

# Qualitative Research and Text Analysis using a Trained Sensory Panel

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# Overview / Agenda

## Purpose

- Fundamental learning
- Testing efficiency

## Method

- Trained Participants
- Naturalistic Procedures
- Open-ended observations

## Analysis

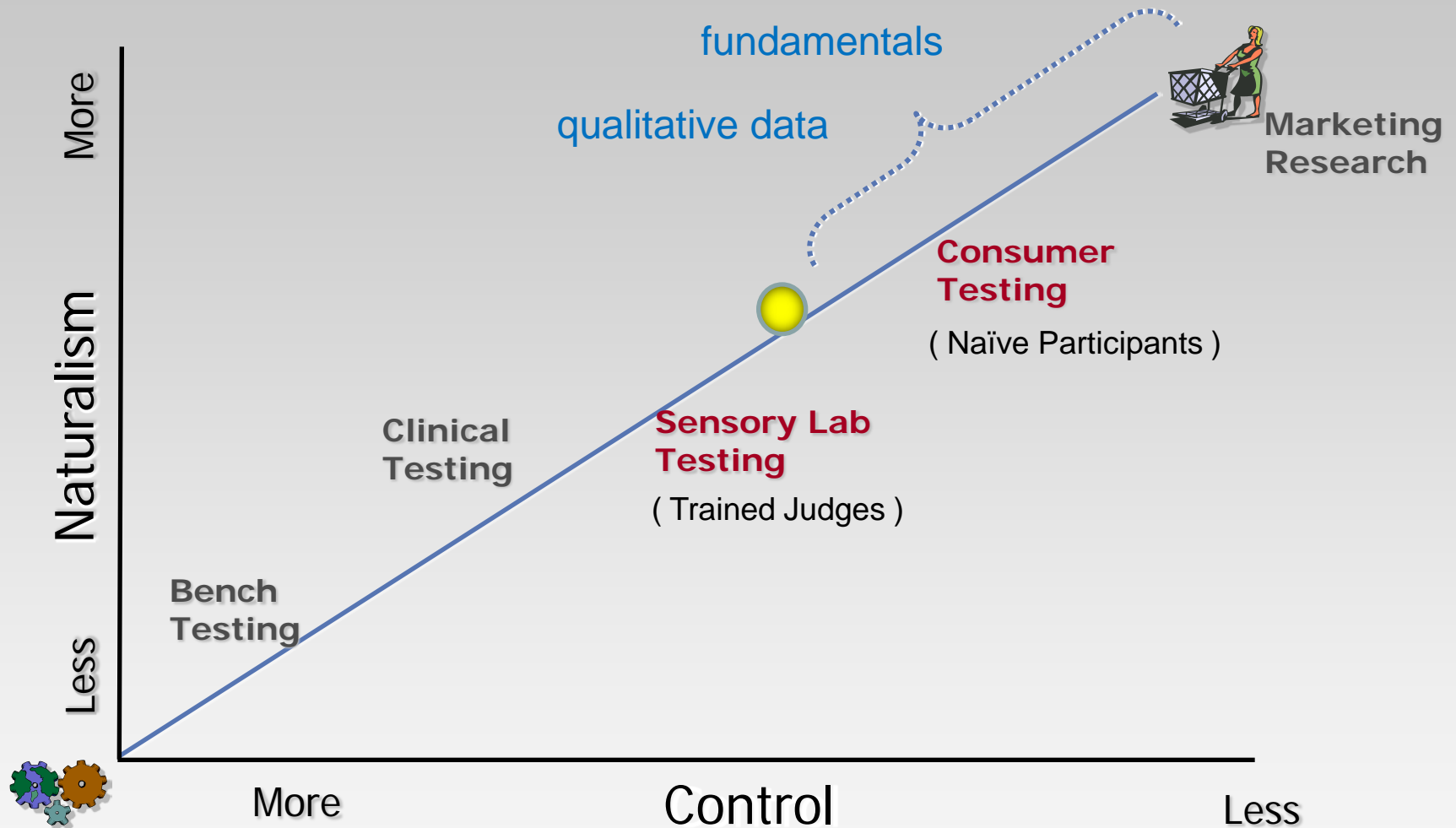
- Language processing
- Theme extraction

