# Qualitative Research and Text Analysis using a Trained Sensory Panel

G Keep, J Cohen*, R Zepp

*Alberto-Culver

# Overview / Agenda

**Purpose**

- Fundamental learning
- Testing efficiency

**Method**

- Trained Participants
- Naturalistic Procedures
- Open-ended observations

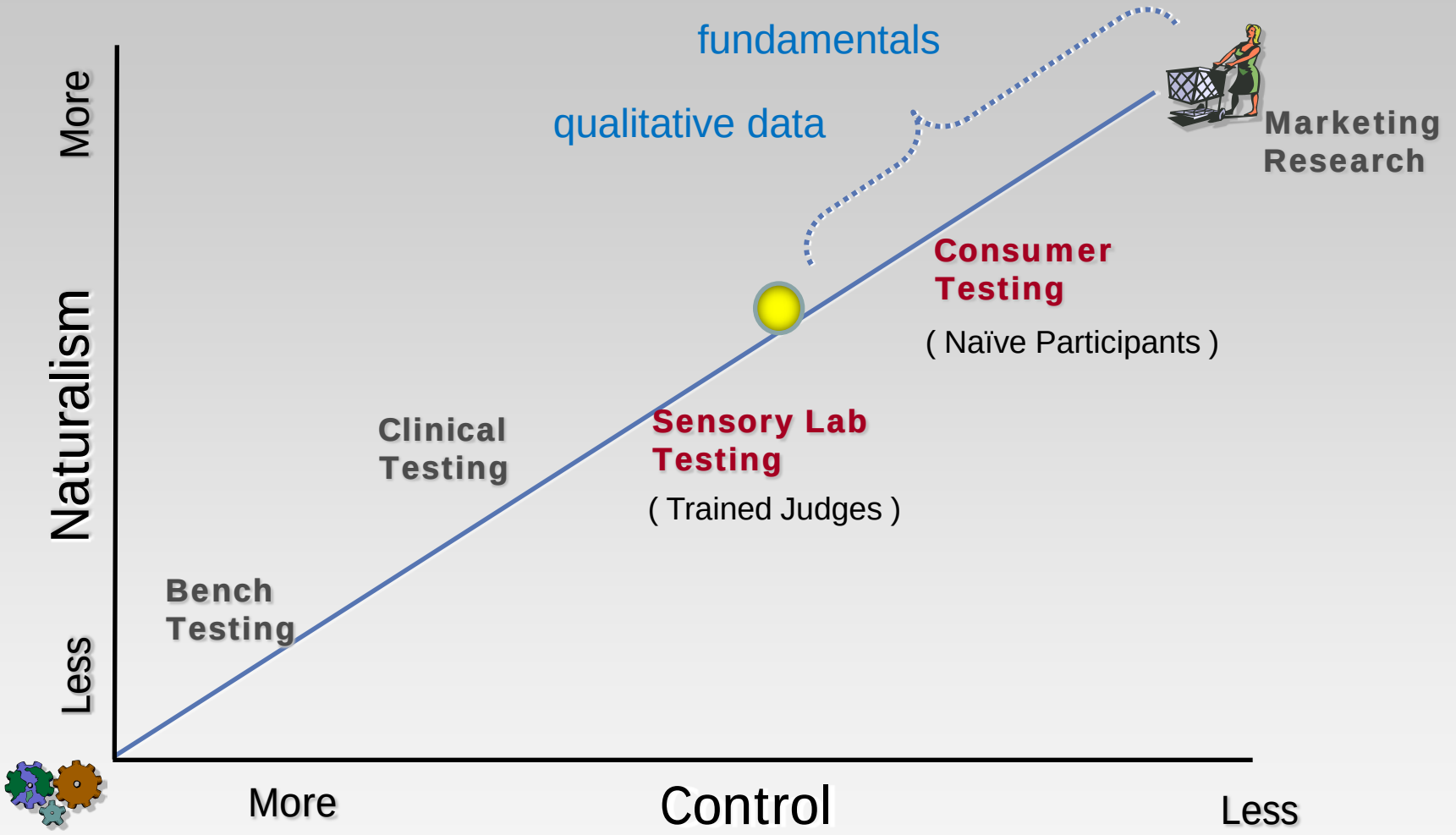
**Analysis**

- Language processing
- Theme extraction

**Validation**

- Example
- Comparison to consumer results

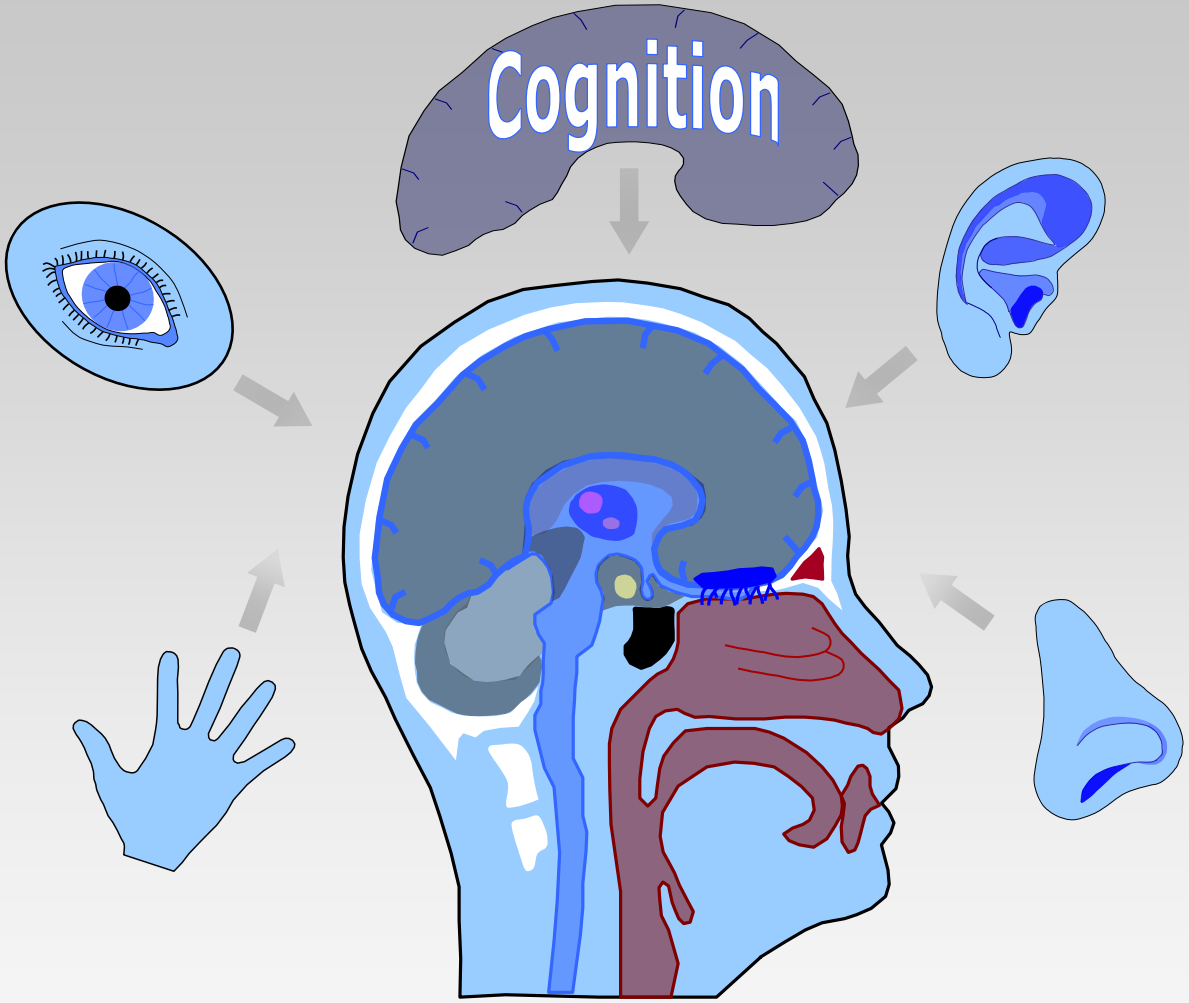
# Contextualizing the Method



# Trained Judges

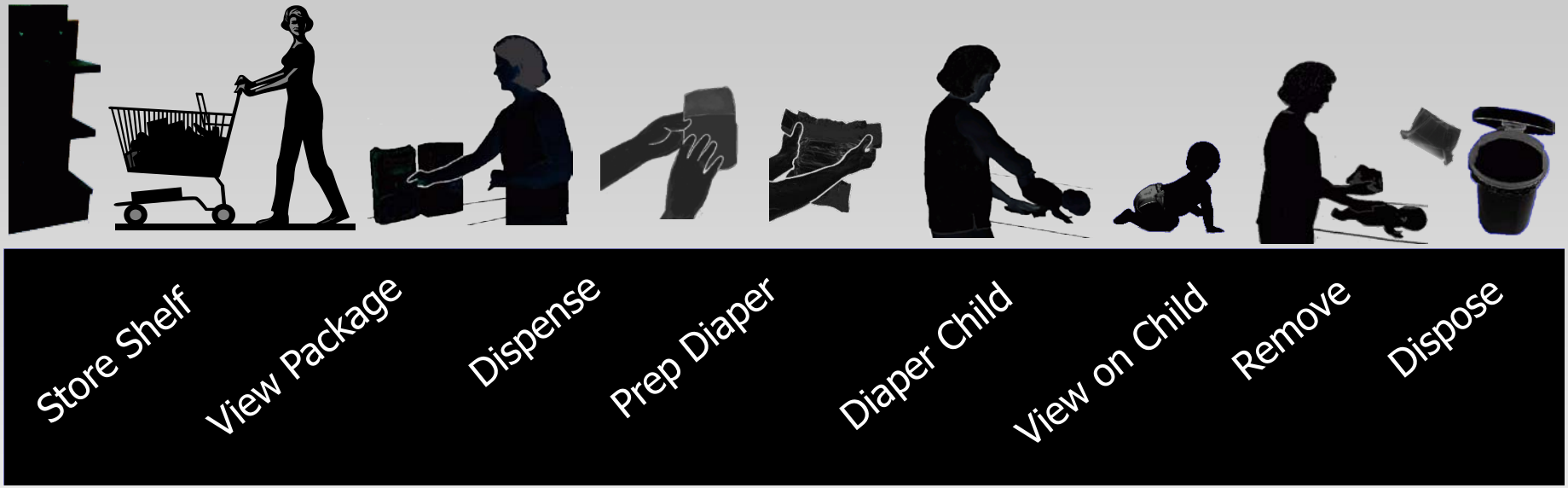
- Sensory Panelists
  - screened for ability
  - analytical thinking
  - follow procedures carefully
- Justification for Use
  - note presence of sensations
  - do not provide preference
  - not experts on specific product

# Focused Concept for the Study




**What did you experience that relates to “Softness”?**

# Naturalistic Procedures




- Targeted phase of interaction
- Based on ethnography
- Naturalistic
- Composite sequence of events
- Capture typical actions
- Capture common “touchpoints”

# Example Procedure: Diaper Softness

**Softness as perceived over course of natural usage — from dispensing to disposal.**

- Defined procedure
- Multiple stages
  - run consecutively
  - observations for each
- Use of mannequins

