How to Analyze Survey Results: Open-Ended Questions

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Learning Objectives

By the end of this session, you will be able to:

- Discuss preliminary analysis considerations
- Describe common analytic approaches to qualitative analysis
- Compare and contrast content and thematic analysis approaches for survey questions
- Practice doing content or thematic analysis

What are some ways you are using open-ended survey questions in medical education?

Benefits & Challenges of Analyzing Open-Ended Questions

- **Structured questions to all respondents**
- Respondent answers the questions with few parameters
- Finite number of responses & respondents
- Responses are “packaged” by space & how much is written
- Data may already be in digital format if online

Need coding system to analyze responses
Researcher requires subjective judgments

When collecting open-ended survey responses, how do you usually analyze data?

Types of Analytic Reasoning

Qualitative Analysis

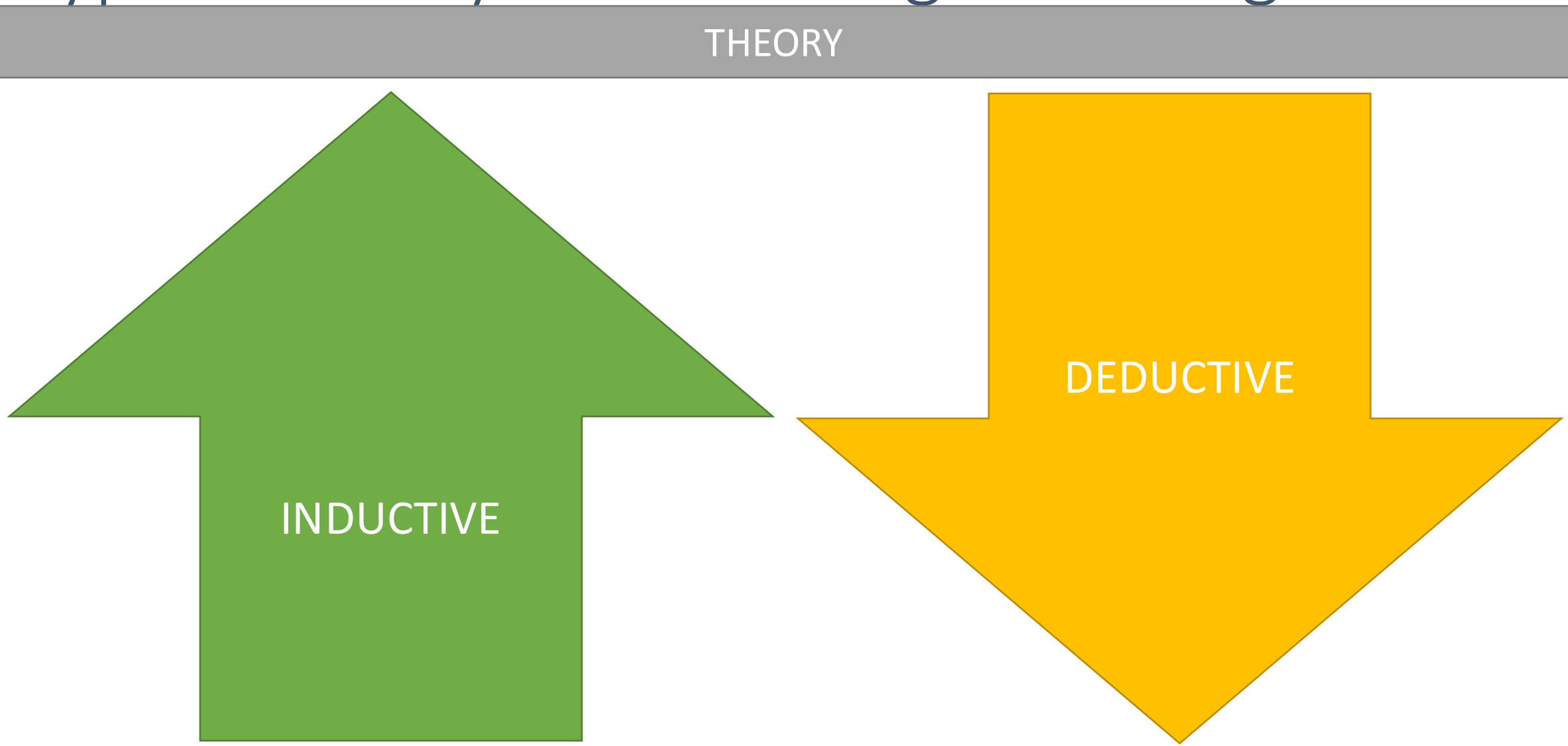
No established or standardized protocol for qualitative analysis

Fluid process, dependent on research question

Under certain circumstances, modify approach as data emerges

Multiple methods of discovery: deductive & inductive reasoning, or a combination

Types of Analytic Reasoning – Starting Points



Types of Analytic Reasoning

THEORY

Generate codes from Data, refine as more data are reviewed

Start with your data

Through coding process, identify emergent codes, then consider how fits into literature

Example research question: How do students define mistreatment during clerkships?

INDUCTIVE: Iteratively develop codebook based on student statements, compare to ACGME mistreatment definitions

YOUR DATA

Types of Analytic Reasoning

THEORY

Apply a general theory specifically to your data

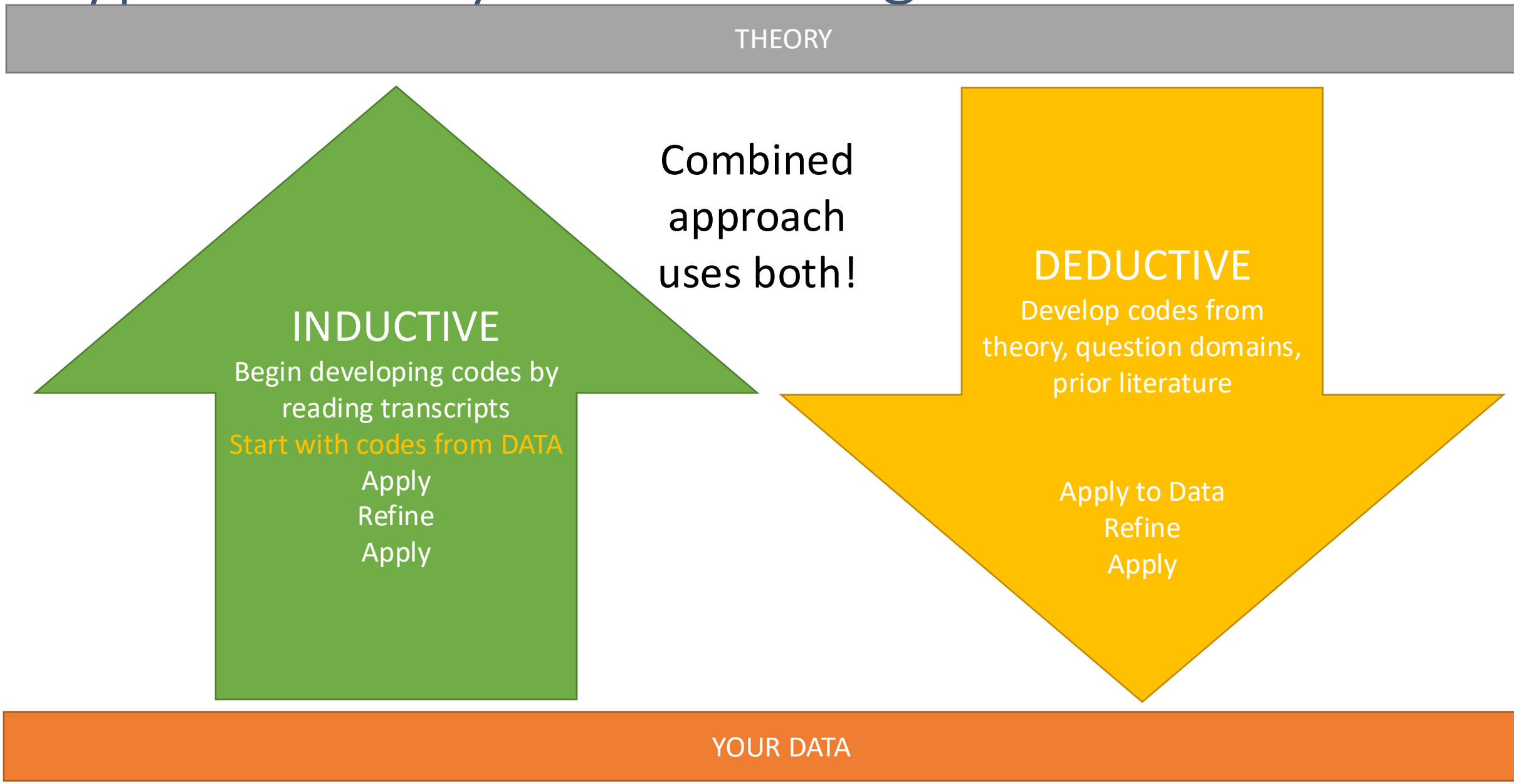
Start with a codebook
You develop based on prior literature/theory, then apply to your data through codes

RQ: How do students define mistreatment during clerkships?

