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The power of sensory marketing in advertising

Aradhna Krishna^{1,3}, Luca Cian^{2,3} and Tatiana Sokolova¹

This article discusses the role of sensory marketing in driving advertisement effectiveness. First focusing on vision, we discuss the effect of mental simulation and mental imagery evoked by ad visuals on ad effectiveness. Second, we review findings on gustation, zooming in on the effect of multi-sensory stimulation on taste perceptions. Third, we elaborate on the role of actual and imagined touch in shaping consumer evaluations and behaviors. Fourth, we discuss olfaction as a driver of ad recall and responses to ads. Finally, we review the role of auditory sense in advertising, focusing on the effect of music on consumers' memory for and evaluations of ads. Directions for future research in the domain of sensory marketing and product advertising are discussed.

Addresses

¹Ross School of Business, University of Michigan, USA

²Darden School of Business, University of Virginia, USA

Corresponding author: Krishna, Aradhna (aradhna@umich.edu)

³The first two authors contributed equally to this paper.

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In the last few decades, marketing has changed drastically, evolving from unidirectional communications from companies to consumers, into dialogs between companies and consumers. Today, marketing communication is characterized by multidimensional conversations with products finding their own voices and consumers responding viscerally and subconsciously to them (Krishna, in [1]). Attention to how to reach consumers through the five senses has consequently been growing exponentially, in the corporate world as well as in academia. Sensory marketing can be defined as 'marketing that engages the consumers' senses and affects their perception, judgment and behavior. From a managerial perspective, sensory marketing can be used to create subconscious triggers that characterize consumer perceptions of abstract notions of the product (e.g. its sophistication or quality)' ([2], p. 332). Krishna and Schwarz [3**] place sensory marketing within a broader framework and show its relationship to embodied cognition — another emerging

field highlighting the idea that feeling guides thinking (or that sensory perception affects cognition).

In this review, we will focus on how sensory marketing can influence advertisement (ad) design and effectiveness. We begin by discussing ad visuals and the role of mental simulation and imagery. We then focus on how to activate sensory stimulation via ad copy. We next describe the interrelation of ads with the other senses: haptics, smell, and hearing. We conclude with ideas for future research.

Visuals and imagery in advertising

Visual aesthetics have long been recognized as key determinants of ad effectiveness [4–10]. In this review, we focus on how ad visuals can lead to spontaneous generation of imagery in the viewer's mind with stimulus orientation [11] and perceived movement [12**] affecting the amount and the type of imagery generated. The content of these images, in addition to how the images are formed, plays a large role in affecting evaluations toward the ad and the product.

Stimulus orientation and mental simulation

Can the position of a product in an ad (e.g. to the right or to the left) affect how the viewer imagines using the product? Elder and Krishna [11] demonstrated that changing a product's visual depiction leads viewers to imagine interacting with that product and can thereby increase purchase intention. Specifically, they showed that a match between handedness and product orientation (e.g. a right-handed person views a picture of a bowl of soup with a spoon on the right; see Figure 1), vs. a mismatch (e.g. a right-handed person sees a picture of a bowl of soup with a spoon on the left), increases the mental simulation of product interaction. In other words, a match between handedness and object orientation facilitates the mental simulation of interacting with the object. Enhanced mental simulation, in turn, increases purchase intentions. However, when the product appears unappealing, a match between product orientation and handedness enhances the simulation of a negative experience, consequently decreasing purchase intentions. Figure 2 shows the effects of an enhanced mental simulation (match) on purchase intentions using an appealing product (soup with asiago cheese) and an unappealing product (soup with cottage cheese). Finally, Elder and Krishna [11] have shown that mental simulation requires resources similar to those involved in actual perception — if right-handed subjects are holding a clamp in their right hand, purchase intention does not increase.

