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The DAST Framework for Retail Atmospherics: The Impact of In- and Out-of-Store Retail Journey Touchpoints on the Customer Experience

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Abstract

A proposed design–ambient–social–trialability (DAST) framework for retail atmospherics broadens conceptualizations to encompass not only the in-store experience but also out-of-store experiences that the retailer can control or influence. In turn, it expands understanding of retail atmospherics to incorporate multiple retail touchpoints that a customer may encounter during a journey. This framework also introduces a new dimension to conceptualizations of retail atmospherics, namely, the notion of trialability. By integrating literature on store environment cues with notions of the in-store sensory experience, this study also reveals some mediating and moderating factors that clarify how the DAST factors influence consumers' shopping behavior.

Keywords: Retail; Atmospherics; Design; Ambient; Social; Trialability

Many shoppers enjoy opening their mailboxes to find Trader Joe's Fearless Flyer. The colorful, illustrated mailer includes rich descriptions of products, price information, and silly jokes, both verbal and visual; the text describing cookie butter ice cream with waffle cones is designed in the shape of an ice cream cone, for example. A convenient shopping list printed in the flyer details where each advertised item will appear in the local store. Trader Joe's website similarly offers a colorful, fun experience, highlighting product stories, recipes, and appetizing pictures. The fun continues for visitors when they enter the store, where they encounter murals depicting landmarks of their local town, smiling employees in Hawaiian-themed shirts, product sampling options throughout in the store, and a ringing bell to signal the need for a manager, rather than annoying announcements over a PA system.

All of these elements combine to form the customer experience and thus customers' cognitive, affective, emotional, social, and physical responses to the retailer (Verhoef et al. 2009). The customer experience spans all stages of the customer journey (Lemon and Verhoef 2016), because the retail atmosphere, whether established in the store or through various retail touchpoints, influences customers' overall perceptions of the retailer and choices. Retailers accordingly invest heavily to establish the atmosphere they want to convey and engage customers, in all stages in their shopping journey.

In turn, and in contrast with traditional views of retail atmospherics that center predominantly on the in-store environment (Baker 1986; Baker et al. 2002; Bitner 1992), it is important to broaden conceptualizations to recognize that the customer experience takes place as part of a longer journey, some of which occurs within a store, while other aspects take place outside the store. Prior literature describes in-store touchpoints that establish the store's ambient elements, design, and social factors (Baker et al. 2002), but similar elements appear on the retailer's website, app, shipping or packaging materials, and other retailer-controlled touchpoints. Therefore, as an extension of existing frameworks and research, we overview the DAST framework of retail atmospherics, referring to design–ambient–social–trialability factors.

Design pertains to visual elements, whether in store, online, or on other retailer-controlled touchpoints, so it includes the

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layout and style of the store, website, or flyer. It also may depend on the introduction of new technologies, such as smart carts that can direct consumers through the store. The *ambient* factor involves background conditions, whether lighting in the store or the brightness of pictures that appear on the website or flyer. New technologies, such as ceiling projections used by Oakley in its New York City flagship store, also are modifying ambient elements in new ways. *Social* encompasses the people: other customers in the store, store employees or service agents, and reviews posted by others online. Finally, *trialability* refers to the ease with which a customer can try a new product or service. In a store, a consumer can taste a food sample or try on clothes; online customers might use digital equivalent technologies, achieved through augmented or virtual reality, to explore products. Such technologies even can transcend distinctions between physical and online worlds (Grewal et al. 2020).

Because the four DAST factors affect different stages of the customer journey, to form the overall customer experience with the retailer both in and out of stores, the framework helps broaden conceptualizations of retail atmospherics to encompass more than the in-store experience, integrating out-of-store experiences that the retailer controls or can influence (e.g., website, social media, flyer, shipping materials). By expanding understanding of retail atmospherics to incorporate these multiple retail touchpoints that customers encounter in their journeys, we also introduce a new dimension to conceptualizations of retail atmospherics, focused on the notion of trialability. To derive the framework, we integrate literature on store environment cues (Baker 1986; Baker, Levy, and Grewal 1992; Baker et al. 2002; Bitner 1992) with insights into the in-store sensory experience (Krishna 2012; Spence et al. 2014). We also explore mediating effects of the DAST factors on cognitive and affective reactions, which then determine consumer shopping behavior. Finally, we consider how DAST factors might function as moderating mechanisms, as detailed in Fig. 1.

