Word Aversion and Consumer Behavior

Paul H. Thibodeau (paul.thibodeau@oberlin.edu)
Katerine Christel[1] (katherine.christel@uiowa.edu)
Department of Psychology, Oberlin College
120 W. Lorain Street; Oberlin, OH 44074 USA

Abstract

Word aversion is characterized by visceral disgust in response to seeing or hearing a word. Unlike taboo words or profanity, aversive words do not seem to have an obvious historical context, referent, or pejorative function that causes people to react negatively to them. "Moist" is a prototypical example of an aversive word: roughly 20% of American English speakers equate hearing the word with the sound of fingernails scratching a chalkboard. Despite widespread aversion to "moist," the word frequently appears on the packaging of consumer products like cake, shampoo, and towelettes. The present study tests whether word aversion affects consumer behavior. We find that moist-averse participants are less like to choose hygiene-related, but not food-related, products that have "moist" on the package. We discuss the implications of this finding for theories of language processing and disgust in the context of consumer behavior.

Keywords: word aversion, emotional language, decision making, consumer psychology, disgust

Introduction

In 2000 the Food and Drug Administration allowed the California Prune Board to advertise "prunes" as "dried plums" (Brasher, 2001). In the year following the change, sales of the product increased for the first time in six years and by a substantial margin: 5.5 percent (Sacramento Business Journal, 2001).

Language is a salient and influential source of information about products and services (Bolls, Lang, & Potter, 2001; Kardes, Cronley, & Cline, 2014). One reason that "dried plums" may sell better than "prunes" is because of the semantic associations that the words call to mind. Whereas "prunes" may lead people to think about constipation and aging, "dried plums" sound like a healthy snack (Safire, 2004).

The language on product packaging and in advertisements is often carefully designed to evoke a positive emotional response from consumers toward the product (Brown, Homer, & Inman, 1998; Demirbilek & Sener, 2003; Pham, Geuens, & Pelmacker, 2013). A meta-analysis of the relationship between ad-evoked feelings and brand evaluation reveals a large, positive correlation (r = .35 to .40; Brown, Homer, & Inman, 1998).

Some words and phrases, however, seem to elicit very different emotional responses in different people and depending on the context in which they are used (Thibodeau, 2016). The word "moist," for instance, has both strong positive and strong negative connotations. A moist cake is delicious, but a moist armpit is gross. For many people (as much as 15 to 20 percent of the American English-speaking population), the word is acutely aversive and elicits visceral disgust. Nevertheless, the word is commonly featured on the packaging of food and hygiene products.

The current study seeks to test the behavioral implications of this divisive word in a consumer context. We explore whether the aversive word influences peoples' evaluation of products, and whether this influence is moderated by the type of product that displays the word. Along with the practical implications of the work (e.g., in advertising), the studies are designed to shed light on theoretical questions about how information is conveyed through a combination of words and images.

The Current Study

Participants in the current study were shown a series of trials (n = 20) that contrasted two versions of a similar product like chocolate cake mix. Participants were asked to choose which of the two options they would buy if they were in the market for that product. On some of the trials (n = 6), one version of the product had the word "moist" on the packaging and the other did not. At the end of the study, participants were asked whether they find the word "moist" categorically aversive and whether they noticed the word on product packaging in the study.

Based on prior work (Thibodeau, 2016), our first prediction was that about 15 to 20 percent of our sample would identify as moist-averse and that younger, more educated, female participants would be especially likely to identify as moist-averse. Second, we expected that moist-averse participants would be less likely to select products advertised as "moist." Third, we expected that this effect would be moderated by product type. Since prior work has found that the aversiveness of "moist" is grounded in disgust toward bodily function, we hypothesized that moist-averse participants would be less likely to choose hygiene-related products advertised as "moist" (e.g., towelettes) but not food-related products advertised as "moist" (e.g., chocolate cake). In other words, we predicted that the context of a hygiene product would activate the aversiveness of the word "moist," whereas the context of a food product would mitigate the aversiveness of the word.