## Validation

- Example
- Comparison to consumer results



# Contextualizing the Method

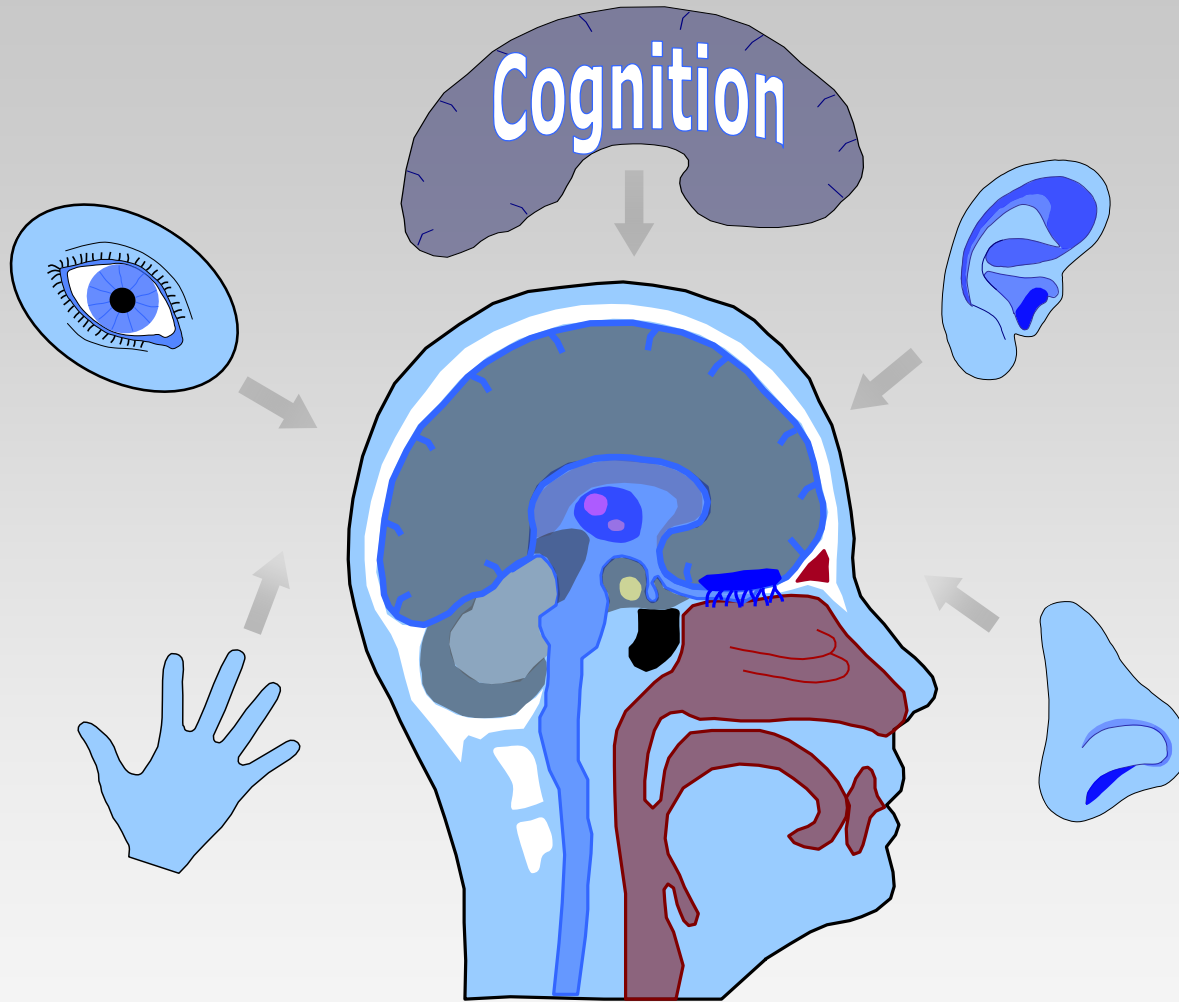


# Trained Judges

- 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

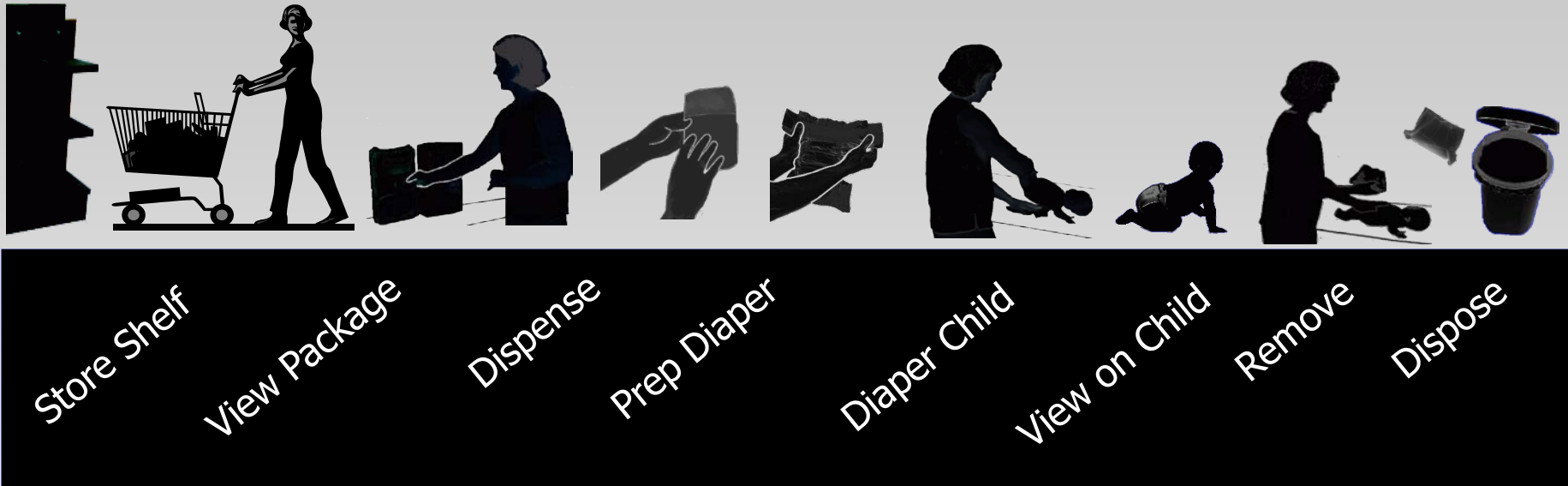


# Focused Concept for the Study



**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)**

<input type="checkbox"/> Visual - See	<input type="checkbox"/> Backward View Only
<input type="checkbox"/> Auditory - Hear	<input type="checkbox"/> Backward View Photo
<input type="checkbox"/> Olfactory - Smell	<input type="checkbox"/> Forward View
<input type="checkbox"/> Tactile - Touch	<input type="checkbox"/> Intermediate View
<input type="checkbox"/> Kinesthetic – Weight	<input type="checkbox"/> Product Detail
<input type="checkbox"/> Other Sensation	<input type="checkbox"/> Product Photo
	<input type="checkbox"/> Assembly
	<input type="checkbox"/> Leg Elastics
	<input type="checkbox"/> Case Study
	<input type="checkbox"/> User Story
	<input type="checkbox"/> Brand Book
	<input type="checkbox"/> Design Guide
	<input type="checkbox"/> Whole Product
	<input type="checkbox"/> Other Component

## sensory modality

## diaper component

sentiment | + | | - | | \* |

## Diapering Observations

Screen 4/17

## Usage Stage X

**Setting:**

### Evaluation Steps:

See page 100 for more information. All numbers are estimates and may vary slightly from actual results.