DEDUCTIVE:
Develop codebook based on ACGME definition of mistreatment, apply to student statements

YOUR DATA

Types of Analytic Reasoning



Summary

- Use your research question to guide your analytic reasoning approach. Does it make more sense to:
  - Start with the data, especially if exploratory or novel research: **INDUCTIVE**
  - Start with prior knowledge, especially if building or explanatory research: **DEDUCTIVE**
- Utilize **COMBINED** approach to enhance rigor and findings

Consider analytic approach before starting the analytic process!

Research Methods Used During Qualitative Analysis

Practical “How To” Analyze

- Consider:
  - Philosophical Approach
  - Data Analysis Approaches
- Process Elements
  - Team-based analysis
  - Software assisted analysis (additional analysis features)
- **Multiple approaches and Processes**

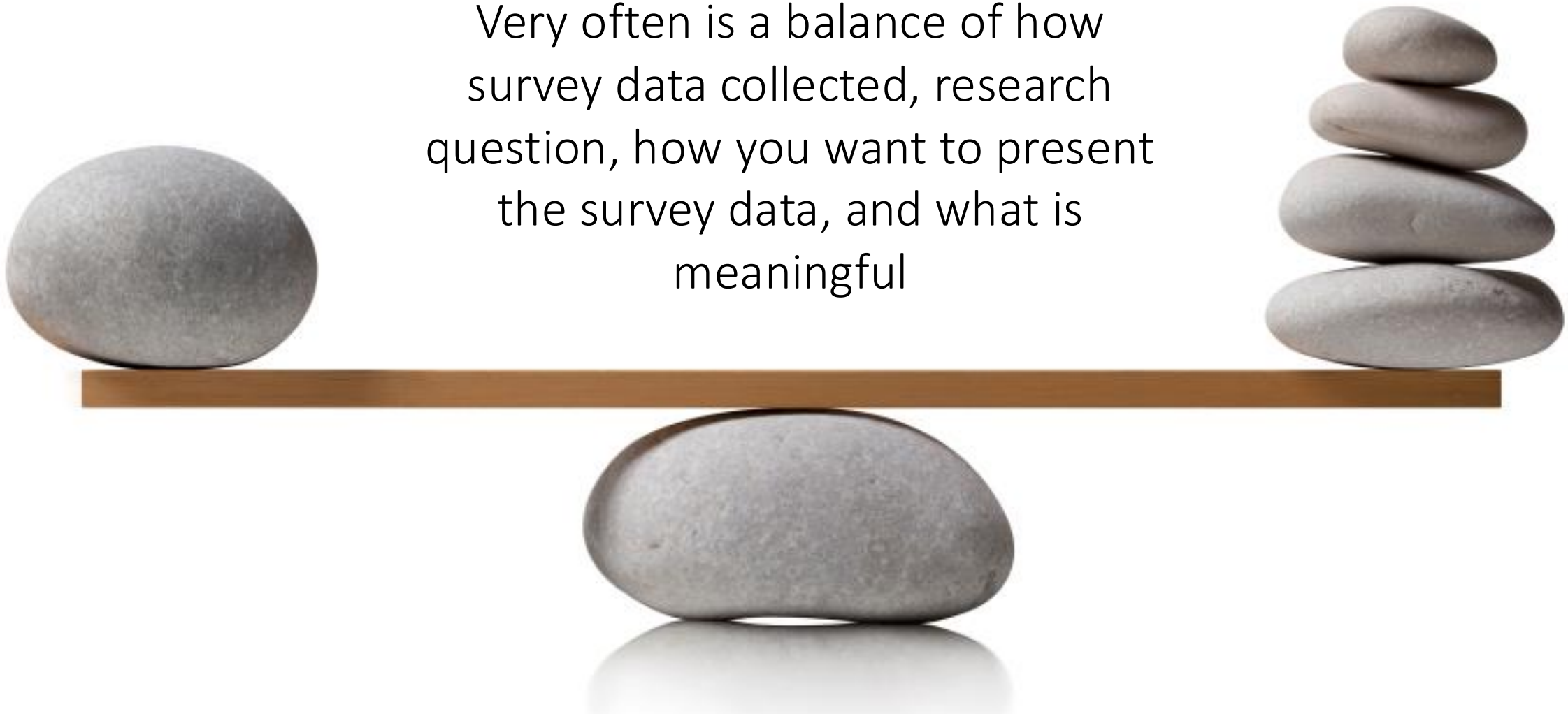
Philosophical Approaches

Generic Qualitative Research	Investigate subjective opinions, attitudes, beliefs, reflections of experiences *
Phenomenological	Describe shared meaning of lived experience as phenomenon
Narrative	Use individual stories people share to understand meaning or experience
Ethnographic	Understand interaction through systematic observation within culture or society
Case Study	Examine a bounded “case” derived from multiple mixed methods source data
Action Research	Solve problems through community knowledge
Grounded Theory	Generate a theory grounded from iterative process of data collection and analysis