[1] Katherine Christel now affiliated with Carver College of Medicine, University of Iowa.

©2020 The Author(s). This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY).

Methods

Participants. Data from 500 people were collected online through Amazon's Mechanical Turk, from workers who lived in the United States with a good performance rating on prior tasks (greater than 90 percent approval). This is a large sample size, consistent with prior work, that should allow for reliable comparisons between moist-averse and non-averse participants (Thibodeau, 2016). Five participants submitted an incorrect completion code, indicating that they did not complete the study; their data was excluded from analysis. Of the remaining 495 participants, 51% were male. The mean age of participants was 35 (*SD* = 11.8, *median* = 31).

Materials and Design. Participants were shown 20 pairs of products. They were instructed to "pick the one that you would be more likely to buy." In six of the 20 pairs, one of the packages had the word "moist" on it and one did not (see Figure 1). Two of the target pairs contrasted cake mixes (chocolate cake and pound cake); the other four target pairs contrasted hygiene products (shampoo, conditioner, face cream, towelettes). Products for the control trials came from similar categories: food (bread, chips, donuts, whipped cream, cookies, chicken nuggets, pizza rolls, maple syrup) and hygiene products (deodorant, toothpaste, tissues, face wash, mouthwash, detergent). Pictures of the products were found on the internet; brand names were not removed. We strove to find pairs of pictures that were similar in size, orientation, vividness, and other factors that could affect participants' decisions.

Figure 1. Example of two trials from the experiment. The top row shows a target trial, in which one of the products contains the word "moist" (left) while the other does not (right). The bottom row shows a control trial, in which neither product contains the word "moist."

Six blocks of trials were created so that participants would not see multiple target pairs in a row. The order of the blocks was randomized between participants, as was the order of the items within each trial (i.e. which of the two products was shown on the left side).

After making judgments for the 20 pairs of products, participants were asked whether they "would characterize yourself as being particularly averse to the word moist?" (Yes or No). Participants were also asked if they noticed that some of the products contained the word "moist" (Yes or No), and whether they thought their purchasing preference would be affected by the presence of the word on the label (Yes or No).

Finally, participants were asked demographic and background questions, including their age, gender, education level, and political ideology (on a 101-point scale from "Very liberal" to "Very conservative").

Results and Discussion

Demographics of Word Aversion. Of the 495 people who participated, 68 (14%) identified as moist-averse (10% of males, 18% of females). A logistic regression with predictors for age, political affiliation, educational background, and gender revealed that females were more likely to report an aversion to "moist" than males, β = .81, *SE* = .28, p = .003. Younger participants, β = -.27, *SE* = .15, p = .066, and participants with more education, β = .24, *SE* = .14, p = .083, were marginally more likely to report an aversion. There was no relationship between political ideology and word aversion, β = .06, *SE* = .13, p = .658. These findings are consistent with prior work (Thibodeau, 2016).

Word Aversion and Choice. Our primary research question was whether moist-averse participants would be less likely to choose a product that included the word "moist" on the packaging. An independent samples t-test revealed that people who identified as moist-averse (*M* = .47, *SD* = .25) were indeed significantly less likely to select products that included the word "moist" compared to people who identified as non-averse (*M* = .56, *SD* = .21), $t(493)$ = 3.307, p = .001, d = .39. This finding confirms our hypothesis.

We then tested whether the relationship between moist-aversion and purchasing intentions was specific to the hygiene products. A mixed-effect logistic regression was fit to participants' choices with aversion (yes or no) as between-subjects factor and product type (food or hygiene) as a within-subjects factors. On this approach, analyses are conducted at the level of the individual trial, rather than by averaging data over items or participants (Bates et al., 2014; Jaeger, 2008). This allows us to take advantage of the statistical power afforded by the relatively large sample and

to partial out variance associated with sample-level preferences for the products (Jaeger, 2008). The deviance between the models (i.e., difference in likelihood ratios) is reported as an index of model fit; model deviance approximates a chi-square distribution with the number of added parameters as its degrees of freedom (Menard, 2002).