Please describe what you noticed, especially anything related to SOFTNESS. (If at all possible, use words other than SOFT.)

Consider ALL of your senses. Please try to be specific about what you were doing WHEN you made your observation.

Use the drop-down menus (below) to indicate the components for which you want to comment. Use a separate entry box for each component. You are NOT obligated to write about any particular component, only those for which you have an observation.

Code: 293

Comment 1 Categories (select all that apply)

☐ Visual - See  
☐ Auditory - Hear  
☐ Olfactory - Smell  
☐ Tactile - Touch  
☐ Kinesthetic - Weight  
☐ Other Sensation

Write Comment 1:

Comment 2 Categories (select all that apply)

☐ Visual - See  
☐ Auditory - Hear  
☐ Olfactory - Smell  
☐ Tactile - Touch  
☐ Kinesthetic - Weight  
☐ Other Sensation

Write Comment 2:



## 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

Synonyms

Semantic Networks

Grammatical Structure

Classification Algorithms

Pattern Matching

Dictionaries

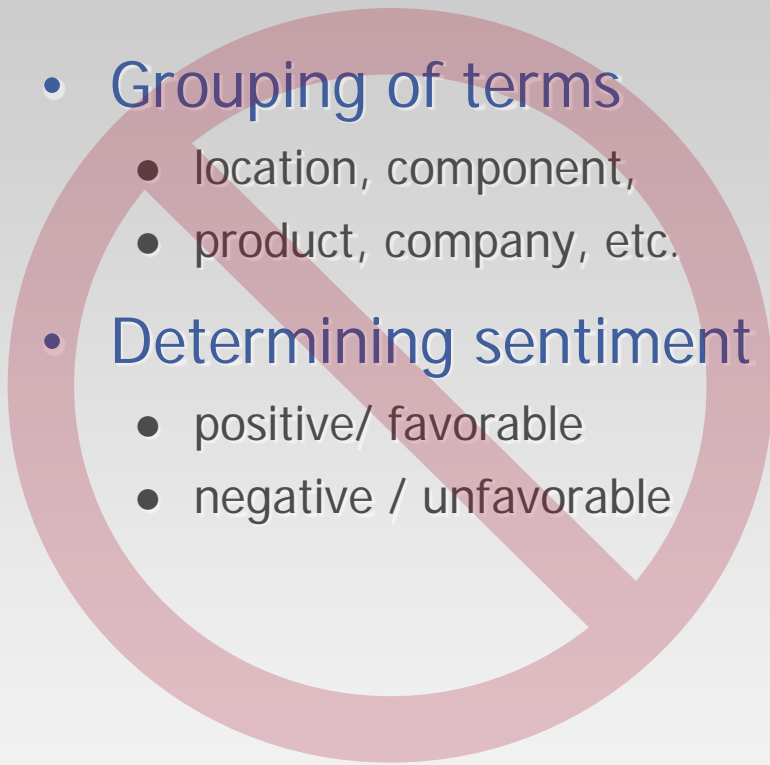


# Text Analysis – Elements

## 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
- 

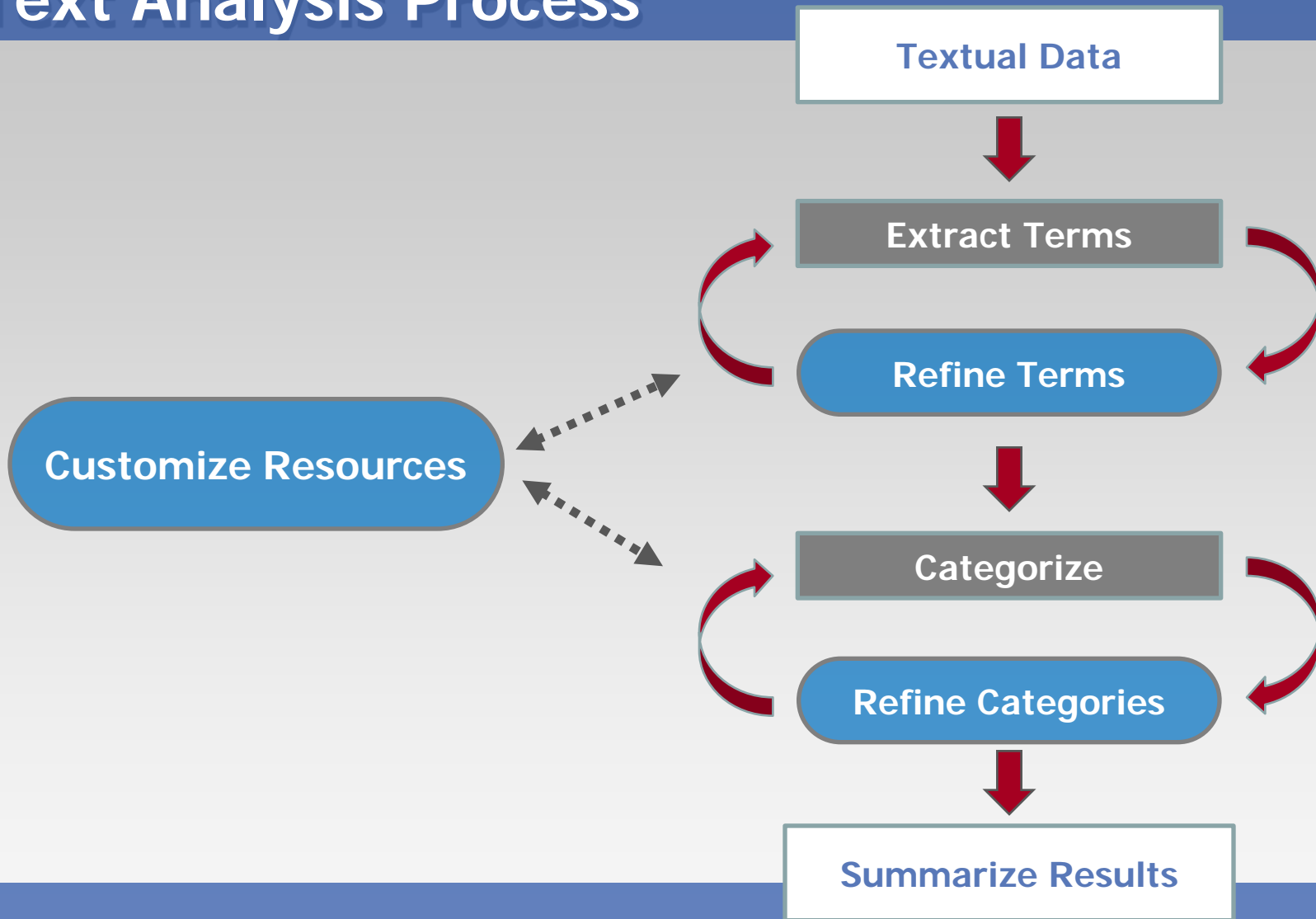
# Example of a Category (Theme)

## “Rough”

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



# Text Analysis Process



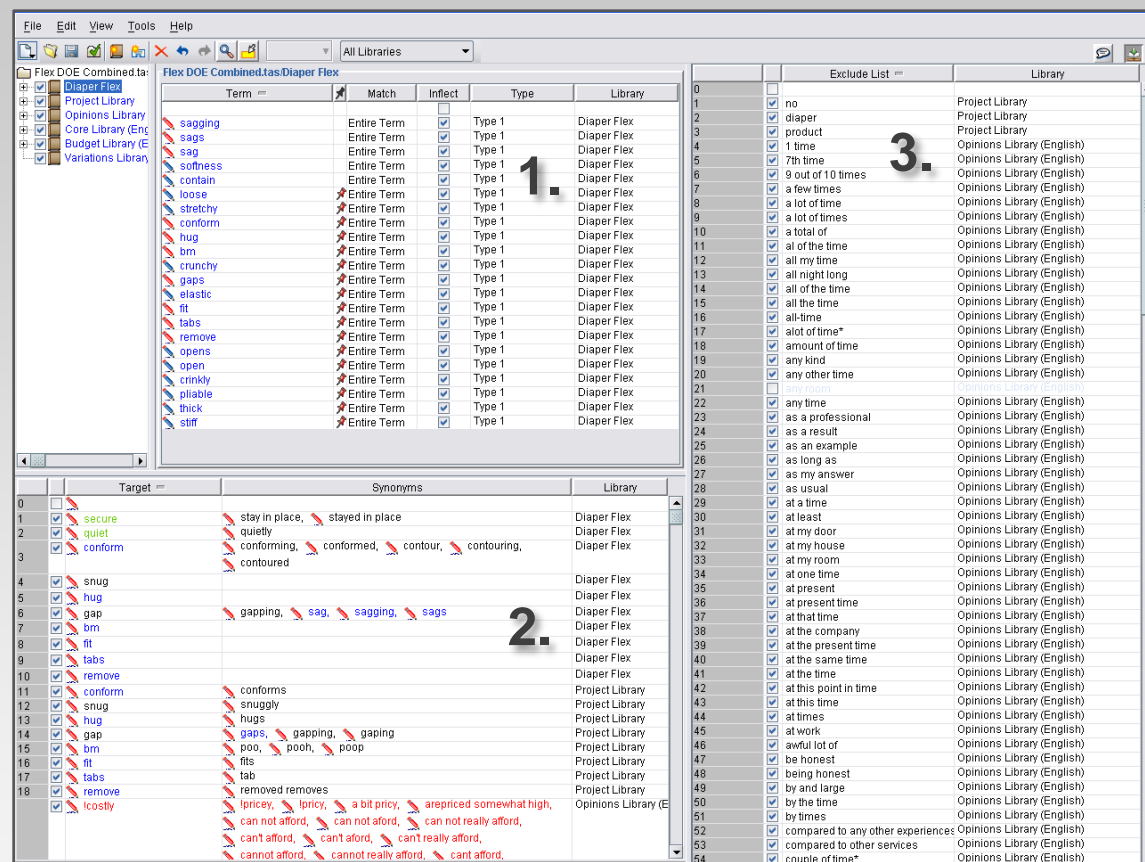
# Text Analysis – SPSS Main Screen

The screenshot displays the SPSS Main Screen with the following components:

