

Minty Fresh! Absolving Dieters of their Consumption Sins

Nguyen Pham¹, May Lwin² & Melissa G. Bublitz³

¹ Leon Hess Business School, Monmouth University, West Long Branch, United States

² Wee Kim Wee School of Communication and Information, Nanyang Technological University, Singapore

³ College of Business, University of Wisconsin, Oshkosh, United States

Correspondence: Nguyen Pham, Leon Hess Business School, Monmouth University, West Long Branch, NJ 07764, United States.

Received: July 2, 2022

Accepted: August 10, 2022

Online Published: August 18, 2022

doi:10.5539/ijms.v14n2p58

URL: <https://doi.org/10.5539/ijms.v14n2p58>

Abstract

This research contributes to the emerging interest in food morality by exploring the preference for and the effects of a particular food flavor (mint) on consumption behavior. More specifically, we examine how the refreshing oronasal properties of a specific food flavor (i.e., mint) systematically influence consumer preferences and food choice behavior. Across a pilot and two studies, we show that the refreshing properties of mint that can help dieters wash away the guilt associated with the consumption of “taboo” foods. We found that dieters tended to prefer “taboo” foods such as chocolate cookies (study 1) when they were mint-flavored. Further, after having consumed taboo food such as chocolate, dieters were more likely to prefer a mint- (vs. berry- or cinnamon-) flavored oral freshener (study 2). We also provide food marketers and public policy makers with new insights into how certain consumers (i.e., dieters) evaluate mint-flavored food products.

Keywords: dieters, mint, moral cleansing, food, consumption guilt

1. Introduction

Walking the aisles of your favorite grocery store, you will see mint flavoring and mint odors added to various products. Because mint has traditionally been used to flavor oral hygiene products such as toothpaste and mouthwash, consumers have come to associate it with the feelings of freshness and cleanliness experienced after brushing their teeth or rinsing their mouths. The associations between mint and its cleansing properties can also be seen in products such as floor cleaners, shampoo, and soap. Increasingly, we see food product manufacturers also drawing on the associations between mint and freshness. While mint flavors have long permeated categories such as gum and breath mints, the flavoring is increasingly used as an ingredient in products promoting health benefits such as herbal teas, energy drinks, and protein bars.

The oronasal cavity’s freshness perception from mint exposure comes from the menthol compounds found in mint-flavored foods. Menthol activates trigeminal (temperature-sensitive) nerve endings located in the mucous membranes of the oronasal cavity, signaling temperature reduction in the brain (Rohacs et al., 2005). It has been shown that sensory attributes related to coldness are strongly associated with refreshing perceptions (Zellner & Durlach, 2003). As a result, consuming mint-flavor foods is described by consumers as a highly refreshing experience. In this paper, we explore how the freshness properties long associated with mint systematically influence the food choices of consumers, especially those who engage in dieting behavior.

Dieting to lose weight is common in the U.S. From 2013 to 2016, 49.1% of U.S. adults tried to lose weight in the last 12 months (Martin et al., 2018). Dieting is also big business: the annual revenue of the U.S. weight-loss industry, which includes diet books, diet drugs, and weight-loss surgery, is estimated at \$72 billion (Market Research, 2019). Despite the growing cost of the obesity epidemic and the explosion of businesses with products, services, and publications that attempt to help consumers tackle their weight problems, there is little evidence to suggest society is making adequate progress in reversing this health crisis. Dieters who achieve short-term success can usually not maintain weight loss due to relapses into overeating (Laessle et al., 1989; Lee, Greening, & Stoppelbein, 2007). Overeating is associated with a lack of self-control, contrary to accepted norms of moral behavior and social prescriptions. Overeating can thus have negative consequences not only for one’s health but also for one’s psyche (Yuker, Allison, & Faith, 1995). Feelings of shame and guilt often accompany being overweight or obese (Conradt et al., 2008). The stigma associated with obesity motivates many to avoid

consuming energy-dense foods such as chocolate, candy, and cookies, which they find highly desirable but consider forbidden or taboo (Macht & Dettmer, 2006). However, choosing to exercise self-control within the tempting food-rich environments consumers face each day depletes their regulatory resources (Vohs et al., 2008) and may make them more susceptible to a temporary lapse in self-control or indulgence in the food they previously labeled forbidden or off-limits. Subsequently, these lapses in self-control may prompt feelings of guilt for those who violate their diet intentions. This research explores how dieters seek to alleviate the guilt they associate with taboo foods through mint flavoring.

Research demonstrates how consumers use names and packaging cues to categorize foods as healthy (e.g., Deng & Kahn, 2009; Madzharov & Block, 2010; Scott et al., 2008) and how such cues may license overconsumption (Bui, Tangari, & Hawk, 2017). The finding that consumers presented with a non-partitioned package of food tend to eat more of the product perceived as healthy is important given that single-serving packages have been heavily promoted for unhealthy products.

Companies seek to develop products that will help consumers satisfy their hedonic desires while simultaneously meeting their health goals or minimizing post-consumption guilt. This research explores how mint flavoring helps dieters “wash away” some of the guilt associated with taboo food consumption. We begin with an overview of research that demonstrates the sensory properties that link mint flavoring to feelings of freshness. Then we review recent findings in the literature that link physical cleansing and metaphorical moral cleansing to consumption choices. Building on this research, we conduct a pilot test and two studies demonstrating how mint-flavored products may cleanse dieters of their consumption “sins”. We conclude with a discussion of the theoretical, managerial, and public policy implications.

