USE OF SAME-DIFFERENT TEST AND R-INDEX TO EFFICIENTLY COMPARE MULTIPLE PRODUCT DIFFERENCES

BACKGROUND AND OBJECTIVE

The Problem

Multiple formulation options to achieve business objective and sensory match to control

Potential Solutions

- Team Judgment
- Multiple Triangle Tests
- Multiple Pair Same-Different Test w/Sureness and R-Index Analysis

Issues

- High risk
- Time consuming & potentially noisy
- ?

The Goal

Choose the formula that minimizes overall difference when changing an established product

METHODS AND PROCEDURES

4 pairs/panelist

N = 72 ✕



Example Output

	Number of Panelists				Results
	Same, Sure	Same, Not Sure	Different, Not Sure	Different, Sure	**R-Index**
Blind Control	28	18	12	11	
Test Option 1	22	13	15	19	58%
Test Option 2	19	12	15	23	62%
Test Option 3	28	10	15	16	54%

vs.

3 Triangle Tests

N = 72 ✕  T1

+ N = 72 ✕  T2

+ N = 72 ✕  T3

Example Output

Formulation	Est. % True Discriminators
Test Option 1	1%
Test Option 2	12%
Test Option 3	0%

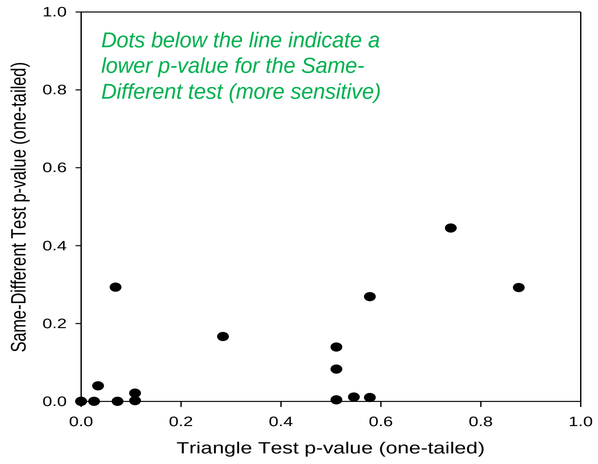
RESULTS

ACCURACY
The S-D test more often correctly identified the sample closest to Control from a series of prototypes

	Same-Different w/Sureness + R-Index	Multiple Triangle Tests (True Discriminators)
Cereal Set 1	✓	✗ (Reversal)
Cereal Set 2	✓	✓
Cereal Set 3	✓	✓
Yogurt Set 1	✓	✓
Yogurt Set 2	✓	✓
Soup Set 1	✓	● (2 sample tie)

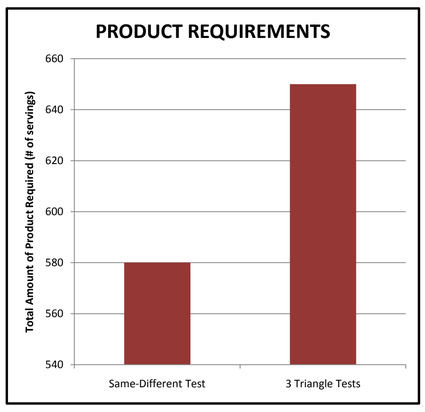
✓ = lowest R-index or %TD corresponded to physically closest test sample

SENSITIVITY
S-D test was equally or more sensitive than triangle test for 15 of 17 test samples



EFFICIENCY
Multiple sample S-D tests requires less time and product to compare 3 test samples to a Control





CONCLUSIONS

Multiple Pair Same-Different Test with Sureness and R-Index Analysis is more time-efficient than multiple triangle tests, and shows no apparent risk to accuracy or sensitivity.

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