- Categories (Top-Left):** A tree view showing derived categories. The 'Uncategorized (194)' category is selected, showing a list of terms like 'flexible (500)', 'soft (485)', 'baby (484)', 'elastics (481)', 'leg (448)', 'waist (450)', 'waist (397)', 'waist band (24)', 'backwaist (17)', 'elastic waist (5)', 'cover at the backwaist (1)', 'waist rides (1)', 'waist security in terms (1)', 'waist for peace (1)', 'waist for comfort (1)', 'stretch backwaist (1)', 'waistback (1)', 'waist gap (0)', 'thin waist (2)', and 'ears (417)'.
- Unused Extractions / All Extractions (Bottom-Left):** A list of extracted terms. The 'Unused Extractions' tab is active, showing terms like 'texture (4)', 'theirtinal shape (1)', 'thet leg (1)', 'thick baby blanket (1)', 'thick horizontal bands (1)', 'thigh area to catch (1)', 'thin and lacked padding (1)', 'thin child (1)', 'thin feeling (1)', 'thin sponge (1)', 'thinner (1)', 'thread (2)', 'thumb (2)', 'tidy (5)', 'tigger (1)', 'tightness (1)', 'time (2)', 'tiny (1)', 'tio roll for disposal (1)', 'tofeel (1)', 'toimproves (1)', and 'too high (6)'.
- Raw Data (Text) (Center):** A table with columns 'Id', 'Response', and 'Categories'. It displays 36 rows of data, including responses like 'The diaper feels compact and dense.', 'Diaper appears standard size for use adn yields well to manipulation.', 'Diaper cover feels very highly absorbent to first initial touch.', 'not much padding for comfort', 'doesn't appear to hold everything in', 'May be more of a challenge to diaper.', 'Diaper feels crushed thinly and has odd folds like it was ill packaged.', 'looks faded', 'Bottom crotch area of diaper appears to be either cut or folded so it looks more narrow.', 'The diaper was bending', 'This was a very lightweight product.', 'Product moves easily', 'The diaper felt squishy and form fitting', 'This is a very lightweight product.', 'and thick diaper', 'Seems to be about average weight.', 'fastener ears adhered nicely', 'Diaper rolled up easily', 'No gapping at backwaist', 'The diaper was foamy and squishable', 'like this product would wrap around and move with baby easily.', ', no puckering in legs', 'There was a gap at the belly', 'There was a gap at the belly area', ', looks like it would have good mobility and stretch', 'Looks like it is properly coving baby.', 'There is a very tiny gap at baby's spine', 'This product had an unpleasant odor.', 'Leg elastics in rear stay in place well while moving baby.', 'The diaper was foamy', 'The diaper was snug in those areas', 'Makes me wonder, I am not sure how this could move easily with baby.', 'product bunched in seat area while sitting.', 'The diaper is brilliant white and looks clean.', 'and paper-like', and 'Product feels dense.'

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

# Text Analysis – Refining Terms



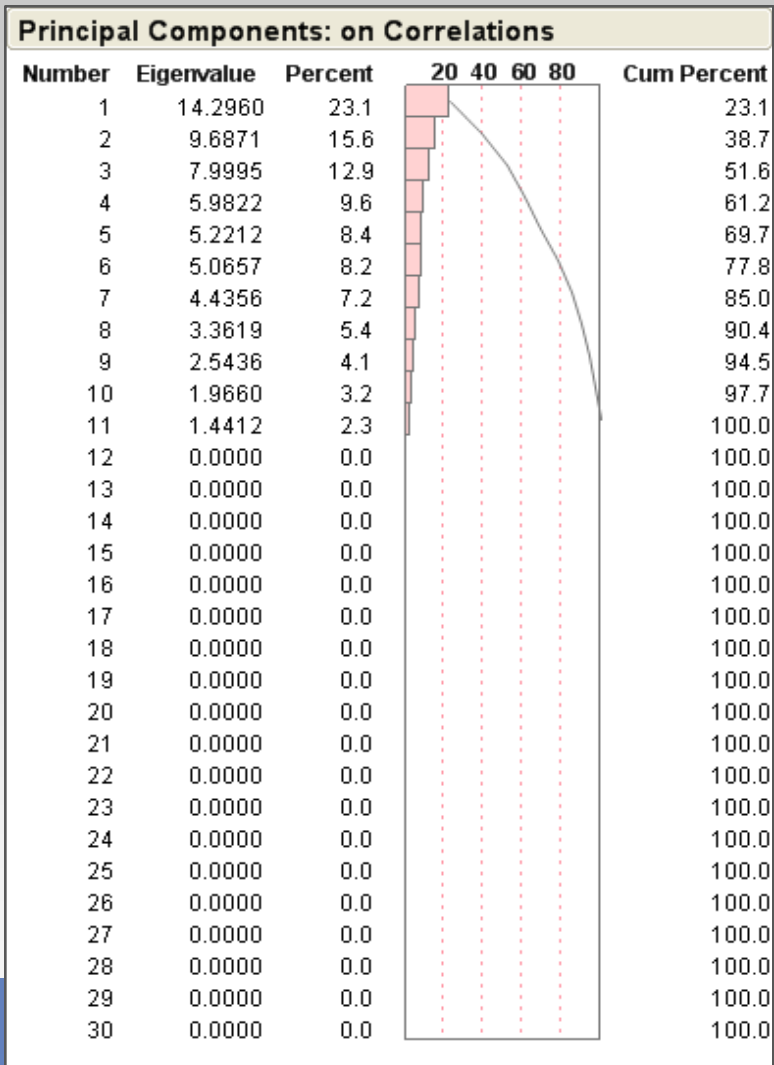
The screenshot displays the Flex DOE software interface, which is used for text analysis and term refinement. The interface is divided into three main panels:

- Term Panel (Top Left):** This panel lists various terms (e.g., sagging, sags, sag, softness, contain, loose, stretchy, conform, hug, bm, crunchy, gaps, elastic, fit, tabs, remove, opens, open, crinkly, pliable, thick, stiff) and allows users to select or deselect terms for analysis. It includes columns for Match, Infect, and Type.
- Synonyms Panel (Bottom Left):** This panel shows target terms and their synonyms. For example, the target term 'sagging' has synonyms like 'sag', 'sagging', and 'sags'. The target term 'conform' has synonyms like 'conforming', 'conformed', 'contour', and 'contouring'.
- Exclude List Panel (Right):** This panel shows a list of terms to be excluded from the analysis. The list includes terms like 'no', 'diaper', 'product', '1 time', '7th time', '9 out of 10 times', 'a few times', 'a lot of time', 'a lot of times', 'a total of', 'all of the time', 'all my time', 'all night long', 'all of the time', 'all the time', 'all-time', 'alot of time\*', 'amount of time', 'any kind', 'any other time', 'any time', 'as a professional', 'as a result', 'as an example', 'as long as', 'as my answer', 'as usual', 'at a time', 'at least', 'at my door', 'at my house', 'at my room', 'at one time', 'at present', 'at present time', 'at that time', 'at the company', 'at the present time', 'at the same time', 'at the time', 'at this point in time', 'at this time', 'at times', 'at work', 'awful lot of', 'be honest', 'being honest', 'by and large', 'by the time', 'by times', 'compared to any other experiences', 'compared to other services', and 'couple of time\*'. The list is numbered 0 to 54.

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

**Saved and reused for other studies.**

# Diagnostics – How much information?

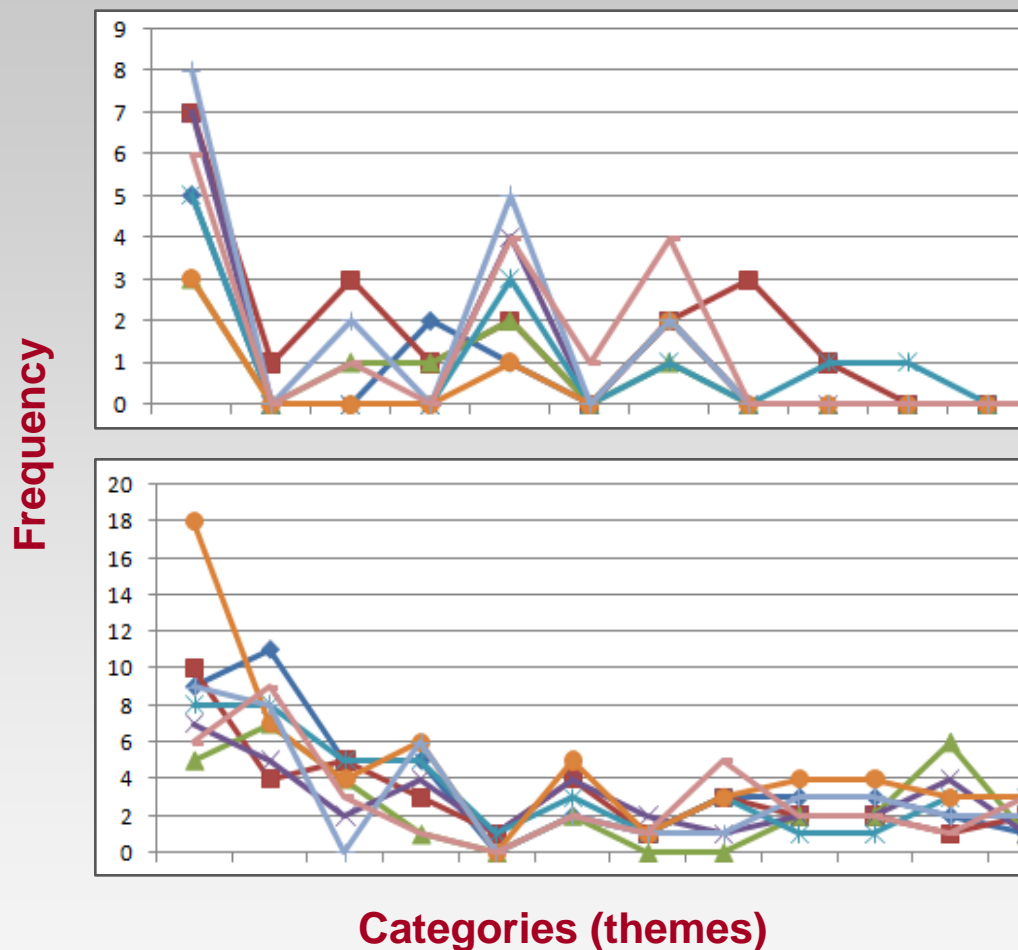


- 12-product study
- PCA on 30 categories
- 11 factors with eigenvalues  $>1$
- 85% variance explained with seven factors