2. Theoretical Background

2.1 The Refreshing Properties of Mint

Menthol, the active ingredient in mint-flavored products, has been long used for medical purposes, such as analgesic balms, cough medicine, etc. It is also commonly found in oral care and body care products. In food product categories, in addition to chewing gum, marketers have recently introduced a wide range of mint-flavored confectionery foods (e.g., M&Ms mint chocolate or Girl Scout mint cookies). Laska and colleagues (Laska et al., 1997) showed that trigeminal stimulation could lead to such sensations as burning, cooling, and tingling. Among several odorous substances, menthol can similarly activate trigeminal nerves (Parikh et al., 2009). The underlying mechanism by which menthol activates trigeminal nerve endings located in the mucous membranes in the oronasal cavities was illuminated by discovering the receptor TRPM8 (Peier et al., 2002). The trigeminal nerve fibers in the oronasal cavities respond to substances that produce hot and cold sensations, such as cinnamon and menthol, respectively, even though those substances do not change the temperature of the mucous membranes (Kozyreva et al., 2010). Menthol binds to the TRPM8 neural receptors activated by actual declines in body temperature (Klein et al., 2010; Kupisz & Trebacz, 2011). In this way, menthol compounds in mint-flavored foods and oral cleansers activate thermo-receptive neurons that signal temperature reduction to the brain (Rohacs et al., 2005).

Previous research has demonstrated that sensory attributes related to coldness are strongly related to refreshing perceptions (Zellner & Durlach, 2003). Thus, the result of mint exposure in the oronasal cavity is typically described by consumers as a highly refreshing experience (Karashima et al., 2007; Labbe et al., 2009). Indeed, mint is considered one of the most refreshing aromas and flavors for foods and beverages (Labbe et al., 2009). Building on this research, we propose that dieters prefer mint-flavored oral products (i.e., those containing menthol) both during and after consuming energy-dense foods because they help to physically and metaphorically refresh and thus wash away the guilt associated with the consumption of taboo foods. We will also show that oral exposure to mint flavors can license dieters’ re-indulgence in energy-dense foods because of its guilt-reducing effects.

2.2 Balancing One’s Moral Self-Identity

A person’s moral self-identity is one aspect of a person’s social self-schema organized around a set of moral traits related to actions that promote or protect the welfare of others (Aquino & Reed, 2002; Hart, Atkins, & Ford, 1998). Aspects of one’s moral self-identity drive behavior to the extent that a person views moral traits “as essential to his or her self-concept” (Aquino & Reed, 2002, p. 1425). We propose that part of the moral self-identity of dieters is closely tied to the foods they eat and which they consider good or bad in terms of conforming to societal expectations. Specifically, for dieters, eating or resisting taboo food has moral implications for their dynamic sense of moral self-worth, manifesting in their subsequent food choices. The moral cleansing and moral licensing literature, discussed next, show that people try to maintain a particular

standard of moral behavior. When they become aware of deviating from it, they engage in compensatory behaviors.

The notion of moral cleansing, introduced by Tetlock and colleagues (2000), suggests that people engage in virtuous behaviors after engaging in unethical behaviors to regain a balanced sense of one's moral self-identity. If someone recalls immoral behavior from the past, he or she is more likely to then engage in prosocial behaviors, such as donating blood and volunteering (Jordan, Mullen, & Murningham, 2011; Gao, Wheeler, & Shiv, 2009; Strahilevitz & Myers, 1998). After thinking about financially compensating the poor to harvest their body organs, people are more likely to donate or volunteer (Tetlock et al., 2000). Administering "electric shocks" to another person (actually a confederate in an experiment) leads to more compliant behavior (Carlsmith & Gross, 1969).

The reverse type of response, moral licensing, refers to the effect of past ethical deeds on current decisions to behave immorally. The moral licensing literature has shown that temporary boosts to one's moral self-identity licenses less self-controlled or unethical behavior (Monin & Miller, 2001; Sachdeva, Ilic, & Medin, 2009). After recalling an instance of moral behavior from the past, for example, one is more likely to cheat (Jordan, Mullen, & Murningham, 2011; Gao, Wheeler, & Shiv, 2009; Strahilevitz & Myers, 1998). Consumers similarly engage in compensatory moral and immoral (or utilitarian and hedonic) behaviors as evidenced by their product choices. Ramanathan and Williams (2007) found that some consumers are more likely to launder their negative emotions after indulgences by making a utilitarian product choice. Khan and Dhar (2006) demonstrated a licensing effect such that consumers who express an intention to act virtuously in the future feel licensed to choose a luxury rather than necessity product.

Therefore, a person's moral self-identity is impacted both by prior boosts and prior threats, which elicit compensatory behavioral responses in a negative feedback model of behavior (Sachdeva et al., 2009). People's compensatory moral behavioral processes echo aspects of psychoanalytic theory, which proposes that opposing forces underlie human behavior—the pleasure-seeking id versus the superego (which imposes morality, social conformity, and altruism). The ego which is the realistic part of human balances these two via compromise. The balancing of these two forces is seen in the moral cleansing (remunerative moral strivings) and moral licensing (relaxed moral strivings) literature.

2.3 Metaphorical Moral Cleansing

Recent research has found that moral cleansing can be achieved not only behaviorally (through moral actions or virtuous product consumption) but also metaphorically, such as through physical cleansing behavior (e.g., Zhong & Liljenquist, 2006). Research on metaphorical cleansing effects shows that higher-order mental processes are closely tied to or "grounded" in human perceptual and motor processes (Barrett, 2011; Barsalou, 1999).

More specifically, this literature suggests that people use metaphors to link abstract concepts, such as morality, to physical and sensory experiences, such as being cleansed (Barsalou, 2008; Lakoff & Johnson, 1980). Physical cleanliness is a primary goal for most individuals and is based on the adaptive desire to avoid dangerous contaminants from the environment (Rozin, Millman, & Nemeroff, 1986; Williams, Huang, & Bargh, 2009). The concrete experience of feeling clean comes to be metaphorically linked to the abstract notion of moral purity (Rozin et al., 1986). This process is evident in the fact that physical cleansing terms are often used to describe one's moral purity level—to be moral is to be clean and pure.

Recent research shows that smelling a citrus scent activates concepts related to cleanliness (Holland, Henriks, & Aarts, 2005; Schnall, Benton, & Harvey, 2008). Threats to one's moral purity (e.g., recalling unethical deeds) result in more positive ratings of cleansing products and a preference for hand wipes over pencils as gifts (Zhong & Liljenquist, 2006). When primed with feelings of impurity, individuals render harsher moral judgments (Wheatley & Haidt, 2005). Such results indicate that bodily feedback plays a direct role in judgments related to higher-level goals (Williams et al., 2009). Such research also suggests that physical cleansing may serve as a surrogate for behavioral cleansing of one's moral self-identity.

