tracy, 2006). Therefore, compatibility between atmosphere, identity, and image is a main concern (Ward, Davis & Kooijman, 2003, 2007). In addition, scents' effects on consumers are enhanced if they are compatible with the products sold (Gulas & Bloch, 1995).

The ambient scent used in the experiment was selected from among three commercially available room scents (Iannini, 2010): Popcorn, Mint, and Cola-Lemon. Fragranced cotton balls were placed in clear, colorless, numbered glass vials without indicators of specific scents. A convenience sample of 21 people (62% female) with a mean age of 41.3 years inhaled air from around the vials as many times as necessary, holding them 15 centimeters from the nose. Each participant evaluated each of the three scents. The characteristics of fragrances is evaluated according to 10 pairs of bipolar semantic differential scales, as suggested by Spangenberg, Crowley, and Henderson (1996) (Table 1); Cronbach's  $\alpha = 0.98$ . The congruence of the scent with the movie theater is evaluated using a four-item Likert-type scale adapted from Spangenberg, Grohmann, and Sprott (2005), which is anchored between *strongly disagree* and *strongly agree*; Cronbach's  $\alpha = 0.98$ . A 7-point scale (anchored between *very weak* and *very strong*) measures the perceived intensity of the scent.

A repeated-measures analysis of variance (ANOVA) reveals that some scents are preferred more than others, Wilks' Lambda = 0.43, ( $F(2,19) = 12.42, p < 0.001$ ). Individual tests showed that Cola-Lemon ( $M = 4.9$ ) is better liked than the two other scents. It is rated more favorably than Popcorn ( $M = 3.0$ ; Paired  $t(20) = 5.09, p < 0.001$ ) and slightly more favorably than Mint ( $M = 4.5$ ; Paired  $t(20) = 1.88, p < .10$ ). A univariate repeated-measures ANOVA on means congruity ratings shows no differences between scents, Wilks' Lambda = 0.99,  $F(2,19) = 0.10, p > 0.10$ ), although all three scents score low. There are no differences in terms of scent intensity ( $p > 0.25$ ), with ratings ranging from 4.8 to 5.4 (less than 1.5 standard deviations).

Scent	Cola-Lemon	Mint	Popcorn	F-Value ( <i>p</i> = ) <sup>a</sup>
<b>Characteristics</b>				
Negative – Positive	4.8 (1.04)	4.5 (1.40)	3.0 (1.80)	9.01 (0.000)
Unattractive – Attractive	4.7 (1.10)	4.2 (1.55)	2.7 (1.59)	11.78 (0.000)
Tense – Relaxing	4.6 (1.29)	4.3 (1.71)	2.6 (1.46)	10.61 (0.000)
Uncomfortable – Comfortable	5.0 (0.95)	4.5 (1.66)	2.9 (1.56)	12.91 (0.000)
Bad – Good	5.1 (1.06)	4.5 (1.63)	3.0 (1.46)	13.53 (0.000)
Boring – Stimulating	5.0 (0.89)	4.4 (1.25)	3.1 (1.41)	13.84 (0.000)
Unlively – Lively	5.1 (0.96)	4.7 (1.35)	3.4 (1.50)	10.66 (0.000)
Dull – Bright	5.1 (1.12)	4.7 (1.42)	3.3 (1.46)	9.43 (0.000)
Demotivating – Motivating	4.8 (1.08)	4.5 (1.40)	3.1 (1.56)	10.11 (0.000)
Uninteresting – Interesting	5.0 (1.18)	4.5 (1.44)	2.9 (1.56)	13.35 (0.000)
Mean	4.9	4.5	3.0	
<b>Congruence</b>				
This scent reminds me of my trips to the movies	3.0 (1.72)	2.8 (1.67)	3.0 (2.31)	0.07 (0.934)
When I smell this scent, I think of the movies	2.9 (1.73)	2.7 (1.65)	3.0 (2.32)	0.12 (0.887)
This scent makes me feel like I'm at the movies	3.0 (1.60)	2.9 (1.62)	2.9 (2.28)	0.01 (0.986)
This scent captures the spirit of the movies	3.0 (1.66)	2.8 (1.60)	2.8 (2.28)	0.06 (0.943)
Mean	2.9	2.8	2.9	
<b>Intensity</b>				
Very Weak Intensity – Very Strong Intensity	5.0 (0.92)	4.2 (1.40)	4.5 (1.63)	1.68 (0.195)

Notes: N = 21. The scale varies 1–7. Standard deviations are in parentheses.