# 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

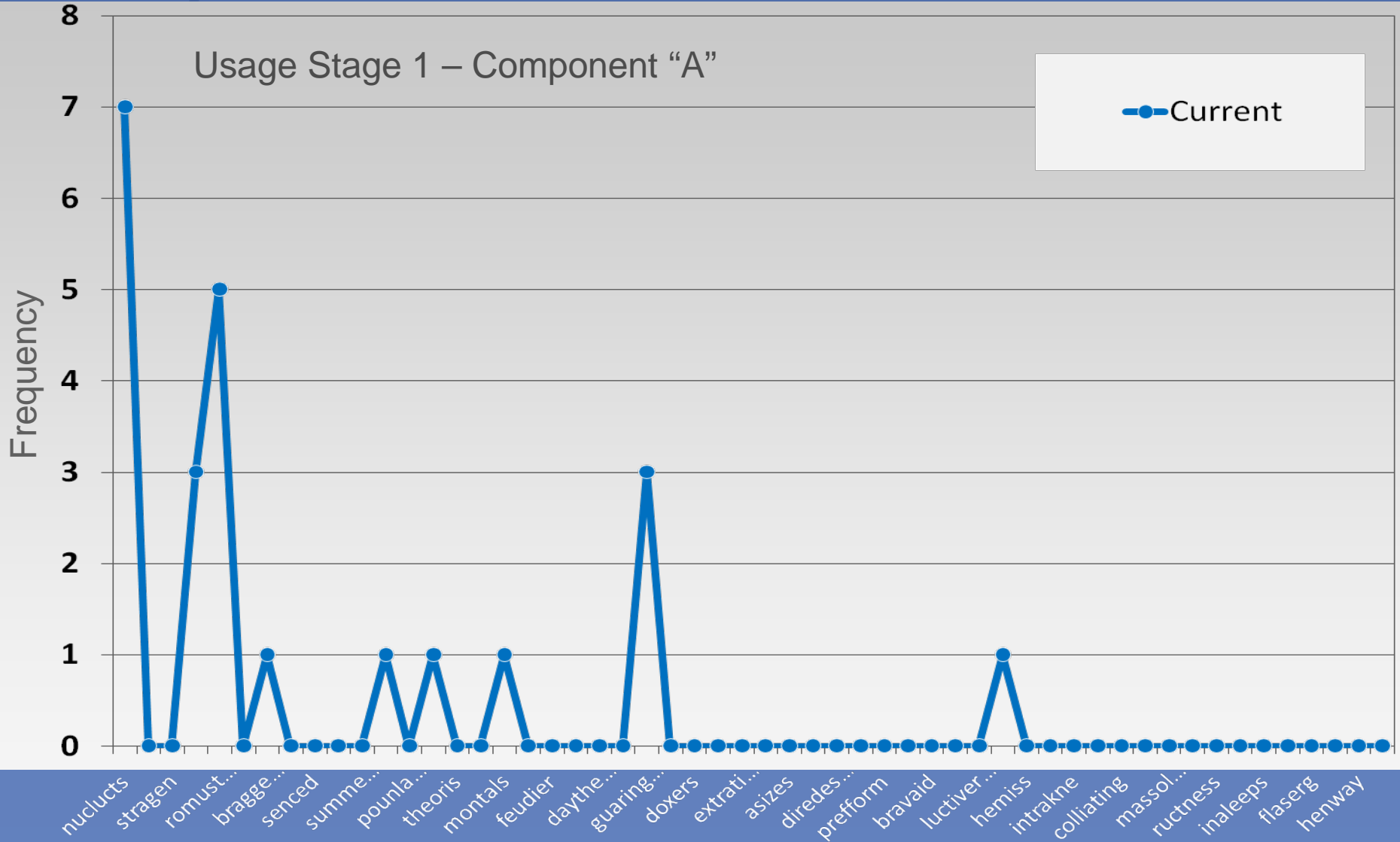


# Example: Focus of Results

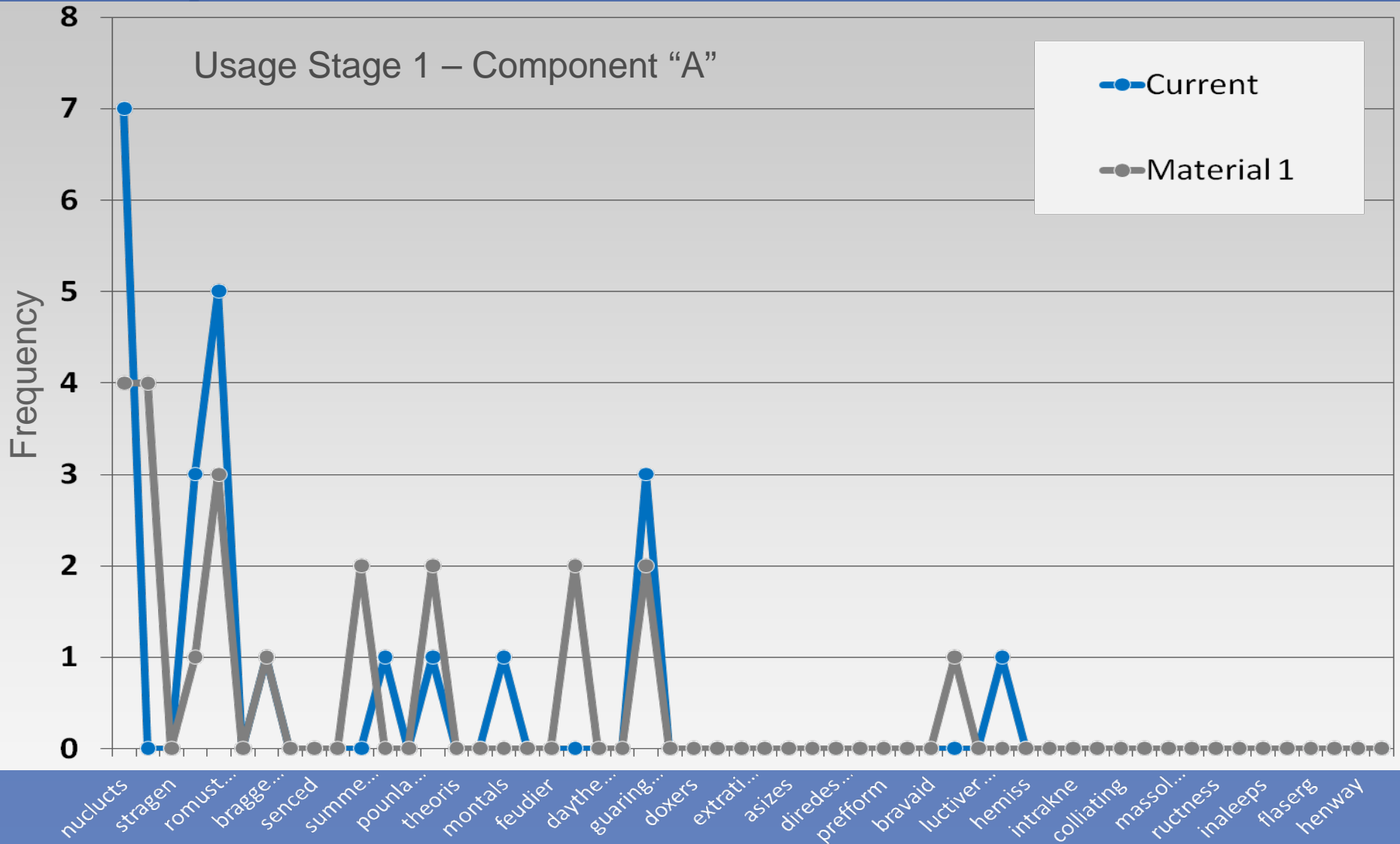
- Real data
- Full study conducted
- Current example...
  - one stage
  - one diaper component
  - positive comments
- Proprietary
- Use proxies for this example
- “Unfolding the Diaper”
- “Leg Elastics”