# Comments

## Tagging

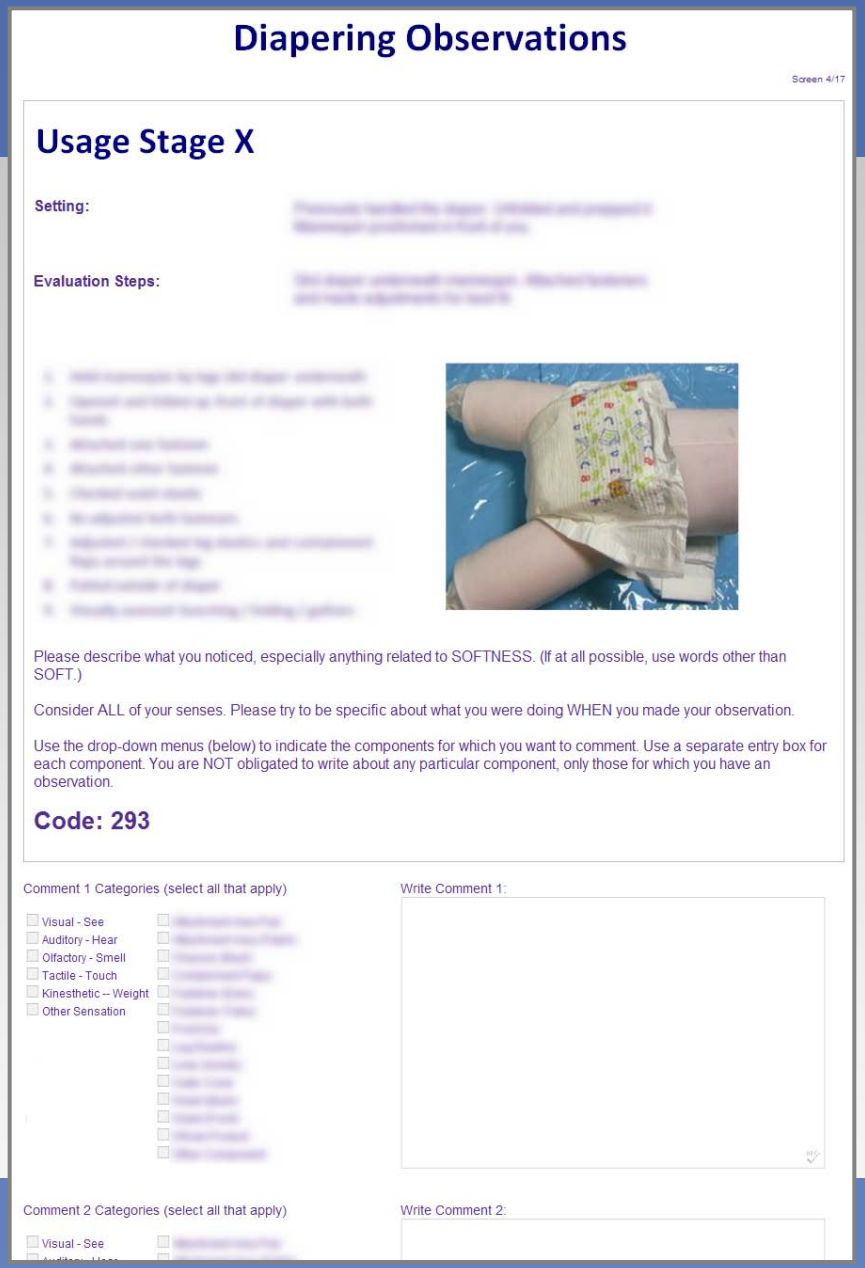
Comment 1 Categories (select all that apply)

- Visual - See
- Auditory - Hear
- Olfactory - Smell
- Tactile - Touch
- Kinesthetic -- Weight
- Other Sensation
- Leg Elastics
- Whole Product
- Other Component

**sensory modality**

**diaper component**

**sentiment | + | | - | | * |**



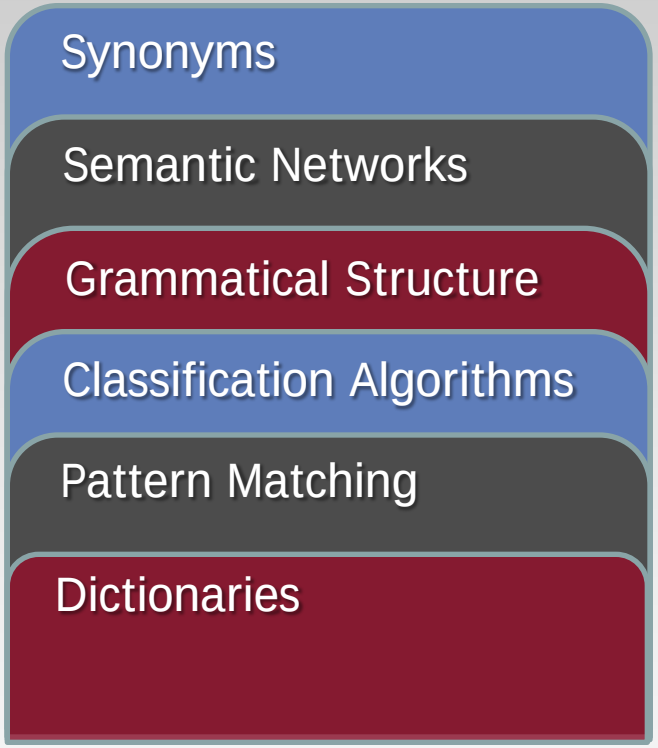
# Example Comment

Leg elastics conformed around baby's legs, especially during movement |+| Sounded a little crunchy when opening|-| Edges felt sharp |-| The openings were too tight around the legs |-| May cause chafing |-|

# Text Analysis – Natural Language Processing

- Processing of comments
- Content analysis
- Statistical techniques
- Linguistic techniques
- Extract terms
  - key words
  - key phrases
- *SPSS Text Analysis for Surveys*

## Linguistic Resources



# Text Analysis – Elements

## Used with Methodology

- Term extraction
- Linguistic resources
  - customizable
  - refine extraction
- Thematic categorization
  - equivalent phrasing
  - related words
  - root words

