

A Sociable Atmosphere

Ambient Scent's Effect on Social Interaction

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This exploratory study examines how introducing an ambient scent affects the interactions between people within a meeting room. The study demonstrates behavioral mapping, a procedure for testing people's responses to ambient factors. The study found that introducing an ambient scent into a meeting room significantly increased the number of social interactions between the study's participants. However, the significance of the effect of the scent was moderate. The role of scent in the hospitality industry seems promising, although the small number of observations, along with certain other factors, limits the possibility for generalizing the results of this study.

Keywords: atmospherics; ambient scent; affiliation; social interaction

In 2006, several hotel chains announced plans to incorporate fragrance in their hotels as part of their brand image. Westin Hotels, for instance, spreads a

white tea fragrance throughout its lobbies (and makes it available in its retail locations); Sheraton uses a combination of fig, clove, and jasmine in its properties; Omni Hotels combines the odor of green tea and lemongrass in its lobbies and uses the scent of sugar cookies in its coffee shops; and Four Points hotels have lobbies redolent of cinnamon and clove, as from an apple pie (Higgins 2006).

Hyatt Hotels appears to be taking a more property-specific approach to scenting its hotels' public spaces. The Park Hyatt Chicago created two signature scents; one is peppery, the other is a black tea blend (Jeffers 2006). The Park Hyatt Place Vendôme developed a signature scent that, in the view of one observer, "smells like wet cement poured over a raw plank of oak, coupled with fresh, ever-so-slightly-cinnamoned pastry dough" (Burr 2006, 30). The hotel also created a macaroon reflecting its signature scent, which is delivered to the guest's room after check-in. The Hyatt Regency Tamaya Resort & Spa, near Albuquerque, scents the property

with cedar and herbs to reflect the Native American culture of the area (Torrissi 2006).

Some hotels are offering aromas as part of their meeting amenities. Starwood's W brand offers the "Sensory Set-Up" meeting option, which incorporates aromatherapy. The Steigenberger Kurhaus Hotel in the Netherlands offers a meeting space known as the "Result Room," which allows the customer to custom-design the room's color, sound, and scent—all at the touch of a button (Torrissi 2006). Omni's "Sensational Meetings" program includes a wide variety of scents that are intended to enhance celebrations, negotiations, brainstorming, planning, and training (<http://www.omnihotels.com/MeetingsAndEvents/SensationalServices.aspx>).

Each company's signature scent is meant to achieve a particular outcome. Some of the scents are designed to help guests relax upon arrival. Some are designed to build affect for the property. The scents in the "Sensory Set-Up" and "Result Room" are intended to help customers create an environment matched to the meeting's goal.

Service Environments and Ambient Odor

Joseph Pine and James Gilmore's 1999 book *The Experience Economy* encouraged designers to consider all five senses in the service environment. From an academic standpoint, the study of the service environment is a relatively new phenomenon. Mary Jo Bitner (1992) first proposed a service-environment framework, known as Servicescape, in an effort to help distinguish service marketing and operations from the traditional manufacturing-based studies. Her framework examines the entire service process, including the physical environment (e.g., temperature, lighting, and odor), the customer's or employee's individual characteristics, and the service outcomes. Outcome gauges include the amount of time spent in the environment, the amount of money

spent, and intent to return. Another set of outcomes falls into affiliation and social interaction, which includes the amount of interaction that occurs between employees and guests.

The study of ambient scent in business is also a relatively recent occurrence. Most of the work to date tests consumer reactions to "localized" scent (Gulas and Bloch 1995), meaning scented objects used as promotional items (Morrin and Ratneshwar 2000), inserts in magazines, and product scents like those found in household cleaners and shampoos (Bone and Jantraris 1992; Milotic 2003).

While some research has explored ambient scent in the marketplace, most of those studies have looked at retail establishments. For example, one study tested the effect of adding a pleasant ambient scent to a simulated retail environment (Spangenberg, Crowley, and Henderson 1996). The participants' evaluations of the environment and of products in the environment were examined in the presence of scent and in its absence. The researchers found that the presence of scent led to positive evaluations of the environment as well as favorable evaluations of the products.

