HOW MANY CONSUMERS ARE NEEDED FOR HEDONIC MEASUREMENT OF OVERALL LIKING IN GENERAL SENSORY STUDIES?

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Background

- Representation of real world
- Costs
- Current literature

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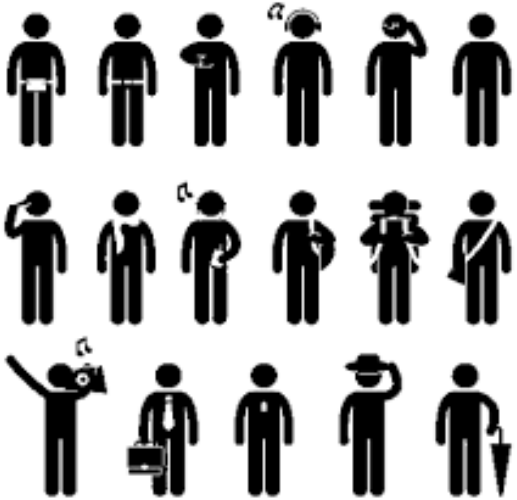
Objective

- To determine how many consumers are needed for hedonic measurement of overall liking in consumer sensory studies.



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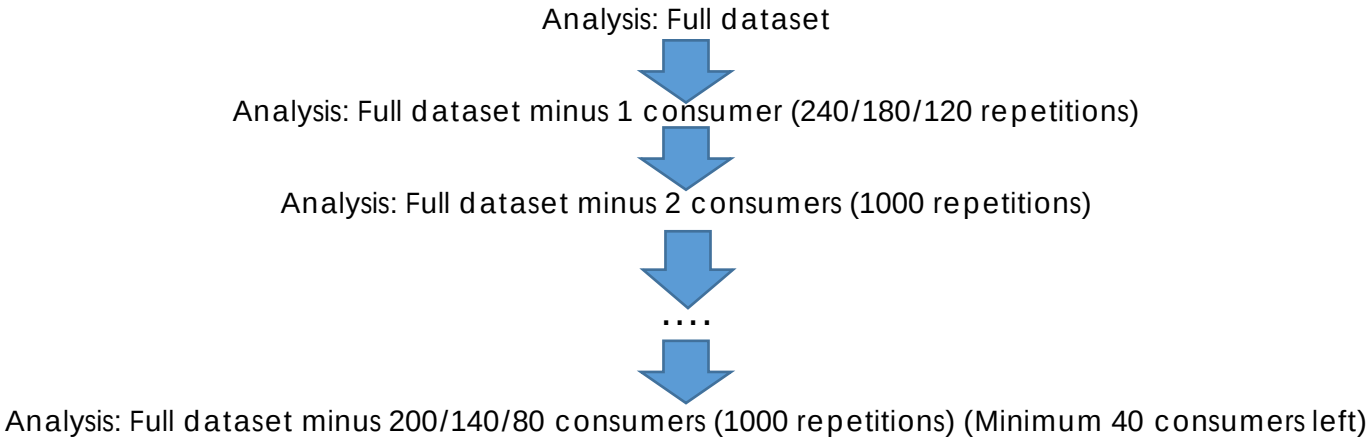
Materials and Methods

- Data:
  - Fragrance: 5 samples, 240 consumers
  - Cookies: 3 samples, 180 consumers
  - Dog Food Appearance: 30 samples, 120 consuemrs

- Simulation:



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Materials and Methods, cont.