## Redundant / Not Used

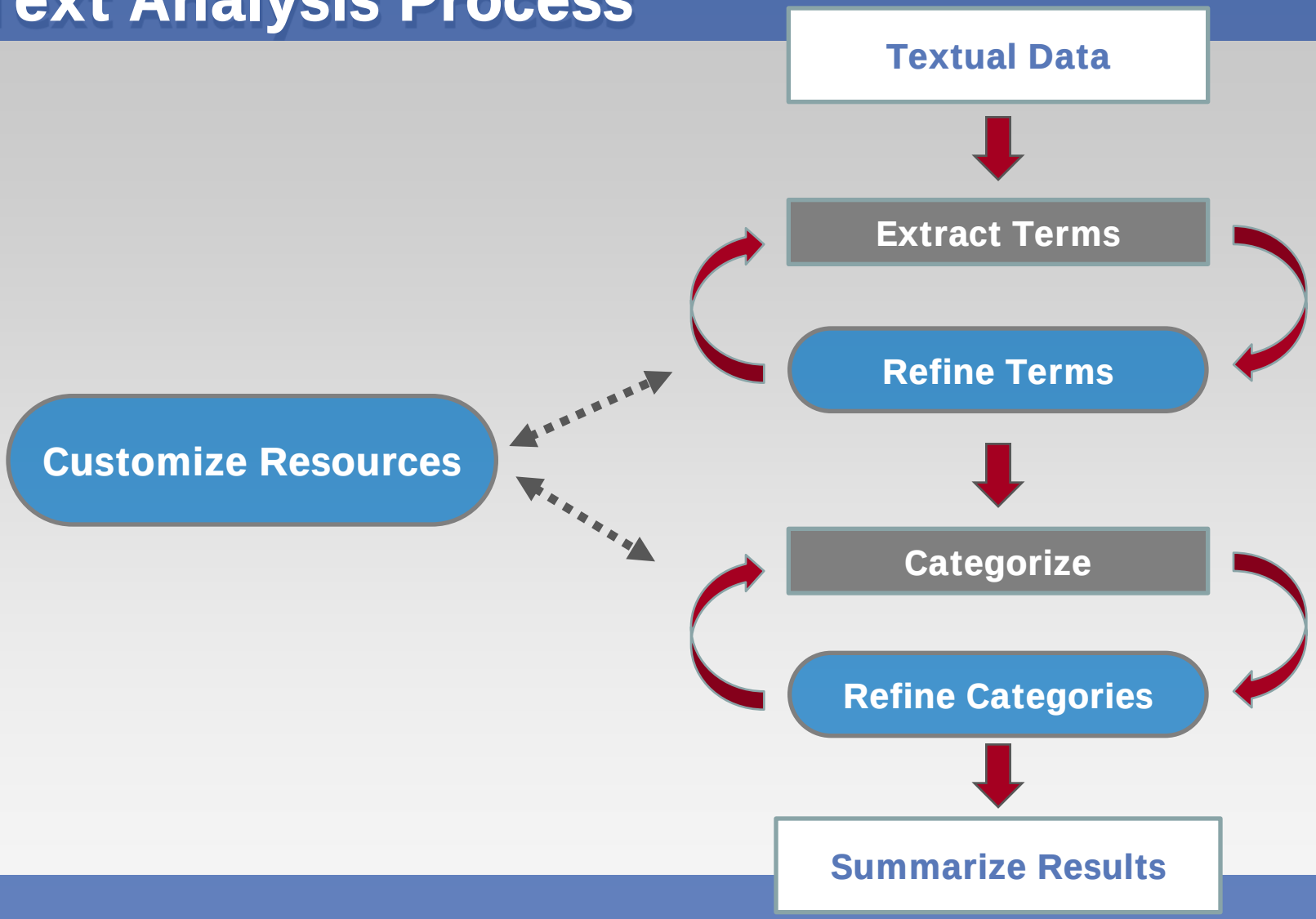
- Grouping of terms
  - location, component,
  - product, company, etc.
- Determining sentiment
  - positive/ favorable
  - negative / unfavorable

# Example of a Category (Theme)

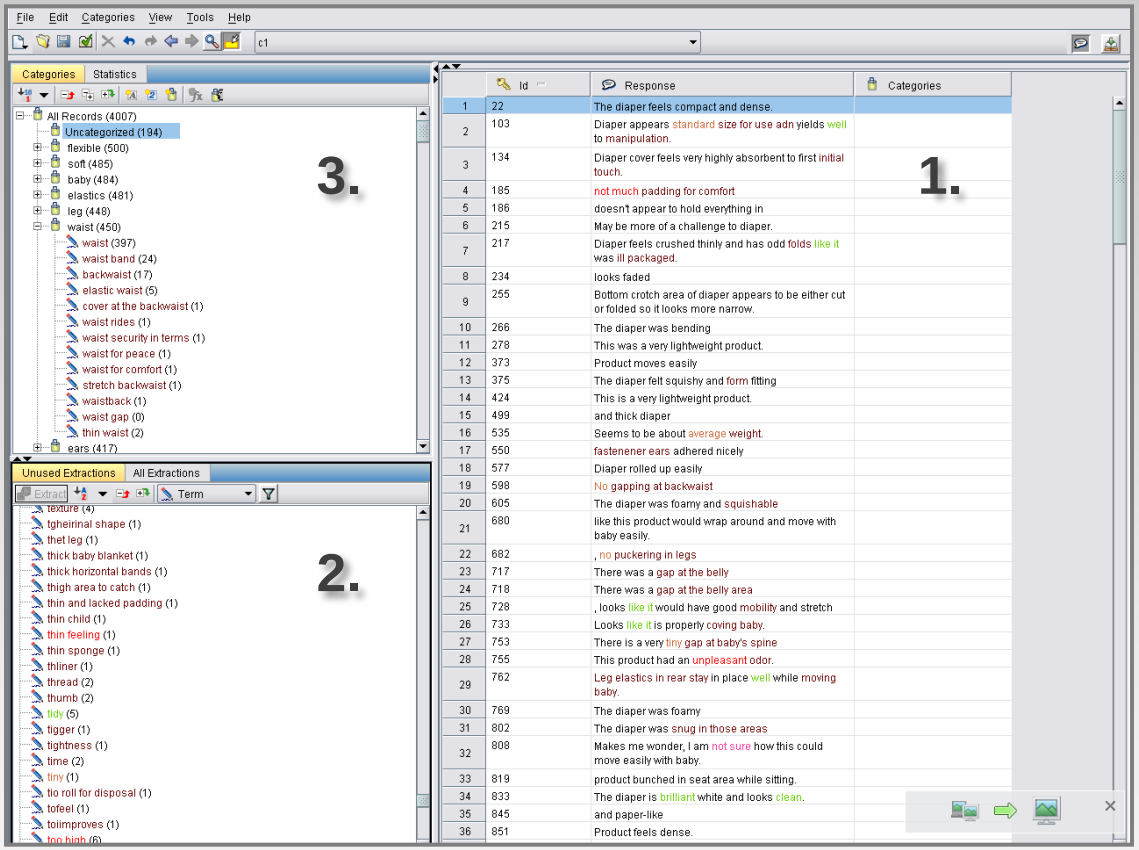
## “Rough”