Figure 1



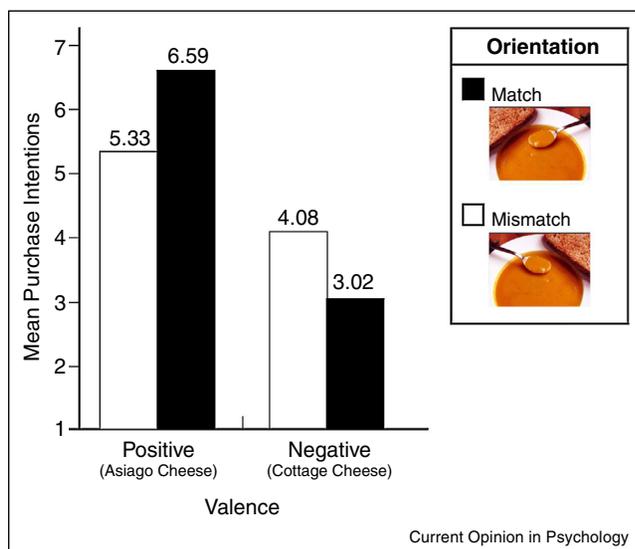
Two different ads used in Elder and Krishna [11] (p. 1001).

Dynamic imagery

In addition to product orientation, another visual characteristic able to evoke an automatic imagery response is perceived movement [7,12**]. For example, imagine being in a museum and seeing a painting evoking a great

sense of dynamism and movement. In a marketing context, we can find similar examples when observing logos and pictures in ads. What, then, are the consequences of this perceived movement? Cian *et al.* [12**] focused their research on the ability of a static visual to convey movement without actually moving (what they called 'dynamic imagery'). They showed that dynamic imagery allows for images within the mind to continue in motion, creating a higher engagement for the viewer. For instance, in one of their studies, they created two versions of an ad for a fictitious brand, EE Watches. The only difference between the two ads was the dynamic imagery evoked by the logo (lower vs. higher dynamism, see Figure 3). In this study, Cian, Krishna, and Elder used an eye tracker to measure engagement (testing for gaze duration and number of fixations) and found that the more dynamic logo leads participants to spend more time gazing at the ad. Higher engagement with the ad led, in turn, to more favorable attitudes toward the brand.

Figure 2



Effects of an enhanced mental simulation (match) on purchase intentions using an appealing (positive valence) and unappealing (negative valence) product; Elder and Krishna [11], p. 997. Note that images are for a right-handed participant; match and mismatch would be reversed for a left-handed participant.

Advertising copy, sensory stimulation, and perceived taste

Ad copy has a fundamental role in completing and expanding the message conveyed by the visual [13]. In ad copy, the message is usually simple and brief [14], often focused on one sensation or sense. When advertising food, for example, most companies use ads focused only on the taste of the food. Elder and Krishna [6] showed, however, that an ad results in better taste perception by mentioning multiple sensations rather than taste alone. Because multiple senses (sight, smell, texture, and sound) together generate taste [15**,16], ads that

Figure 3



Two different ads used in Cian *et al.* [12**], p. 193.

mention these senses will have a stronger impact than ads that mention taste alone. In one experiment, the authors used two different ads: one appealed to multiple senses (a tagline for a chewing gum read ‘stimulate your senses’) and the other mentioned only taste (‘long-lasting flavor’). After tasting the gum, participants listed their thoughts about the item and rated its overall taste. It was found that ads involving multiple senses led to more positive sensory thoughts and thus higher taste perception than ads involving taste alone. These results suggest that advertising (in general) could benefit from including multiple sensory attributes of the advertised products. However, future research is needed to examine the effects of the interaction (and the congruence) between different senses.

Haptic advertising

Research also suggests that ads can benefit from the inclusion of a haptic component. Peck and Wiggins [17] found that a message incorporating a touch element is perceived as more persuasive than a message without a touch element, especially when the touch stimulates neutral or positive sensory feedback. For example, in one study, the authors designed a brochure to solicit new memberships for a Midwestern children’s museum. Half of their brochures included a soft, enjoyable touch element. The other half did not. The authors found that people who were exposed to the touch element, relative to those who were not, displayed a more positive attitude toward the brochure and were more likely to purchase a museum membership. However, this effect emerged only for people who derived enjoyment from touch (this construct was measured using the ‘Need for Touch Scale’ [18]).

Unfortunately, in most advertising media (TV, radio, Internet, etc.), it is impossible to provide a haptic component. To address this issue, Peck, Barger, and Webb [19**] investigated if imagining touch (haptic imagery) could serve as a surrogate for touch. They point out that individuals who have the opportunity to touch an object feel a stronger sense of ownership of that object [20,21], thereby increasing their perception of its value (i.e. the endowment effect). Interestingly, the degree to which individuals feel a sense of ownership is the same, whether they touch the object or merely close their eyes and imagine touching it. The results of this research are undoubtedly promising, even though the elicitation of haptic imagery, to be effective, requires respondents to close their eyes — a condition that is often difficult to obtain in practice.