To expand on each DAST factor, we first discuss it from an in-store perspective, then add the perspective of other journey touchpoints. In addition, we note which sensory aspects might be invoked by each DAST factor, as an extension of the well-known frameworks by Baker, Levy, and Grewal (1992) and Bitner (1990), which integrate distinct sensory elements less explicitly. Our discussion of in-store and other touchpoints draws on examples from prior research. Furthermore, we address how the DAST factors can influence cognitive and affective reactions that then determine shopping behaviors. Finally, we describe how consistent or congruent DAST elements combine to determine consumer behavior, as well as how experience and involvement could moderate the effect of a given cue on evaluations and behaviors.

The DAST Framework

The framework draws on two related streams of research that conventionally have been investigated independently: retail atmospherics (Baker, Levy, and Grewal 1992; Bitner 1990) and sensory experiences (Krishna 2012; Spence et al. 2014). In frameworks of retail atmospherics proposed by Baker, Levy, and Grewal (1992) and Bitner (1990), store atmospheric elements constitute three main categories: design (visual elements), ambient (background conditions), and social (other people). Each category in turn has potential effects on consumers' senses. For example, ambient cues, such as music and lighting, evoke auditory and visual senses. Accordingly, the retail atmospheric domain clearly would benefit from the formal integration of insights into sensory experiences. For the DAST framework, we draw on sensory literature (Krishna 2012; Spence et al. 2014) to specify the likely impact of each factor on the human senses of sight, hearing, smell, touch, and taste, as detailed next.

Table 1
DAST factors and associated elements.

DAST factor	Elements
Design Elements that exist at the forefront	*Functional elements* Layout Comfort Signage Search speed Organization of website/app Interface used to make selections *Aesthetic elements* Merchandise presentation Color Style Graphics Pictures
Ambient Elements that exist as background conditions	Lighting Music Smells Temperature Brightness/contrast Sounds Enhanced zoom feature Entertainment aspect
Social People present or felt in the environment	Number of others Appearance of others Behavior of others Physical/virtual presence of others Volume of others Number of comments/likes of others
Trialability Ability to try the product/service	Sampling Augmented reality Virtual reality

Design Factor

In-Store

Design factors "exist at the forefront of our awareness" (Baker 1986) and consist of both functional and aesthetic elements. *Functional design* elements include the layout, comfort, and signage; *aesthetic design* elements refer to the color, scale, texture/pattern, style, accessories, and merchandise presentation (Baker 1986) (Table 1). Generally, functional design elements require more planning and expense to change, so retailers tend to prefer similar designs in all their stores. Whether shopping

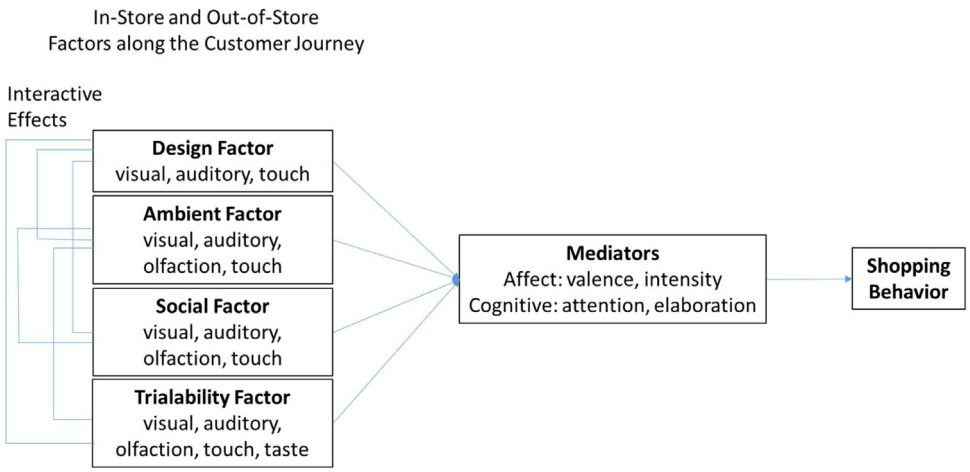

Fig. 1. DAST framework of retail atmospherics.

in Sweden or the United States, the path through an IKEA store thus is consistent. Many retailers establish planograms for their stores, specifying where products should be placed on shelves or displays.