- felt scratchy
- prickly when handling
- not smooth
- abrasive
- irritating
- grainy material
- etc.

# Text Analysis Process

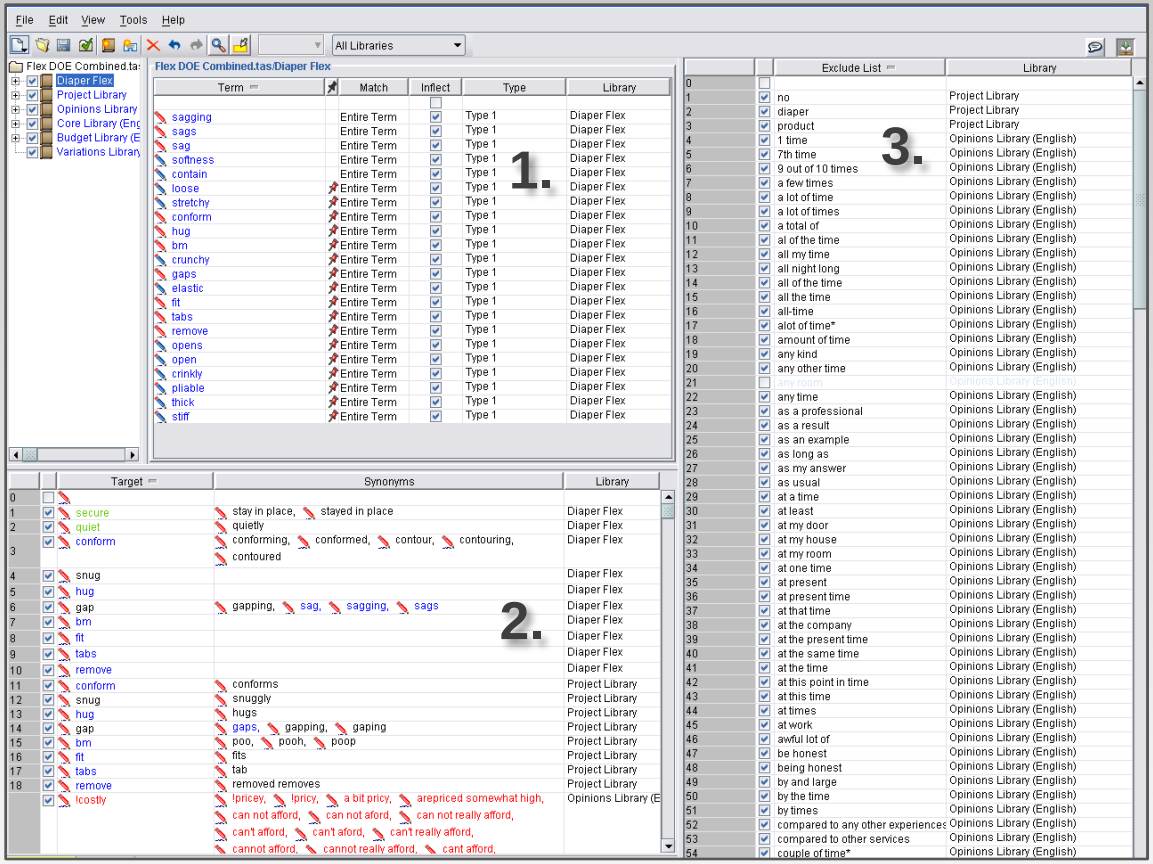


# Text Analysis – SPSS Main Screen




1. Raw Data (Text)
2. Extracted Terms
3. Derived Categories

# Text Analysis – Refining Terms




1. Create terms – study-dependant
2. Create new synonyms
3. Exclusion list

**Saved and reused for other studies.**

# Diagnostics – How much information?

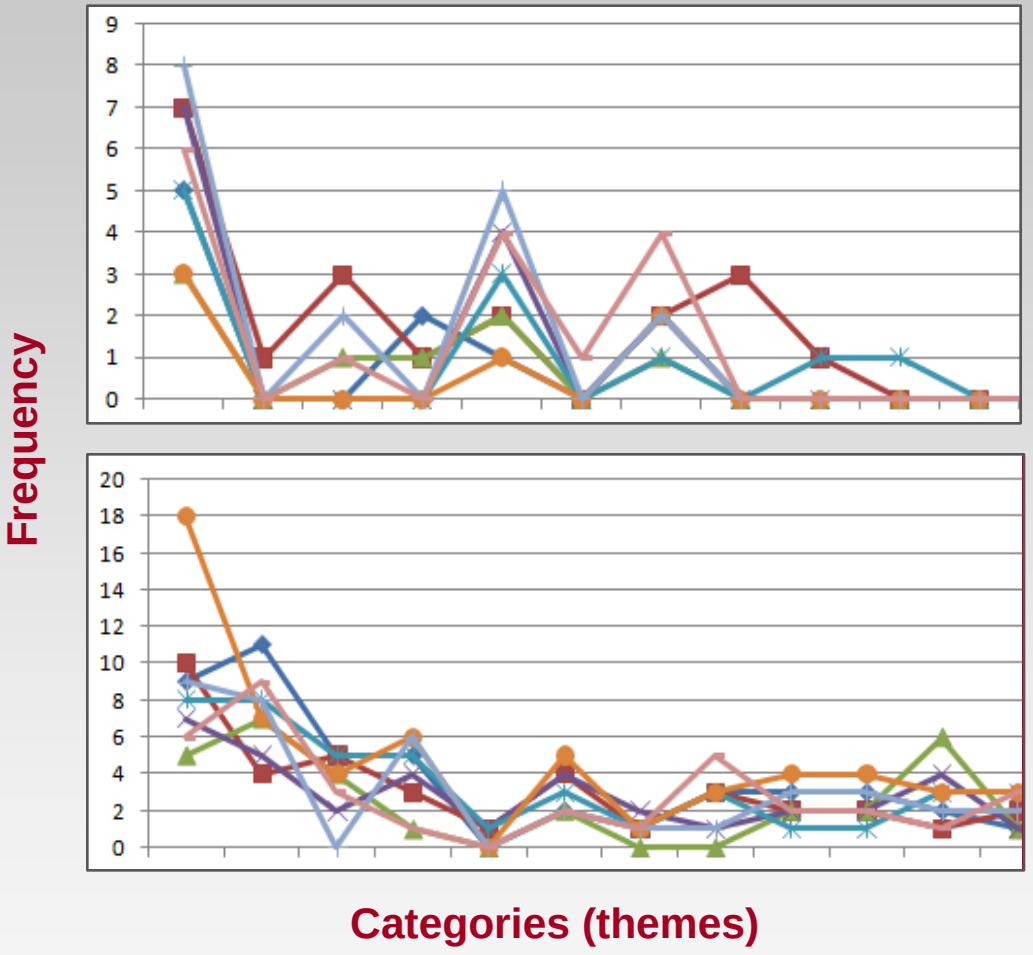
**Principal Components: on Correlations**

| Number | Eigenvalue | Percent | Cum Percent |
|---|---|---|---|
| 1 | 14.2960 | 23.1 | 23.1 |
| 2 | 9.6871 | 15.6 | 38.7 |
| 3 | 7.9995 | 12.9 | 51.6 |
| 4 | 5.9822 | 9.6 | 61.2 |
| 5 | 5.2212 | 8.4 | 69.7 |
| 6 | 5.0657 | 8.2 | 77.8 |
| 7 | 4.4356 | 7.2 | 85.0 |
| 8 | 3.3619 | 5.4 | 90.4 |
| 9 | 2.5436 | 4.1 | 94.5 |
| 10 | 1.9660 | 3.2 | 97.7 |
| 11 | 1.4412 | 2.3 | 100.0 |
| 12 | 0.0000 | 0.0 | 100.0 |
| 13 | 0.0000 | 0.0 | 100.0 |
| 14 | 0.0000 | 0.0 | 100.0 |
| 15 | 0.0000 | 0.0 | 100.0 |
| 16 | 0.0000 | 0.0 | 100.0 |
| 17 | 0.0000 | 0.0 | 100.0 |
