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The Cool Scent of Power: Effects of Ambient Scent on Preferences and Choice Behavior

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The present paper examines the effects of ambient scents that differ on perceived temperature on consumer perceptions and buying behavior. We demonstrate that warm vs. cool scents bias social density perceptions and ultimately lead to power-compensatory consumption behavior such as increased purchases of luxury brands and high-status products.

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The Cool Scent of Power: Effects of Ambient Scent on Preferences and Choice Behavior

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EXTENDED ABSTRACT

Scent marketing or emitting ambient scents in the shopping environment is considered by industry managers to be an area with wide and unexplored opportunities and much commercial promise. Despite practitioners' evolving interest and a rapid investment increase in ambient scent technologies, consumer research on scent has been very limited (Morrin 2010). Extant research still leaves many important questions unanswered; for instance, how different categories of ambient scents affect actual purchase behavior.

In this research, we contribute to furthering such understanding by providing an in-depth exploration of how semantically related scent categories affect product choice and purchase behavior in the store. We demonstrate that scents that differ on perceived temperature systematically affect consumer behavior through the process of producing a spatial bias in social density perception. Social density is defined here as the joint perceptual evaluation of the number of people present, the physical proximity between them, and the overall spaciousness of the environment.

Extant research has established that scents can be categorized based on the semantic meaning that they carry and that they can activate and increase accessibility of semantic concepts (Krishna, Elder, and Caldara 2010). One scent categorization that is established and used in both theory and practice is based on the temperature dimension where scents are categorized as warm or cool based on the strong temperature associations that they evoke (e.g., warm scents are vanilla and cinnamon while cool scents are peppermint and eucalyptus; Krishna et al. 2010). In addition, psychology research has established the existence of a very strong bi-directional correlation between temperature and spatial proximity both as fundamental features of the physical environment and as psychological concepts in people's minds. In the present paper, we extend these findings by proposing that semantically primed temperature through warm and cool ambient scents will bias perceptions of overall social density. More specifically, we propose that a warm (vs. cool) ambient scent will lead to perceptions of greater social density.

Research on social density suggests that when people perceive social density to be very high they tend to experience less control over their social environment. In addition, recent research on power in consumer behavior indicates that when people experience less power (i.e., control) they automatically adopt a power-compensatory behavior in an attempt to regain power (Rucker, Galinsky, and Dubois 2012). For example, such behavior is exhibited through greater value placed on luxury or high-status products that can serve to restore power (Rucker et al. 2012). Integrating the findings from these research streams, herein we propose that a warm vs. cool scent will lead to perceptions of greater social density and as a result people will experience less power and adopt power-compensatory behavior exhibited through greater preference and choice of high-status products and luxury brands.

In study 1 ($n = 38$), we show that a warm (vs. cool) ambient scent activates associations with temperature and leads to perceptions of higher social density. In a warm (vs. cool) ambient scent people perceived the room to be fuller and the space to be more limited, and these spatial perceptions were mediated by the temperature associations evoked by the scents.

In study 3 ($n = 66$), we once again replicate the scent effect on social density perceptions but we also demonstrate this bias mediates the effect of scent on power-compensatory consumption patterns. The results demonstrate that people in the warm (vs. cool) scent condition reported higher evaluations of ads describing the products in terms of their prestige (vs. performance) qualities, and perceptions of social density mediated these effects.

In studies 3 and 4 (field studies), we provide real-life data supporting the effect of warm versus cool scents on actual purchases of luxury brands and high-end products. The first field study (study 3; $n = 154$) was conducted in an optics store during a 22-day period. Data were collected on sales of prescription frames and sunglasses from a wide variety of brands ranging from low-end to high-end. The results from this field study show that in a warm- (vs. cool-) scented store shoppers purchased significantly more products from luxury brands (e.g., Gucci, Versace, Prada).

Study 5 was a field study conducted in a retail store over a period of 5 weeks. Sales records were collected on 1127 transactions for a total of 1989 items sold in the store during the study period. The results from the sales records analysis demonstrate that shoppers in the warm- vs. cool- and no-scent condition purchased significantly more products from the high-end category. In addition, a survey questionnaire from a sample of 247 consumers showed that consumers in the warm- vs. cool- and no-scent condition perceived the store as more socially dense, and as a result purchased more upscale items which they also reported would make them feel more respected (as evident in a significant serial mediation).

The findings from this research carry important theoretical contributions to sensory research. This research is the first to demonstrate that sensory stimulation in the olfactory sense (i.e., through ambient scent) can produce biases on perceptions in the visual sense (i.e., on spatial perception of social density) thus contributing to research on multisensory, scent and spatial perception. In addition, we contribute to scent research firstly by identifying a new process for the scent effects, and secondly by presenting real-world evidence of how scents affect actual purchase behavior. The present findings also have important managerial implications and can provide practitioners with concrete insights on how different categories of scents work.