Mattila and Wirtz (2001) explored the main and interaction effects of ambient scent and background music on customers' evaluations of a store's environment. They found positive main effects for scent and music individually on approach behavior and store evaluation. That study also looked at the interaction of music and scent, as judged by the extent of arousal from combinations of scent and music (that is, high or low arousal). The most favorable responses occurred when the scent and music were congruent with each other (i.e., when both the scent and music offered low arousal or both offered high arousal). These results suggest that customer satisfaction can be increased through thoughtful manipulation of ambient stimuli.

Mitchell, Kahn, and Knasko (1995) studied the effect of congruity of ambient odors and product purchases. In this study, some participants selected chocolate assortments in a chocolate-scented environment or floral arrangements in a floral-scented environment, while others made the same selections in a scent-free environment. The presence or absence of a scent did not result in a significant difference in the number of choices made. However, when odor was congruent, participants spent more time in decision making and made a wider product choice in each category.

More recently, Morrin and Ratneshwar (2003) conducted a study to test the effects of ambient scents on brand evaluation and memory. The presence of scent increased participants' attention to the brand stimuli and improved brand recall and brand recognition. It appears that the mere presence of the pleasant scents drove these effects.

Hirsch (1995) conducted a study in a Las Vegas casino to determine whether the presence of a pleasant ambient scent would affect the level of slot machine gambling. He found that the presence of one particular scent increased the amount of slot revenues in one area of the casino that was being tested. At the same time, a second scent in a different section had no noticeable effect. Revenues in an unscented section of the casino remained unchanged.

Gauging the Effects of Scent

Many researchers (Gulas and Bloch 1995; Baron 1990; Bitner 1992; Spangenberg, Crowley, and Henderson 1996) have called for further study of the effect of ambient scent on customers' behavior. Business managers are also interested. As we mentioned above, Pine and Gilmore's (1999) *The Experience Economy* led to increased interest in studying the effect of the physical environment on the service experience.

The study described in this article examines the effects of ambient scent on the

interactions of strangers in a meeting room to determine whether the scent affected the level of their social interaction. We hope to identify scent as an easy, inexpensive way for service managers to differentiate their products from those of competitors. Our assumption is that a meeting sponsor would be more satisfied with a meeting if its participants recorded higher levels of interaction. In that regard, we propose the following two hypotheses:

Hypothesis 1: The number of *affiliation* behaviors exhibited by the study subjects in the scented environment will be greater than the number of affiliation behaviors exhibited by the study subjects in the unscented environment.

Hypothesis 2: The number of *social interaction* behaviors exhibited by the study subjects in the scented environment will be greater than the number of social interaction behaviors exhibited by the study subjects in the unscented environment.

This study also tests a new method for examining the Servicescape framework. No previous study uses behavioral tracking, as described here. The method permitted us to quantify behaviors that normally are not tracked at all. This method can be used in the future to further explore behavioral aspects of the Servicescape framework.

Methods

The meeting room that we tested was either scented or it was not. Thus, our study had one dichotomous independent variable, ambient scent condition. The experimental condition involved scenting the room, while it was left unscented in the control condition. As dependent variables, we measured the following two activities: (1) the number of affiliation behaviors and (2) the number of social interactions. We agree that these two items seem similar, and the differences between these two categories are not well-defined in

the literature. (Indeed, as we discuss below, the similarity may have confounded our observation.) Nevertheless, we felt that there was enough evidence offered by previous researchers (e.g., Mehrabian and Russell 1974; Bitner 1992) to attempt to measure them separately. We describe the differences in the analysis section below. We also asked participants to record their sex and age.

Data Collection

We recruited a convenience sample of Las Vegas area residents, twenty-one years of age and older, at various “locals” casinos in Las Vegas, Nevada. (Locals casinos target the local resident customer rather than the tourist market; see Hendler and Latour [2008]; Shoemaker and Zemke [2005].) The participants were asked to participate in a focus group to discuss a particular slot machine game that was manufactured by the study’s sponsor. The focus groups took place in March 2003. Participants who knew each other (i.e., spouses, friends) were not permitted to register for the same focus group session, to reduce the risk of preexisting relationships that could affect the interactions within the group. We assigned participants to a group on a first-come, first-served basis.