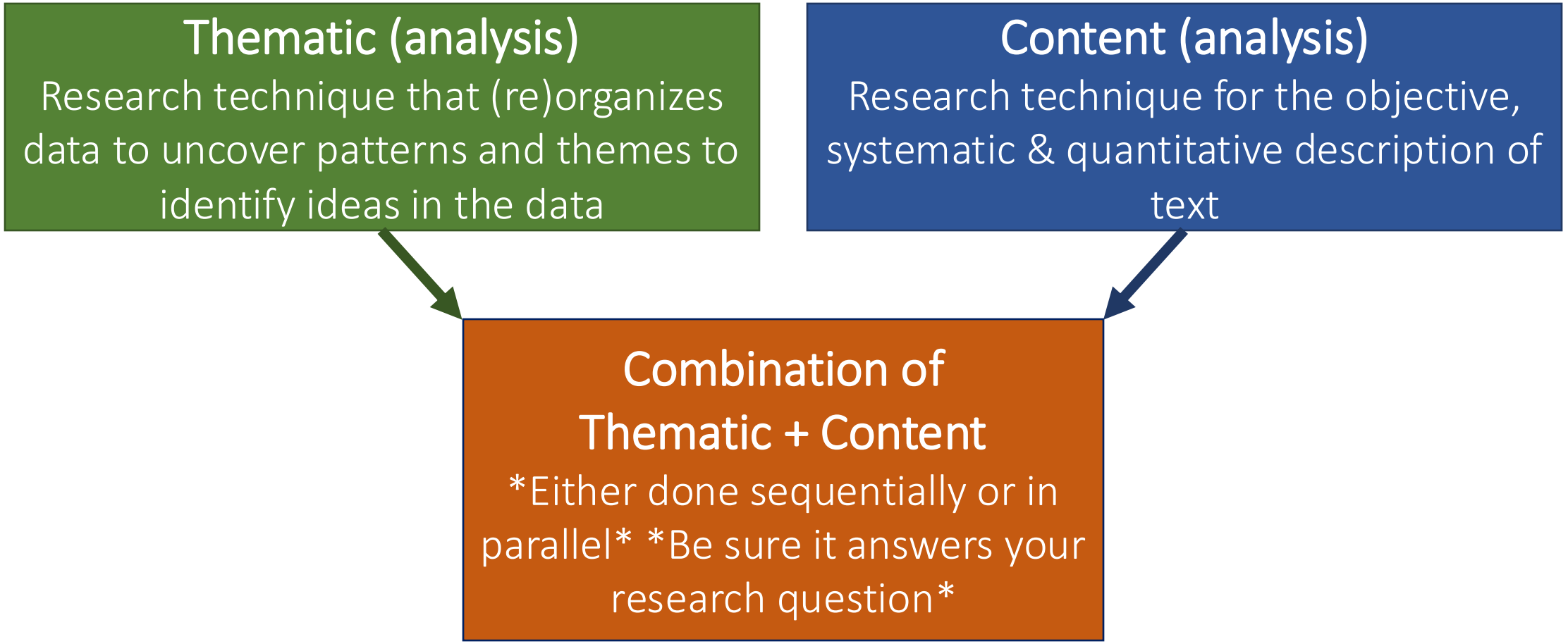
Approaches to Qualitative Analysis

Qualitative Analysis Approaches

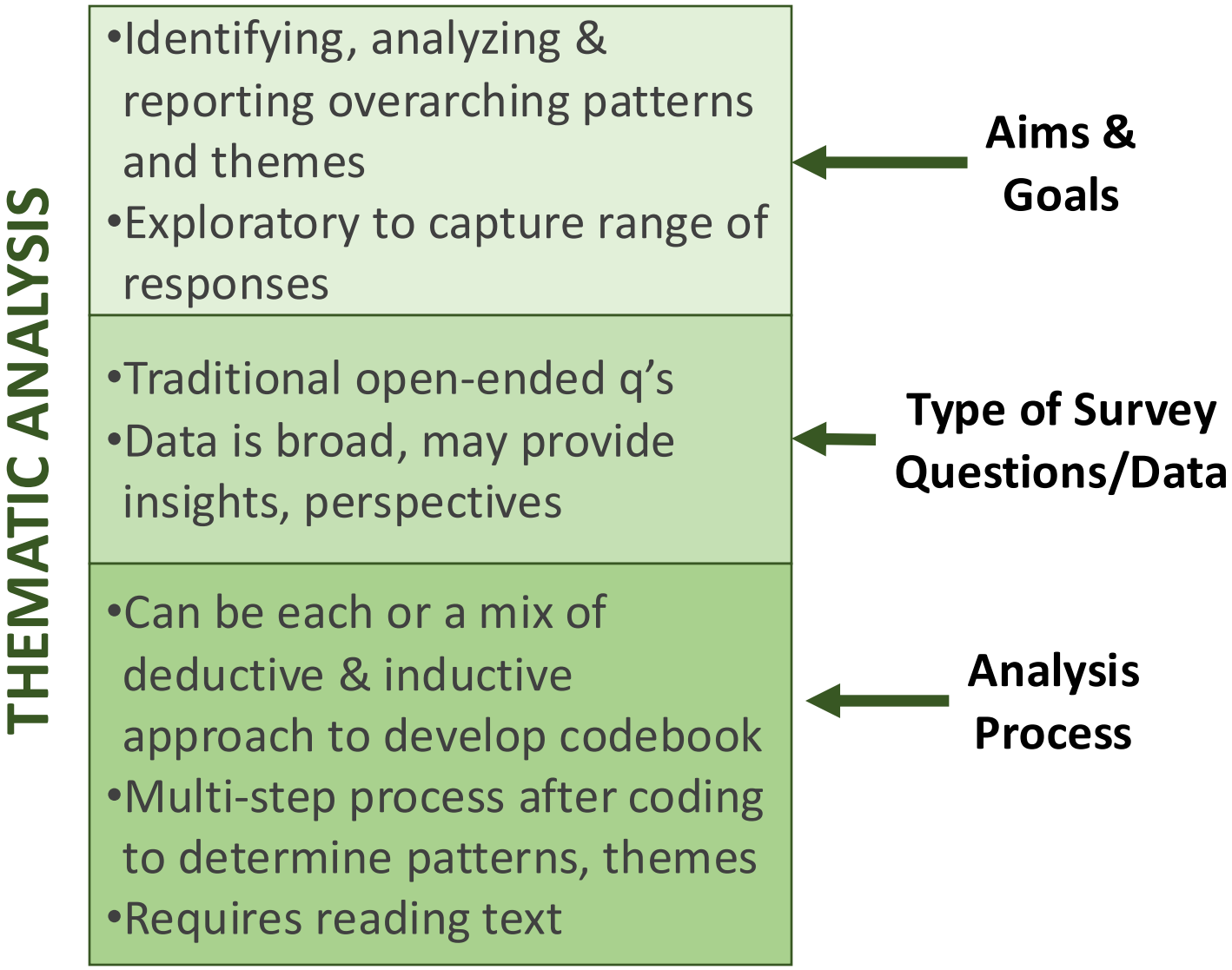
Very often is a balance of how survey data collected, research question, how you want to present the survey data, and what is meaningful



Qualitative Analysis Approaches



Thematic v Content Analysis: A Comparison



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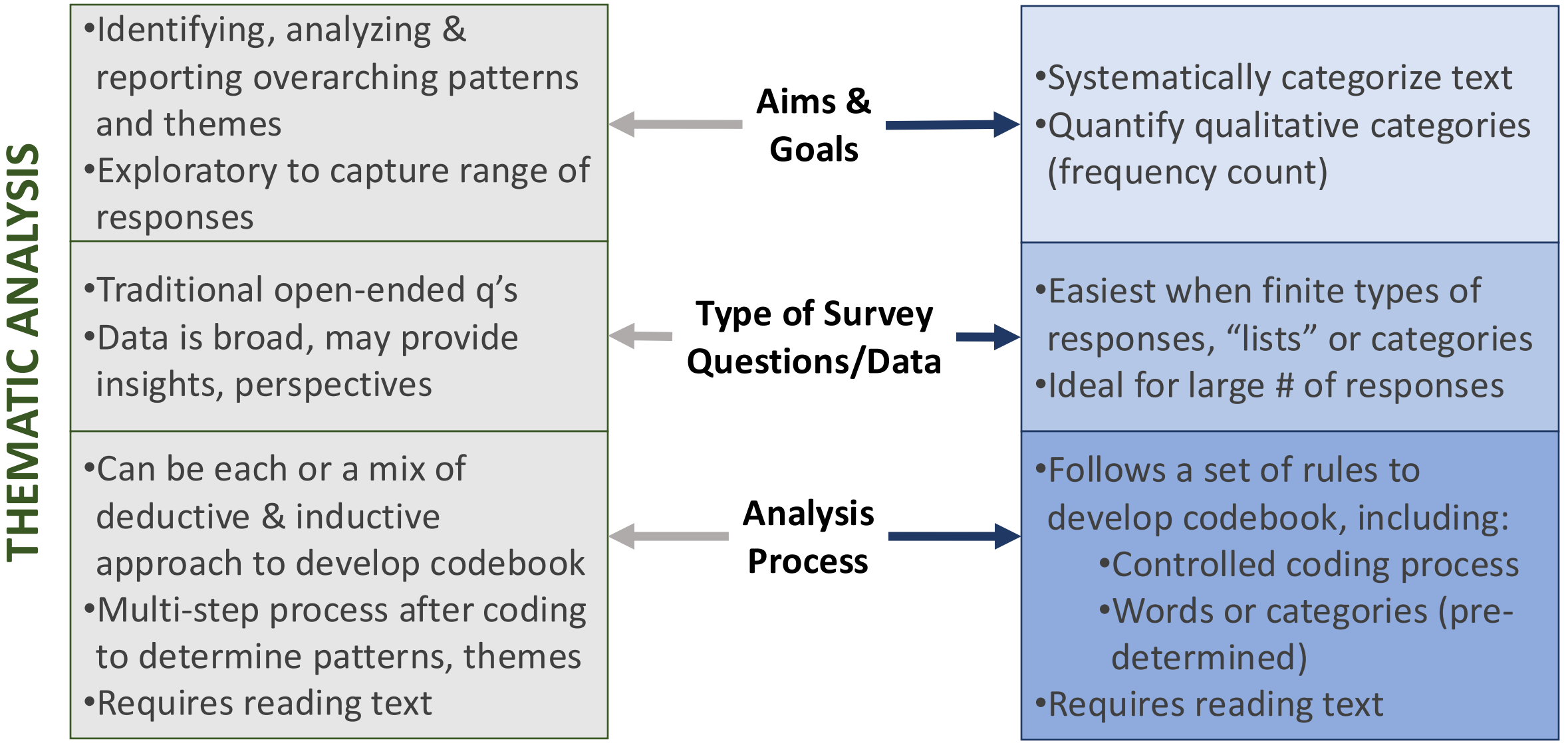

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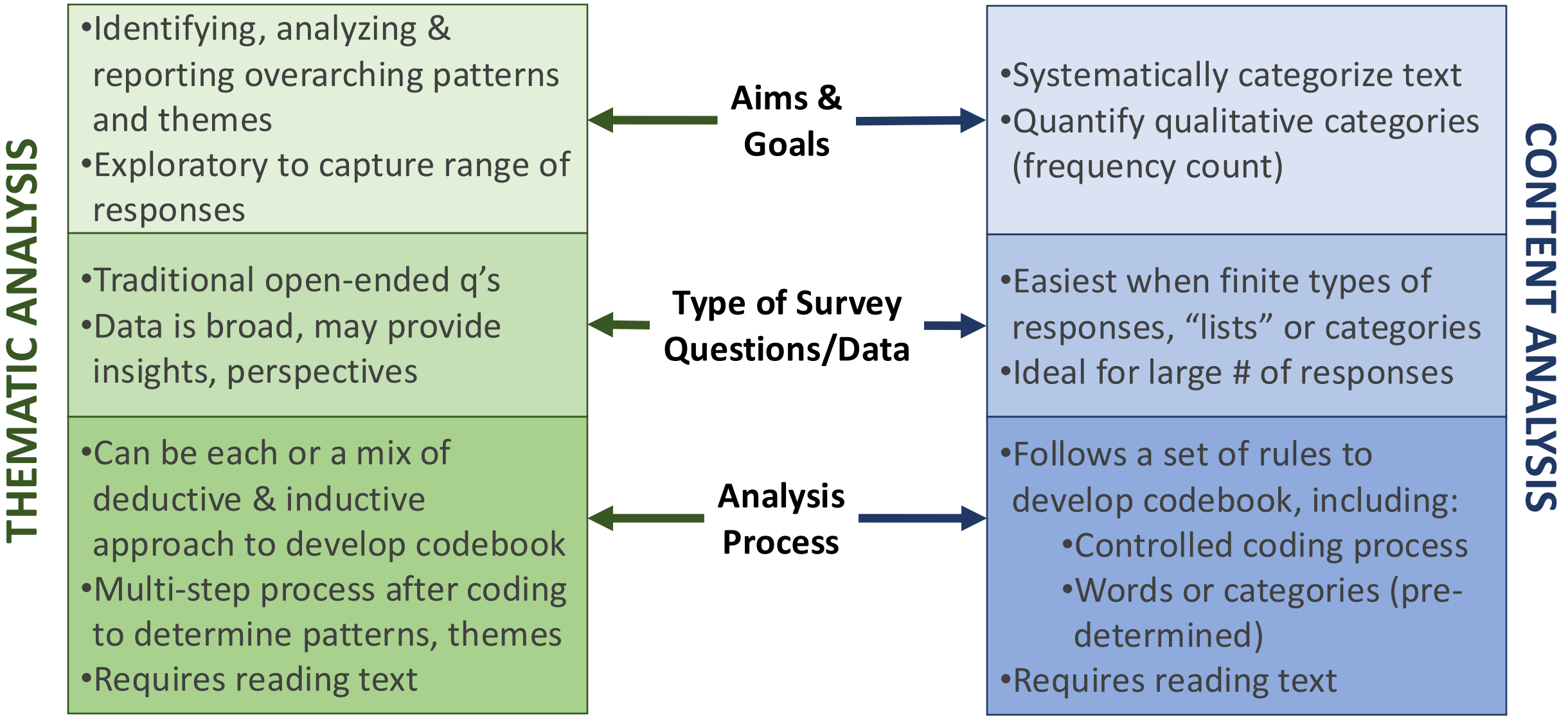