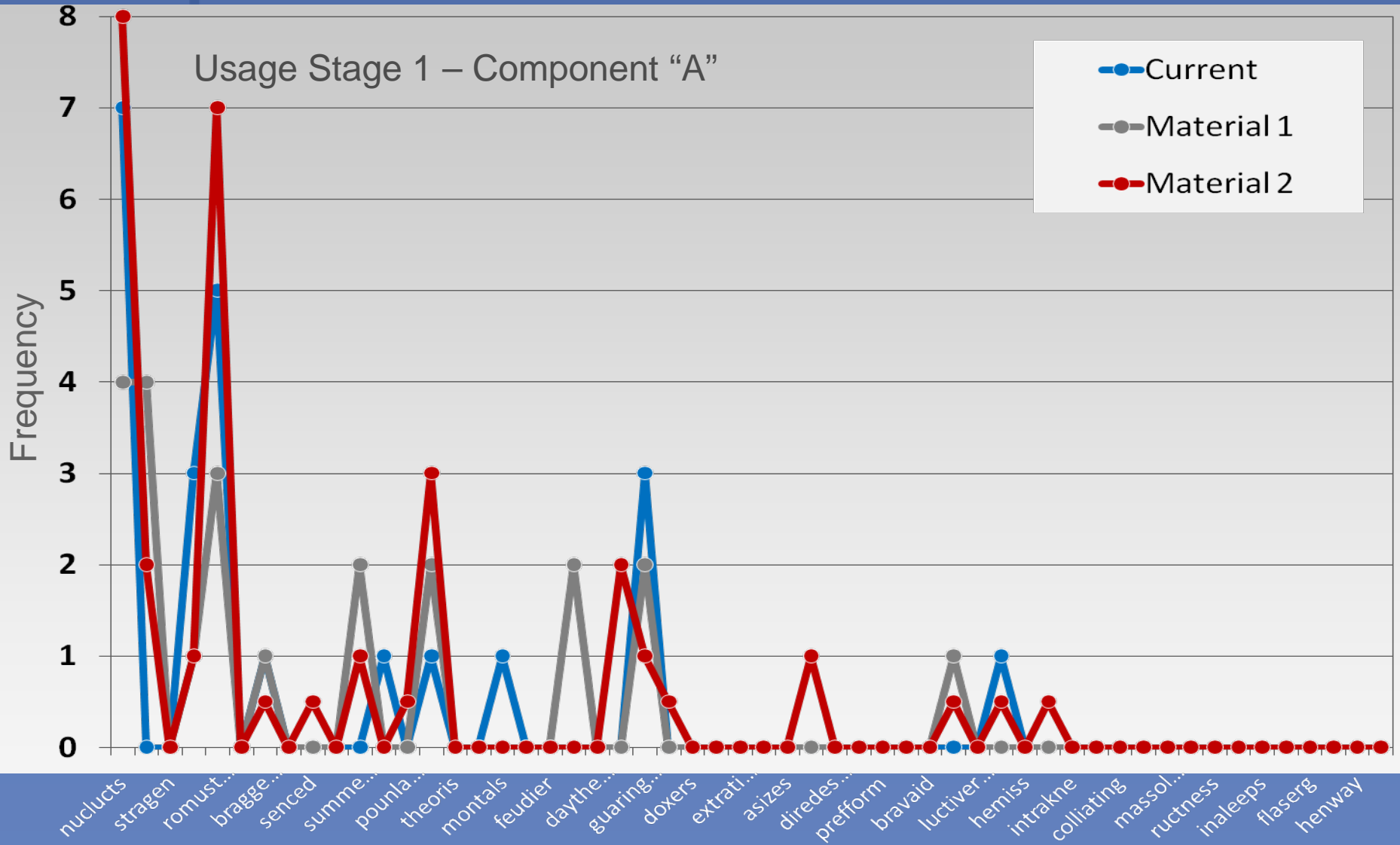
# Example – Positive Comments



# 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?

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