The focus group recruits were asked to not wear perfume, cologne, or other scents to the meeting on the grounds that the focus group moderator was “allergic to perfume and cologne.” This measure was taken to avoid interference with the study’s ambient scent condition. To ensure that perfumed air would not be a problem for our participants, we asked (as part of the informed consent process required by the University of Nevada, Las Vegas) whether participants were sensitive to chemicals that might be found in the building. A list of possible chemicals in the air caused a couple of potential participants to decline to participate.

Among the chemicals listed on our consent forms was the one we selected to test,

essential oil of geranium, based on the work by Morrin and Ratneshwar (2000, 2003). Floral scents of this type are usually considered to be pleasant, rather than neutral or unpleasant (Gulas and Bloch 1995; Morrin and Ratneshwar 2000, 2003). Respondents in the Morrin and Ratneshwar studies rated of geranium higher than lavender, rosemary, or eucalyptus. Essential oil of geranium has a citrusy, slightly floral odor. When we tested it on eight people ahead of time, it evoked no specific memories or products among those eight respondents.

We conducted the experiment in a University of Nevada, Las Vegas, conference room set with two tables and a total of twelve chairs, eight of them at the tables. Past research indicates that changes in room layout do not affect the amount of conversation and social interaction (Mehrabian and Diamond 1971), so we do not believe that the room layout itself affected the amount of activity that was observed.

When the scent was being used, it was already in place when focus group participants entered the conference room. After they arrived, the participants were told that the focus group moderator was “running a few minutes late” and they would have to wait for “a few minutes,” which in all cases meant fifteen minutes. We chose fifteen minutes because we believed that it was long enough for social interactions to appear but not so long that the participants would become irritated by the delay and then perform poorly in the actual focus group session. Past research in social interaction formation used study periods ranging from two minutes (Mehrabian and Ksionzky 1974) to five minutes (Mehrabian and Diamond 1971). However, these studies measured interactions between a maximum of three people at one time. Since the focus groups in this study could involve as many as twelve people, we felt that a longer observation period was in order. In addition, we wanted to allow enough time for the scent to show any effects, especially because we

found no prior research that indicated that exposure to the scent would have an instant effect.

Participant behavior was observed using a hidden camera that recorded visual information only. The video camera was positioned at the ceiling level in a corner to allow full room coverage. The participants were not aware that they were being taped.

When the fifteen-minute period ended, participants completed a preliminary survey that recorded the demographic items. The participants then moved to another room, where the focus group session commenced. A second survey was administered following the focus group session to determine whether they had noticed any conditions in the rooms that seemed unusual, such as lighting, noise, temperature, or scent. No participants reported noticing anything unusual in either room.

Sample Characteristics

We targeted a sample size of eighty, or forty participants per experimental cell (Tabachnick and Fidell 2001; Hair et al. 1998). We almost achieved that number. We attempted to overrecruit focus groups to compensate for cancellations and no-shows, but the cancellation and no-show rate exceeded our estimates, reaching 30 percent for some groups. Although 101 people signed up for focus groups, we ended up with 77 participants, for a 76.24 percent participation rate.

The final sample consisted of forty participants in the scented condition and thirty-seven participants in the unscented condition. Thirty-four participants were men (44.2 percent), forty-three were women (55.8 percent), and the mean age was 53.8 years (median = 58.0 years). The sample had a higher percentage of women than did the overall Las Vegas population, but the difference was not statistically significant ($\chi^2 = .842$). The participants were also somewhat older than the local resident population. Both

differences were expected, based on previous studies of slot machine players, who tend to be women in their forties and above.