We aim to show in these studies that consuming taboo foods such as chocolate candy or chocolate cookies will pose a threat to dieters' moral self-identity and self-worth. As a result, they will attempt to attain moral purity by continually monitoring their consumption-driven moral self-worth and adjusting their consumption behavior to keep it in balance. We propose that the freshness effect of mint-flavored products comes to be metaphorically linked to the abstract notion of moral purity. Consequently, the desire for oral refreshing through the consumption of mint-flavored products will be evident among dieters, who will not only seek out mint-flavored taboo foods but will also seek out mint-flavored oral cleansers after taboo food consumption, which will cleanse them of their consumption guilt and thus license them to re-indulge.

Because of chocolate's status as a highly desirable but taboo food, it is utilized in the taboo foods in the set of studies reported in this paper. Consuming chocolate, the most craved food in the Western world (Rozin, Levine, & Stoess, 1991), often generates feelings of guilt (Macht & Dettmer, 2006) due to its energy-dense characteristics—that is, its high fat and sugar content (Cartwright & Stritzke, 2008). Indeed, chocolate is often rated as the most forbidden of foods—referred to as a “nice but naughty” product (Stirling & Yeomans, 2004). For those trying to control their weight, exposure to tasty but unhealthy food products such as chocolate presents a classic type of goal conflict—approaching the short-term goal-congruent object to satisfy an immediate desire for pleasure and the avoidance of the long-term goal-incongruent object to attain the future desire of maintaining one's health and weight. We next report the results of a pilot and two experiments to test these expectations.

3. Methods

3.1 Pilot Test

We first conducted a pilot test among 59 students and staff in a student union (mean age = 24, 62% female) to assess the perceived refreshing/cooling sensations of mint flavoring as an additive to indulgent food products. Participants sampled identical cookies except for whether they contained a mint or a peanut-butter flavor ingredient. Participants were randomly assigned to taste either a mint-flavored or peanut-butter-flavored cookie. The cookies were identical in size and appearance; both were covered in chocolate. To measure the perceived cooling sensation created by the cookies, respondents indicated their agreement (from 1 = Disagree to 7 = Agree) to these items: This product has a minty flavor, This product creates a tingling sensation in my mouth, My mouth feels clean, My mouth feels fresh, and I feel refreshed now ($\alpha = .90$). A factor analysis with varimax rotation on these items confirmed they all loaded onto a single dimension, which accounted for 67.3% of the variation in response. An ANOVA on this measure of perceived refreshing/cooling quality showed that the mint-flavored cookie was rated as significantly more refreshing/cooling than the peanut-butter flavored cookie ($F(1, 57) = 69.32, p < .01; M = 4.00$ vs. $M = 1.59$), as expected.

3.2 Study 1

In this study, we examine whether dieters prefer forbidden food, such as chocolate cookies, that contain a mint-flavored filling compared to two other cookies that do not by using an actual taste test setting.

3.2.1 Sample and Design

Students and staff ($n = 116$, 48% female, 50% < age 32) in a student center participated in this study for a small gift. Each participant tasted three different cookies (chocolate sandwich cookie with mint cream filling, chocolate sandwich cookie with vanilla cream filling, and vanilla sandwich cookie with vanilla cream filling) on a within-subjects basis. After providing evaluations of the three cookies, participants completed several closed-ended items, including whether or not they were currently on a diet.

3.2.2 Materials and Procedure

All participants were provided with a large manila envelope containing a questionnaire with instructions plus three zip-locked bags, each containing a single cookie. All three cookies were Oreo brand sandwich cookies, each of which had the same number of calories (i.e., 70) and grams of fat (i.e., 7). The cookies were: chocolate (i.e., Chocolate Double Stuf, a chocolate sandwich cookie with a vanilla cream insert), mint (i.e., Cool Mint, a chocolate sandwich cookie with a mint-flavored cream insert), and vanilla (i.e., Golden Double Stuf, a vanilla sandwich cookie with a vanilla cream insert). The actual names of the cookies were not provided to the participants; only the cookies themselves, identified with a random letter.

Participants were instructed to taste each cookie, one at a time, in any order they liked, and to indicate purchase intent for each one (e.g., I would purchase this product, 1 = disagree to 7 = agree). After evaluating the three cookies, participants were asked to choose their favorite with this question: “Which cookie did you like the best?” They then answered two items to measure post-consumption guilt (described below) plus other closed-ended items: Are you on a diet now? (yes, no).

3.2.3 Results

Consumption Guilt. We combined two items to measure post-consumption guilt: “I feel very guilty about what I just ate” and “I wish I had not eaten those cookies” (from 1 = disagree to 7 = agree; $r = .64, p < .01$). As expected, participants on a diet felt significantly more guilty after tasting the three cookies than did those not on a diet ($M_{\text{Dieter}} = 4.03$ vs. $M_{\text{Non-Dieter}} = 2.99$; $F(1, 115) = 7.30, p < .01$).

Favorite Cookie. We conducted a Pearson chi-square test to see whether the likelihood of choosing the mint-flavored cookie (yes, no) as the favorite varied as a function of dietary status (yes, no). The test was

significant ($\chi^2(1) = 8.83, p < .01$). As predicted, dieters were more likely to choose the minty cookie (51.6% of dieters) than were non-dieters (23.0% of non-dieters) as their favorite. Whereas the dieters' favorite cookie was the minty one, the minty one was the least favorite among the non-dieters. The non-dieters favorite was the traditional chocolate cookie with the vanilla flavored filling (50.6% of non-dieters chose the traditional chocolate cookie as their favorite).