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Striving for Superiority: Face Ratio, Anthropomorphism and Product Preference

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EXTENDED ABSTRACT

Anthropomorphism, or attributing human traits to non-human entities, is increasingly being studied in marketing. Research suggests that people often think of products in humanlike terms, ascribing to them human traits, and interacting with them as they would interact with other people (Aggarwal and McGill, 2007; 2012). In this research we examine the interesting possibility that people react to product faces, in particular faces of high status products, in much the same way as they react to human faces; and base their evaluation of these products based on their impression of the specific product-face. In particular, this research proposes that consumers' preferences for anthropomorphic products may be influenced by the respective face width-to-height ratios (*f*WHR: bizygomatic width divided by upper-face height).

Extant literature demonstrates that perceivers use social stimuli as indicators of status in others (Zebrowitz and Montepare, 1989; Keating and Doyle, 2002) and faces with high *f*WHR are perceived as being more dominant, are given higher-status in the social hierarchy (Mazur et al., 1984), but are also liked less (Stirrat and Perrett, 2010). Based on these findings, we propose and demonstrate that high *f*WHR of products resembling human faces will lead to the product being perceived as being high on dominance. However, unlike the inter-personal domain, higher level of dominance (or toughness) of the product will lead to greater (and not less) consumer preferences and willingness to pay (WTP) for it. Thus, individuals will show greater preference for wider product faces but not for human faces and the perceived dominance from each set of faces will mediate these effects. We explain this seemingly opposite effect to the product's ability to be used as a signaling device: consumers use the high dominant product as a means to enhance their own status. Thus, we find that the effect is moderated by the type of product – the products that are seen as status products show this effect while products that are incapable of being used as a signaling device show the opposite effect.

For the first study, we look at the relationship between price and automobile *f*WHR of 297 models from 25 automobile manufacturers. Our data include pictures, price information, and product specifications. Consistent with our predictions, the results show that WHR significantly predicts automobile price ($p < .001$). In particular, we found that the WHR is a significant predictor of prices for Sedan ($\beta = 71.95$, $p < .001$), for Coupe ($\beta = 321.32$, $p < .001$), and for Convertible ($\beta = 248.94$, $p < .001$).

Since Study 1 gives only correlational evidence, Study 2 is designed to replicate this effect in a laboratory setting. For Study 2, we created a set of experimental stimuli with four human faces and four automobile face stimuli, each with three levels of WHR (ratio). In order to control any covariance between ratio and spaciousness (e.g., automobiles with high ratio being more spacious), width was held constant across all ratios. We found that participants ($N = 485$) perceive both human and automobile faces with high *f*WHR as being more dominant (human faces: $p < .001$; automobile faces: $p < .04$). Further, as predicted, participants dislike human faces with a high ratio ($p < .001$), while they like automobile faces with a high ratio ($p < .01$). Consistent with our theorization, these effects are mediated by perceptions of dominance (Human face Sobel's $z = -3.1$, $p < .001$; Automobile face Sobel's $z = -2.45$, $p < .02$).

Next, Study 3 is designed to test if this effect will be amplified when participants are motivated to impress others (i.e., impression goal). Three automobiles were manipulated into two levels of ratio by proportionally increasing and decreasing the original ratio. The impression goal was manipulated by presenting a scenario where participants were instructed to imagine renting a car for an important business trip. As in Study 2, perceived dominance and WTP for renting the car (\$/day) were measured. As predicted, the goal manipulation increases sensitivity towards the dominance looks of the car front, meaning, participants with impression goal perceived the wider faced car being more dominant ($p < .05$) and were willing to pay more for renting the wider faced car ($p < .04$). Furthermore, the goal predicts the amount paid for the car rental and perceived dominance of the car face mediates the effect ($p < .001$).

As the final study, Study 4 tested generalizability of this effect. In particular, we wanted to see if product's ability to signal status to others moderates the effect of ratio on WTP. Using products with and without the ability to signal status (house vs. mop), we tested if the found effects are dependent on the products' ability to signal status. As in the previous studies images of house and mop were manipulated by proportionally increasing and decreasing the original ratio. After seeing each image, participants provided their immediate impressions of the stimuli in terms of perceived dominance, degree of liking, and WTP. Results show a significant interaction between product types and ratio ($p < .01$). Specifically, compared to a narrow faced house, participants rated a wider faced house being more dominant ($p < .02$) and were willing to pay more for it ($p < .003$). However, there was no effect of ratio on perceived dominance, liking or WTP for mop. A mediation analysis using 5,000 bootstrap samples confirmed that perceived dominance mediates the effect of ratio on WTP for the house (95% CI: .08 and 1.39).

In sum, our research provides the first demonstration of influence of *f*WHR on product preferences and actual market prices, while simultaneously providing the underlying conceptual basis for why we observe this effect. This research suggests that product faces may be perceived the same way as human faces such that the WHR influences their perceived dominance traits. Further, because products that are used as signaling tools for status, they are also liked more if they have a high WHR unlike human faces that are liked less if they have high WHR. We find consistent results across four studies using secondary data as well as experiments in the lab, using factors that strengthen the effect (impression goal) and factors that weaken the effect (non-status products). There are significant future theoretical and managerial implications of this research.

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