

The Effect of Branding on Food Preference

Introduction

Have you ever wondered why your favorite, name-brand foods appear to fly off the supermarket shelves? We observe that people are often attracted to popular food brands with which they are familiar. Although name-brand foods are more expensive, customers are more inclined to buy them than to buy the generic, store brand. In a recent survey conducted by BrandSpark International, an advertising consulting firm, 67% of respondents reported that they prefer to purchase name-brand foods rather than generic or store brand variants.¹ Do people continue to buy prominent brands because of their quality and taste, or because of their familiarity? We discern that although the taste of a name-brand and generic food may be very similar or even the same, people generally prefer branding that they recognize.

We want to test the relationship between branding and people's preference in foods. In designing our experiment, we intend to answer the question: What is the effect of branding on food preference? We will compare our volunteers' predilection for two different brands of potato chips. The generic Harris Teeter Original Classic Potato Chips will contend with the popular Lay's Classic Potato Chips. We will present these two brands of chips in various ways to identify which one our volunteers truly prefer. We anticipate that because the volunteers will likely have already formed opinions of the chips based on the brand, they will gravitate toward the brand they are familiar with rather than objectively judging the taste of the chips. Because we believe

¹"More than 10,000 Shoppers Determine America's Most Trusted Consumer Packaged Goods Brands," BrandSpark International, 24 May 2017, <https://static1.squarespace.com/static/5a9f1b211aef1d822edb9d0b/t/5aaffd266d2a73dd2ea36a0d/1521483047862/BMTA+2017+CPG+Press+Release+USA.pdf>.

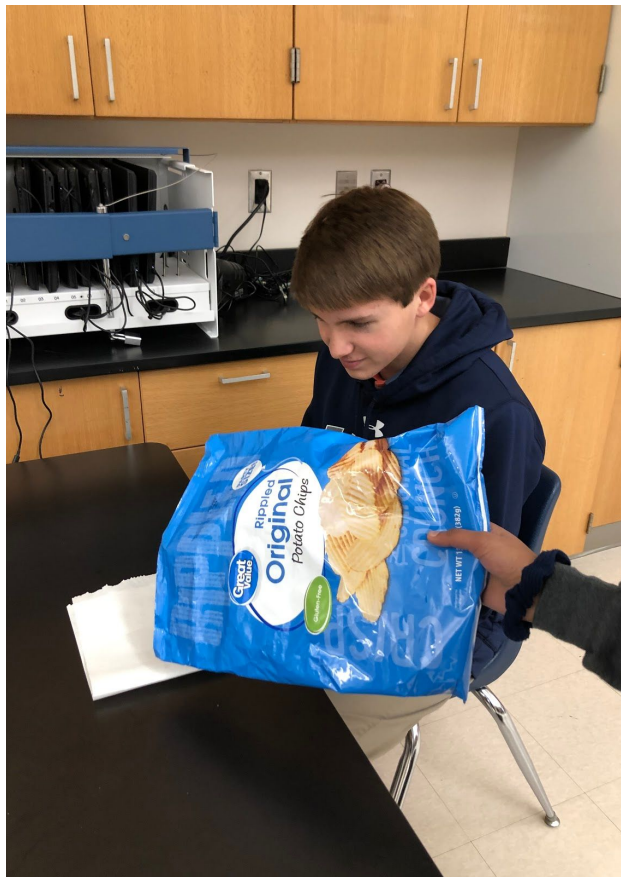
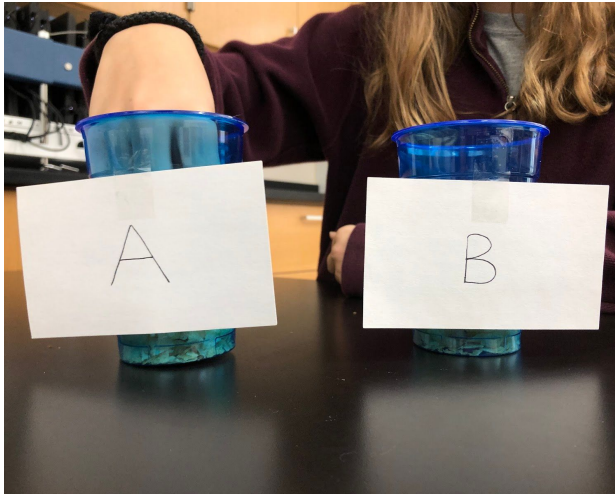
that name-brand foods are more popular among the general population, we predict that most of our volunteers will prefer what they believe to be the Lay's Classic Potato Chips.