Purchase Intent. We conducted a MANOVA on participants' purchase intentions for each of the three cookie types (mint, chocolate, vanilla) as a function of dieter status. Only purchase intent for the mint-flavored cookie emerged significant ($F(1, 114) = 4.25, p < .05$). Neither of the other two cookies exhibited significant differences in purchase intent as a function of dietary status (p 's $> .30$). A follow-up ANOVA showed that dieters were more likely to agree "I would purchase this product" than were non-dieters for the mint-flavored cookie ($M_{\text{Dieter}} = 4.73$ vs. $M_{\text{Non-Dieter}} = 3.76$), as expected.

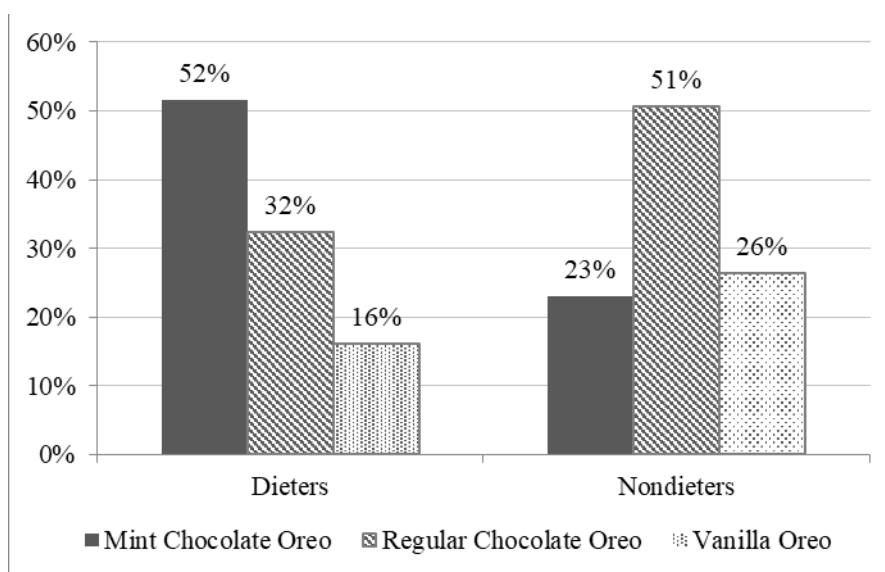


Figure 1. Study 1 results: Proportion choosing favorite cookie flavor

3.2.4 Discussion

Study 1 demonstrates that dieters are more prone to experience post-consumption guilt. In addition, dieters experiencing guilt were significantly more likely to prefer a cookie containing a mint-flavored filling (within a chocolate cookie sandwich) than those with vanilla-flavored fillings (within either a chocolate or vanilla cookie sandwich) in a within-subjects tasting format. This preference for mint-flavored indulgent products was evident in terms of both flavor preference and product purchase intent. In addition, this study demonstrates that dieting consumers are more likely to choose an indulgent product with mint flavoring over other similar indulgences that do not contain mint flavoring. As reported in the pilot study, consuming mint-flavored indulgent products such as cookies and chocolate are more likely to produce freshness sensations. Next, we examine dieters' preferences for mint-flavored oral products *after* they have consumed a taboo food product.

3.3 Study 2

Study 1 demonstrated that when choosing to consume taboo food such as chocolate cookies, dieters prefer one that contains a mint flavor. What about dieters' flavor preferences for oral products consumed *after* taboo food consumption? More specifically, would mint-flavored oral cleansers such as breath strips be more preferred by dieters (versus non-dieters) after having "sinned" via taboo food consumption? If so, such a result would show that dieters strive for the refreshing feeling of physical oral-sensory cleansing in the form of mint-flavored products after having "sinned" by consuming taboo foods. Study 2 explores this question.

In study 2, we examine whether dieters who eat regular (i.e., full fat) chocolate candy rather than the same chocolate labeled as "low fat" are more likely to subsequently choose a breath strip in a mint flavor. We expect dieters will exhibit a greater desire to cleanse their palates via mint-flavored oral products after the more forbidden food consumption.

3.3.1 Sample and Design

Undergraduate students ($n = 209$, 43% female, 64% < 25 years of age) participated in this study for partial course credit. The study was a 2 (chocolate type: regular vs. “low fat”) X 2 (dietary status: on a diet, not on a diet) between-subject design, with random assignment to chocolate condition. As in the previous studies, we asked respondents whether they were currently on a diet toward the end of the experiment to classify them in terms of dieting status.

3.3.2 Materials and Procedure

This study took place in a behavioral lab at a large public university. Participants entered the lab in groups of up to twelve but completed the task in individual cubicles. They were instructed that the study involved several parts. For the first part, the chocolate taste test, all participants received a zip-locked bag containing three bite-sized pieces of foil-wrapped chocolate (consisting of one piece each of: Hershey’s Nuggets-Milk Chocolate with Toffee & Almonds, Dove milk chocolate, and Dove dark chocolate). The chocolates were re-wrapped in nondescript foil to avoid alerting participants to brand names. The total weight for the three pieces of chocolate used in the taste was .875 oz. For participants in the regular chocolate condition, their chocolates were in a zip-locked bag that contained a white label with the type-written words: REGULAR CHOCOLATE. For participants in the “low fat” condition, their chocolates were in a zip-locked bag with a similar type of label that read: LOW FAT, NO SUGAR ADDED. In reality, all subjects received the same set of chocolates to control caloric consumption, flavor quality, mouthfeel, etc. Thus, the manipulation consisted of a labeling difference only.

Participants were instructed to taste each chocolate sample, one at a time, in any order they liked, and to evaluate each chocolate to support the cover story (i.e., tastes good, high quality). When participants finished tasting the chocolates, they were asked to indicate how much they agreed that they just consumed (1) a lot of calories, (2) a lot of fat, and (3) a lot of sugar as a manipulation check.

Participants were asked to indicate how much guilt and regret they felt about the chocolate they had consumed. Next, participants saw a picture of Listerine breath strips that included a mint-flavored version of the product and three other flavors. They indicated which of the four flavors of breath strips they would most likely buy from the four flavors depicted in the visual image (i.e., Cinnamon, Coolmint, Arctic Berry, Citrus). Participants also indicated whether they were currently on a diet.