Analysis

Analyzing the Videotape

We used a qualitative technique called behavioral mapping to analyze the videotape (Bechtel and Zeisel 1987). Winkel and Sasanoff (1976) recommended this technique for determining overall traffic patterns, measuring distances, and determining differences between different time periods. The technique consists of five essential elements:

1. a graphic rendering of the space to be observed;
2. a clear definition of the behavior to be observed, counted, described, or diagrammed;
3. a record of times particular behaviors occurred during the observation and recording;
4. a systematic procedure followed in observation; and
5. a coding and counting system, which minimizes the effort required in recording observations (Bechtel and Zeisel 1987).

Step 1: Graphic rendering. We gave our judges a map of the space drawn to scale (Bechtel and Zeisel 1987). The drawing included the location of the furniture and any other semifixed features present in the room. Expert judges (observers) used the map to note the behaviors and movement within the room.

Step 2: Definitions of behaviors. A critical element in behavioral mapping is to determine categories of behaviors that are to be specifically observed (Bechtel and Zeisel 1987). Ittelson, Rivlin, and Proshansky (1976, 341) suggested that the behavior categories “must be explicit, precise, and relatively narrow, and in addition, relevant to the particular problem under consideration.” However, no matter

how precisely the categories are defined, it is likely that the list of categories will change during the observation; additional behaviors may be added or original behaviors may be deleted.

We identified the following three general categories of behaviors: affiliation (for positive affiliative behavior), avoidance (for negative affiliation behavior) and social interaction (Mehrabian and Russell 1974; Bitner 1992). The types of behaviors in each category are described in an excerpt of the manual that was used to train the judges, which is presented in Exhibit 1.

Although our study did not analyze avoidance behaviors, the judges were instructed to record avoidance behaviors to obtain a full record of participants' behavior and to provide a means for resolving conflicting observations among judges.

Step 3: Timing of behaviors. Each focus group session occurred at approximately the same time of day. Observers recorded the time shown on their VCR clock when each behavior occurred.

Step 4: Systematic procedure for observation. To find a manual for this study, we developed our own training manual for the judges. Descriptions of the activities to be observed were based on descriptions of interaction modifiers described by Birdwhistel (1970). Each judge attended a training session, where he or she reviewed the manual and then practiced identifying behaviors that were shown on videotapes.

Step 5: Coding system. Having defined the categories of behavior in step 2, we assign specific codes to those categories in step 5. The total number of incidences of each behavior constitute the dependent variables in the statistical analysis.

Judges/Observers

Based on expert advice, we empanelled six expert judges so that three of them could observe each videotape and perform the

behavioral mapping. Each judge was a graduate student in sociology who had prior experience in observational techniques, and we did not serve as judges. Each judge was randomly assigned four videotapes to view, resulting in each of the eight sessions being analyzed by three judges.

Interjudge Reliability

The data obtained from the judges were analyzed for reliability, according to the formula for interjudge reliability used by Smith and Houston (1985). The total number of incidences for each behavior was used in the interjudge reliability calculation. Although the usual level deemed adequate for interjudge reliability is .90 or greater (Bechtel and Zeisel 1987), our interjudge reliability ranged from .80 to .95. Although this range is not ideal, we deemed it acceptable for the purposes of this exploratory study. The chief source of disagreement was determining the difference between an affiliation behavior and a social interaction behavior. We anticipated this problem, given the absence of comprehensive definitions of those two categories.

The distribution of behaviors for each group as well as the gender composition and average age appear in Exhibit 2.

Results

We analyzed the data in Exhibit 2 using multivariate analysis of variance (MANOVA). The two dependent variables were the average numbers of observed affiliation behaviors per person and the average number of social interaction behaviors per participant. As we said above, the independent variable was the scent condition. We selected MANOVA, using Pillai's Trace (Hair et al. 1998) as the test statistic, because of the moderate level of correlation between the affiliation and social interaction variables ($r = .32$, $p = .004$), unequal cell sizes, and small sample size. This technique generates a combined dependent variable that accounts for any interaction

Exhibit 1:

Examples of Affiliation and Social Interaction Behaviors

Affiliation

In this situation, we are looking for behavior that indicates that the person desires to affiliate with others in the room. This is not the same as actually interacting with the other people.