| 18 | 0.0000 | 0.0 | 100.0 |
| 19 | 0.0000 | 0.0 | 100.0 |
| 20 | 0.0000 | 0.0 | 100.0 |
| 21 | 0.0000 | 0.0 | 100.0 |
| 22 | 0.0000 | 0.0 | 100.0 |
| 23 | 0.0000 | 0.0 | 100.0 |
| 24 | 0.0000 | 0.0 | 100.0 |
| 25 | 0.0000 | 0.0 | 100.0 |
| 26 | 0.0000 | 0.0 | 100.0 |
| 27 | 0.0000 | 0.0 | 100.0 |
| 28 | 0.0000 | 0.0 | 100.0 |
| 29 | 0.0000 | 0.0 | 100.0 |
| 30 | 0.0000 | 0.0 | 100.0 |


- 12-product study
- PCA on 30 categories
- 11 factors with eigenvalues >1
- 85% variance explained with seven factors

# Text Analysis – Output

- Category counts
- Graphed
- Indexed
- Cross tabulated
  - usage stage
  - product
  - product component
  - sensory modality
  - sentiment



# Text Analysis – Tradeoffs

## Advantages

- Semi Automated
  - user customizable
  - re-use among studies
- Saves time and costs
- Open ended
- Find patterns
  - user language
  - relationships among terms

## Limitations

- Requires human input
  - not like a mechanical T-test
  - pronoun disambiguation
- No intensities in our implementation
- Limited by dictionaries
  - Or must build / customize your own
- Certain techniques demand large data sets