3.3.3 Results

Manipulation Checks. When participants finished tasting the chocolates, they were asked to indicate how much they agreed that they had just consumed (1) a lot of calories, (2) a lot of fat, and (3) a lot of sugar on slider scales ranging from 0 = disagree to 100 = agree ($\alpha = .84$). We averaged these three items to measure how taboo the chocolate consumed was perceived to be. An ANOVA confirms that the regular chocolate was perceived to be more fattening than the chocolate labeled low fat ($M_{\text{regular}} = 59.4$ vs. $M_{\text{lowfat}} = 48.6$, $F(1, 207) = 14.87$, $p < .01$).

Consumption Guilt. Participants were asked these two items: “How guilty, if at all, do you feel right now about the chocolate you ate?” (1 = not at all guilty to 5 = extremely guilty) and “Do you regret at all having eaten the chocolate in this taste test?” (1 = no regret at all to 5 = extreme regret; $r = .71$, $p < .01$). We averaged these two items for a measure of consumption guilt. An ANOVA on consumption guilt as a function of dieter status (on a diet: yes, no) confirmed that dieters ($M = 1.92$) felt guiltier than did non-dieters after chocolate consumption ($M = 1.53$: $F(1, 207) = 7.61$, $p < .01$).

Breath Strip Flavor Choice. We conducted a logistic regression on whether or not mint was chosen as the breath strip flavor (0 = no, 1 = yes) as a function of dietary status (0 = not on a diet, 1 = on a diet), chocolate type (0 = low fat, 1 = regular), and the interaction between these two variables. Neither dietary status ($b = .0952$, $z = .30$, $p > .75$) nor chocolate type ($b = .1723$, $z = .57$, $p > .55$) were significant. However, the interaction between these two variables was ($b = 1.4341$, $z = 2.25$, $p < .05$), indicating that the effect of eating full fat (vs. supposedly low fat) chocolate on choice of a mint flavor breath strip was conditional on dietary status. Specifically, among non-dieters, there was no effect of chocolate type on the predicted probability of choosing the mint-flavored breath strip (Low fat = 69.4% vs. Regular = 61.9%; effect = $-.3355$, $z = -.92$, $p > .35$). However, among dieters, there was a significant effect of chocolate type ($b = 1.10$, $z = 2.11$, $p < .05$), with the probability of choosing the mint-flavored breath strip significantly higher if the chocolate labeled regular rather than low fat had been eaten (Low fat = 55.6% vs. Regular = 79.0%; as shown in Figure 2).

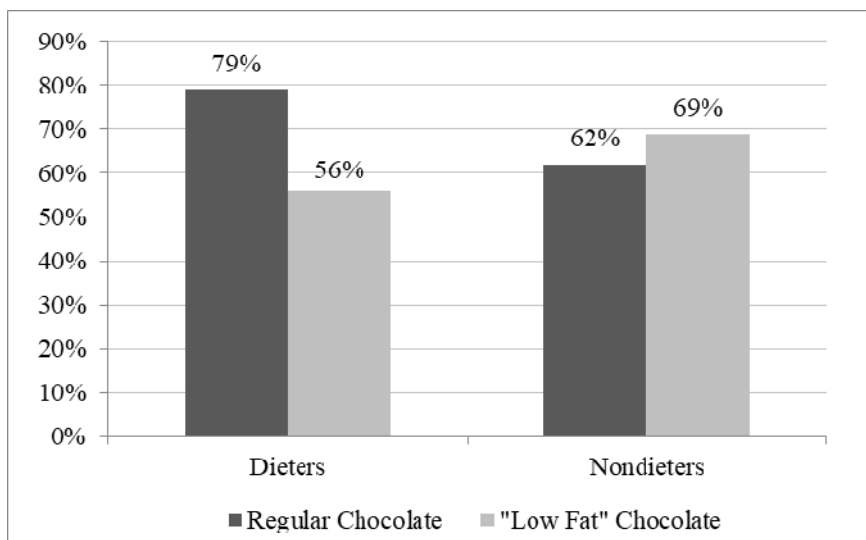


Figure 2. Study 2 results: Proportion choosing mint breath strips

3.3.4 Discussion

The results of study 2 show that dieters exhibit a greater preference for oral-sensory cleansing via mint-flavored (vs. other-flavored) breath strips after they have eaten what they perceive to be a more taboo food item—chocolate labeled as regular rather than low fat. We propose that dieters who have indulged exhibit moral striving in their desire for a mint-flavored breath freshening product.

4. General Discussion

4.1 Theoretical Implications

In this research, the morally-charged implications of food choices emerged only for dieters, for whom taboo foods such as chocolate candy and cookies can create the desire for physical and metaphorical cleansing via mint-flavored foods and oral cleansers. We show that dieters' moral self-identities are closely tied to consuming what they consider taboo foods. Across the set of studies presented here, we find that dieters: prefer to consume energy-dense foods that are mint-flavored and prefer mint-flavored oral cleansers (such as breath mints) after eating energy-dense foods. The results demonstrate the utility of investigating metaphorical processing to help disentangle physically-versus psychologically-driven consumption motivations.

We speculate that the tendency over the last several decades to classify foods as either good or bad, with the demonization of specific ingredients such as sugar and fat, may be partly to blame for the obesity epidemic due to compensatory consumption efforts among dieters. Interestingly, in countries with lower obesity rates, such as France, it is much rarer to observe the perception of certain foods as forbidden or immoral. The characterization of some foods as "healthy" (and others as "unhealthy") might unwittingly be eliciting the subsequent consumption of energy-dense foods through the process of moral rebalancing. Moreover, as seen here, certain sensory sensations, such as the cooling and refreshing sensations associated with mint flavors, may provide alternate means of dieter redemption with similar licensing effects.