Thematic & Content Analysis: Your Data

Think about your dataset:

How were the data collected?

How are you envisioning sharing findings?

Review how you might approach analysis before developing codes, codes might differ if they're counted (content) or identifying themes (thematic). Can have combined analytic approach goals for codes.

Thinking about Approaches to Thematic & Content Analysis …

When would you use:

- Content analysis
- Theme analysis

Qualitative Analysis Process

Your Qualitative Data…

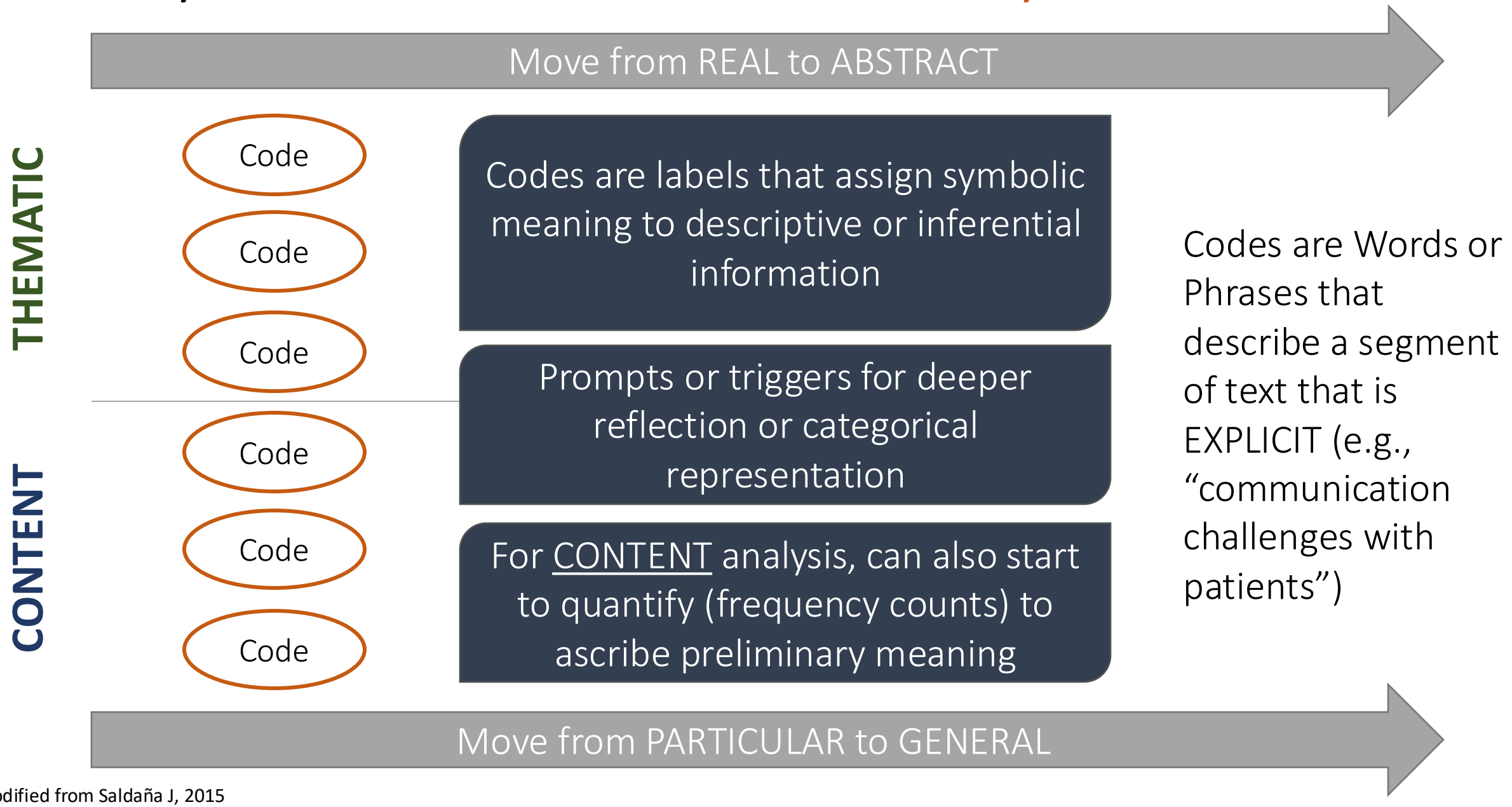
Where to begin?

Preparation for data for analysis is compatible with other data sources

<u>Key steps</u>: 1) Transcribe/translate
2) Clean and de-identify data
3) Input data into qualitative software

<u>Resources</u>: Identify and mobilize co-coders, content experts, and participant experts; develop analysis plan and timeline

Analysis Process: Code the Survey Data



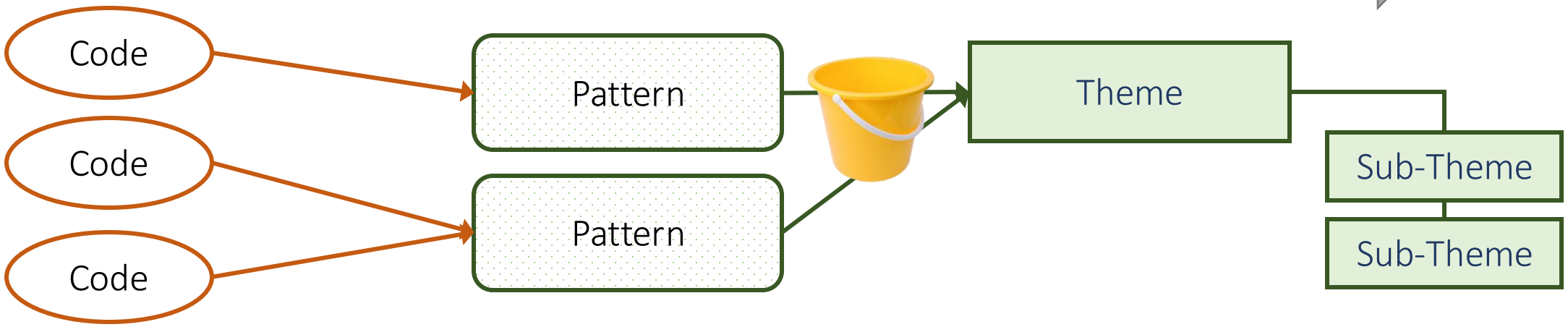
Codes are Words or Phrases that describe a segment of text that is EXPLICIT (e.g., "communication challenges with patients")

Modified from Saldaña J, 2015

Analysis Process: Thematic Analysis

THEMATIC

Move from REAL to ABSTRACT



By reviewing individual or groups of codes, patterns emerge that suggest more abstract ideas

Themes are articulation of larger ideas present in the data but synthesized through the analysis process