Examples of affiliation behavior:

Eye contact

Increasing attempts at eye contact; increased looking in the direction of other people. Increasingly facing other people. Mirroring or parallel behaviors
Mirroring: mirror image behaviors between people. For example, if one person scratches his chin with his left hand, the other person scratches his chin with his right hand.

Body orientation

Gestures

Parallel: two or more people move in parallel with each other.

Facial expressions

Smiling; "questioning" expressions.

Body distance

Closing distance between themselves and others.

Leaning toward other(s).

Moving chair closer to other(s).

Social interaction

Social interaction is actual interaction between two or more people. This may include talking to others, closing distance between themselves and others, and physical contact.

Examples of social interaction behavior:

Eye contact

Prolonged and focused.

Body orientation

People are facing each other at increasingly parallel angles.

Gestures

Hand gestures, pointing. Head nodding; tilting toward other person; moving head inward toward other person.

Physical contact

Handshake; hand on the shoulder or the back of other person.

Proximity

Moving closer to the other person; leaning towards the other person.

Conversation

With one or more people.

(Continued)

Exhibit 1 (continued)**Avoidance**

Avoidance behavior is displayed when the person is uncomfortable in the environment or does not want to interact with others in the environment.

Examples of avoidance behavior:

Withdrawing attention	Staring up at the ceiling. Staring at a fixed point (not at another person). Reading a magazine or newspaper
Withdrawing physically	Looking out the window Leaving the room

Exhibit 2:

Composition and Behavior Frequencies of the Groups

<i>Group</i>	<i>Scent Condition</i>	<i>Male</i>	<i>Female</i>	<i>Mean Age (Years)</i>	<i>Average # of Affiliation Behaviors (per Person)</i>	<i>Average # of Social Interaction Behaviors (per Person)</i>
1	Unscented	5	4	56.9	4.64	7.59
2	Scented	5	4	45.6	5.48	11.26
3	Unscented	5	3	58.3	4.39	16.62
4	Scented	1	8	56.9	3.34	19.57
5	Unscented	3	7	57.7	8.70	6.40
6	Scented	6	5	45.9	4.23	8.72
7	Unscented	6	4	62.9	3.11	2.12
8	Scented	3	8	48.9	5.02	8.81
	Total	34	43	53.8		

between affiliation and social interaction. We also conducted univariate analyses of variance (ANOVAs) on each of the dependent variables. The results of the analyses appear in Exhibit 3.

Multivariate Analysis of Variance (MANOVA)

We found a statistically significant difference between the scented and unscented groups on the combined dependent variable of affiliation and interaction, $F(1, 75) = 3.764, p = .028$. The partial η^2 value of .092

indicates that there was a weak to moderate level of strength of association between the scent condition and the combined affiliation and social interaction dependent variable. By this calculation, approximately 9.2 percent of the variance in the combined dependent variable can be explained by the scent condition of the meeting room.

Univariate Analysis of Variance (ANOVA)

To determine the specific effect of the scent condition, we conducted follow-up

Exhibit 3:

Statistical Analyses

MANOVA						
<i>Scented</i>	F	df	Error df	Sig.	<i>Partial η^2</i>	
Pillai's Trace	3.764	2	74	.028	.092	

Follow-Up ANOVA						
<i>Source</i>	<i>Dependent Variable</i>	<i>Type III Sum of Squares</i>	df	F	<i>Sig.</i>	<i>Partial η^2</i>
Scented	Affiliation	10.60	1	0.961	.330	.013
	Social interaction	309.73	1	5.566	.021	.069
Error	Affiliation	827.94	75			
	Social interaction	4173.41	75			

univariate ANOVAs. The scented condition did not yield any statistically significant effect on affiliation behavior ($p > .33$), but it did have an effect on social interaction behavior, $F(1, 75) = 5.566$, $p = .021$. A partial η^2 value of .069 shows again a weak effect; nearly 7 percent of the variance in the number of social interaction behaviors that were observed is explained by the scent condition. Clearly, however, participants waiting in the room that was scented with essential oil of geranium exhibited more social interaction behaviors ($M = 11.758$, $SD = 8.13$) than did those in the unscented room ($M = 7.743$, $SD = 6.66$).