Data Collection

In order to gather volunteers, we sent an email to the 84 students on our school's Physics Club email list, specifying where and when they could volunteer to be in our experiment. We chose the Physics Club because we inferred that students in a science-oriented organization would be more inclined to partake in an experiment. Our volunteers' involvement in the Physics Club should not affect their preference in potato chips because academic interests do not determine taste perception. To maintain control, all volunteers were between the ages of 13-18, and members of the our school's Physics Club. We used these controls in our experiment to reduce variability in our results and the effect of confounding variables. After recruiting 51 students to participate in our experiment, we numbered the volunteers 1-51. We used a random number generator to select 17 unique numbers between 1 and 51. The volunteers corresponding to the selected numbers were assigned to Group 1. We used the random number generator to select 17 additional, unique numbers between 1 and 51. The volunteers corresponding to these numbers were assigned to Group 2. The remaining 17 students were assigned to Group 3. We used random assignment to divide the volunteers in order to create a completely randomized design and make the groups roughly equal. With 51 volunteers and 17 receiving each treatment, the experiment was sufficiently replicated to attain precise results. To further reduce confounding, the three groups received their treatments in the same room and within 45 minutes of each other. Before tasting each type of chip, the volunteers drank water to eliminate any residual flavor in their mouth. The volunteers in Group 1 were presented two cups, instructed to

taste the chips from each cup, and asked which cup's chips they preferred. Group 1 was single-blinded, as the students did not know which chips were in which cup or if the chips were different. They received Lay's Classic Potato Chips in Cup A and Harris Teeter Original Classic Potato Chips in Cup B. Subsequent to tasting the two kinds of chips, the volunteers in Group 1 submitted which chips they preferred to a Google form. The question on the form was phrased: "Which chips do you prefer, the chips in Cup A or Cup B?" They then selected either the box labeled "Cup A" or the box labeled "Cup B." While submitting their selection in the Google form, the volunteers did not communicate with each other to reduce bias and assure that each volunteer submitted their own opinion. When the volunteers in Group 2 received their treatment, they were able to see the chip bags and their branding. Group 2 received Lay's Classic Potato Chips and Harris Teeter Original Classic Potato Chips one at a time. The chips were poured from the bag in front of them so that they could see which servings and brands corresponded. After tasting the chips, Group 2 reported their preference in a Google form. The question on the form was phrased: "Which chips do you prefer, the Lay's Classic Potato Chips or the Harris Teeter Original Classic Potato Chips?" They then selected either the box labeled "Lay's Classic Potato Chips" or the box labeled "Harris Teeter Original Classic Potato Chips." When Group 3 received their treatment, they were able to see the chip bags and their branding. However, the contents of the two chip bags had been swapped. Group 3 received the Lay's Classic Potato Chips in the Harris Teeter Original Classic Potato Chips bag and the Harris Teeter Original Classic Potato Chips in the Lay's Classic Potato Chips bag with the bags poured into their cup in front of them. They then submitted which chips they preferred to a Google form. The question on the form was phrased: "Which chips do you prefer, the Lay's Classic Potato Chips or the Harris Teeter

Original Classic Potato Chips?” They then selected either the box labeled “Lay’s Classic Potato Chips” or “Harris Teeter Original Classic Potato Chips.” After all the volunteers had submitted their preference to their group’s Google form, we compiled and compared the results.