Olfactory advertising

Much of the research on smell is focused on its effect on memory, such as memory for scent itself [22,23], scent and autobiographical memories [24], and ambient scent and memory [25]. Lwin, Morrin, and Krishna [26] extended the scent literature, testing for the effects of smell on memory within the advertising domain. The authors manipulated the presence or absence of both smell and pictorial stimuli in an ad and then assessed participants’ verbal recall. For example, in one experiment participants received a direct mailer insert promoting a moisturizer. The authors created two versions of the insert, one with a pictorial stimulus and the other without. Furthermore, some of the inserts were infused with a scent, whereas others were not. Participants were asked to recall the verbal information contained in the insert, both after 5 min and after 2 weeks. Results show that pictures

improve verbal memory (as also shown by previous research [27]) and that scent makes this effect even stronger. Also, unlike pictures, scent's effect on memory persists after a time delay.

In addition to improving memory, smell can also enhance the effectiveness of ad visuals. For example, Krishna, Morrin, and Sayin [28**] showed that scent in printed food ads increases individuals' physiological (i.e. salivation), evaluative (i.e. desire to eat), and consumptive (i.e. amount eaten) responses to the ads. Thus, a scratch-and-sniff strip can benefit ads, provided the strip reproduces the actual food smell. Interestingly, this research also showed how ads can induce people to 'imagine smells' ('smellizing') and how olfactory imagery can have effects similar to those of actual smell. Consumers who were shown a picture of chocolate chip cookies, and were asked to imagine the smell, salivated much more than consumers who were shown the picture but were not asked to imagine the smell. The authors found this olfactory-imagery response when consumers could see the food (either in a picture or through visual imagery); otherwise, the response was weaker. In conclusion, merely asking individuals to imagine what the advertised food might smell like can lead them to desire the food more (when the ad includes a picture of the food).

Music in advertising

A recent study from Nielsen noted that almost every television ad included music [29]. Given the omnipresence of music, it is crucial to understand its effects. Music in advertising has been shown to impact ad persuasion by influencing mood [30–36] and involvement [30,37–39]. In addition, music itself can carry a meaning — both embodied and referential [40]. In terms of *embodied meaning* (spontaneous feelings or reactions generated by the sounds of music, independently of context or semantic connotations), ads with a faster tempo can evoke more positive feelings [41,42]. More abbreviated percussive sounds and a more repetitive rhythm generate more energy [32,40]. In addition, auditory rhythms have a cross-modal influence on how one allocates visual attention; in other words, rhythmic auditory stimuli can direct attentional processes [43].

Music in ads also has a *referential meaning*, which is context dependent and reflects a listener's personal associations. Most of the research on music also focuses on context, transportation, and familiarity. With respect to the *context*, results generally show that music can improve message processing, brand recall, and brand attitude only when it fits (it is congruent) with features of the ad and brand [31,44–46]. With respect to *transportation*, some research [46] investigated the persuasive power of moving (i.e. emotional) music in audio-visual advertising. The research showed the persuasiveness of such music is based on the listener's ability to

'get lost' in the ad's story. Such narrative transportation reduces critical processing, thereby increasing behavioral intentions (e.g. purchase intentions or willingness to donate money) by leading viewers into the ad's story. Thus, moving music should not be used when communicating a complex advertising message, as it appears to disrupt attention and critical processing. Finally, music *familiarity* is another very important element to consider in advertising. Ward, Goodman, and Irwin [47] found that although consumers say they prefer listening to unfamiliar music, familiarity with music positively predicts individuals' preferences for songs. When determining whether consumers would choose a particular kind of music or playlist, marketers should bypass consumers' ideas of what they want and instead ask about their familiarity with the music. Similarly, Stalinski and Schellenberg [48] investigated whether liking a song affects song recollection. They found that liking is directly associated with recognition. Listeners therefore tend to like music they remember and vice versa.