# Sensory Study – Softness Observations

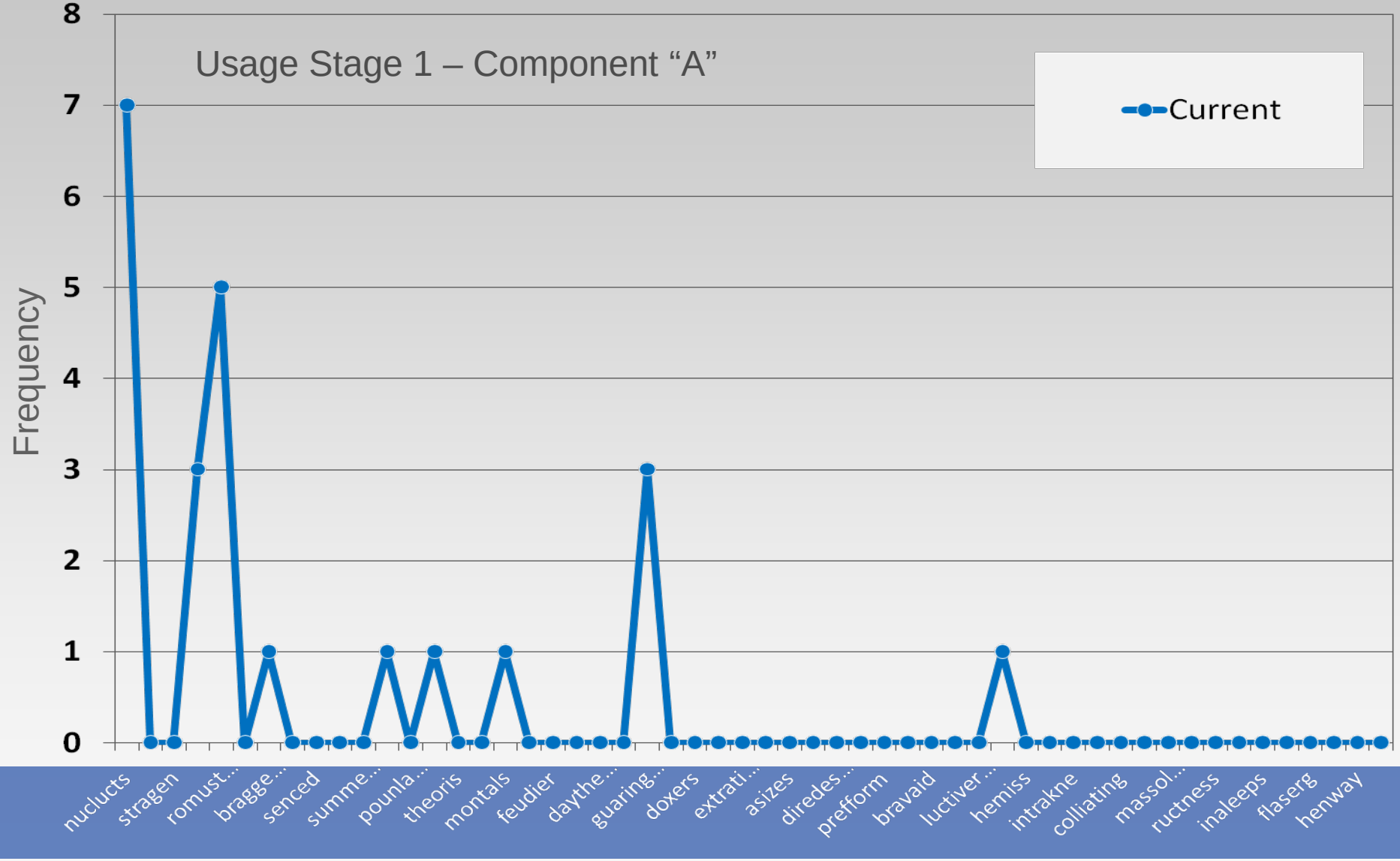
- Investigate material options (DOE)
- Provide current softness at reduced cost
- Screen material options
  - select for consumer study
  - range of good to poor materials
  - range of cost options

# Example: Focus of Results

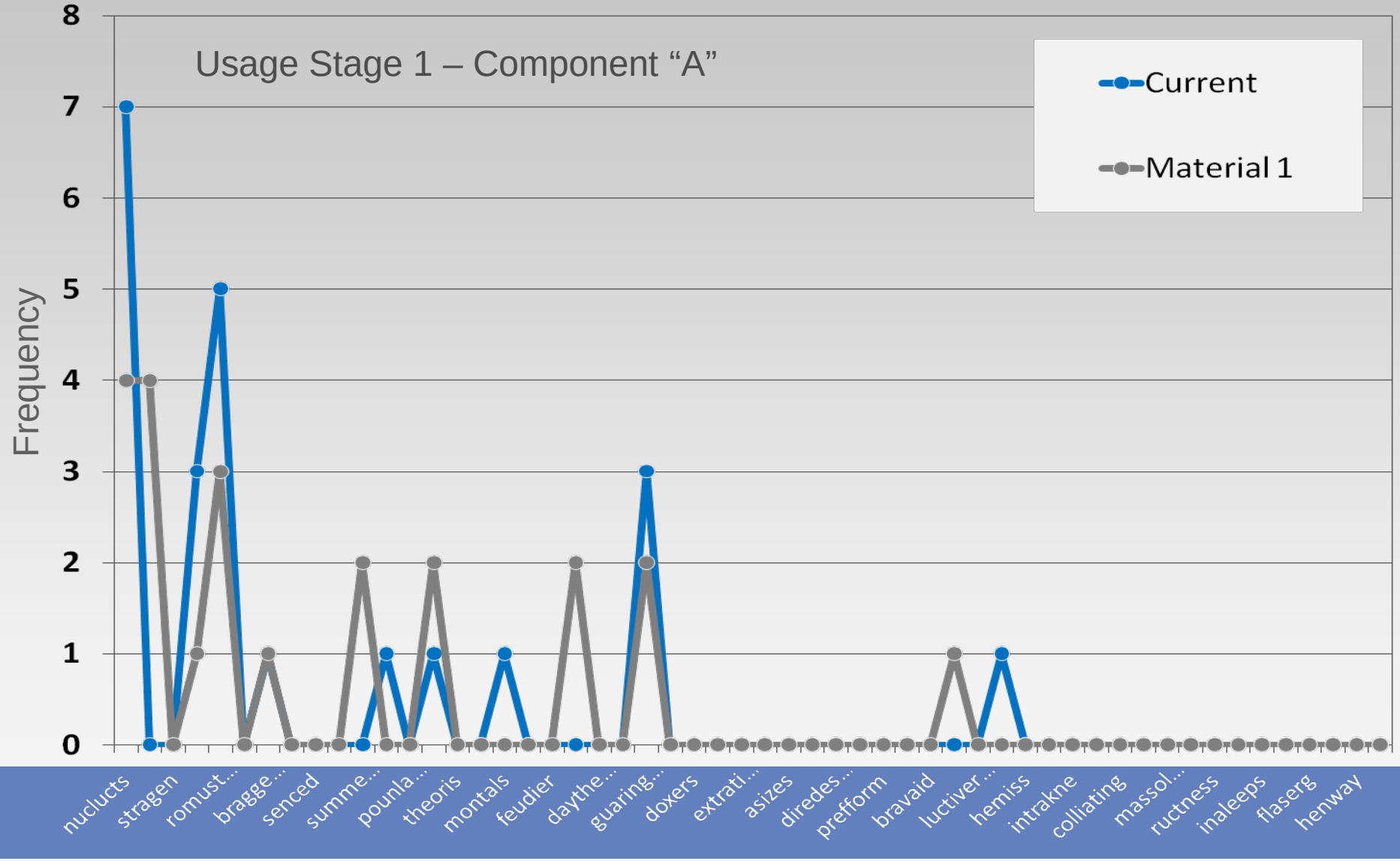
- Real data
- Full study conducted
- Current example…
  - one stage
  - one diaper component
  - positive comments
- Proprietary
- Use proxies for this example