Within-Groups Analysis

Further ANOVAs were conducted to determine whether there were significant differences in behavior for groups that were in the unscented condition and, separately, for groups in the scented condition. For the unscented condition, we found that significant differences existed for both affiliation ($F = 4.029$, $p = 0.015$) and social interaction ($F = 16.815$, $p < .000$). Further examination

revealed that groups 5 and 7 were significantly different, where group 5 exhibited, on average, 8.7 ($SD = 6.41$) affiliation behaviors compared to group 7 ($M = 3.11$, $SD = 2.51$) affiliation behaviors. Group 3 in the unscented condition exhibited significantly higher social interaction behaviors, where 16.63 ($SD = 4.79$) social interactions per person were displayed versus the those of the remaining three groups, at 7.59 ($SD = 4.38$), 6.4 ($SD = 5.43$), and 2.12 ($SD = 2.42$) behaviors per person. We are unable to explain the reasons for these differences using the data collected in this study.

The scent groups showed no significant differences in average numbers of affiliation behaviors. However, a statistically significant difference was found for social interactions, where group 4 ($M = 19.57$, $SD = 5.90$) exhibited higher numbers of social interactions than group 6 ($M = 8.73$, $SD = 6.07$) or group 8 ($M = 8.81$, $SD = 6.44$). Again, the data gathered in this study do not provide us a way of explaining the differences. The differences within groups in the treatment and control condition point to the need for future research to uncover causes for the differences.

Discussion and Managerial Implications

The results of the study indicate that a pleasant ambient scent (in this case, essential oil of geranium) can have at least a moderate effect in increasing social interaction between strangers, at least when they are not otherwise occupied. Because we only tested the interactions while people were waiting and not in the focus group room itself, we cannot draw any further inferences.

Looking at our expected outcomes, Hypothesis 1 was not supported. Adding scent to the room did not appear to have any effect on the affiliation behaviors exhibited by the study's participants. We wonder whether part of this noneffect results from the low interjudge reliabilities for affiliation behaviors. Contrary to our expectations, when we examined the reliability measure differences between the two dependent variables on a case-by-case basis ($n = 77$), we found that the differences between the two sets of reliabilities were significant ($Z = 1,792.5$, $p = .015$, using the Wilcoxon signed-rank test (Conover 1999)).

The lack of agreement might also be the result of a variety of other factors, such as the analogue videotape copying quality (not as good as digital formats), differences in the playback quality of the VCRs used to review the tapes, or personal biases and perceptions among the various judges. From an intuitive standpoint, descriptions of affiliation behaviors seem more subtle than some of the more obvious-seeming actions in social interaction. For example, the subtlety of initial eye contact between two people makes that event harder to identify than a conversation or a handshake.

Hypothesis 2 was supported in this study. Overall, the addition of the pleasant scent to the waiting room performed as expected by increasing the number of social interaction behaviors displayed by an average of 52 percent per participant as compared to the unscented room.

Theoretical Implications

One theoretical implication arises from this study. Some of the Servicescape framework's more easily manipulated components, such as music and lighting, have been tested more in retail environments but less in service environments (see, however, Robson and Kimes 2007). In addition, the retail tests have examined approach-type behaviors, but we have seen little research regarding affiliation or social interaction. This study offers a new procedure for examining these important, but underresearched, behaviors in a setting outside of retail. This study is also one of the few studies that provide evidence that ambient scent does, in fact, affect the way that people interact with each other in the space.

Managerial Implications

This study reinforces our proposal that service businesses could develop a distinctive "signature" scent for their properties. Careful development of a proprietary scent would be an additional way to appeal to the senses and to make a company's service seem more tangible. If a customer were to smell the signature scent at a location away from a business's premises, the scent might trigger a happy recollection of the business's name and services. While we noted above that several companies have signature scents, we do not see evidence that there is an overt intent to develop brand recall (although the companies simply may not have stated this publicly).