Final remarks and future directions

Sensory marketing is an emerging field of research. In this article, we have presented a brief overview of how research in sensory perception can be applied to advertisement design and effectiveness, which we hope will spur further exploration of this topic. Much of what we have learned in the sensory marketing literature has clear practical and theoretical implications. To date, however, research has paid relatively little attention to how acoustic, haptic, and olfactory sensory inputs affect consumer decision-making and attitude formation processes. More systematic research is also needed to expand our understanding of multisensory integration and interactions between different sensory modalities [16,22,49–51]. Another area worth investigating is sensory dominance; for example, does a specific sense have a greater impact on ad effectiveness depending on the advertising medium used? Addressing these (and related) questions will further advance our understanding of how sensory marketing impacts consumers' thoughts, feelings, and actions.

Conflict of interest statement

Nothing declared.

References and recommended reading

Papers of particular interest, published within the period of review, have been highlighted as:

- of special interest
- of outstanding interest

1. Hilton K: **Psychology the science of sensory marketing.** *Harv Bus Rev* 2015:28-31 <http://dx.doi.org/10.1037/h0052552>.
2. Krishna A: **An integrative review of sensory marketing: engaging the senses to affect perception, judgment and behavior.** *J Consum Psychol* 2012, **22**:332-351 <http://dx.doi.org/10.1016/j.jcps.2011.08.003>.

3. Krishna A, Schwarz N: **Sensory marketing, embodiment, and grounded cognition: a review and introduction.** *J Consum Psychol* 2014, **24**:159-168 <http://dx.doi.org/10.1016/j.jcps.2013.12.006>.

This article provides an overview of the role of context sensitive perception, imagery, and simulation in consumer behaviors. The paper also discusses the communalities between embodiment, grounded cognition, and sensory marketing.

4. Hagtvedt H, Patrick VM: **Art infusion: the influence of visual art on the perception and evaluation of consumer products.** *J Mark Res* 2008, **45**:379-389 <http://dx.doi.org/10.1509/jmkr.45.3.379>.
5. Patrick VM, Peracchio LA: **"Curating" the JCP special issue on aesthetics in consumer psychology: an introduction to the aesthetics issue.** *J Consum Psychol* 2010, **20**:393-397 <http://dx.doi.org/10.1016/j.jcps.2010.08.003>.
6. V.M.E. consumer aesthetics. Patrick, Everyday consumer aesthetics (n.d.).
7. Cian L, Krishna A, Elder RS: **A sign of things to come: behavioral change through dynamic iconography.** *J Consum Res* 2015, **41**:1426-1446 <http://dx.doi.org/10.1086/680673>.
8. Cian L: **The conceptual effects of verticality in design.** In *Psychol. Des. Creat. Consum. Appeal*. Edited by Rajeev Batra DB, Seifert C. Routledge; 2015:40-52.
9. McQuarrie EF, Mick DG: **Visual and verbal rhetorical figures under directed processing versus incidental exposure to advertising.** *J Consum Res* 2003, **29**:579-587 <http://dx.doi.org/10.1086/346252>.
10. Cian L, Krishna A, Schwarz N: **Positioning rationality and emotion: rationality is up and emotion is down.** *J Consum Res* 2015 <http://dx.doi.org/10.1093/jcr/ucv046>.
11. Elder RS, Krishna A: **The "visual depiction effect" in advertising: facilitating embodied mental simulation through product orientation.** *J Consum Res* 2012, **38**:988-1003 <http://dx.doi.org/10.1086/661531>.
12. Cian L, Krishna A, Elder RS: **This logo moves me: dynamic imagery from static images.** *J Mark Res* 2014, **51**:84-197 <http://dx.doi.org/10.1509/jmr.13.0023>.

This paper introduces the concept of 'dynamic imagery' (the ability of static images to convey a sensation of movement) within the marketing domain. Unlike static visual imagery, dynamic imagery allows for images within the mind to continue in motion, resulting in a moving trajectory or perceived movement of a static image. The authors show that very subtle changes in logo design can increase or decrease dynamic imagery. This, in turn, affects consumer engagement and attitudes toward the ad.

