



Palatability and preference of treats, toppers and inclusions

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October 2018

My background

- Started working in KSU 2012
- Experience in food industry & research institute approximately 15 years
- Have studied sensory properties of foods and non-foods, and consumer attitudes in different countries
- Have studied petfood sensory characteristics, aromatic composition, and consumer acceptance

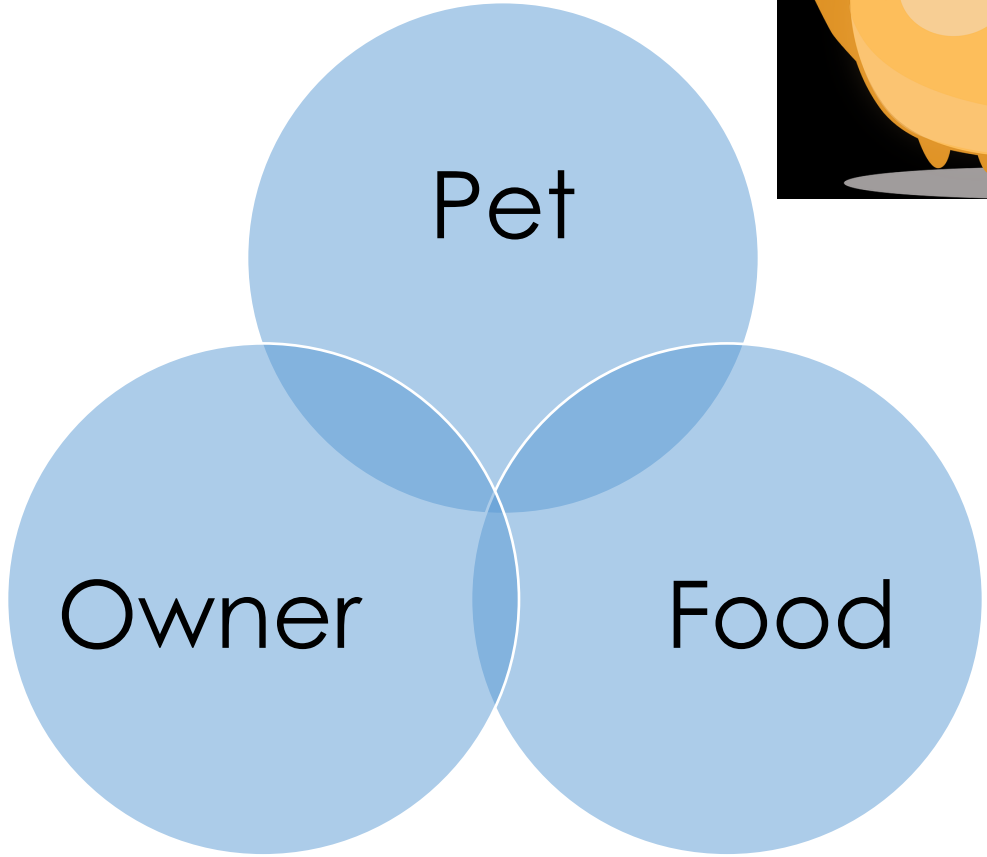


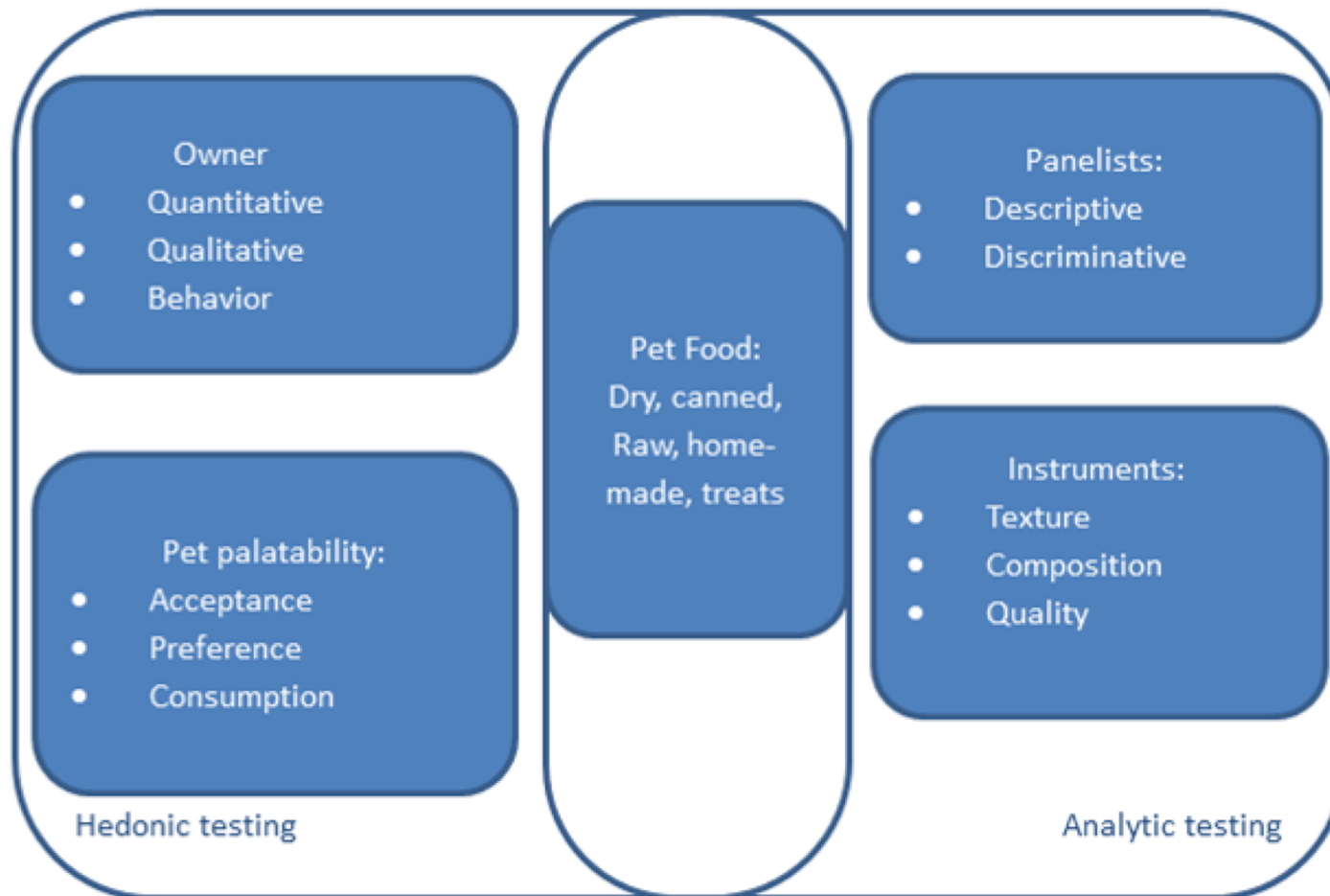
Sensory Analysis

- “Sensory evaluation has been defined as a scientific method used to **evoke, measure, analyze, and interpret** those **responses to products** as perceived through the senses of sight, smell, touch, taste and hearing.” – IFT 1975; Stone and Sidel 1993.