<sup>a</sup>Univariate F-tests associated with (2.60) d.f.

**Table 1. Means, Standard Deviations, and Significance Tests of the Pretest**

## Experiment

The experiment took place in a theater complex in Lisbon, Portugal, from May 17<sup>th</sup>, until June 12<sup>th</sup>, 2012. Theaters show recent films from diverse genres, use 100% - digital presentation media, and are open from 12:00 PM until 2:00 AM daily. Four theaters were selected for the experiment. The scent test took place in two rooms with capacities of 237 and 364 seats. The two unscented theaters are about the same size. The type of movie viewed was counterbalanced between theatres, since films rotate among theaters each week (i.e., none is screened in the same theater for longer than 1 week). This cycling ensures the absence of any relationship between scent exposure and moviegoer characteristics due to preferences for different types of movies. The ambient scent was mechanically added to the theaters during the experimental period. Calibration of scent intensity was performed according to the instructions provided by the fragrance supplier. A pilot test was conducted to fine tune scent intensity. Scent dispersion was accomplished using automatic diffusion apparatuses regulated to inject and disperse 10 mL of product every 30 minutes via the air-conditioning units of the chosen theaters.

The study participants were recruited from spectators from all of the theaters. No incentives were used. At the end of the screenings, participants were asked if they were willing to answer a questionnaire in the movie theater lobby. Two analysis groups were created: one subject to the aromatic stimulus, and the other as a control.

### **Survey instrument**

The measurement instrument used to evaluate the effects of scent in the movie theater is based on the questionnaire used by Spangenberg, Crowley, and Henderson (1996), adjusted to movie theaters. The questionnaire was translated from English to Portuguese, and then translated back into English, according to recommended procedures. The questionnaire was further refined in multiple iterations with spectators. To simplify the understanding of the survey, all of the semantic differential scales used seven points. Five semantic differential scales measure overall evaluation of the movie theater.

The first four offer a global assessment of the movie theater's image: *unfavorable/favorable*, *bad/good*, *negative/positive*, and *outdated/modern* image. The fifth scale, *dislike/like*, measures whether participants liked the theater (cf. Table 3 for full list). Evaluation of the movie theater environment is measured by fourteen semantic differential scales comprised of bipolar adjectives that are used to measure the movie theater's environment; these include *demotivating/motivating*, *boring/interesting*, and *unpleasant/pleasant*. Four semantic differential scales assess the Evaluation of concession products: *inadequate/adequate product variety*, *low/high prices*, *low/high product quality*, and *outdated/up-to-date products*. Intention to return to the theater is measured on a semantic differential scale of seven points, with anchors of *unlikely/likely*. Respondents are asked, "Do you plan to return to this movie theater?"

### **Respondents**

A non-probabilistic convenience sample consisted of 407 participants. Of the total sample, 204 questionnaires were gathered from spectators who watched movies in rooms with olfactory stimulation. Participants ranged in age from 14 to 81 years ( $M = 30$  years;  $S.D. = 11.0$ ), and were approximately equally distributed across genders (52.1% female). Chi-square tests did not show significant sociodemographic differences between the two. Table 2 shows the sample characterization.