Data Display

Group 1

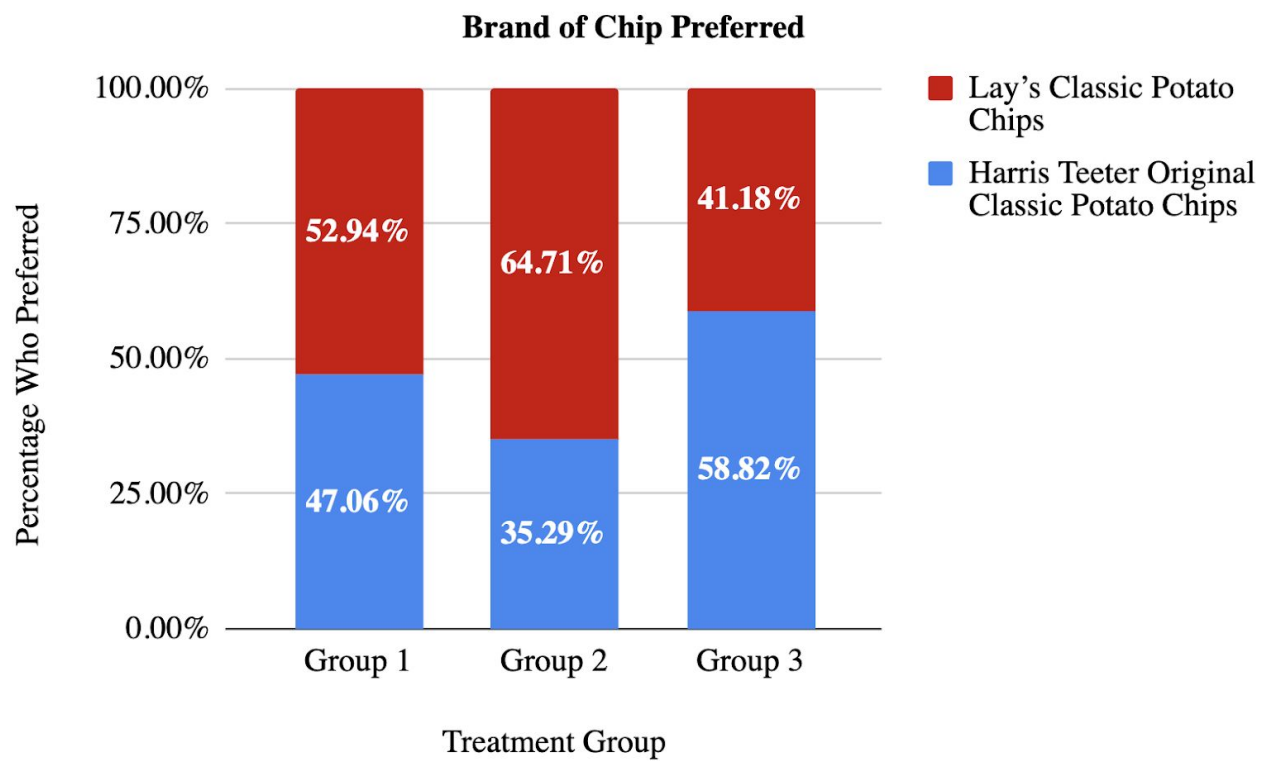
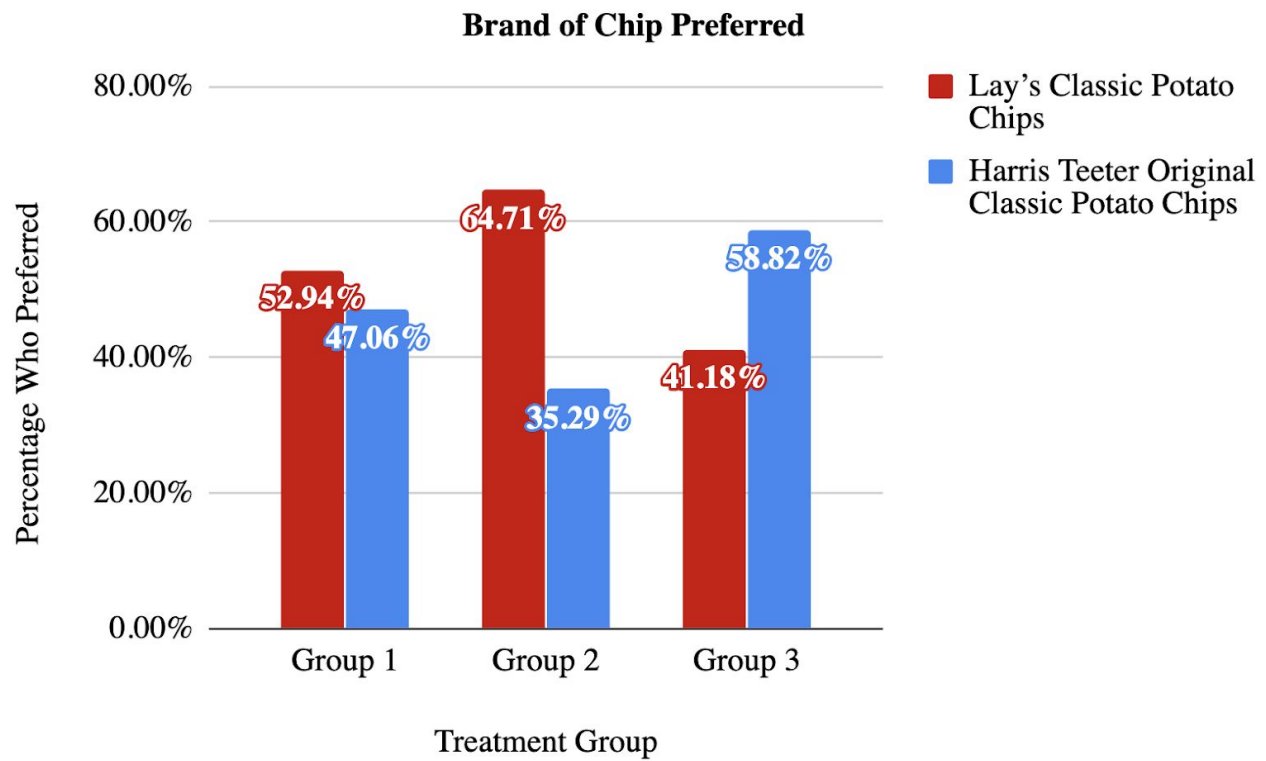
	Number Who Preferred	Proportion Who Preferred
Cup A (Lay's Classic Potato Chips)	9	0.5294
Cup B (Harris Teeter Original Classic Potato Chips)	8	0.4706
Total	17	1.0000