First, to confirm the results of the initial analyses, we compared a model that included a predictor for moist-aversion to one that did not. Consistent with the independent samples t-test reported earlier, the model revealed that moist-averse participants were significantly less likely to choose products that displayed the word "moist," $\chi^2(1) = 10.948$, $p < .001$. Next, we added a predictor for the type of product (food or hygiene) to the model, which revealed a statistically significant main effect, $\chi^2(1) = 35.842$, $p < .001$. Overall, participants were more likely to choose hygiene products that had the word "moist" on the packaging ($M = .59$) than food products that had the word "moist" on the packaging ($M = .47$). This main effect was qualified by an interaction between moist-aversion and product type, $\chi^2(1) = 6.883$, $p < .001$. As shown in Figure 2, moist-averse participants were no less likely to choose a cake product that contained the word "moist," $\beta = .020$, $SE = .191$, $p = .917$, but were 14 percentage points less likely to choose a hygiene product that contained the word "moist," $\beta = -.603$, $SE = .229$, $p < .001$.

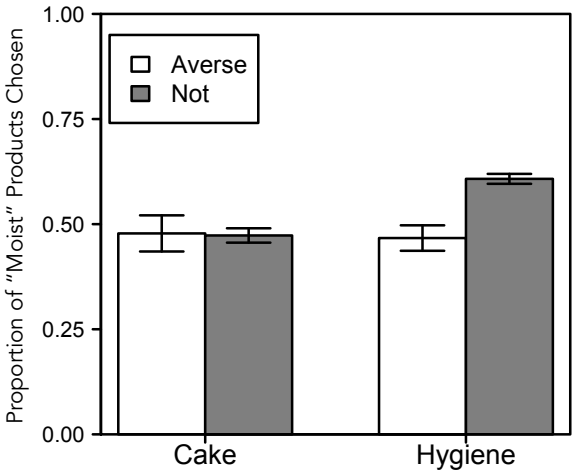

Figure 2. Proportion of products that contained "moist" on the packaging chosen by moist-averse and non-averse participants by product type. Error bars denote standard errors of the means.

Choices by Item. Pictures of the target trials are shown in Figure 3 below. The proportion of moist-averse and non-averse participants who chose the product that contained the word "moist" is displayed in the two right-moist columns. Note that for all of the hygiene products (but not the food products), moist-averse participants were consistently less likely to choose the item with "moist" on the packaging.

Product			Averse	Not
Conditioner			43%	68%
Cream			63%	69%
Shampoo			37%	46%
Towelettes			44%	60%
Chocolate cake			69%	61%
Pound cake			26%	33%

Figure 3. Pictures of the target trials, in which one of the products contained the word "moist" (left) and the other did not (right). The first four rows show hygiene products; the final two show food products. The percentage of moist-averse and non-averse participants who chose the product that contained the word "moist" on the packaging is shown in the two rightmost columns.

Awareness. At the end of the study, participants were asked whether they noticed the word "moist" on the packaging of any of the products. A chi-square test of independence revealed that participants who identified as moist-averse were more likely to have noticed the word (94% compared to 84%), $\chi^2(1) = 4.304$, $p = .038$. Moist-averse participants were also more likely to report that they would be affected by the presence of this word on the product (57% compared to 21%), $\chi^2(1) = 37.508$, $p < .001$.

It is not surprising that moist-averse participants are more attuned to the presence of the word "moist" on product packaging or more likely to report that the word will affect their consumer behavior. Previous work has found that the word "moist" grabs the attention and elicits a visceral negative reaction from people who are averse to the word (Thibodeau, 2016). What remains interesting, given participants self-awareness, is that the effect of "moist" on packaging was specific to hygiene-related products.

General Discussion

Word aversion is characterized by visceral disgust in response to seeing or hearing a word. Unlike taboo words or

profanity, aversive words do not seem to have an obvious historical context, referent, or pejorative function that causes people to react negatively to them. "Moist," in the contemporary culture of American English speakers, is a prototypical example of an aversive word: roughly 20% of American English speakers equate hearing the word with the sound of fingernails scratching a chalkboard (Thibodeau, 2016).