Design elements strongly rely on vision to evoke customers' awareness; the store layout, signage, and the organization of the website are all visually perceived elements. Compared with the other senses, vision exerts a stronger effect on human perception and cognition (Calvert, Spence, and Stein 2004; Spence et al. 2014). It thus has important implications for the design of retail atmospherics. However, it is important to recognize that the impact of visual design factors is limited to a person's visual field. The human visual field spans just 130 degrees vertically and 180 degrees horizontally (Strasburger and Pöppel 2004). In contrast, auditory design elements in the environment have a broader area in which they can be perceived. Perceptions of auditory elements can occur outside of the visual field. Thus, even if a customer may not see the waterfall on a digital sign in the store, the customer can hear the water falling. The synergistic impact of different sensory elements then may strengthen the impact of a design element. According to neuropsychology research, visual elements accompanied by corresponding sounds improve memory performance accuracy, relative to the sole presentation of visual elements (Murray et al. 2004).

Research that investigates the outcomes of *functional design* elements includes a natural experiment in a fast-food chain, designed to determine how a store remodeling influences customer spending and store traffic; Brüggen, Foubert, and Gremler (2011) find increased spending in the short run but baseline levels after six months. Furthermore, they show that store traffic did not vary in the short run and then dipped after six months. In terms of comfort, Möller and Herm (2013) determine that when seating is hard (stone block), participants view the retailer as more rugged than if the seating is soft (leather sofa). The metaphor-specific meaning of hardness and warmth, both associated with touch, thus gets transferred to the store's brand personality. With regard to visual senses, Roggeveen, Nordfält, and Grewal (2016) test how the inclusion of digital displays affects sales and find evidence of enhanced sales in hypermarkets, whereas in supercenters and supermarkets, the displays had minimal impacts, and in convenience stores, the impact was negative. Rather than digital displays, Van den Bergh et al. (2016) examine how floor markers might help supermarket retailers alter customers' pace through the store; when pasted lines on the floor across the aisles are closer together (farther apart), it creates the illusion of a longer (shorter) aisle, which slows (speeds) customers' pace down the aisle. Thus, functional design involves a variety of sensory modalities that influence consumers' cognition, mood, and emotions, as well as their behaviors.

Other studies examine *aesthetic design* elements. In a field experiment, Sarantopoulos et al. (2019) demonstrate that a complement-based assortment organization prompts more purchases and greater expenditures than a substitute-based assortment organization—a result that held even ten months after the shift in the merchandise organization. In a study of how the display organization (vertical, horizontal, diagonal) affects consumer behavior, Nordfält et al. (2014) determine that vertical displays encourage browsing and purchasing. In addition, by altering the order in which healthy and unhealthy items appear in a display, Romero and Biswas (2016) show that putting healthy items to the left (vs. right) of an unhealthy item enhances preferences for healthier items. Thus, the even simple organization of merchandise in the store can determine sales, both in terms of how much and which items are selected.

Color is another influential visual aesthetic design element. Labrecque, Patrick, and Milne (2013) find that warm (vs. cool) colors result in arousing, dissatisfying affect among customers waiting in checkout lines. Consistently, a meta-analysis indicates that warm colors result in higher arousal than cool colors, but also in less satisfaction (Roschk, Loureiro, and Breitsohl 2017). Thus, retailers should consider how the colors in their store designs are likely to influence customer perceptions and reactions.

Other Journey Touchpoints

Other retailer-controlled touchpoints (e.g., website, mobile app, flyer, shipping, and packaging) also have key design features that, again, entail functional and aesthetic elements.

Relevant functional design elements outside the store include website navigation, search speed, and the organization of the site or app, as well as the selection process (e.g., touch or non-touch interface). They also pertain to how an item is packaged for shipping. Aesthetic design elements instead include factors that define the "balance, emotional appeal, aesthetics, and uniformity of the website's overall graphical look" (Cyr 2008, p. 53), such as color, graphics, logos, and pictures. These aesthetic considerations are important in various communication channels. For example, the pictures included in a message, even those conveyed on packaging, can determine how consumers perceive the retailer, which may be why Trunk Club, a personal styling service, sends its clothing in a box decorated like a high-end traveling trunk.

Beyond meeting their basic functions to facilitate consumer purchases and be aesthetically pleasing, functional and aesthetic design elements need to establish congruency across multiple customer journey touchpoints to create a viable customer experience. Such functional and aesthetic design elements also reveal notable effects. For example, citing the functional design, Shen, Zhang, and Krishna (2016) find that when consumers order using touch interfaces, they tend to select hedonic options over cognitively superior versions. Noting aesthetic design impacts, Gorn et al. (2004) indicate that the screen color of a webpage influences consumers' perceptions of download speed, their evaluations of the website, and their likelihood of recommending it to others. Roggeveen et al. (2015) investigate online merchandise displays and show that dynamic presentation formats increase preferences for and valuations of hedonic options. According to Bleier, Harmeling, and Palmatier (2019), different visual elements on a website (product feature crop, lifestyle photo, photo size, product video) affect the customer experience, according to the type of customer experience being emphasized (i.e., social, sensory, informative, or entertaining). Design factors therefore have important roles across all customer touchpoints, such that engaging the different senses can change how customers perceive the brand, product, and purchase decision.