Group 2

	Number Who Preferred	Proportion Who Preferred
Lay's Classic Potato Chips	11	0.6471
Harris Teeter Original Classic Potato Chips	6	0.3529
Total	17	1.0000

Group 3

	Number Who Preferred	Proportion Who Preferred
Lay's Classic Potato Chips (Appearing as Harris Teeter Original Classic Potato Chips)	7	0.4118
Harris Teeter Original Classic Potato Chips (Appearing as Lay's Classic Potato Chips)	10	0.5882
Total	17	1.0000



Data Analysis

Our results show that when the volunteer was unaware of the brand names of the two kinds of chips and judging on taste alone, a roughly equal amount of people preferred each kind of chip. The side-by-side bar graph conveys that the percentages of people who preferred each brand of chips were fairly close in Group 1, where the brand names were undisclosed. Of the volunteers in Group 1, 52.94% preferred the Lay's chips and 47.06% preferred the Harris Teeter chips. This supports our preconception that the taste of name-brand and generic foods are roughly equivalent. In Group 2, where the chips were presented in their bags, clearly advertising the brand, the graphs make it clear that the volunteers significantly preferred the Lay's chips. Of the volunteers in Group 2, 64.71% preferred the Lay's chips while 35.39% preferred the Harris Teeter chips. In Group 3, where the branding was presented but the contents of the bags were swapped, there was a greater percentage of volunteers who preferred the Harris Teeter Original Classic Potato Chips appearing as Lay's chips than the Lay's Classic Potato Chips appearing as Harris Teeter chips. However, the difference in the percentages was not very large, as 58.82% preferred the Harris Teeter chips disguised as Lay's chips and 41.18% preferred the Lay's chips disguised as Harris Teeter chips. Aligning with our prediction, the results reflect that the majority of people preferred the name-brand food over the generic when the branding was visible. The volunteers continued to prefer what appeared to be the Lay's Classic Potato Chips even after the contents of the bags were switched. This upholds our assumption that the volunteers would prefer what appeared as the Lay's chips regardless of the true taste. The side-by-side bar graph reports the proportion of volunteers who preferred that brand of chip, regardless of its presentation. Thus, if one brand was consistently favored across all three treatment groups, we

could infer that the brand is superior taste-wise. However, because the Lay's chips are preferred in two of the three groups, and the Harris Teeter chips are preferred in one group, we can deduce that there is another factor affecting our volunteers' preferences. We believe that this factor is branding, as the volunteers in Group 2 and Group 3 preferred the name-brand Lay's Classic Potato Chips over the generic Harris Teeter Original Classic Potato Chips even when the chips were swapped.