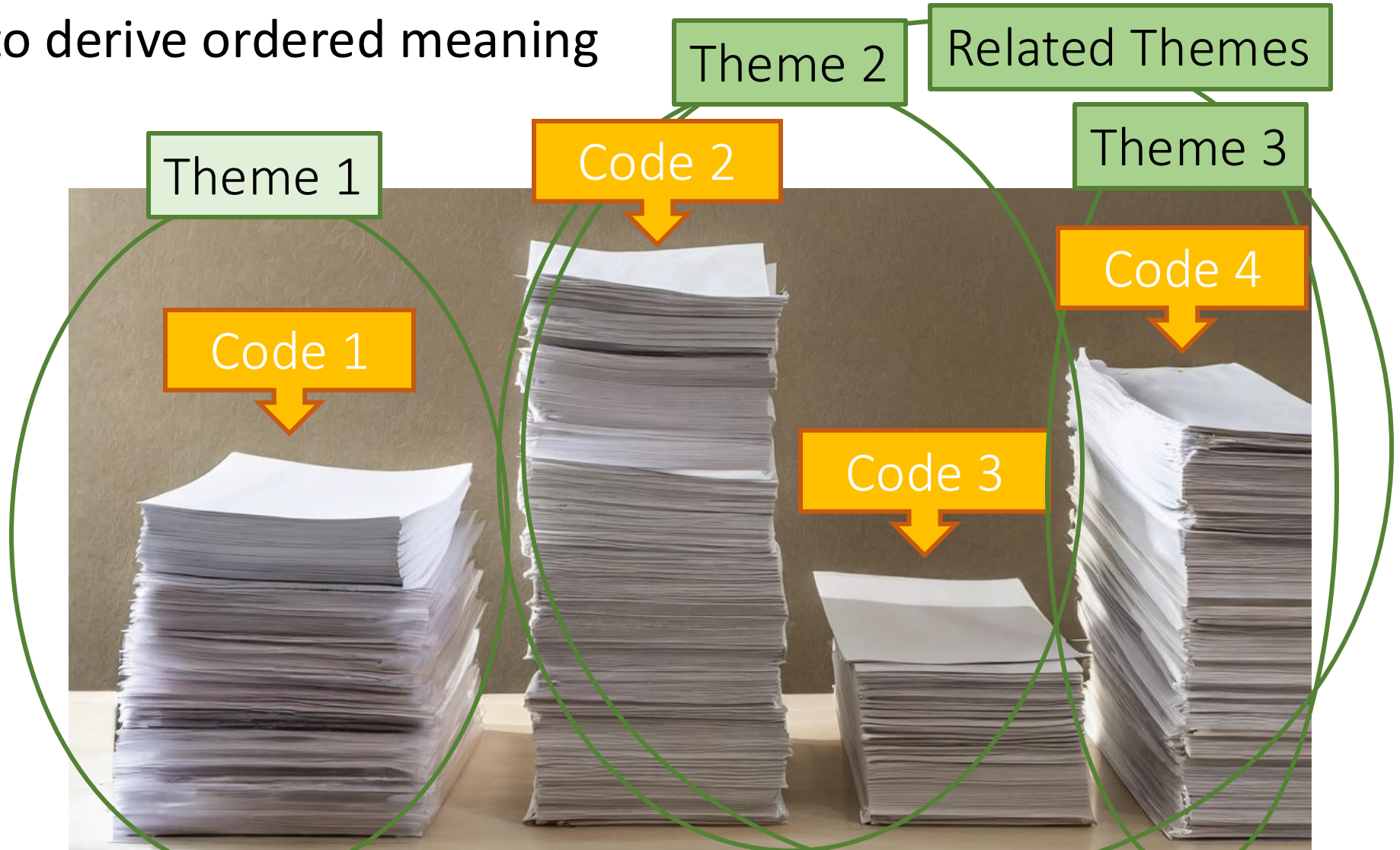
Themes are the outcome of coding & analytic process

Move from PARTICULAR to GENERAL

Modified from Saldaña J, 2015

Coding: Theme Analysis

Sorting your participant quotes (from survey responses) into theoretical ‘piles’ to derive ordered meaning



Analysis Process: Content Analysis

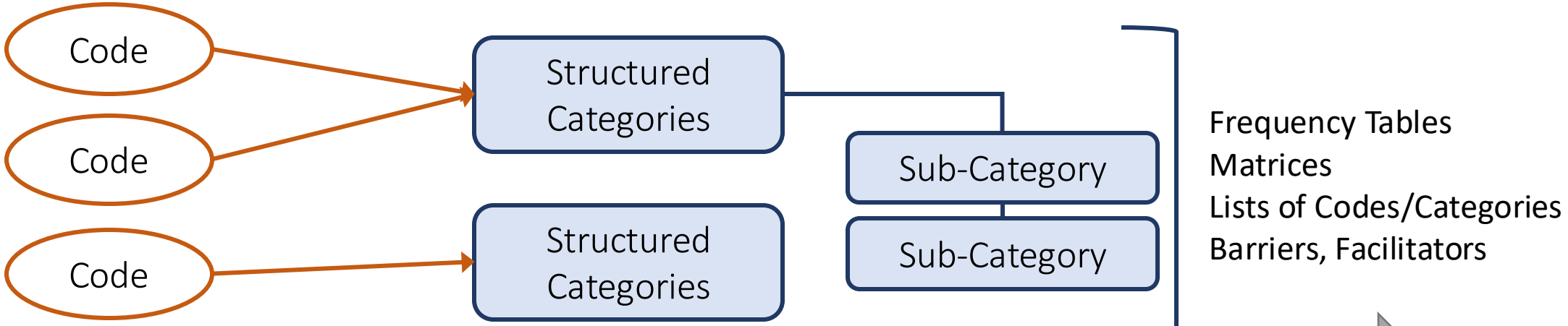
Move from REAL to ABSTRACT

Codes are condensed into meaningful categories based on research question and/or relevant frameworks