4.2 Managerial Implications

Our findings have important implications for manufacturers of diet foods (e.g., Jenny Craig, Weight Watchers, Atkins, etc.). The most obvious implication is that marketers of diet foods could increase their products' appeal to dieters by increasing the number of mint-flavored offerings. This strategy is likely most effective when the products are taboo foods, such as desserts and snacks. Moreover, the current research also offers helpful insight and recommendations for manufacturers of oral cleansing products (e.g., breath strips, toothpaste, mouthwash, etc.). Study 2 shows that after consuming taboo food, dieters are more likely than non-dieters to prefer to cleanse their palates with mint-flavored oral cleansers. Manufacturers of oral cleanser products could create more intense mint offerings so that their products are more appealing to specific segments of the population seeking moral redemption.

4.3 Public Policy Implications

Our findings also have implications from a public policy perspective. Research indicates that consumers with

low levels of appearance self-esteem may be susceptible to external cues in making consumption decisions (Argo & White, 2012). For overweight consumers with low appearance esteem, cleansing flavors in indulgent products may license unhealthy choices and undermine their diet intentions. It has been shown that for consumers who pay close attention to nutrition and food information and products positioned based on health, packaging cues may lead to overconsumption (Mohr, Lichtenstein, & Janiszewski, 2012). In the same way, mint-flavored offerings may produce unintended health consequences licensing overconsumption of indulgent products as consumers mitigate consumption guilt by making an oral cleansing choice. Given the rising rates and costs of obesity, it would be beneficial for governments to understand one of the mechanisms contributing to failure among dieters.

4.4 Future Research

This research is one of the first in marketing to examine the systematic effects of a specific food flavor on consumption behavior. To our knowledge, dieters' preference for mint flavors has not been previously documented. Although a burgeoning interest in sensory marketing is evident within the field of marketing, researchers have explored the effects of individual senses such as scent (Spangenberg, Crowley, & Henderson, 1996; Morrin & Ratneshwar, 2003), touch (Krishna & Morrin, 2008; Peck & Childers, 2003) and taste (Elder & Krishna, 2010), very few have examined the effects of specific flavors on behavior. It is hoped this research will motivate others interested in sensory marketing to explore the effects of food flavors, which combine several of the senses (taste, smell, and touch), and consider it a worthwhile area of study.

Future research might explore whether moral cleansing is more or less effective among individuals who chronically under indulge (Haws & Poynor, 2008; Kivetz & Simonson, 2002)—would such people be more or less likely to feel licensed by mint-based oral cleansing? Future research could also explore conditions under which positive rather than negative feedback effects (e.g., when consuming mint would reduce subsequent taboo food consumption). The effectiveness of moral cleansing may be domain-specific for individuals, reflecting the facets of their moral self-concept. For dieters, eating behavior is a highly salient aspect of their moral self-concept. For other individuals, the moral self-concept may reflect other highly salient behaviors. Understanding the motivations to engage in moral consumption may help to encourage positive consumption behaviors.

References

- Aquino, K., & Reed II, A. (2002). The self-importance of moral identity. *Journal of Personality and Social Psychology*, 83(6), 1423. <https://doi.org/10.1037/0022-3514.83.6.1423>
- Argo, J. J., & White, K. (2012). When do consumers eat more? The role of appearance self-esteem and food packaging cues. *Journal of Marketing*, 76(2), 67–80. <https://doi.org/10.1509/jm.09.0512>
- Barrett, L. (2011). *Beyond the Brain*. Princeton University Press. <https://doi.org/10.1515/9781400838349>
- Barsalou, L. W. (1999). Perceptual symbol systems. *Behavioral and Brain Sciences*, 22(4), 577–660. <https://doi.org/10.1017/S0140525X99002149>
- Bui, M. M., Tangari, A. H., & Haws, K. L. (2017). Can health “halos” extend to food packaging? An investigation into food healthfulness perceptions and serving sizes on consumption decisions. *Journal of Business Research*, 75, 221–228. <https://doi.org/10.1016/j.jbusres.2016.08.032>
- Carlsmith, J. M., & Gross, A. E. (1969). Some effects of guilt on compliance. *Journal of Personality and Social Psychology*, 11(3), 232. <https://doi.org/10.1037/h0027039>
- Cartwright, F., & Stritzke, W. G. (2008). A multidimensional ambivalence model of chocolate craving: Construct validity and associations with chocolate consumption and disordered eating. *Eating Behaviors*, 9(1), 1–12. <https://doi.org/10.1016/j.eatbeh.2007.01.006>
- Carver, C. S. (2004). Self-regulation of action and affect. In *Handbook of Self-Regulation: Research, Theory, and Applications* (pp. 13–39). New York, NY: Guilford Press.
- Ciampolini, M., Lovell-Smith, D., & Sifone, M. (2010). Sustained self-regulation of energy intake. Loss of weight in overweight subjects. Maintenance of weight in normal-weight subjects. *Nutrition & Metabolism*, 7(1), 1–11. <https://doi.org/10.1186/1743-7075-7-4>
- Conradt, M., Dierk, J. M., Schlumberger, P., Rauh, E., Hebebrand, J., & Rief, W. (2008). Who copes well? Obesity - related coping and its associations with shame, guilt, and weight loss. *Journal of Clinical Psychology*, 64(10), 1129–1144. <https://doi.org/10.1002/jclp.20501>

