

What's in Fido's Food? A Content Analysis Comparing Front-of-Package Food Images to Actual Ingredients in Dog Food

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Introduction

In the grocery retailer setting, consumers' cognitive constraints in a visually competitive environment mean they are frequently influenced by visual communication, like images of ingredients on the front of packages (FOP), to make food purchase decisions. Pet food is an interesting example of packaged food because it must communicate a variety of ingredients all contained within a single product for a fully-balanced animal diet. Manufacturers' written claims are tightly regulated (Association of American Feed Control Officials, 2016), leaving communicators to use FOP design elements to enhance branding and healthful associations with their products that may only loosely align with actual ingredients. Consumers may assume FOP images identify desired main ingredients in their pet food when that might not be the case.

Conceptual Framework

Several studies summarize the importance of FOP visual elements in food-related decision making. In an eye-tracking study by Ares et al. (2013) participants fixated the most on the FOP image, followed by brand, nutritional information, and ingredients. When participants were considering willingness to purchase and perceived healthfulness, the image on the package front was the second item observed by most participants. Abrams, Evans, and Duff (2015) found parents rely heavily on FOP imagery and design to select snack foods quickly for their preschool age children. They will make different assumptions about a food's relative nutrition and/or function based on the visuals, even if the food itself is identical or nearly identical nutritionally from product to product. Parents admitted they realize they are possibly misled by such visuals but tend not to think about it in the grocery store or thereafter (Abrams et al.). "Pet parents" may be influenced similarly, but no studies have examined consumer evaluations of pet food FOP information. Investigating marketplace practices of how the visual communication of pet foods compares to their ingredients is the first step to designing ecologically valid consumer effects studies. The purpose of this study was to determine if pet food FOP images accurately depict actual ingredients. The research questions were: 1) What FOP visuals are used on dog food packages? 2) What are the most common top 10 ingredients? 3) How frequently do FOP images match top 10 ingredients?

Method

Two coders independently coded 27 dry dog food products within the \$7-\$20 range for about a one-month's supply (based on feeding instructions) sold at the largest U.S. grocery retailer, Kroger (Statistica, 2013). The price range was chosen based on data from the Bureau of Labor Statistics (2017) stating the average pet owner spent about \$19 per month on food in 2015. Coders assessed for 18 categories of food images (animal-based protein, grains, produce, and other) on the FOP. Following the FOP image assessment, the same method was used to identify the presence of each food ingredient within the first 10 ingredients listed on the back of the package. A relational assessment was also made by each coder to determine matches between FOP food images and the top 10 ingredients. Interrater reliability was excellent with $\kappa = 0.95$ or higher on all variables.

Findings

The most frequently occurring images included chicken from the animal protein category, peas and carrots were about equal in the produce category, and in grains, most products did not feature any image of a grain (Table 1). In the top 10 ingredients within the animal protein category, chicken was present on the majority, followed by "other" (animal by-products and fats, bison). Most did not contain any produce in the top 10 ingredients. Grains were in most products' top 10 ingredients (85%, $n = 23$), with "other" (e.g., soybean meal, beet pulp) being the most common, followed by corn (Table 1). To add to RQ3 findings, we analyzed each product individually to determine the

match between FOP food images and their presence/absence in the top 10 ingredients. Data showed each product had an average of 34.8% (Mdn = 33%) match between FOP images and the top 10 ingredients. Eleven products had a match between images and ingredients for 50-67% of foods, meaning 50-67% of the foods pictured on the FOP were also in the top 10 ingredients. Nine showed a match of 20-40% between images and ingredients; and only 2 had a match of 70-75% between images and ingredient. Five showed no matches between top 10 ingredients and FOP images.

Table 1

Occurrences of FOP Food Images, Top 10 Ingredients, and Matches Between Them

<u>Ingredient Category</u>	<u>Food Image</u>	<u>Percentage Pictured</u>	<u>Percentage in Top 10</u>	<u>Percentage a Match</u>
Animal-based protein	Chicken	55.6%	92.6%	51.9%
	None	18.5%	0.0%	18.5%
	Beef	14.8%	37.0%	14.8%
	Lamb	7.4%	7.4%	7.4%
	Fish	7.4%	22.2%	7.4%
	Pork	0.0%	7.4%	0.0%
	Other	0.0%	48.1%	0.0%
Produce (fruits and vegetables)	Peas	51.9%	25.9%	18.5%
	Carrots	48.1%	0.0%	0.0%
	None	33.3%	74.1%	81.5%
	Other	25.9%	14.8%	11.1%
	Sweet Potatoes	18.5%	7.4%	3.7%
	Lettuce	11.1%	0.0%	0.0%
Grain	None	70.4%	14.8%	66.7%
	Rice	22.2%	48.1%	22.2%
	Corn	11.1%	77.8%	11.1%
	Wheat	3.7%	51.9%	3.7%
	Other	0.0%	88.9%	0.0%

Conclusions, Implications, and Recommendations

About half of the food images were not present in the first 10 ingredients. Animal-based proteins were commonly both pictured and listed in the top 10 ingredients. Produce was pictured on the majority but found in the top 10 ingredients on less than half. Grains, on the other hand, were pictured on less than 33%, but were found in the first 10 ingredients on 85% of the sample. In some cases, food pictured was not present in the ingredient list at all. These communication practices warrant serious concern for consumers' welfare. The first being perpetuation of false beliefs about healthy pet diets, like grains are unhealthy for most. The second being misleading consumers to buy more expensive or what appears to be healthier dog food when in actuality, the top ingredients may be low-quality protein sources or may not contain most of the vegetables pictured. Those in the pet health industry should be equipped to communicate with consumers about making healthy pet food choices and help them navigate marketing and advertising. This study also supports Abrams et al. (2015) contention that the food industry requires better regulatory guidance on visual communication. Future research should examine a wider range of pet food brands available in pet feed and supply stores, as well as effects of FOP visual communication on consumers.

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