Pet food triangle



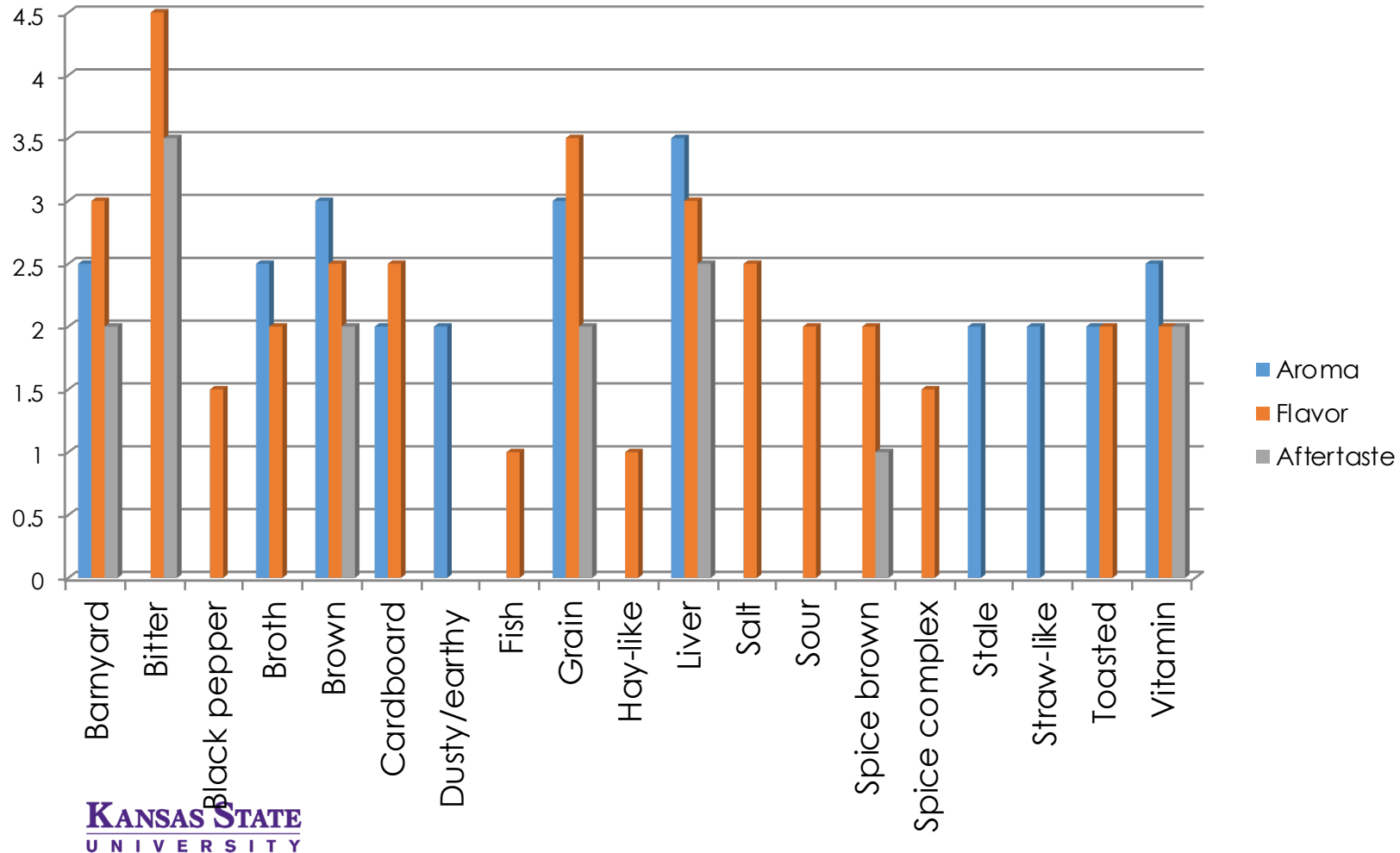


Koppel, 2014