Inference Procedure

To determine whether or not branding affects the food preferences of our volunteers, we will run a chi-square test for homogeneity with the following hypotheses.

H_0 : Branding does not affect preference for Lay's Classic Potato Chips.

H_a : Branding does affect preference for Lay's Classic Potato Chips.

$$\alpha = 0.05$$

If conditions are met, we will do a χ^2 test for homogeneity.

- 1) Randomization: Volunteers were randomly assigned to treatment groups.
- 2) Normality: Large Counts Condition is satisfied because all expected counts are larger than or equal to 5.

Observed Counts

	Number Who Preferred Lay's Classic Potato Chips	Number Who Preferred Harris Teeter Original Classic Potato Chips
Group 1	9	8
Group 2	11	6
Group 3	7	10

Expected Counts

	Number Who Preferred Lay's Classic Potato Chips	Number Who Preferred Harris Teeter Original Classic Potato Chips
Group 1	9	8
Group 2	9	8
Group 3	9	8

Chi-Square Test Statistic:

$$\chi^2 = \frac{(9-9)^2}{9} + \frac{(8-8)^2}{8} + \frac{(11-9)^2}{9} + \frac{(6-8)^2}{8} + \frac{(7-9)^2}{9} + \frac{(10-8)^2}{8} = 1.88889$$

Degrees of Freedom: $(3 - 1)(2 - 1) = 2$

P-Value: 0.388896

Conclusion

The results of our experiment reveal that when the volunteers did not know which brand of chips they were eating, more people preferred the Lay's Classic Potato Chips. When our volunteers saw the brand of potato chip they were tasting, they preferred the name-brand Lay's Classic Potato Chips over the generic Harris Teeter Original Classic Potato Chips regardless of which kind was in the bag. However, because the p-value of 0.388896 is greater than the significance level of $\alpha = 0.05$, we fail to reject H_0 in favor of H_a . While we did see a preference toward what appeared to be Lay's Classic Potato Chips in our volunteers, we did not find convincing evidence that the chips' branding caused this preference. We can only conclude that branding does not affect potato chip preference for the students in our school's Physics Club because it is the population from which we received our volunteers.

Reflection

Planning and conducting our experiment was a fairly smooth process. Our large group of volunteers was cooperative and relatively manageable. A potential error in our data collection process was that we did not limit communication between individuals well enough when they were receiving their treatments. In the large groups, it was difficult to keep everyone completely quiet. Thus, some volunteers may have exchanged their chip preferences and influenced the opinions of others. We also did not isolate the different groups, so it is possible that some students saw others receiving their treatments and questioned what was unique about their own treatment. If we were to redesign and redo our experiment, we would recruit additional volunteers to assist in the administration of the treatments. This assistance would allow for the participants to be better managed and the experiment to be double-blinded. In the future, we wish to study the food shopping habits of a broader population and determine whether price or perceived brand reliability is more influential in choosing which foods to buy. Looking at our data on its face, it appears that the volunteers habitually preferred what appeared as the popular Lay's chips, supporting our notion that branding affects preference in food. Subsequent to conducting the inference procedure, we were surprised to conclude that branding did not have an effect on our volunteers' preference for the Lay's Classic Potato Chips. We want to acknowledge and thank our statistics teacher for offering guidance on our project, providing advice on conducting the inference procedure, and suggesting edits.

Works Cited

"More than 10,000 Shoppers Determine America's Most Trusted Consumer Packaged Goods Brands." BrandSpark International. 24 May 2017. <https://static1.squarespace.com/static/-5a9f1b211aef1d822edb9d0b/t/5aaffd266d2a73dd2ea36a0d/1521483047862/BMTA+2017+CPG+Press+Release+USA.pdf>.