Ambient Factor

In-Store

According to one survey, 41% of customers list ambience as the primary reason for enjoying a retail store, above staff friendliness or customer service (Dalziel and Pow 2014). The ambience of a store consists of background conditions, which generally are processed at a subconscious level (Baker et al. 2002). That is, consumers tend to be less aware of ambient factors such as smells, lighting, music, and temperature unless they are unpleasant or absent (Baker 1986). These ambient elements can invoke visual (e.g., lighting, brightness, contrast, zoom features), auditory (e.g., background music, noises in the store), olfactory (e.g., scents from the bakery a few aisles away), and touch (e.g., temperature, click of a mouse) senses. Whereas visual elements are limited to the field of vision, auditory and olfactory elements can be influential as long as they can be heard or smelled; music might reach shoppers throughout a store for example. Furthermore, these individual ambient elements can interact. Spangenberg, Grohmann, and Sprott (2005) note that Christmas-associated scents alone decrease sales, but when Christmas music gets added to the retail atmosphere, sales increase. We acknowledges the interactive effects of sensory modalities, within and across factors, in the proposed framework.

Research into ambient elements often explores lighting and brightness. Vision and color constitute design factors, but visual perceptions of lighting and brightness are ambient factors. Physiologically, humans perceive brightness when light emitted by a source falls on the rods and cones of the eye's retina (Halsted 1993); they then assign this perception subjectively to describe their environment. Brightness and hue can have separate or interactive effects on consumer affect (Wilms and Oberfeld 2018), just as design and ambient factors determine shopping behaviors both independently and interactively. According to Baker, Levy, and Grewal (1992), strong ambient lighting evokes greater pleasure, as long as there are relatively few people in the store. Biswas et al. (2014) find that when the ambient lighting is dim, consumers choose more unhealthy food options, though Reynolds-McIlnay, Morrin, and Nordfalt (2017) specify that a product's brightness relative to the background environment may determine preference for that product. If an item "pops" (e.g., dark product in bright environment), it is preferred, provided the products are not in disarray. Thus, individual product colors interact with the overall brightness of the store.

Extensive examinations also consider how different musical elements affect sales revenues. For example, Milliman (1982) finds that supermarket sales are higher when slower (vs. faster) music plays in the background; Knoferle et al. (2012) confirm that music with a slow tempo and minor mode results in increased department store sales. A meta-analysis reveals that music results in enhanced pleasure, satisfaction, and behavioral intentions, seemingly because "musical stimulation may be seen as a pleasure-inducing substitute for distracting in-store sounds, which will enhance the shopping experience" (Roschk, Loureiro, and Breitsohl 2017, p. 234). General background noises in stores are less frequently studied, though investigations of the interactions between ambient sound and social factors (e.g., crowding) could provide new customer insights for retailers.

There has also been a fair amount of research into the impact of scents in stores. Biswas and Szocs (2019) consider food-related ambient scents and establish that when consumers smell an indulgent food (e.g., cookies) for more than 2 min, they purchase healthy items more than unhealthy items, but the effect is opposite if the scent is available for less than 30 s. In Madzharov, Block, and Morrin's (2015) study, ambient scents that evoke different perceived temperatures (e.g., cinnamon as a warm scent; peppermint as a cool scent) also alter perceptions and choices, such that warm (vs. cool) ambient scents lead to increased premium purchases and higher overall spending. They also cause participants to perceive greater social density in the retail space. Yet scent positively influences customers' pleasure, satisfaction, and behavioral intentions.

Temperature has also been investigated. Warm temperatures have been shown to increase individuals' product valuations (Zwebner, Lee, and Goldenberg 2014). In addition, warm (versus moderate) temperatures have been shown to impact willingness to pay in auctions and negotiations. Interestingly, warm temperatures result in higher willingness to pay in auctions and lower willingness to pay in negotiations (Sinha and Bagchi 2019).