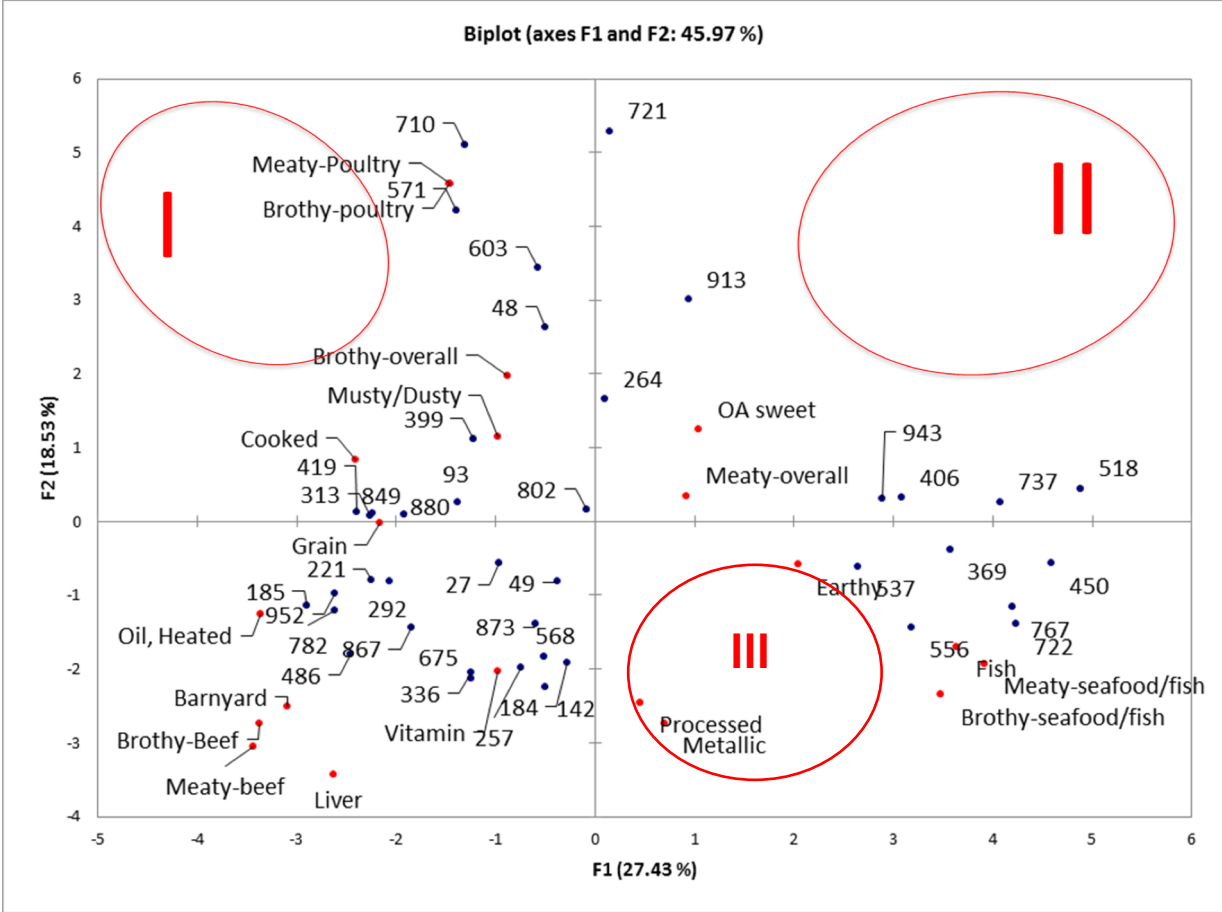
How is sensory analysis useful?