- "Unfolding the Diaper"
- "Leg Elastics"

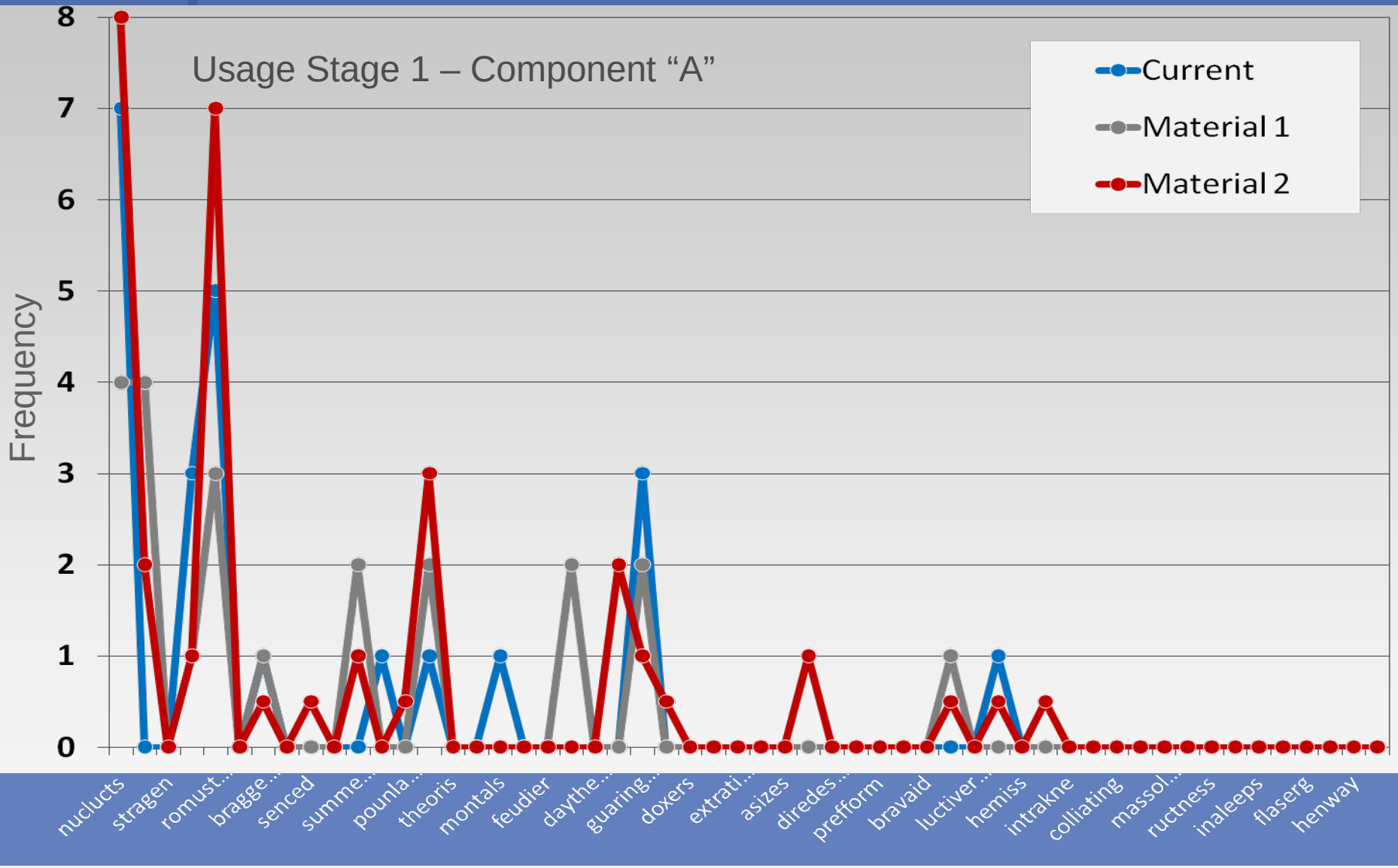
# Example – Positive Comments



# Example – Positive Comments



# Example – Positive Comments



# Example – Actionability and Utility

- Select new material
  - more softness positives
  - fewer softness negatives
  - focus on key terms
  - review actual comments
- Business decision
  - alter marketed product

- Other examples
  - understand competition
  - avoid altering winning features
  - address product key components
  - optimize product for key stages and touchpoints

# Example – Validation – Consumer Study

- Softness fundamentals
  - total product experience
- Mothers, n = 30
- Interviews
- Focus groups
- Products, n = 6

- Data
  - qualitative
  - interpretative
- Results
  - similar conclusions
  - Material 2 recommended
  - Key learning from same usage stages and components
  - Product ranking alignment

# Closing Comments

- Explore fundamentals
- Perceptual-based focus
- Credible results
- Popular method at K-C
- Uses panel infrastructure
- Requires data automation
- Relatively rapid
- Repeatable
- Relatively low cost
- Alternative use of panel
- Works well for ...
  - iterative research
  - smaller projects
  - prelude to conventional sensory testing
  - product screening
  - DOEs

# Qualitative Research and Text Analysis using a Trained Sensory Panel

# Questions?

greg.keep@kcc.com
rick.zepp@kcc.com