Other Journey Touchpoints

Ambient factors in other retailer-related communications, outside the store experience, may include the brightness or contrast used on websites and in photographs, the sounds that are played when consumers watch a product video, enhanced zoom features on a website, or the font used in any communication channel. In online and social media, it is readily possible to modify these ambient elements. Such considerations also are relevant with regard to the images and experiences consumers encounter while using augmented or virtual reality designed by the retailers. For example, North Face's virtual reality options, available in select stores, transport the customer mentally to locations and experiences outside those stores.

Ambient elements thus can be a powerful draw, so retailers leverage increasing varieties of touchpoints to embed ambient factors throughout the customer journey. For example, the multisensory marketing agency Condiment Junkie collaborated with AXE to investigate the influence of sensory cues that seek to convey key emotional and functional attributes that consumer ideally would feel when interacting with the brand (e.g., confidence, individuality, fresh feeling). The investigation revealed that the buttons on cans of the product should have some texture (versus feeling smooth), because touching a rough texture while smelling a masculine aroma improves consumer ratings of the scent (Krishna, Elder, and Caldara 2010). Ultimately, AXE created a Brand-in-a-Box, which "includes sounds, videos, materials to touch, aromas to smell, and different mechanisms and formulations to feel. By opening the box, you are immersed in the sensory world of the brand" (www.condimentjunkie.co.uk/project/axe). Consumers who see these related online retail designs or hear certain background music likely associate them with the touch and scent they have experienced while interacting with AXE products.

Among the existing research that explores some of these ambient elements, Schlosser, White, and Lloyd (2006) find that online purchase intentions are higher among visitors to a high investment site, which features a white background, sophisticated fonts, images on the navigation bar, and an enhanced zoom feature, rather than a low investment site, which uses a default background color (gray) and font (Times New Roman) and offers a limited zoom feature. According to Schroll, Schnurr, and Grewal (2018), handwritten typefaces lead to more favorable product evaluations and behavior, because they create a sense of emotional attachment between the customer and the product. Even such seemingly simple ambient elements thus can have significant impacts on customers' evaluations of a retailer and its products.

Social Factor

In-Store

The social factor involves people, such as service personnel or other shoppers (Baker 1986; Baker et al. 2002). The number of service personnel, their appearance, how affable they are, and how helpful they are all can be relevant. Baker et al. (2002) also find that positive employee cues (e.g., wearing professional-looking uniforms, greeting customers when they enter) cause participants to perceive higher service quality. The other shoppers might include people accompanying the focal consumer, as well as unknown others in the store. Mangleburg, Doney, and Bristol (2004) reveal that teenagers spend more when they shop with friends; even when customers just interact with others in the store, it slows them down and increases the time they spend in the store, as well as how much they buy (Zhang et al. 2014). Shopping with others magnifies the emotional affect consumers experience from products (Pozharliev et al. 2015), such that others' presence can add to the pleasure and excitement of the shopping experience.

However, other shoppers also might detract from the customer's experience. According to Zhang et al. (2014), when there are too many shoppers in one area, it reduces purchases of products located in that area. Optimal shopper density, in terms of increasing sales, thus appears to occur at a moderate level, and Knoferle, Paus, and Vossen (2017) confirm that grocery store sales are highest at medium levels of social density. Beyond just the number of shoppers, any single customer can exert impacts; people evaluate brands more negatively and spend less time in the store if a stranger touches them (Martin 2011), though if a highly attractive person touches a product, a customer is more likely to purchase it (Argo, Dahl, and Morales 2008).

As these studies imply (Martin 2011), social factors have tactile elements. In general, the social factor invokes the same four senses as the ambient factor: visual, auditory, olfactory, and touch. Visual aspects include what other people look like or what they are wearing; auditory aspects include sounds generated by these others in the same environment (e.g., hearing exchanges between another customer and an employee, background conversations by other customers). Olfaction is activated by the smells in an environment, so if other shoppers are wearing perfume or have strong body order, that sense will be activated. Finally, touch becomes a concern if high shopper density requires shoppers to come in physical contact, as well as when strangers touch products that may be of interest to the focal shopper (Argo, Dahl, and Morales 2008; Martin 2011). Thus, social factors often interact with other sensory elements, as well as design and ambient factors.

New technologies also are changing this social factor of the shopping experience. For example, customers might shop with friends and family, even if those others are not actually in the store, by connecting with them through Facetime to obtain their feedback and opinions. Extra personnel could be live-streamed into stores to assist with certain tasks. Retailers can provide social feedback by listing consumer reviews or ratings on shelf tags. New robotic technologies also have meaningful implica-

tions for eliciting a sense of social interactions (Grewal et al. 2020).