- Understand your product and client
- Understand your competitors products
- Generate ideas for new products and services
- Product improvement
- Maintain quality of product
- Evaluate a range of products for their appearance, flavor, taste, and texture
- Consumer acceptance – what are the drivers?
- Check that the final product meets its original specifications

Understand aroma & flavor profile



Understand white spaces



Understand the consumer



The methods

- Discrimination tests
- Descriptive tests
- Consumer tests
 - Pet owners
 - Pets



Discrimination tests

- Different or not?
- 15-60 panelists, screened and trained to use the method
- Quite strict procedures
- Typically compare 2 samples
- Triangle test, Paired comparison, Duo-trio, 2 Out of 5, Tetrad, 2-AFC, 3-AFC,...



Which of the samples is different?



328



417



118

Difference from control



1	2	3	4	5	6	7	8	9	10
Extremely Different	Very Different	Moderately to Very Different	Moderately Different	Slight to Moderately different	Slightly different	Very slightly different	Same		

Descriptive Sensory Analysis

- Different how?
- Trained panelists
- Typically 6-12
- Descriptive language
- Product aspects: appearance, aroma, flavor, texture, aftertaste, amplitude, time intensity...
- Defined and anchored scale



Lexicon – dry dog food

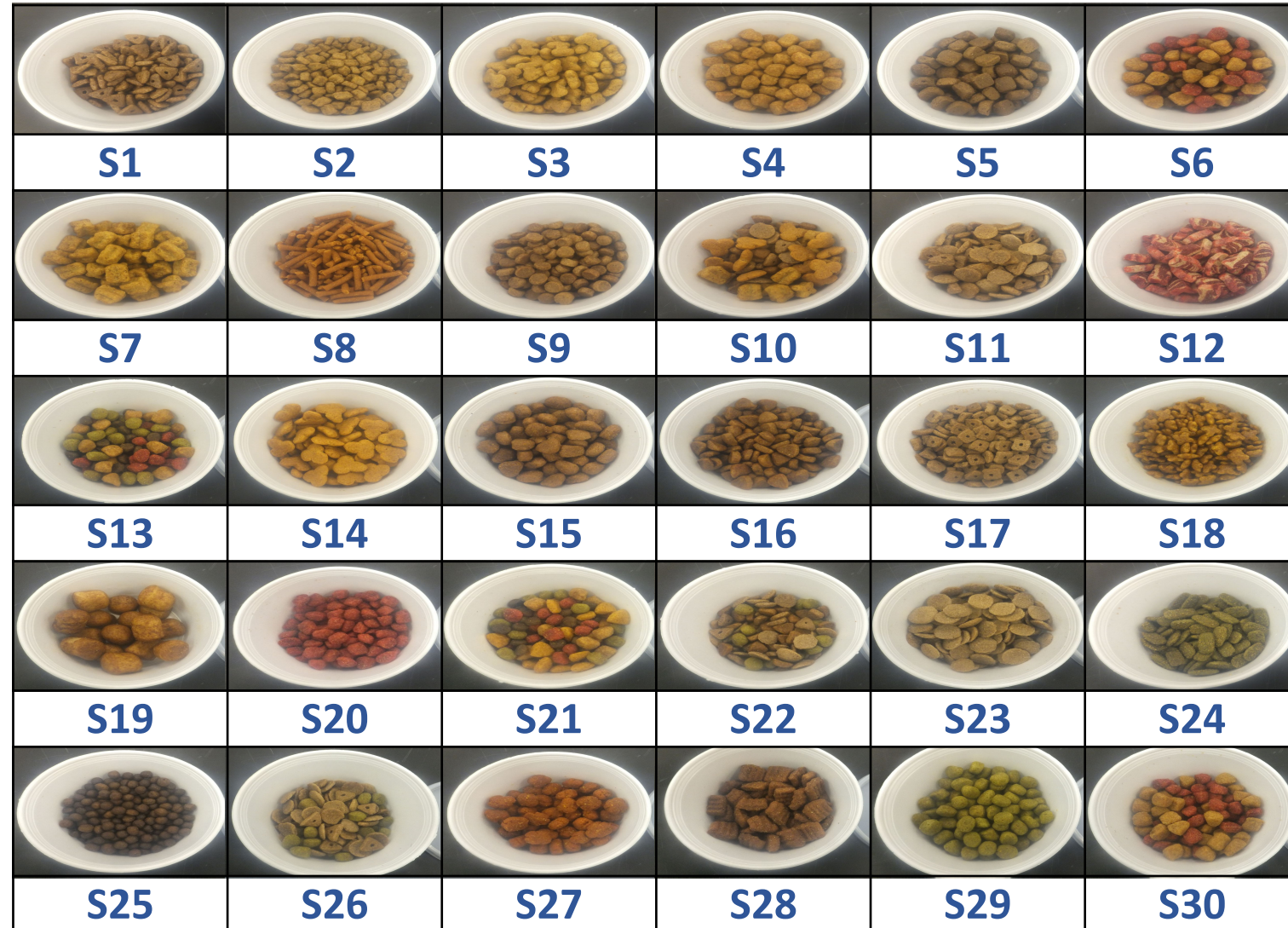
Appearance	Aroma and Flavor			Texture
Brown color	Ashy	Hay-like	Starchy	Cohesiveness
Green color	Barnyard	Liver	Straw-like	of mass