The use of a signature scent in a service business could lead to increased liking for the business. The more a customer smells the scent and identifies it with the company, the greater the likelihood that the neurotransmitters that chemically "reward" the brain for recognizing a familiar scent as a nonrisk will lead to feelings of positive affect toward the source of the scent, in this case the hotel or restaurant. The service company could use

the scent as a marketing tool to increase the appeal for potential purchasers or users of the service.

This study's experimental environment was similar to that of a meeting room in a hotel or conference center. The scent used in this study had a significant effect on the number of social interactions that occurred between the strangers in the study's sample. The introduction of a pleasant, distinctive scent into a hotel or conference center meeting room could facilitate social interactions between meeting participants. This would be most useful for educational or networking meetings, where participants might not know each other. Offering a helpful scent could be positioned as increasing the return on the customer's investment in the meeting. Although many hotels offer signature scents, we do not see the geranium scent listed as one of them.

A signature scent could facilitate social interactions in hotel lobbies and other public spaces. Appropriate scents might encourage interaction between those guests that crave social interaction when escaping their "cocoon-prisons," to use the term from Aubert-Gamet and Cova (1999). This is a different goal than the one stated by hotel companies using custom scents, who are promoting goals such as helping guests relax and feel welcome. We suggest that perhaps other scents can create environments to facilitate social interaction.

If the introduction of a pleasant, signature scent can facilitate recall, and if recall facilitates liking, then the scent should increase the loyalty of a service company's customers (see Shoemaker and Bowen 2003). The addition of a facilitating scent would be a relatively inexpensive amenity offered to create a competitive advantage for the business.

Limitations and Suggestions for Future Research

Despite the statistical significance, this study faces several limitations that prevent

the results from being generalizable. First, the study used a convenience sample of casino gamblers, as specified by the sponsor of this study, who were recruited inside various "locals" casinos in Las Vegas. As such, the characteristics of these participants may not be typical of nongamblers. Future research should examine a more diverse group of people. In addition, the fact that the participants were willing to talk to the recruiters in the casino may indicate that they have an unusually high willingness or need to affiliate with other people. Future studies should examine the mediating role that an individual's willingness to affiliate plays in his or her tendency to interact with others.

While content analysis is considered to be a quantitative method, the interpretation of the videotaped data was still highly subjective. This may have resulted in less than optimal interjudge reliability measures. Future research might use these techniques with a refined list of the expected behaviors to improve reliability.

Future study could also examine different scents. We chose essential oil of geranium because it is considered pleasant but non-evocative. Other pleasant scents may have an even more pronounced effect on behavior. We cannot leave this discussion without noting the potential danger of scenting rooms for persons who are sensitive to perfumes, particularly those that are artificial. We used a natural essential oil in this experiment, but perhaps the results would have varied if we had used an artificial chemical.

Finally, this study focused on a narrow set of behaviors among groups of strangers in an unfamiliar situation. By contrast, the lodging industry often hosts people who are friends or acquaintances, or who at least are on familiar ground. In addition to their use of the brand-identifying scents that we mentioned at the beginning of this article, hotels could test a variety of scents in many different situations. For example, the hotel could

experiment with offering different guest-room scents, as chosen by the guest. Perhaps hotels would like to see whether employees would appreciate a pleasant scent to create a relaxing atmosphere in the employee break area. Research might also explore scents that are congruent with the goals of a particular meeting situation, such as using a “new car scent” while training a group of car sales representatives.

Hotel companies that have developed signature scents are now generating retail revenue by selling candles and other products that permit the guest to bring the signature scent home with them. Thinking beyond the lodging industry, aroma has always played an important role in the restaurant and food and beverage industry. Future studies could explore how manipulation of the ambient odor in a food-service establishment affects behavior and performance.

Conclusion

The study of ambient scent and its effect on human behavior is still in its infancy. The implications of understanding how to manipulate this variable could be far-reaching for the services industries, and particularly so for the hospitality industry.

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