13. Cian L: **A comparative analysis of print advertising applying the two main plastic semiotics schools: Barthes' and Greimas'.** *Semiotica* 2012, **190**:57-79 <http://dx.doi.org/10.1515/sem-2012-0039>.
14. Trehan M, Trehan R: *Advertising and Sales Management*. FK Publications; 2007.
15. Krishna A: *Customer Sense: How the 5 Senses Influence Buying Behavior*. Palgrave Macmillan; 2013.
- The author draws on both research and marketing practice to illustrate how each of the human senses can be engaged by brands to build a favorable consumer response. The book provides an overview of sensory marketing research that has taken place thus far.
16. Krishna A: *Sensory Marketing: Research on the Sensuality of Products*. Routledge; 2011.
17. Peck J, Wiggins J: **It just feels good: customers' affective response to touch and its influence on persuasion.** *J Mark* 2006, **70**:56-69 <http://dx.doi.org/10.1509/jmkg.70.4.56>.
18. Peck J, Childers TL: **Individual differences in haptic information processing: the "need for touch" scale.** *J Consum Res* 2003, **30**:430-442 <http://dx.doi.org/10.1086/378619>.
19. Peck J, Barger VA, Webb A: **In search of a surrogate for touch: the effect of haptic imagery on perceived ownership.** *J Consum Psychol* 2013, **23**:189-196 <http://dx.doi.org/10.1016/j.jcps.2012.09.001>.

This paper introduces the concept of haptic imagery (imagining touching an object) within the marketing domain. The authors claim that haptic

imagery has similar effects on perceived ownership as physical touch. In addition, the more vivid the haptic imagery, the greater the perception of control and the feeling of ownership toward an object.

20. Shu SB, Peck J: **Psychological ownership and affective reaction: emotional attachment process variables and the endowment effect.** *J Consum Psychol* 2011, **21**:439-452 <http://dx.doi.org/10.1016/j.jcps.2011.01.002>.
21. Peck J, Shu SB: **The effect of mere touch on perceived ownership.** *J Consum Res* 2009, **36**:434-447 <http://dx.doi.org/10.1086/598614>.
22. Engen T, Ross BM: **Long-term memory of odors with and without verbal descriptions.** *J Exp Psychol* 1973, **100**:221-227 <http://dx.doi.org/10.1037/h0035492>.
23. Zucco GM: **Anomalies in cognition: olfactory memory.** *Eur Psychol* 2003, **8**:77-86 <http://dx.doi.org/10.1027/1016-9040-8.2.77>.
24. Chu S, Downes JJ: **Proust nose best: odors are better cues of autobiographical memory.** *Mem Cognit* 2002, **30**:511-518 <http://dx.doi.org/10.3758/BF03194952>.
25. Morrin R, Ratneshwar S: **Does it make sense to use scents to enhance brand memory?** *J Mark Res* 2003, **40**:10-25 <http://dx.doi.org/10.1509/jmkr.40.1.10.19128>.
26. Lwin MO, Morrin M, Krishna A: **Exploring the superadditive effects of scent and pictures on verbal recall: an extension of dual coding theory.** *J Consum Psychol* 2010, **20**:317-326 <http://dx.doi.org/10.1016/j.jcps.2010.04.001>.
27. Weyerer R, Hung I, Jiang Y: **Visual and verbal processing strategies in comprehension and judgment.** *J Consum Psychol* 2008, **18**:244-257 <http://dx.doi.org/10.1016/j.jcps.2008.09.002>.
28. Krishna A, Morrin M, Sayin E: **Smellizing cookies and salivating: a focus on olfactory imagery.** *J Consum Res* 2014, **41**:18-34 <http://dx.doi.org/10.1086/674664>.
- This paper introduces the concept of olfactory imagery within the advertising domain. The authors found that smellizing — imagining a smell — increased consumers' desire to consume and purchase advertised food products. Consumers who are shown a picture of chocolate chip cookies and are asked to imagine the smell, desire the advertised food much more than consumers who are shown the picture but are not asked to imagine the smell. The authors find this olfactory-imagery response when consumers can see the food (either in a picture or through visual imagery); otherwise, the response is weaker.
29. Nielsen: *I Second That Emotion: The Emotive Power of Music in Advertising*. 2015. <http://www.nielsen.com/us/en/insights/news/2015/i-second-that-emotion-the-emotive-power-of-music-in-advertising.html> (accessed 07.07.15).
30. Park CW, Young MS: **Consumer response to television commercials: the impact of involvement and background music on brand attitude formation.** *J Mark Res* 1986, **23**:11-24 <http://dx.doi.org/10.2307/3151772>.
31. Alpert JI, Alpert MI: **Music influences on mood and purchase intentions.** *Psychol Mark* 1990, **7**:109-133 <http://dx.doi.org/10.1002/mar.4220070204>.
32. Bruner Ii GC: **Music, mood, and marketing.** *J Mark* 1990, **54**:94-104 <http://dx.doi.org/10.2307/1251762>.
33. Alpert JI: **Background music as an influence in consumer mood and advertising responses.** *Adv Consum Res* 1989, **16**:485-491.
34. Murrock CJ: **Music and mood.** In *Psychology of Moods*. Edited by Clark AV. Nova Science Publishers; 2005:141-155.
35. Hecker S: **Music for advertising effect.** *Psychol Mark* 1984, **1**:3-8 <http://dx.doi.org/10.1002/mar.4220010303>.
36. Tesoriero M, Rickard NS: **Music-enhanced recall: an effect of mood congruence, emotion arousal or emotion function?** *Music Sci* 2012, **16**:340-356 <http://dx.doi.org/10.1177/1029864912459046>.
37. Macinnis DJ, Park CW: **The differential role of characteristics of music on high- and low-involvement consumers' processing of ads.** *J Consum Res* 1991, **18**:161 <http://dx.doi.org/10.1086/209249>.