Red brown color	Brothy	Meaty	Toasted	Fibrous
Color	Brown	Metallic	Vegetable complex	Firmness
Uniformity	Burnt	Musty/dusty	Vitamin	Fracturability
Shape	Cardboard	Musty	Bitter	Graininess
Uniformity	Carrot (raw)	Oil	Salt	Gritty
Size uniformity	Celery	Onion	Sour	Hardness
Fibrous	Clove	Oxidized Oil	Sweet	Initial crispness
Flecks	Cooked	Pepper, black		Mouthcoat
Grainy	Dusty/earthy	Plastic	Overall impact (amplitude)	Oily mouthfeel
Oil	Earthy	Pungent		Powdery
Porous	Egg	Smoky		Springiness
Shape	Fermented	Soy		
Size	Fish	Spice complex		
Starchy	Garlic	Spice brown		
Surface roughness	Grain	Stale		
Wet moist				

Consumer Research

- Who likes what?
- Qualitative
 - Interviews
 - Focus Groups
- Quantitative
 - HUT
 - CLT



What appearance is well-liked?



Best liked kibbles in different countries:



Thailand



USA



Poland



Brazil

Palatability test methods

Method	Single-bowl	Two-bowl	Preference ranking procedure
# of samples tested	1	2	5
# of animals	30+	~10/20	12
# of day for test	5+	5-6/2-4	5
# of day for training	x	2-7	5
Risk of over-eating	✓ x	✓	x
Main meal	✓	✓	x
Time per test session	1h	15-30min	<2.5minutes



Topppers: A case study





Will eat raw meat, kibbles, and canned food, but only if it is completely fresh;



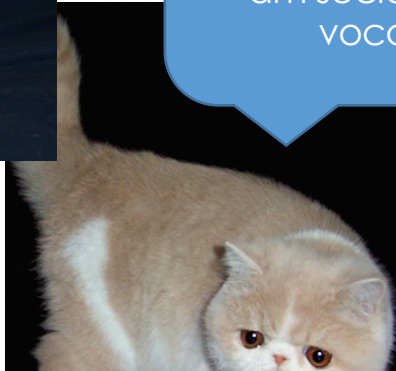
One type of canned food only; dry kibbles; no raw meat; will drink from faucet; social; will catch insects



Canned food (in gravy!) and dry kibbles; no raw meat (yuk)



Will eat cooked meat and canned food, dry kibbles; am social and vocal.