- Deng, X., & Kahn, B. E. (2009). Is your product on the right side? The “location effect” on perceived product heaviness and package evaluation. *Journal of Marketing Research*, 46(6), 725–738. <https://doi.org/10.1509/jmkr.46.6.725>
- Dunning, D. (2007). Self - image motives and consumer behavior: How sacrosanct self - beliefs sway preferences in the marketplace. *Journal of Consumer Psychology*, 17(4), 237–249. [https://doi.org/10.1016/S1057-7408\(07\)70033-5](https://doi.org/10.1016/S1057-7408(07)70033-5)
- Elder, R. S., & Krishna, A. (2010). The effects of advertising copy on sensory thoughts and perceived taste. *Journal of Consumer Research*, 36(5), 748–756. <https://doi.org/10.1086/605327>
- Gao, L., Wheeler, S. C., & Shiv, B. (2009). The “shaken self”: Product choices as a means of restoring self-view confidence. *Journal of Consumer Research*, 36(1), 29–38. <https://doi.org/10.1086/596028>
- Hart, D., Atkins, R., & Ford, D. (1998). Urban America as a context for the development of moral identity in adolescence. *Journal of Social Issues*, 54(3), 513–530. <https://doi.org/10.1111/j.1540-4560.1998.tb01233.x>
- Haws, K. L., & Poynor, C. (2008). Seize the day! Encouraging indulgence for the hyperopic consumer. *Journal of Consumer Research*, 35(4), 680–691. <https://doi.org/10.1086/592129>
- Hayes, A. F. (2012). *PROCESS: A Versatile Computational Tool for Observed Variable Mediation, Moderation, and Conditional Process Modeling*. White Paper. Retrieved March 13, 2013, from <http://www.afhayes.com/public/process2012.pdf>
- Herman, C. P., & Janet, P. (1980). Restrained Eating. In A. J. Stunkard (Ed.), *Obesity* (pp. 208–225). Philadelphia: Saunders.
- Holland, R. W., Hendriks, M., & Aarts, H. (2005). Smells like clean spirit: Nonconscious effects of scent on cognition and behavior. *Psychological Science*, 16(9), 689–693. <https://doi.org/10.1111/j.1467-9280.2005.01597.x>
- Jordan, J., Mullen, E., & Murnighan, J. K. (2011). Striving for the moral self: The effects of recalling past moral actions on future moral behavior. *Personality and Social Psychology Bulletin*, 37(5), 701–713. <https://doi.org/10.1177/0146167211400208>
- Karashima, Y., Damann, N., Prenen, J., Talavera, K., Segal, A., Voets, T., & Nilius, B. (2007). Bimodal action of menthol on the transient receptor potential channel TRPA1. *Journal of Neuroscience*, 27(37), 9874–9884. <https://doi.org/10.1523/JNEUROSCI.2221-07.2007>
- Khan, U., & Dhar, R. (2006). Licensing effect in consumer choice. *Journal of Marketing Research*, 43(2), 259–266. <https://doi.org/10.1509/jmkr.43.2.259>
- Kivetz, R., & Simonson, I. (2002). Self-control for the righteous: Toward a theory of precommitment to indulgence. *Journal of Consumer Research*, 29(2), 199–217. <https://doi.org/10.1086/341571>
- Klein, A. H., Sawyer, C. M., Carstens, M. I., Tsagareli, M. G., Tsiklauri, N., & Carstens, E. (2010). Topical application of L-menthol induces heat analgesia, mechanical allodynia, and a biphasic effect on cold sensitivity in rats. *Behavioural Brain Research*, 212(2), 179–186. <https://doi.org/10.1016/j.bbr.2010.04.015>
- Kozyreva, T. V., Kozaruk, V. P., Tkachenko, E. Y., & Khramova, G. M. (2010). Agonist of TRPM8 channel, menthol, facilitates the initiation of thermoregulatory responses to external cooling. *Journal of Thermal Biology*, 35(8), 428–434. <https://doi.org/10.1016/j.jtherbio.2010.09.004>
- Krishna, A., & Morrin, M. (2008). Does touch affect taste? The perceptual transfer of product container haptic cues. *Journal of Consumer Research*, 34(6), 807–818. <https://doi.org/10.1086/523286>
- Kupisz, K., & Trebacz, K. (2011). Effect of cold and menthol on membrane potential in plants. *Physiologia Plantarum*, 141(4), 352–360. <https://doi.org/10.1111/j.1399-3054.2011.01446.x>
- Labbe, D., Gilbert, F., Antille, N., & Martin, N. (2009). Sensory determinants of refreshing. *Food Quality and Preference*, 20(2), 100–109. <https://doi.org/10.1016/j.foodqual.2007.09.001>
- Laessle, R. G., Tuschl, R. J., Kotthaus, B. C., & Prike, K. M. (1989). A comparison of the validity of three scales for the assessment of dietary restraint. *Journal of Abnormal Psychology*, 98(4), 504. <https://doi.org/10.1037/0021-843X.98.4.504>
- Lakoff, G., & Johnson, M. (2008). *Metaphors we live by*. University of Chicago press.
- Laska, M., Distel, H., & Hudson, R. (1997). Trigeminal perception of odorant quality in congenitally anosmic subjects. *Chemical Senses*, 22(4), 447–456. <https://doi.org/10.1093/chemse/22.4.447>