Coded data can be split into various categories & sub-categories

Categories of the data are represented numerically, quantified

CONTENT

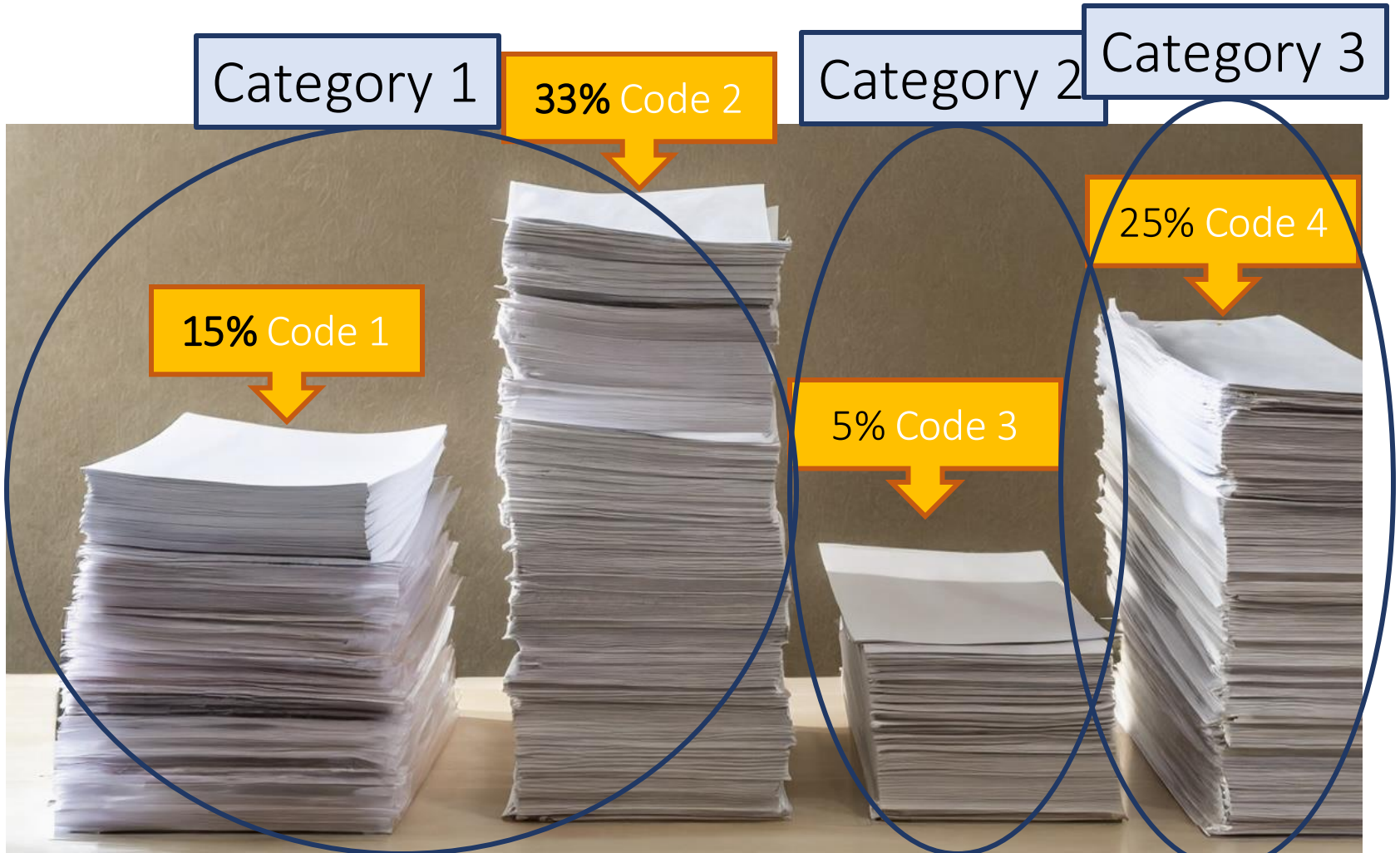


Move from PARTICULAR to GENERAL

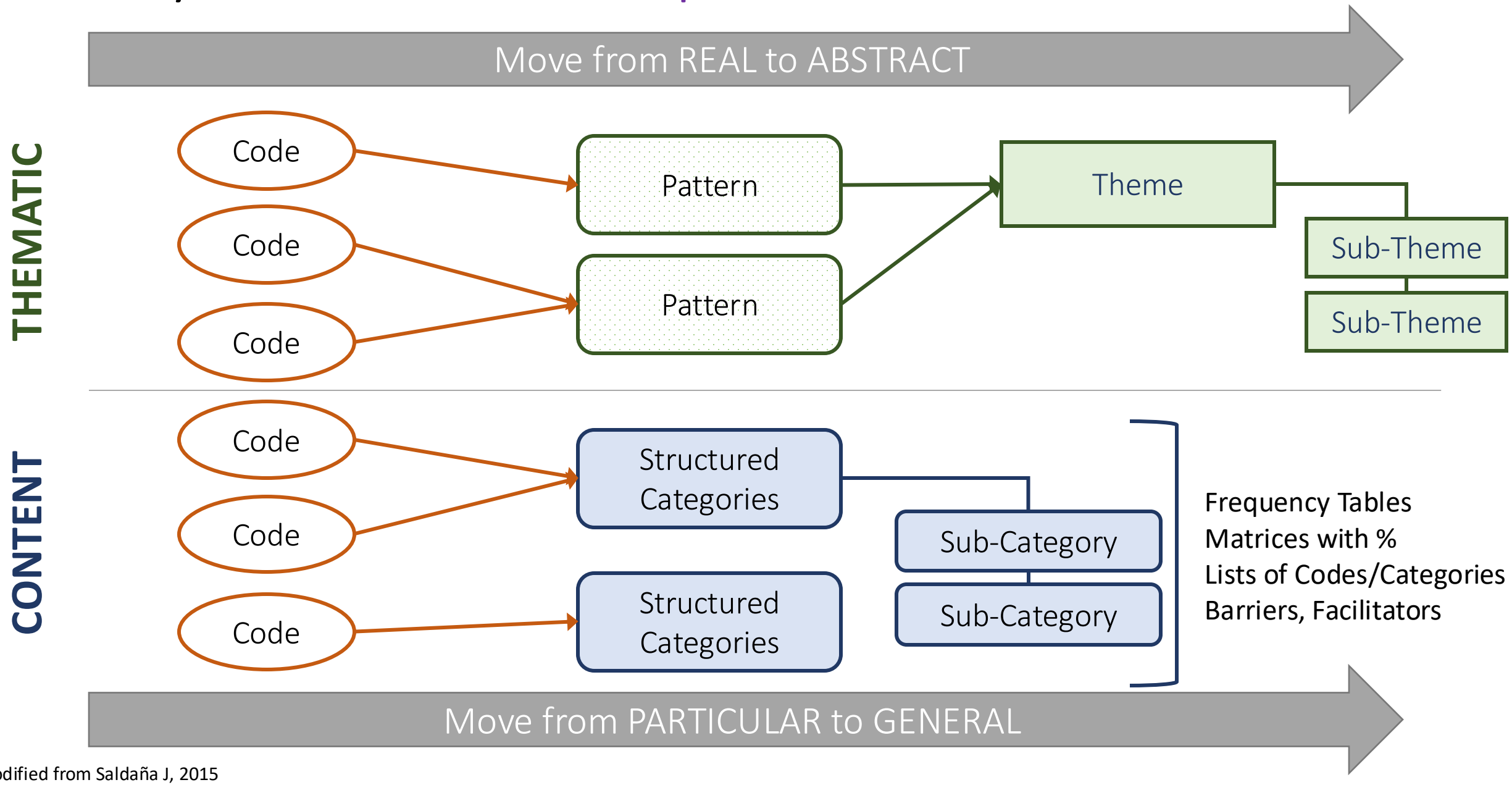
Modified from Saldaña J, 2015

Coding: Content Analysis

Sorting your participant quotes (from survey text) into conceptual ‘piles’ to quantify later – may quantify by Category and/or Code

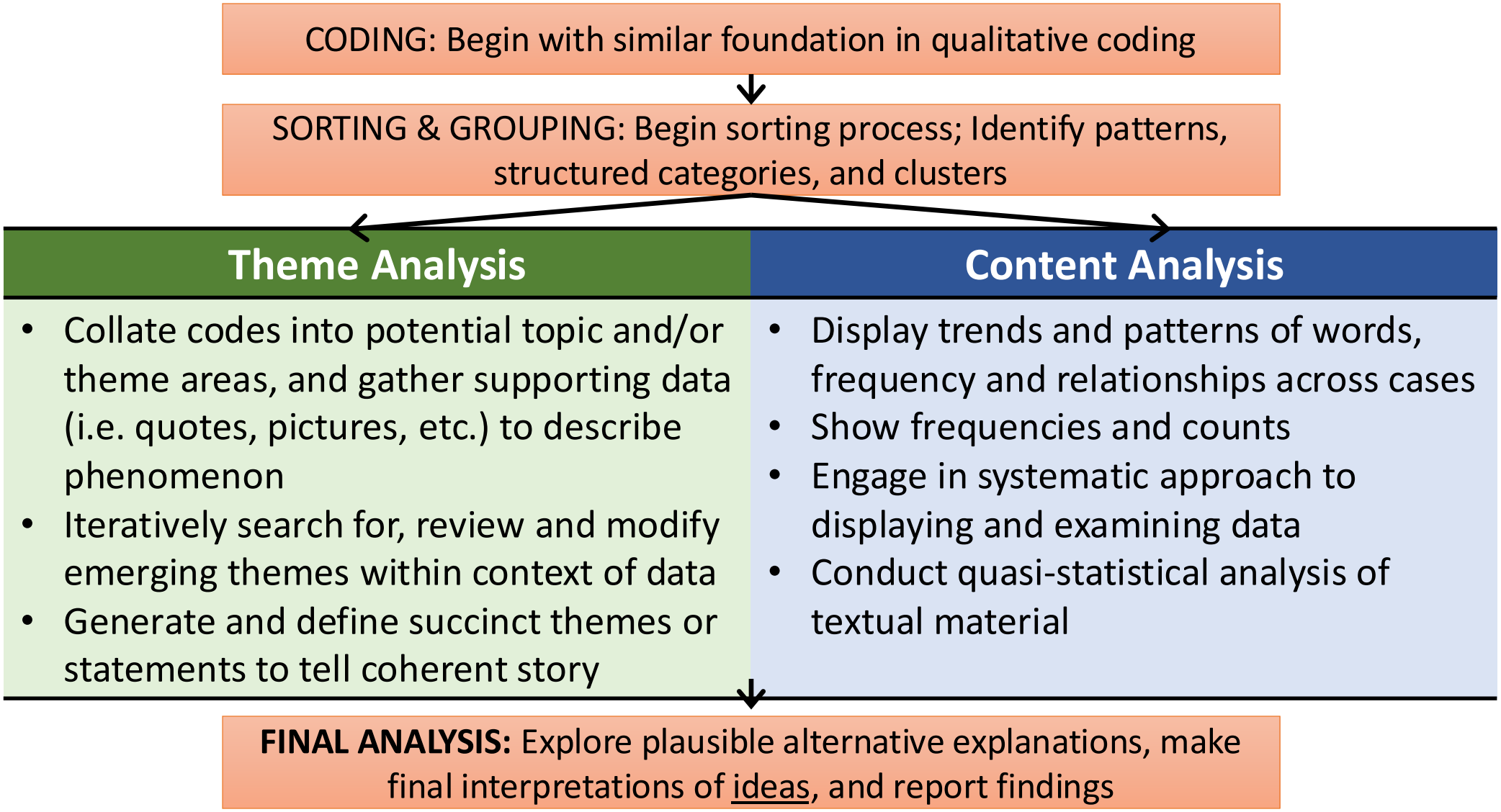


Analysis Process: Compare Process



Modified from Saldaña J, 2015

Methods Have Divergent Analysis Processes



Final Products & Reporting

Both report…

Relevant themes that capture and exemplify meaning within the data to answer a research question

Theme Analysis

- Themes along with narrative summaries and quotes
- Tables of themes and quotes
  - Compare and contract across participants
- Thematic diagrams:
  - Visual presentation of codes and themes
  - Story lines, descriptive processes, models, conceptual maps

Content Analysis

- Tables with descriptive codes, frequencies, quotes
- Matrices that compare and contrast by categories or groups or phases
- Visual models, conceptual maps
- Depiction of processes, such as story lines, descriptive process

Other Analysis Considerations

How do you want to handle the data?