		Unscented % (n = 203)	Scented % (n = 204)	$\chi^2$	<i>p</i>
Gender	Male	46.8	49.0	0.201	0.654
	Female	53.2	51.0		
Age (years)	≤24	34.5	34.3	0.638	0.888
	25–34	37.9	39.2		
	35–44	18.7	16.2		
	≥45	8.9	10.3		
Civil Status	Single	53.7	55.9	2.509	0.474
	Married	31.0	27.9		
	Divorced, widowed, others	15.3	16.2		
Profession	Work for someone else	41.4	45.1	5.860	0.439
	Self-employed	13.3	10.3		
	Public servant, student, retired, others	45.3	44.6		
Education	≤Secondary school	59.1	58.3	3.697	0.296
	Higher education	40.9	41.7		

**Table 2. Sociodemographic Profile of the Experimental Group**

## Findings

The presence of scent was expected to increase spectators' positive evaluations of the movie theater, its environment, the products of its concessions, and repeat consumer intentions. Overall multiple analysis of variance (MANOVA) tests were calculated according to categories of dependent variables, in order to control for Type I error. Subsequently, one-way univariate ANOVAs were performed on the between-group comparisons for each variable. Table 3 shows the results.

The MANOVA for the overall evaluation of the movie theater yielded significant results ( $F(5,401) = 4.26, p < 0.001$ ) for the relevant five variables; this allowed univariate comparisons without fear of Type I errors for H1. The results of the one-way ANOVAs show that the presence of scent increased positive evaluations of scented vs. unscented movie theaters. Scented movie theaters were evaluated more positively for all variables ( $p < 0.05$ ) except *dislike/like* ( $p = 0.065$ ). Both groups of moviegoers like the theater, ( $M_{\text{Unscented}} = 6.6, M_{\text{Scented}} = 6.1, p > 0.05$ ), which may be related to previous experiences or by previously formed expectations (Wirtz, Mattila, & Tan, 2007). The univariate tests show that the presence of scent increased the overall positive evaluations of the movie theater, supporting Hypothesis 1 (*The presence of scent generates a more positive overall evaluation of the movie theater than does the absence of scent*).

Evaluation	Unscented (mean) (n = 203)	Scented (mean) (n = 204)	F-Value <sup>b</sup>	p =
Movie Theater <sup>a,c</sup>				
Unfavorable/Favorable	5.7	6.0	12.93	0.000
Bad/Good	5.8	6.1	13.76	0.000
Negative/Positive	5.8	6.1	17.11	0.000
Outdated/Modern Image	5.7	6.0	7.67	0.006
Dislike/Like	6.6	6.1	3.42	0.065
Theater Environment <sup>a,d</sup>				
Demotivating/Motivating	5.7	6.0	11.24	0.001
Uninteresting/Interesting	5.7	6.0	8.67	0.003
Unpleasant/Pleasant	5.8	6.1	10.35	0.001
Boring/Stimulating	5.6	5.8	4.77	0.030
Bad/Good	5.9	6.0	5.35	0.021
Negative/Positive	5.9	6.1	5.71	0.017
Unlively/Lively	5.7	5.9	4.38	0.037
Dull/Bright	5.5	5.8	6.14	0.014
Drab/Colorful	5.6	5.7	1.59	0.209
Unattractive/Attractive	5.6	5.8	4.68	0.031
Closed/Open	5.5	5.6	1.65	0.200
Uncomfortable/Comfortable	5.6	6.0	19.78	0.000
Tense/Relaxed	5.5	5.8	11.91	0.001
Depressing/Cheerful	5.8	6.0	3.28	0.071
Concession Products <sup>a,e</sup>				
Selection: Inadequate/Adequate	5.7	5.7	0.58	0.448
Prices: Low/High	4.1	3.8	4.42	0.036
Quality: Low/High	5.6	5.8	3.57	0.060
Style: Outdated/Up-to-date	5.7	5.8	0.69	0.405
Intention to Return to the Movie Theater <sup>a</sup>	6.0	6.3	10.01	0.002

all items evaluated on a 7-point scale.

<sup>b</sup>Univariate F-tests with (1,405) d.f.

<sup>c</sup>Global MANOVA of the 5 movie theater evaluations.  $F(5,401) = 4.26, p < .001$ .

<sup>d</sup>Global MANOVA of the 14 evaluations of the movie theater's environment.  $F(14,392) = 2.05, p < .05$ .

<sup>e</sup>Global MANOVA of the 4 product evaluations.  $F(4,402) = 1.72, p > .10$ .