Despite relatively widespread aversion to "moist," the word frequently appears on the packaging of consumer products like cake, shampoo, and towelettes. The present study sought to test whether word aversion affects consumer behavior. We found that people who report an aversion to "moist" (at the end of the study) were less like to choose hygiene-related, but not food-related, products that had "moist" on the package.

These findings have practical implications in a consumer context, as well as theoretical implications related to the social psychology of language. First, although word aversion may seem like an idiosyncratic or isolated phenomenon, the present work suggests that there are real world implications of word aversion: people who find certain words inherently unpleasant seem to be less willing to buy products that have these words on their packaging. These findings complement prior work that has found that aversive words elicit expressions of visceral disgust in a free association task and are more likely to be remembered in a surprise recall task (Thibodeau, 2016).

Second, the work helps to reveal why certain words may come to be aversive and when they are most likely to elicit a negative reaction. Results of prior work suggest that word aversion is driven by associations to bodily function, rather than the sound of the word or because of a social trend (Thibodeau, 2016). For instance, moist-averse participants tended to find words like "phlegm" and "mucus," but not words like "hoist" or "foist," more aversive than non-averse participants. The present work extends this finding, as moist-averse participants were less likely to choose hygiene-related, but not cake-related, products that showed the word "moist" on the package.

Finally, the current work highlights the importance of context as a moderator of sensory processing in general (Samermit, Saal, & Davidenko, 2019). Participants who were predisposed to dislike the word "moist" were consistently discouraged by the word when selecting between hygiene products. However, these same participants were not dissuaded from buying cakes that were advertised as "moist."

References

Bates D, Maechler M, Bolker B and Walker S (2014). *lme4: Linear mixed-effects models using Eigen and S4*. R package version 1.1-7, http://CRAN.R-project.org/package=lme4

Bolls, P. D., Lang, A., & Potter, R. F. (2001). The effects of message valence and listener arousal on attention, memory, and facial muscular responses to radio advertisements. *Communication Research, 28,* 627-651.

Brasher, P. (2001). FDA approves prune name change. *ABC News.* Retrieved May 16, 2016: http://abcnews.go.com/Health/story?id=117656

Brown, S. P., Homer, P. M., & Inman, J. J. (1998). A meta-analysis of relationships between ad-evoked feelings and advertising responses. *Journal of Marketing Research*, 114-126.

Demirbilek, O., & Sener, B. (2003). Product design, semantics and emotional response. *Ergonomics*, *46*, 1346-1360.

Jaeger, T.F. (2008). Categorical data analysis: Away from ANOVAs (transformation or not) and towards logit mixed models. *Journal of Memory and Language, 59,* 434-446.

Kardes, F., Cronley, M., & Cline, T. (2014). *Consumer behavior*. Cengage Learning.

Kensigner, E. A., & Corkin. S. (2003). Two routes to emotional memory: Distinct neural processes for valence and arousal. *PNAS, 101,* 310-315.

Menard, S. (2002). *Applied Logistic Regression Analysis*, Vol. 106. Thousand Oaks, CA: Sage.

Pham, M. T., Geuens, M., & De Pelsmacker, P. (2013). The influence of ad-evoked feelings on brand evaluations: Empirical generalizations from consumer responses to more than 1000 TV commercials. *International Journal of Research in Marketing*, *30*, 383-394.

Sacramento Business Journal (Sept. 4, 2001). Dried plums selling better than prunes. Retrieved May 16, 2016: http://www.bizjournals.com/sacramento/stories/2001/09/03/daily8.html?s=print

Safire, W. (2004). *The right word in the right place at the right time*. Simon & Schuster.

Samermit, P., Saal, J., & Davidenko, N. (2019). Cross-sensory stimuli modulate reactions to aversive sounds. *Multisensory Research, 32*, 197-213.

Thibodeau, P. H. (2016). A Moist Crevice for Word Aversion: In Semantics Not Sounds. *PloS One*, *11*, e0153686.