Other Journey Touchpoints

Social aspects also arise in other journey touchpoints. For example, on retail blogs, consumers post comments and feedback; they also might form virtual communities with brand ambassadors or create social media groups to exhibit their preference for a brand. These factors have visual elements, depending on how the information is presented (e.g., pictures of products), as well as auditory influences, reflecting the voice or tone someone uses when posting a video. Sephora's online "beauty talks" community enables users to discuss products, share their looks and make-up ideas, or seek help with beauty challenges. In turn, retailers must carefully monitor these online communication platforms. Some brand netnography research analyzes first-person online stories posted by consumers (Brodie et al. 2013; Hsu, Dehuang, and Woodside 2009), whereas other studies rely on text mining. For example, Herhausen et al. (2019) investigate negative word of mouth online using text mining and find that high- and low-arousal emotions, structural tie strength, and linguistic style matching all determine whether a firestorm is likely to develop.

The mere virtual presence of others can affect brand evaluations and purchase intentions too. Naylor, Lamberton, and West (2012) investigate the impact of revealing a brand's fan base or leaving supporters' identities ambiguous. The demographic composition of this virtual presence influences other consumers' reactions to the brand. Wang et al. (2007) investigate another type of virtual presence and show that avatars can increase perceptions of the social element of a website, which influences consumers' affect and shopping value. Thus, the social factor of retail atmospherics is evolving, from pertaining just to the physical presence of others in a store toward including the mere virtual presence of others online.

Trialability Factor

In-Store

Trialability involves an ability to experience the product before purchasing it. It was not part of Baker's (1986) initial description of the store environment, likely because physical stores consistently aim to carry all available products in inventory. They generally put some sampling of items on display, so customers can see, touch, and experience the product. To encourage trial, retailers or manufacturers also might offer samples or trial sizes so consumers can try using or consuming prior to making a purchase, whether at home (e.g., laundry detergent) or while still in the store (e.g., food). Products that can be sampled in the store often encourage immediate purchases of more of the product.

Such availability continues to expand; customers can test face creams from cosmetic retailers, smell perfume before buying it, sample food in grocery stores, and test the sound quality of headphones. Trialability thus incorporates all five sensory elements by accounting for the sensory impressions derived from interactions with various products and store environments: what the product looks like, the sound of the product, how the product smells, how it feels, and how it tastes. Prior conceptual work on atmospherics has not integrated sampling and other trialability factors into theoretical frameworks, but our proposed model highlights its importance and the significance of sensory modalities in trialability experiences.

In contrast, researchers have examined the actual impacts of sampling. Biswas, Grewal, and Roggeveen (2010) determine that when people sample a series of two experiential products (e.g., beverages, music), they prefer the product they sample second if both products are desirable, but if the sampling involves two non-experiential products (e.g., scissors), they prefer the first one. Wilcox, Roggeveen, and Grewal (2011) further demonstrate that the timing of when customers learn product information and sample the product determines their response. Specifically, when favorable information appears before the sampling opportunity, consumers evaluate the product more positively, but if that favorable information appears after their sampling experience, they express more negative evaluations (cf. if they saw unfavorable information).

Other Journey Touchpoints

Because trialability is so important, companies have long provided clips, such as snippets of music or movie trailers, to allow consumers to sample their products. Similarly, online retailers seek creative ways to enhance trialability, such as by creating showrooms (e.g., Warby-Parker), pop-up stores, or events that allow consumers to see, feel, touch, and experience the product. They also might use augmented or virtual reality to create sensory experiences through technology, which mainly entail the visual and auditory aspects of trialability. Still, even tactile and olfactory elements can be mentally simulated by effective descriptions. Recent research within the multisensory and crossmodal psychology tradition also has begun to investigate ways to enhance human–computer interactions (Obrist, Ranasinghe, and Spence 2017) and integrate senses such as olfaction, vision, and sound more meaningfully into virtual reality experiences (Aiken and Berry 2015). In an existing effort, IKEA offers an app that provides a virtual reality experience, such that shoppers can use their smartphone to navigate through a virtual kitchen and change the products or colors. The app even allows shoppers to cook Swedish meatballs in their virtual kitchen, then sit down on a virtual chair and leaf through an IKEA catalogue. Thus, the virtual reality experience already integrates multiple sensory elements and different customer touchpoints.