**Table 3. Mean Reactions to the Presence or Absence of Scent**

The overall MANOVA result for evaluation of the movie theater's environment was significant ( $F(14,392) = 2.05, p < 0.05$ ) for the 14 environmental variables. Scented movie theater environments were rated more positively in 11 of these variables ( $p < 0.05$ ), but not for Drab/Colorful, ( $M_{\text{Unscented}} = 5.6, M_{\text{Scented}} = 5.7, p > 0.05$ ) and for Closed/Open, ( $M_{\text{Unscented}} = 5.5, M_{\text{Scented}} = 5.6, p > 0.05$ ). It seems the aroma fails to add brightness or openness to the scented room. The fact that the experiment was carried out behind closed doors in dimmer conditions may partially explain these results.



The univariate tests of individual environmental variables show that the presence of scent increased positive evaluations of the movie theater's environment, supporting H2 (*The presence of scent generates a more positive evaluation of the movie theater's environment than does the absence of scent*). The overall MANOVA result for the four product variables was not statistically significant ( $F(4,402) = 1.72, p > 0.10$ ). Although product evaluations were more positive in scented rooms (more-adequate, lower-priced, higher quality, and more-up-to-date), those assessments did not differ significantly from those of unscented theaters ( $p > 0.05$ ). One possible explanation may reside with prior appraisals of product variety, quality, and style (Spangenberg, Crowley & Henderson, 1996). That is to say, moviegoers are familiar with most products on sale at cinemas; therefore the presence of scent does not alter significantly their perception of product characteristics. Pricewise, moviegoers' evaluation was significantly lower in scented rooms ( $p < 0.04$ ). Merchandise prices were viewed as being lower in scented than in unscented rooms. Although findings point to the expected direction, the results involving concession evaluations do not support H3 (*The presence of scent generates a more positive evaluation of concession products than does the absence of scent*). Moviegoers in the scented condition showed greater intent to return to the theater. The results of the one-way ANOVA on return to the movie theater were statistically significant ( $p < 0.01$ ), supporting H5 (*The presence of scent generates greater intent to return than does the absence of scent*).

## Discussion

This study is one of the few that examines the impact of scent on a natural setting. Results show that the presence of scent can positively influence moviegoer evaluations of a movie theater, its environment, and the intention to return. These findings concur with previous studies (e.g., Spangenberg, Crowley, & Henderson, 1996; Parsons, 2009). However, in contrast to other studies (e.g., Baker, Grewal & Parasuraman, 1994), no significant differences were found in evaluations of concession products sold, possibly due to positive prior appraisals of the variety, quality, and style. Another explanation may be the inherent high quality of most products (Walsh et al., 2011). It is noteworthy that spectators in scented rooms considered product prices significantly cheaper than did spectators in unscented rooms. Contrary to the view of Sirohi, McLaughlin, and Wittink (1998), price is evaluated more positively, that is to say, lower in the scented environment.

This study has practical implications. Although the perception and interpretation of scents is a complex phenomenon, it is clear that scent significantly affects emotional reactions to atmospheres. Retailers can work environments to create enjoyable experiences and positively influence consumer responses. In addition, considering the difficulty and impact of errors in determining price, the apparent lower price sensitivity of customers in scented environments could be explored to determine price tolerances and maximize revenue. However, given the many scents and

scenting systems available, a careful cost-benefit analysis should be conducted. Ultimately, the decision to scent a space, which involves both human and material resources, must be economically viable.

This research has certain limitations. Participants are voluntary moviegoers, and thus, self-reported measures may not be representative of the general population. In addition, self-evaluations may be influenced by the desire to go to the movies (Ward, Snodgrass, Chew, & Russell, 1988), or by previously formed expectations (Wirtz, Mattila, & Tan, 2007). Results do not account for the demographic differences of consumers. For example, as consumers get older, their olfactory function declines (Boyce & Shone, 2006) - this possibility deserves further research. Conducting a study in a real setting makes it difficult to control exogenous variables. Crowdedness and other atmospheric variables may interact with ambient scent and influence results. Finally, this study does not explore complex configurations of stimuli (e.g., combinations of scents, music, lighting, and color). Such complex configurations should be researched, as consumers tend to have holistic views of their environs.

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