- Data Analysis:
  - One-factor and two-factor ANOVA
  - Tukey's Honestly Significant Difference (HSD)
- Decision Criteria:
  - At least 95% of the cases of simulation produced similar results as the full set

Results: Fragrance (240 consumers, 5 samples)

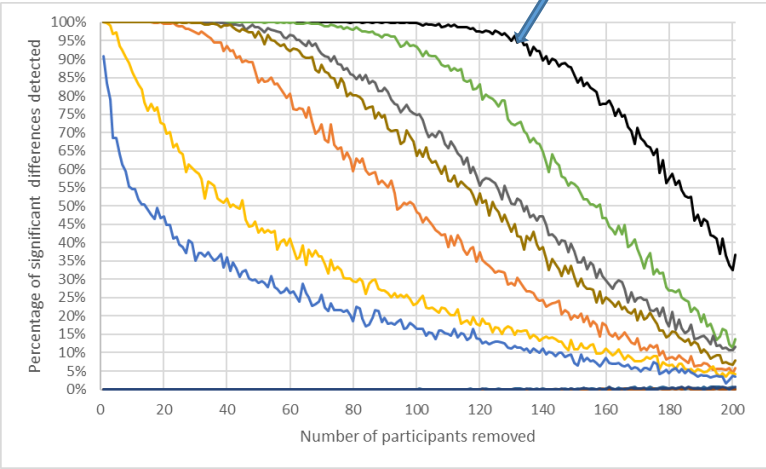

Figure 1. Graph showing similarities with the full set of data as participants are removed with one-way ANOVA. Black line – overall p-value, other lines – pairwise comparison p-values

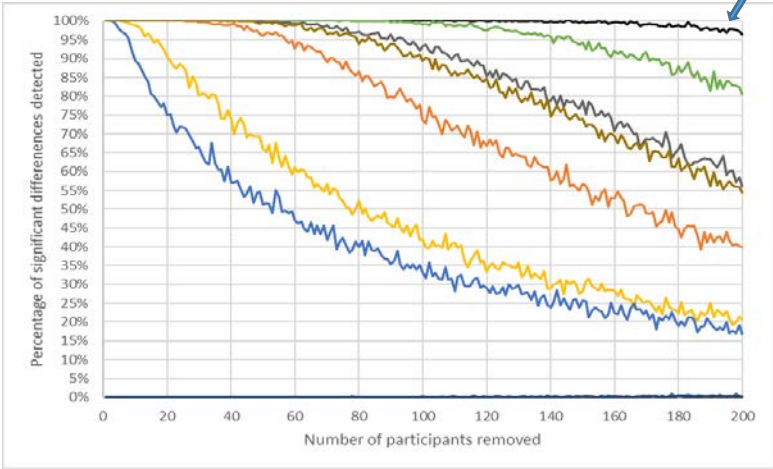

Figure 2. Graph showing similarities with the full set of data as participants are removed with two-way ANOVA. Black line – overall p-value, other lines – pairwise comparison p-values

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Results: Cookies (180 consumers, 3 samples)

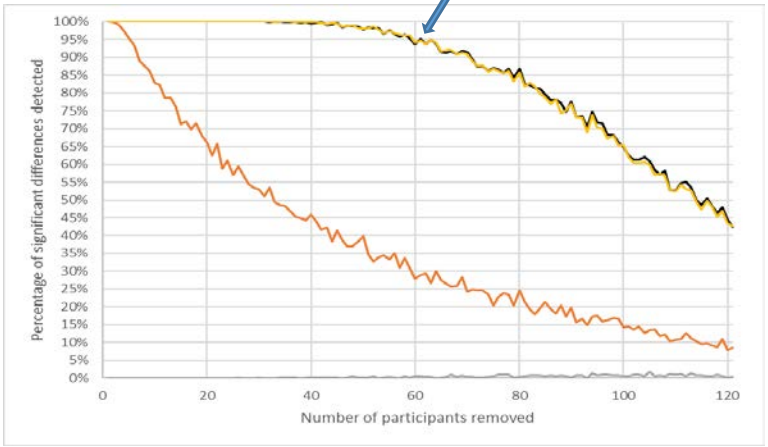

Figure 3. Graph showing similarities with the full set of data as participants are removed with one-way ANOVA. Black line – overall p-value, other lines – pairwise comparison p-values