- Manual analysis (sorting process w/ individual responses)
- Manual transcript-based margin coding
- Software assisted analysis
- Pros and cons for each approach

Who is going to be involved in the analysis?

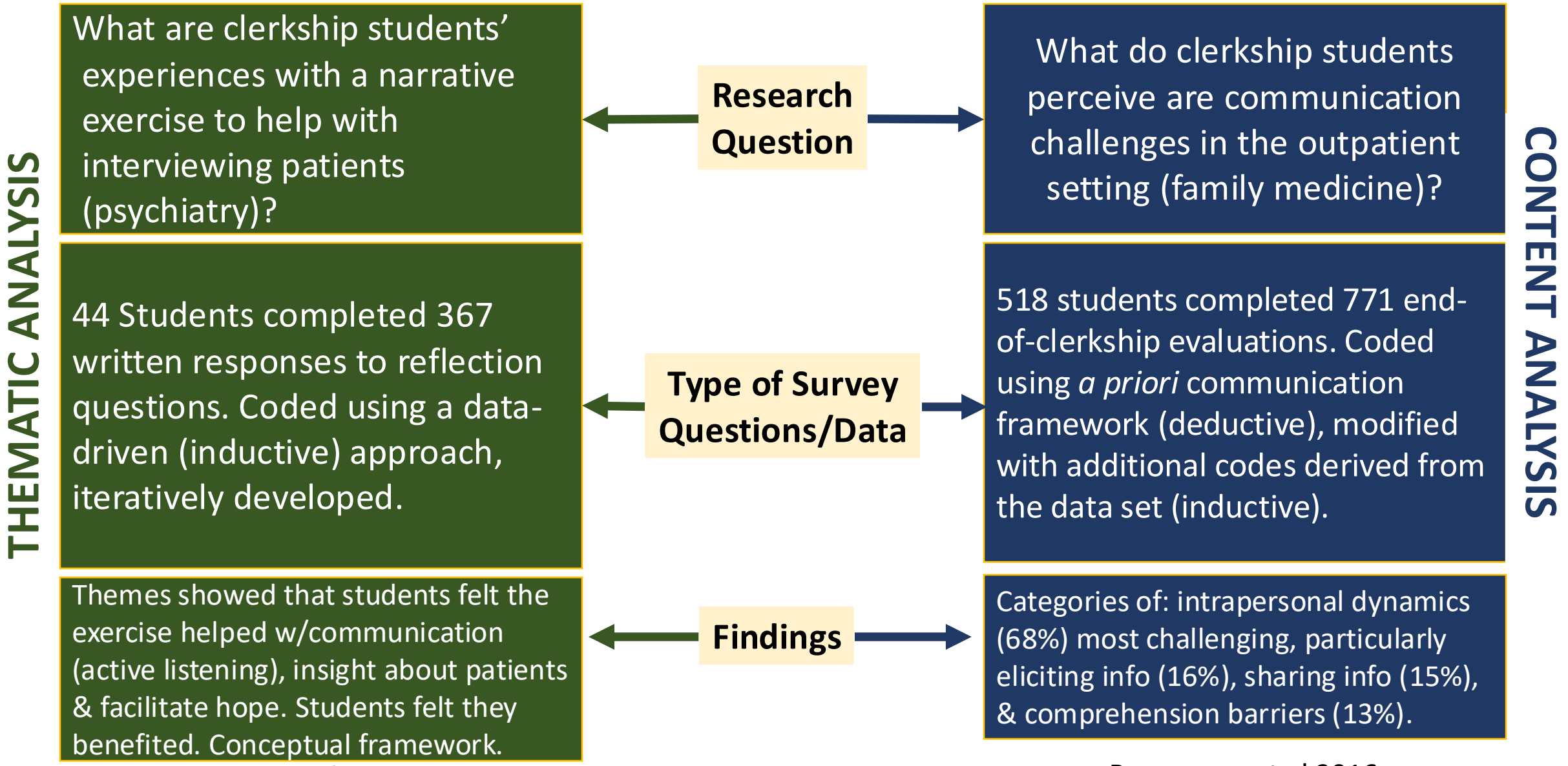
- Bringing in outside perspectives increases the complexity AND the credibility of your findings
- Be strategic in deciding who to involve when, and why

Is your overall design Grounded Theory?

- Grounded theory is an iterative qualitative approach with the aim of generating a conceptual theory driven by data.
- Long, involved process of iteratively and continually collecting data may influence analysis timeframe & process

Examples from the Field

Thematic v Content Analysis: An Example



Garrison et al 2011

Braverman et al 2016

Example of Thematic Analysis Narrative Quotes

Communication

Students identified improved *communication*, and more specifically *active listening*, as the most common dimension of their experience. One student noted that his/her patient "seemed to feel like someone was taking the time to listen to his side and actually hear what he was saying." Other students emphasized their own experience:

> It allowed me to connect with the patient in a different format. I felt more focused on emotions and feelings. I enjoyed understanding the patient's perspective.

Insight

The second broad theme emerging from student comments was *insight*, including *student insights* about their patients and also the facilitation of *patient insights*. The narrative approach helped students gain insights into their patients, which complemented and challenged the diagnostic approach. For example, one student noticed,

> The narrative was much more "in the patient's shoes" than the treatment plan or diagnosis.… It identified areas to put into the treatment and diagnostic plan … definitely strengthening both.

Hope

The third theme to emerge from students' comments was the experience of facilitating *hope*. Comparing the narrative to traditional assessment, one student reflected,

> The diagnostic assessment was totally depressing, all about the horrors that this adolescent had been through, and hard to see any hope at all in her situation. The narrative was hopeful. [The patient] had the biggest smile I had seen on her when we talked about the written narrative. She seemed more upbeat, more hopeful, and more confident that she would leave the hospital and overcome her problems.

The researcher 1) synthesized the findings by theme, 2) described how the data relates to the theme, and 3) displayed an example quote in text.

Garrison et al 2011

Example of Thematic Analysis Conceptual Model

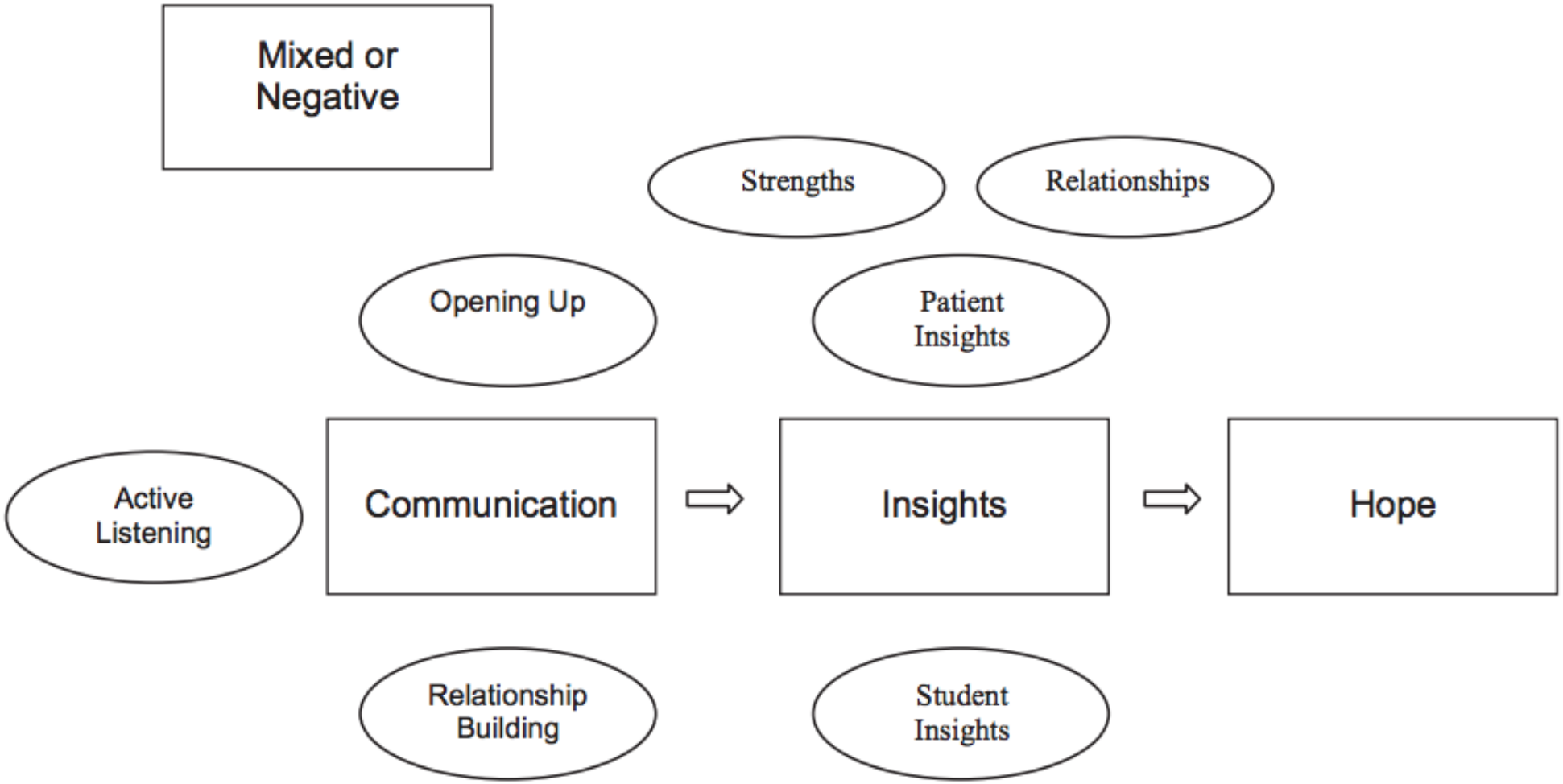


Figure 1 The narrative transaction. This is a model showing how a patient-centered communication exercise may lead to insight and eventually hope for both patients and students. The boxes represent major themes, and the circles represent subthemes.