- Lee, J. M., Greening, L., & Stoppelbein, L. (2007). The moderating effect of avoidant coping on restrained eaters' risk for disinhibited eating: Implications for dietary relapse prevention. *Behaviour Research and Therapy*, 45(10), 2334–2348. <https://doi.org/10.1016/j.brat.2007.03.010>
- Macht, M., & Dettmer, D. (2006). Everyday mood and emotions after eating a chocolate bar or an apple. *Appetite*, 46(3), 332–336. <https://doi.org/10.1016/j.appet.2006.01.014>
- Madzharov, A. V., & Block, L. G. (2010). Effects of product unit image on consumption of snack foods. *Journal of Consumer Psychology*, 20(4), 398–409. <https://doi.org/10.1016/j.jcps.2010.06.007>
- Market Research. (2019). *The U.S. Weight Loss & Diet Control Market*. Retrieved September 29, 2021, from <https://www.marketresearch.com/Marketdata-Enterprises-Inc-v416/Weight-Loss-Diet-Control-12225125/>
- Martin, C. B., Kirsten, A. H., Neda, S., & Cynthia, L. O. (2018). *Attempts to Lose Weight among Adults in the United States, 2013–2016*. CDC. Retrieved from <https://www.cdc.gov/nchs/data/databriefs/db313.pdf>
- Mohr, G. S., Lichtenstein, D. R., & Janiszewski, C. (2012). The effect of marketer-suggested serving size on consumer responses: the unintended consequences of consumer attention to calorie information. *Journal of Marketing*, 76(1), 59–75. <https://doi.org/10.1509/jm.10.0073>
- Monin, B., & Miller, D. T. (2001). Moral credentials and the expression of prejudice. *Journal of Personality and Social Psychology*, 81(1), 33. <https://doi.org/10.1037/0022-3514.81.1.33>
- Morrin, M., & Ratneshwar, S. (2003). Does it make sense to use scents to enhance brand memory? *Journal of Marketing Research*, 40(1), 10–25. <https://doi.org/10.1509/jmkr.40.1.10.19128>
- Parikh, V., Lee-Lim, A. P., & Halpern, B. P. (2009). Retronasal and oral-cavity-only identifications of air-phase trigeminal stimuli. *Chemosensory Perception*, 2(1), 9–24. <https://doi.org/10.1007/s12078-009-9038-4>
- Peck, J., & Childers, T. L. (2003). Individual differences in haptic information processing: The “need for touch” scale. *Journal of Consumer Research*, 30(3), 430–442. <https://doi.org/10.1086/378619>
- Peier, A. M., Moqrich, A., Hergarden, A. C., Reeve, A. J., Andersson, D. A., Story, G. M., ... Patapoutian, A. (2002). A TRP channel that senses cold stimuli and menthol. *Cell*, 108(5), 705–715. [https://doi.org/10.1016/S0092-8674\(02\)00652-9](https://doi.org/10.1016/S0092-8674(02)00652-9)
- Ramanathan, S., & Williams, P. (2007). Immediate and delayed emotional consequences of indulgence: The moderating influence of personality type on mixed emotions. *Journal of Consumer Research*, 34(2), 212–223. <https://doi.org/10.1086/519149>
- Rohács, T., Lopes, C., Michailidis, I., & Logothetis, D. E. (2005). PI (4, 5) P2 regulates the activation and desensitization of TRPM8 channels through the TRP domain. *Nature Neuroscience*, 8(5), 626–634. <https://doi.org/10.1038/nn1451>
- Rozin, P., Levine, E., & Stoess, C. (1991). Chocolate craving and liking. *Appetite*, 17(3), 199–212. [https://doi.org/10.1016/0195-6663\(91\)90022-K](https://doi.org/10.1016/0195-6663(91)90022-K)
- Rozin, P., Millman, L., & Nemeroff, C. (1986). Operation of the laws of sympathetic magic in disgust and other domains. *Journal of Personality and Social Psychology*, 50(4), 703. <https://doi.org/10.1037/0022-3514.50.4.703>
- Sachdeva, S., Iliev, R., & Medin, D. L. (2009). Sinning saints and saintly sinners: The paradox of moral self-regulation. *Psychological Science*, 20(4), 523–528. <https://doi.org/10.1111/j.1467-9280.2009.02326.x>
- Schnall, S., Benton, J., & Harvey, S. (2008). With a clean conscience: Cleanliness reduces the severity of moral judgments. *Psychological Science*, 19(12), 1219–1222. <https://doi.org/10.1111/j.1467-9280.2008.02227.x>
- Scott, M. L., Nowlis, S. M., Mandel, N., & Morales, A. C. (2008). The effects of reduced food size and package size on the consumption behavior of restrained and unrestrained eaters. *Journal of Consumer Research*, 35(3), 391–405. <https://doi.org/10.1086/591103>
- Spangenberg, E. R., Crowley, A. E., & Henderson, P. W. (1996). Improving the store environment: do olfactory cues affect evaluations and behaviors? *Journal of Marketing*, 60(2), 67–80. <https://doi.org/10.1177/002224299606000205>
- Stirling, L. J., & Yeomans, M. R. (2004). Effect of exposure to a forbidden food on eating in restrained and unrestrained women. *International Journal of Eating Disorders*, 35(1), 59–68. <https://doi.org/10.1002/eat.10232>
- Strahilevitz, M., & Myers, J. G. (1998). Donations to charity as purchase incentives: How well they work may

- depend on what you are trying to sell. *Journal of Consumer Research*, 24(4), 434–446. <https://doi.org/10.1086/209519>
- Tetlock, P. E., Kristel, O. V., Elson, S. B., Green, M. C., & Lerner, J. S. (2000). The psychology of the unthinkable: taboo trade-offs, forbidden base rates, and heretical counterfactuals. *Journal of Personality and Social Psychology*, 78(5), 853. <https://doi.org/10.1037/0022-3514.78.5.853>
- Vohs, K. D., Baumeister, R. F., Schmeichel, B. J., Twenge, J. M., Nelson, N. M., & Tice, D. M. (2018). Making choices impairs subsequent self-control: A limited-resource account of decision making, self-regulation, and active initiative. In *Self-regulation and self-control* (pp. 45–77). Routledge. <https://doi.org/10.4324/9781315175775-2>
- Wheatley, T., & Haidt, J. (2005). Hypnotic disgust makes moral judgments more severe. *Psychological Science*, 16(10), 780–784. <https://doi.org/10.1111/j.1467-9280.2005.01614.x>
- Williams, L. E., Huang, J. Y., & Bargh, J. A. (2009). The scaffolded mind: Higher mental processes are grounded in early experience of the physical world. *European Journal of Social Psychology*, 39(7), 1257–1267. <https://doi.org/10.1002/ejsp.665>
- Yuker, H. E., Allison, D. B., & Faith, M. S. (1995). Methods for measuring attitudes and beliefs about obese people. In B. A. David (Ed.), *Handbook of Assessment Methods for Eating Behaviors and Weight-Related Problems* (pp. 81–118). Thousand Oaks, CA: Sage Publications.
- Zellner, D. A., & Durlach, P. (2003). Effect of color on expected and experienced refreshment, intensity, and Liking of Beverages. *The American Journal of Psychology*, 116(4), 633–647. <https://doi.org/10.2307/1423663>
- Zhong, C. B., & Leonardelli, G. J. (2008). Cold and lonely: Does social exclusion literally feel cold? *Psychological Science*, 19(9), 838–842. <https://doi.org/10.1111/j.1467-9280.2008.02165.x>
- Zhong, C. B., & Liljenquist, K. (2006). Washing away your sins: Threatened morality and physical cleansing. *Science*, 313(5792), 1451–1452. <https://doi.org/10.1126/science.1130726>

Copyrights

Copyright for this article is retained by the author, with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).