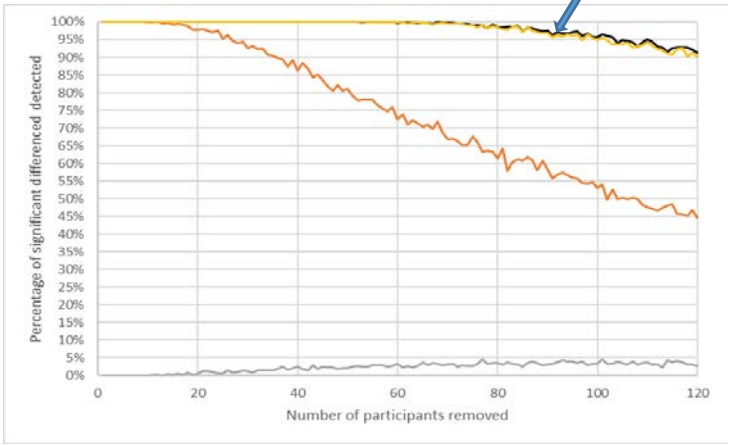

Figure 4. Graph showing similarities with the full set of data as participants are removed with two-way ANOVA. Black line – overall p-value, other lines – pairwise comparison p-values

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Results: Dog Food Appearance (120 consumers, 30 samples)

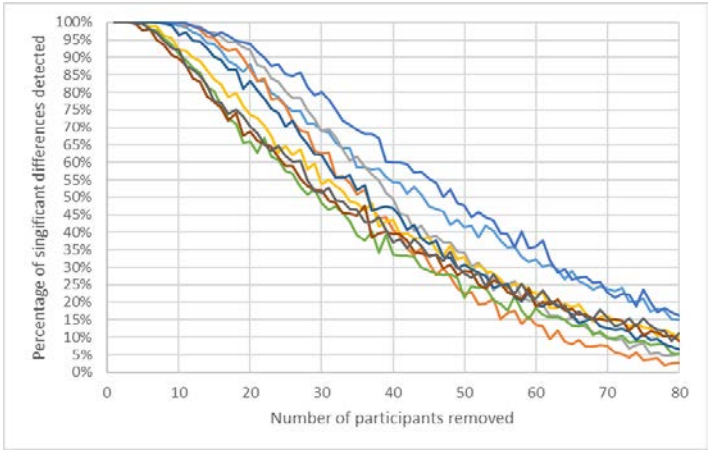

Figure 5. Graph showing similarities with the full set of data as participants are removed with one-way ANOVA.

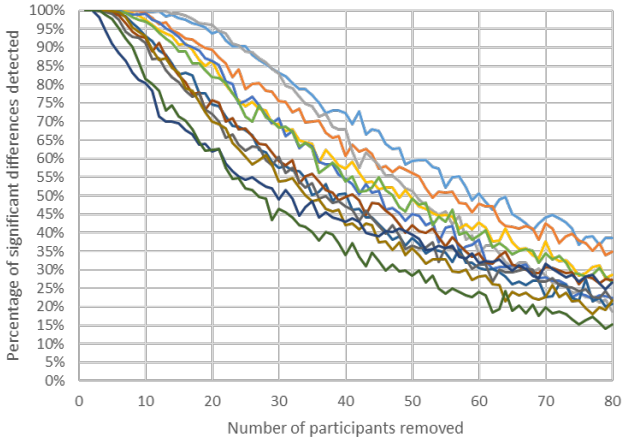

Figure 6. Graph showing similarities with the full set of data as participants are removed with two-way ANOVA.

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Conclusions

- If overall p-value is most important:
  - One-way ANOVA: ~**110**
  - Two-way ANOVA: Fewer products = higher numbers
    - 5 samples: 40
    - 3 samples: 85
- If Sample to Sample pairwise comparison p-value is most important:
  - Number needed is MUCH higher and never under 90

Conclusions, cont.

- Regardless of the statistical number needed,

  Test MUST include sufficient representation from ALL targeted groups

Thank you!

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