Not Just Gustation: the Cognitive Effects of Multi-Sensory Advertising on Taste Perceptions

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This research investigates the cognitive impact of advertisements on taste perceptions. Bringing together research in physiology and consumer behavior, we propose that advertisements focusing on multi-sensory components of taste result in higher taste perceptions than ads focusing on taste alone. These effects are mediated by sensory cognitions (study 1), and as such are attenuated when cognitive resources are constrained (study 2). Further, the individual’s ability to sensorially imagine consumption experiences interacts with the ad and product familiarity to reverse the effect of multiple-sense ads (study 3). The significance of this cognition-sensory perception link for future research is addressed.

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EXTENDED ABSTRACT

Food advertising is big business. Kraft Foods spent $1.5 billion in 2007 on advertising in the U.S. alone, whereas PepsiCo spent $1.31 billion, and McDonalds spent $1.14 billion (Advertising Age Data Center 2008). Not surprisingly, most of these advertisements focus on increasing awareness, purchase intentions, and overall brand attitudes. However, few ads focus on the actual taste of the product, and those that do fail to incorporate the multi-sensory determinants of taste (i.e., smell, touch, vision, sound). This research utilizes prior literature in consumer behavior and physiology to posit that cognitions directed by ads can have an impact on sensory perceptions, and that taste is affected more positively by multiple-sense ads than ads that focus on taste alone. Across three studies we show that advertisements focusing on multi-sensory components of taste result in higher taste perceptions than ads focusing on taste alone. These effects are mediated by sensory cognitions (study 1), and as such are attenuated when cognitive resources are constrained (study 2). Further, the individual’s ability to sensorially imagine consumption experiences interacts with the ad and product familiarity to reverse the effect of multiple-sense ads (study 3).

Despite our seemingly constant exposure to food, we have remarkable difficulty in discerning one taste from another. Part of this ineptitude stems from the limited number of distinct tastes that we can detect. Our taste buds alone (pure gustation) detect only sweet, sour, salty, bitter, and umami tastes. This leads to a general ambiguity in taste experiences that is reduced in large part by our ability to incorporate multiple sensory inputs into our ultimate taste perceptions. The primary accompanying sense for taste is olfaction (how the food smells). Taste is further affected by vision (how the product looks), as well as audition (the sound the item makes when chewed). The convergence of these sensory inputs occurs in the orbitofrontal cortex, labeled as a secondary taste cortex (Rolls 2005) and leads to a complete composition of taste.

In addition to a reliance on other senses, the ambiguity of taste experiences also leads to a reliance on external cues (Hoch and Ha 1986). Within the present context, the ambiguity of a taste experience would then lead to more susceptibility to, and increased utilization of advertising and verbal descriptions. Prior literature in marketing has shown that verbal labels can affect product preferences (Allison and Uhl 1964; Levin and Gaeth 1988, Raghunathan, Naylor, and Hoyer 2006), taste discrimination (Hoegg and Alba 2007), as well as altering the taste experience itself (Lee, Frederick, and Ariely 2006). We build on this literature to show that sensory cognitions created by ads will impact taste perceptions, and thus contribute to both the sensory marketing literature and general perception literature.

In study 1, we test the basic effect of multiple-sense ads on taste perceptions. The ads created were pretested to be equal on informativeness, complexity, and overall attitudes toward the ad. The ads either listed three sensory components aside from taste (e.g., texture, smell) or listed three distinct taste components. Individuals were randomly assigned to either the multiple-sense or single-sense ad conditions and, upon reading the ad, were given a cup of potato chips. Participants then listed their thoughts regarding the consumption experience and rated the taste of the potato chips. Thoughts were coded for valence and sensory nature. The results from study 1 show that the multiple-sense ad leads to significantly higher taste perceptions than the single-sense ad, and that the effect of positive over negative sensory thoughts mediates the effect of ads on taste.

Study 2 was designed to further explore the cognitive process of ads on taste. We used a 2 (cognitive load: yes, no) x 2 (ad: multiple-sense, single-sense) design with the experimental procedure following closely that of study 1. Cognitive load was imposed by having participants memorize a class roster of first and last names. We conducted an ANOVA with taste perception as the dependent variable and ad and cognitive load as independent variables. There was a significant main effect of ad on taste perceptions with the multiple-sense ad leading to higher taste perceptions than the single-sense ad. This main effect was qualified by the hypothesized two-way interaction of load and ad on overall taste perception. Simple effect tests revealed a significant difference between the multiple- and single-sense ads in the no load conditions, with taste perceptions in the multiple-sense ad condition being significantly higher; however, there was no significant difference between the multiple- and single-sense ads in the load condition. Thus, the effects of the multiple-sense ad (vs. single-sense ad) are reduced when participants were restricted in their cognitive ability.

Study 3 explored additional moderators of the ad-taste effect, namely sensory imagery ability and product familiarity, creating a 2 (ad: multiple-, single-sense) x 2 (product: familiar, unfamiliar) design with sensory imagery ability used as a measured third factor. We chose popcorn as the familiar food, with soy popcorn as the unfamiliar food. With an unfamiliar food, we expect individuals who are less able to imagine sensory experiences on their own will rely more heavily on the ad for the image generated. In contrast, those who are high in imagery ability should rely on their own imagination of the experience and less on the ad and its positive direction for sensory thoughts. Indeed, we find that for an unfamiliar food, sensory imagery interacts with the ad so that a multiple-sense (vs. single-sense) ad leads to better taste for low imagers (vs. high imagers). Interestingly, for high imagers taste perceptions are significantly lower in the multiple-sense condition than in the single-sense condition, showing a backfire effect of multiple-sense ads. This may stem from previously reported negative perceptions of soy as an ingredient (Wansink et al. 2000). For a familiar food we replicate our findings from studies 1 and 2, leading to a three way interaction with familiarity, ad, and imagery ability.

Our results across these three studies exhibit the cognitive effects of ads on sensory perceptions and contribute both theoretically and substantively to the perception and marketing literature.

REFERENCES