Augmented reality goes even further to help "customers see how products fit them personally or in their environments" (Hilken et al. 2017, p. 885), because it prompts them to imagine using the product. Similarly, dynamic (cf. still) images on websites help customers vividly imagine using the product, which increases their involvement to a level that matches that of an actual product experience (Roggeveen et al. 2015). New technologies thus give retailers new options to enhance trialability for customers.

The DAST Factors and Shopping Behavior

Each DAST factor likely influences consumers' shopping behavior, though the mechanisms through which they do so are multifaceted.

Cognitive and Affective Routes

At the simplest level, we consider the affective or cognitive route (Spence et al. 2014). In line with the stimulus-organism-response model (Woodworth 1929), on the affective route, a consumer's emotional state (pleasure, arousal, dominance) mediates the impact of environmental cues on her or his behavior (Mehrabian and Russell 1974). For example, Donovan and Rossiter (1982) show that when customers regard a retail environment as pleasant and arousing, they spend more time and money in it. Sensory perceptions, as evoked by each DAST factor, have a key role in forming shoppers' mood and affect (Lin, Cross, and Childers 2018; Schreuder et al. 2016). Extensive research addresses the relationships among different atmospheric elements, pleasure and arousal, and approach or avoidance behaviors; in a meta-analysis of this research, Vieira (2013) affirms that as pleasure and arousal increase, approach behaviors increase.

Rather than limiting the affective route to one positive emotion though (i.e., pleasure), we integrate the circumplex model (Russell 1980), according to which a variety of emotions result from various combinations of valence and intensity. For example, pride is a positive emotion with moderate intensity; serenity is a positive emotion with a low level of intensity. Pleasure may be central as a measure of valence, but it also is important to consider the wider range of emotions that derive from the combination of valence and intensity. In line with Spence et al. (2014), we suggest research should focus on the general valence and the intensity of the emotion.

The cognitive route instead reflects how DAST factors garner attention and then evoke different levels of elaboration. A stronger cognitive route seems to arise if associations exist between the products and atmospheric cues, as well as in the presence of nonconscious associations between the products and the atmosphere (Spence et al. 2014). As North, Hargreaves, and McKendrick (1999) show, more French wine sells when the store plays French music, and more German wine sells if it plays German music. We expect that the cognitive elaborations consumers make when relating the product and the atmosphere get stimulated further by social factors (e.g., shopping with a friend) and trialability (e.g., tasting the food, trying on clothing).

The DAST factors thus directly or indirectly influence both affective and cognitive responses, which then affect shopping behavior. For example, music playing in a store can increase consumer spending (Areni and Kim 1993), as a function of the cognitive processing that gets sparked when consumers experience congruity between their motivation and the shopping environment (Roggeveen et al. 2019). In addition, slow tempo, quiet, familiar music causes shoppers to linger longer in a store (Garlin and Owen 2006), which then might lead them to purchase more. They likely linger because the store environment feels enjoyable and safe (affective response) or because it motivates them to look at more products and process more information (cognitive response). Thus, both affective and cognitive responses likely mediate the influences of the DAST elements on shopping behavior.

Interactive Impact of DAST Factors

In addition to their distinct effects, the DAST factors should interact in their influences. However, limited research investigates these interactive effects of the DAST factors or their constitutive elements (e.g., Baker, Grewal and Parasuraman 1994). Rather than try to articulate all possible interactive effects, we highlight two potential mechanisms that predict how DAST factors might work in conjunction: consistency and congruity and experience and involvement.

Consistency and Congruity Effects

When multiple cues (e.g., design and ambient elements) interact, they might be consistent or congruent, or not. Most research indicates that these multiple cues (store factors, as well as price, brand name, country of origin) enhance evaluations and behaviors (Dodds, Monroe, and Grewal 1991; Miyazaki et al., 2005Miyazaki, Grewal, and Goodstein 2005). This moderating mechanism likely moves through a cognitive route to influence how people process multiple competing or complementary cues.

The underpinnings of consistency and congruity rest on various alternative theories. In particular, the predictions are consistent with information integration theory (Anderson 1981), categorization theory (Loken, Barsalou, and Joiner 2008), and congruity theory (Fiske and Taylor 1991; Mandler 1982). Consistent or congruent cues, such as a well-designed store with pleasant music and soft lighting, likely enhance overall evaluations of the merchandise or store, as well as purchase behaviors. In one of the few studies to explicitly examine the interactive effects of ambient and design factors, Grewal and Baker (1994) demonstrate that when ambient (music, lighting) and design (store layout, organization of merchandise) cues are congruent, it evokes in higher price acceptability and greater perceptions of price fairness. Another study of congruency effects by Knoferle, Paus, and Vossen (2017) signals that sales increase when social density is congruent with the pace of the music being played. If customers shop in a crowded environment, they purchase more products if the music is fast paced, suggesting congruent arousal—namely, the arousal value of social and ambient factors match.