I like almost everything and everyone; am very social and vocal.



No raw meat; canned food (in gravy) and dry kibbles; am the fastest hunter



No raw meat. Canned food maybe and dry kibbles. Will drink from faucet. Like to be the only cat. Will catch mice.



No raw meat; cooked chicken maybe and canned food + kibbles; can be grumpy



Raw meat! Canned food. No dry kibble!!! Moist kibble, maybe. I'm the pretty boy.



What are Toppers?

- Products to add to your pet's main meal in order to enhance/boost flavor
 - Feels like home-made
 - Add nutrients
- Not a complete and balanced meal on its own



Objectives

- a) Investigate the cat food toppers category
 - a) Preliminary testing of palatability
- b) Understand sensory properties



Testing

- Qualitative data – product screening
- Preference data
- Descriptive sensory analysis

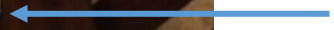


Mapping

Liquids



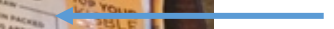
Wet food



Dry sprinkles



Dry bits



Samples tested



Butyric
Smoky
Meaty
Oil Heated



Smoky
Fishy
Woody
Oily



Fishy
Grainy
Metallic
Vitamin



Samples tested



Fishy
Grainy
Seaweed
Dusty



Dusty
Woody
Fishy
Petroleum



Cooked grain
Stale
Fishy

Samples tested



Fishy
Skunky
Butyric



Fishy
Liver



Tuna



Tuna
Oil

Samples tested



Butyric
Fishy/tuna



Meaty
Brothy
Starchy
Smoky



Fruity
Brown spice
Cooling
Vegetable

Preference testing: dry samples



Wet toppers





FF salmon

Wellness

FF Shrimp

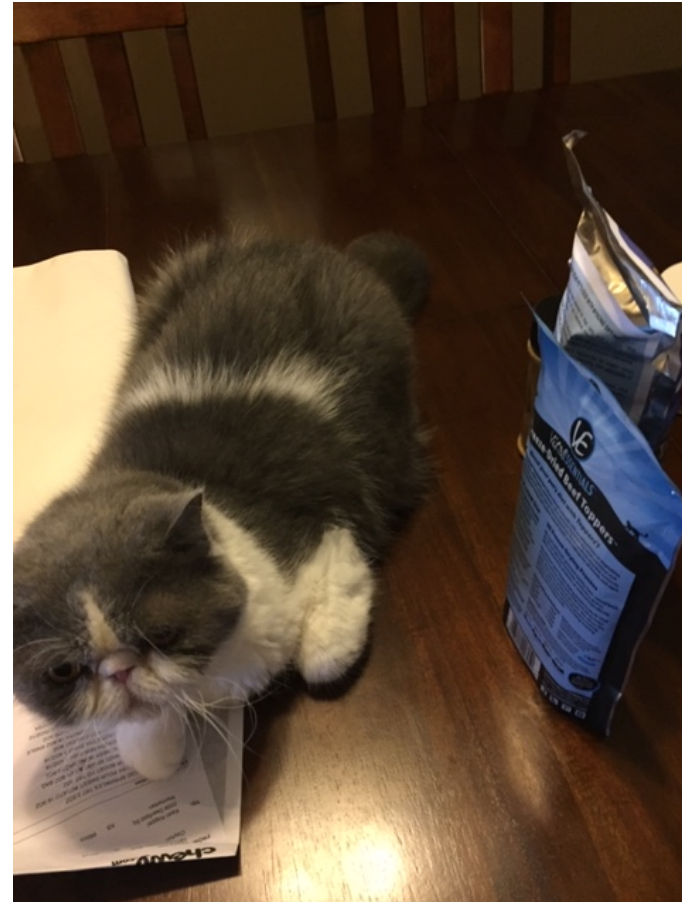
last

Liquids & freeze dried bits



Conclusions

- ✓ Toppers – way to bond with pet
- ✓ Potential for market growth
- ✓ Need to enhance consumer awareness



Acknowledgements

- Mr. Siim Koppel



Thank you!



Center for Sensory Analysis and Consumer Behavior

Data Presented by
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