38. Park HH, Park JK, Jeon JO: **Attributes of background music and consumers' responses to TV commercials: the moderating effect of consumer involvement.** *Int J Advert* 2015, **33**:767 <http://dx.doi.org/10.2501/IJA-33-4-767-784>.
39. Lavack AM, Thakor MV, Bottausci I: **Music-brand congruency in high-and low-cognition radio advertising.** *Int J Advert* 2008, **27**:549-568 <http://dx.doi.org/10.2501/S265048708080141>.
40. (Juliet) Zhu R, Meyers-Levy J: **Distinguishing between the meanings of music: when background music affects product perceptions.** *J Mark Res* 2005, **42**:333-345 <http://dx.doi.org/10.1509/jmkr.2005.42.3.333>.
41. Stout PA, Leckenby JD: **Let the music play: music as a nonverbal element in television commercials.** In *Nonverbal Commun. Advert.*. Edited by Hecker S, Stewart DW. Lexington, MA: Lexington Books; 1988:207-223.
42. Scherer KR, Oshinsky JS: **Cue utilization in emotion attribution from auditory stimuli.** *Motiv Emot* 1977, **1**:331-346 <http://dx.doi.org/10.1007/BF00992539>.
43. Miller JE, Carlson LA, McAuley JD: **When what you hear influences when you see: listening to an auditory rhythm influences the temporal allocation of visual attention.** *Psychol Sci* 2013, **24**:11-18 <http://dx.doi.org/10.1177/0956797612446707>.
44. Meyer LB: **Universalism and relativism in the study of ethnic music.** *Ethnomusicology* 1960, **4**:49-54.
45. Hung K: **Narrative music in congruent and incongruent TV advertising.** *J Advert* 2000, **29**:25-34 <http://dx.doi.org/10.1080/00913367.2000.10673601>.
46. Strick M, De Bruin HL, De Ruiter LC, Jonkers W: **Striking the Right Chord: Moving Music Increases Psychological Transportation and Behavioral Intentions.** *J Exp Psychol Appl* 2015:57-72.
47. Ward MK, Goodman JK, Irwin JR: **The same old song: the power of familiarity in music choice.** *Mark Lett* 2014, **25**:1-11 <http://dx.doi.org/10.1007/s11002-013-9238-1>.
48. Stalinski SM, Schellenberg EG: **Listeners remember music they like.** *J Exp Psychol Learn Mem Cogn* 2013, **39**:700-716 <http://dx.doi.org/10.1037/a0029671>.
49. Elder RS, Aydinoglu NZ, Barger V, Caldara C, Chun H, Lee CJ *et al.*: **A sense of things to come: future research directions in sensory marketing.** *Sens. Mark. Res. Sensuality Prod.*. 2010:361-376 <http://dx.doi.org/10.4324/9780203892060>.
50. Knöferle K, Spence C: **Crossmodal correspondences between sounds and tastes.** *Psychon Bull Rev* 2012:992-1006 <http://dx.doi.org/10.3758/s13423-012-0321-z>.
51. Krishna A, Elder RS, Caldara C: **Feminine to smell but masculine to touch? Multisensory congruence and its effect on the aesthetic experience.** *J Consum Psychol* 2010, **20**:410-418 <http://dx.doi.org/10.1016/j.jcps.2010.06.010>.