Experience and Involvement Effects

As another important mechanism, greater experience or involvement moderates (or attenuates) the effect of any given cue on evaluations and behaviors. Thus, for example, the effects of design and ambient cues might be mitigated by the presence of others or interactions with sales associates (social factors) or sampling of merchandise (trialability). Such moderating effects arise because social and trialability factors increase customers' experience (or access to experience) and perhaps their involvement.

Familiarity and experience research (Rao and Monroe 1989) and the elaboration likelihood model (Petty and Cacioppo 1986) concur in suggesting that different DAST factors or elements should be attenuated if shoppers have greater knowledge, involvement, or both. For example, Rao and Monroe (1989) note that the effects of price cues on quality perceptions are more pronounced among less knowledgeable, compared with more knowledgeable, consumers.

Conclusion

This article presents a DAST (design- ambience- social- trialability) framework for retail atmospherics. The framework broadens existing conceptualizations to encompass not just the in-store experience but also out-of-store experiences that retailers can control or influence. By expanding understanding of retail atmospherics to incorporate the multiple retail touchpoints that customers often encounter during their journeys, we establish a novel model of retail atmospherics that better reflects the multifaceted contemporary retail environment.

As our description of the DAST factors makes clear, each factor encompasses a host of elements. Past research has operationalized the factors using either a particular element (e.g., music or lighting) or several of them (e.g., music and lighting). We recommend that continued research also needs to consider questions of congruency and consistency, both among factors (e.g., ambient and design) and within them (e.g., scent and lighting).

Our framework introduces a new dimension to retail atmospherics, namely, the notion of trialability. It is novel, even though trialability has a rich history in retail and services arenas. In food courts, multiple restaurants offer samples of their merchandise. In department stores, consultants at cosmetics counters actively offer options to try perfumes and cosmetics. In the German appliance retailer Vorwerk's stores, customers are encouraged to test robotic vacuum cleaners. Furthermore, trialability is expanding beyond physical locations to include product testing options that rely on a digital twin, accessed through augmented or virtual reality.

In parallel, our framework expands conceptualizations of the social factor, which previously have focused on sales associates or other customers in a store (e.g., role of crowding). We consider the social element in the online domain as well, as might be signaled by reviews by other customers, posted videos, or even comment sections. Continued research needs to consider how these social elements of new technologies affect consumer perceptions. We predict that social factors will gain increasing prominence online as retailers gain capabilities to interact with shoppers using technologies such as avatars, chatbots (Grewal et al. 2018), and robots (Mende et al. 2019). Shoppers also might bring companions with them virtually, such as by shopping while using Facetime. The potentially different influences of companions in the shopping journey who are present in various ways (virtually or physically) represent an interesting avenue for further research. In addition, new facial tracking tools and technology might provide sales associates with expanded information about customer emotions (valence and intensity), which they can use to achieve greater emotional adaptivity in their selling efforts.

To gain a more comprehensive understanding of DAST factors, additional research should address their various interactive effects. For example, the social factor might interact with ambient and design elements to enhance their combined impacts on shopping behavior. Trialability also is likely to enhance the impact of ambient and design elements. Then researchers should undertake efforts to understand how these interactive effects of DAST factors differ across customer journey touchpoints.

In examining these various elements of the DAST framework, it is important for researchers to continue acknowledging the role of signage, including directional signs, information posts, and promotions. Recent research highlights the importance of the presentation of numeric attributes on shelves, such as the influence of a vertical position of one attribute relative to a comparison attribute (Guha et al. 2018a), the horizontal position of price relative to a prior price (Biswas et al. 2013), or the way the offer is framed (Guha et al. 2018b). It would be helpful to understand how different signage designs might be enhanced or attenuated by other DAST elements (e.g., trialability).

Finally, we hope this article stimulates additional research into how the retail atmosphere, which comprises DAST factors, influences consumers' evaluations and shopping behavior. As we have noted, retailers invest millions to create effective retail atmospheres that can engage customers at all stages in their shopping journey. In detailing how the DAST factors implicitly or explicitly can evoke different senses, we also encourage researchers to combine rich research in both atmospheric and sensory domains to develop a more comprehensive view of how these various elements together determine shopping behaviors.

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