Garrison et al 2011

"As Figure 1 illustrates, improved communication helped students and patients gain insights and recognize signs of hope. The model suggests that taking the time to discover the patient's life story results in opportunities for both students and patients to grow from the illness experience…"

Example of Content Analysis Table

Content analysis table

- Quantification of pre-determined codes using a framework, count frequencies across student responses, provide a representative example

Can display Thematic Analyses findings similarly, without the "code application" column

Table 2: SEGUE+ Framework Codes, Definitions, Coding Frequencies, and Illustrative Examples

Code Name	Code Definition	Code Applications, No. (%) (n=1,105)	Example
Intrapersonal	Communication difficulty or opportunity deriving from student's own biases or preconceived notions, professionalism issues, boundary-setting challenges	59 (5%)	Middle-aged man for follow-up after ED visit for chest pain. Works in liquor industry and admits to binge drinking behavior (my words, not his). Found it absolutely impossible to bring up his high risk for EtOHism/dependence...basically b/c of my own discomfort with how to appropriately address it/frame it as a health issue of concern.
e	Communication elements that set the tone for history taking and the physical exam: establish reason for visit, receive patient permission for encounter and build trust, build rapport, maintain patient privacy, outline agenda for visit and direct conversation, conduct encounter efficiently	144 (13%)	I saw a chronic pain patient who, upon my arrival to the room looked up from her magazine expectantly for the doctor. I was not the doctor, and her expression immediately changed from one of submission to one of irritation. If she was going to say anything though, it was eclipsed by me, as I introduced myself and said hello, "I'm working with Dr [removed] today." It became immediately clear that she did not want to talk with me. "Where's Dr [removed]?" she demanded. "She's with another patient at the moment, unfortunately," I replied. "Is it okay if I ask you a couple questions about why you're here?" She gestured to the medical records I was holding. "It's all in there." "Yes, I read some of it" I replied. "And I just wanted to know if you might have any concerns regarding your visit today?" "I'm in pain," she spat and then fell silent, looking away from me with her arms crossed. Yikes!

Braverman et al. 2016

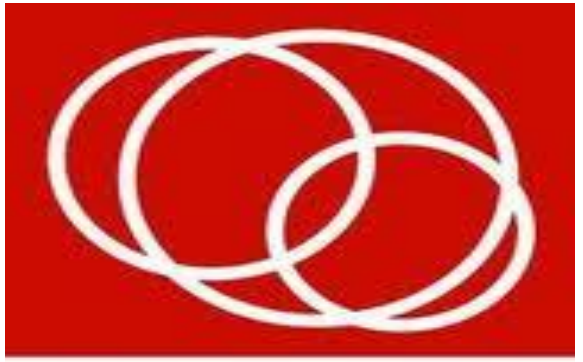
Time to Practice

Qualitative software

Software Assisted Analysis

- Use software to store, organize, retrieve info.
- View preliminary relationships
- Conduct word counts
- Link to quantitative data
- Involve multiple coders
- Conduct inter-rater reliability
- **Does not do analysis!**

atlas.ti



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Themes & Categories Are Findings

In Summary

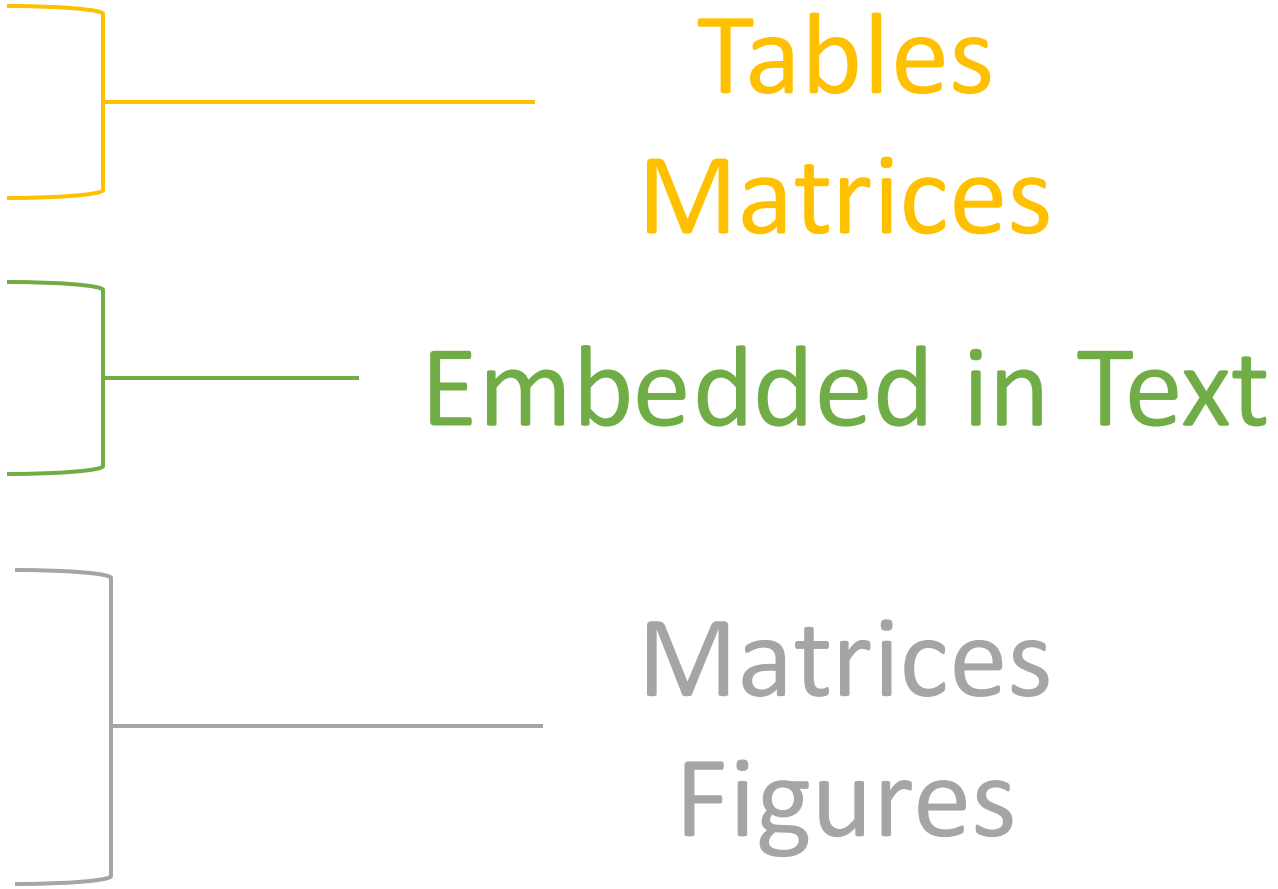
What Themes & Categories Represent

- Illustrate general findings across data set (repetitions or counts “keep coming up”)
- Demonstrate meaningful relationships & link concepts
- Demonstrate contrasts (across groups of people, space, time)
- Characterize typologies
- Show less obvious/absent concepts
- Illustrate theoretical postulations (Grounded Theory)

Themes & Categories represent your interpretation of the data

How Can Themes & Categories Be Represented?

- Words
- Phrases
- Full Sentences
- Characterizations
- Relationships
- Processes
- Counts



There are many ways to present data

Increase Credibility: Document Analytic Process

Who was primarily involved in the theme analysis process?

Who provided expert input? Did you get participant feedback?

Qualifications of team members (*if not already noted*)

How many revisions?

Round 1: 4 domains; 28 themes (*Ex. approx. 7 each*)

Round 2: 4 domains; 16 themes

Round 3: 3 domains; 10 themes (Final manuscript)

Summary: Themes (& Categories) are…

- Abstract, can be difficult to identify
- Take time to identify what's important ≠ not spontaneous appearance
- Need to be put in larger context
  - Consider: "what are they telling me?" "why does it matter? (themes)" "how many people saying same thing? (categories, counts)"
- Significant concepts link substantial portions of dataset
- Consider how themes & counts support your research question

Be patient and persistent. Coding & analysis of will take considerable time

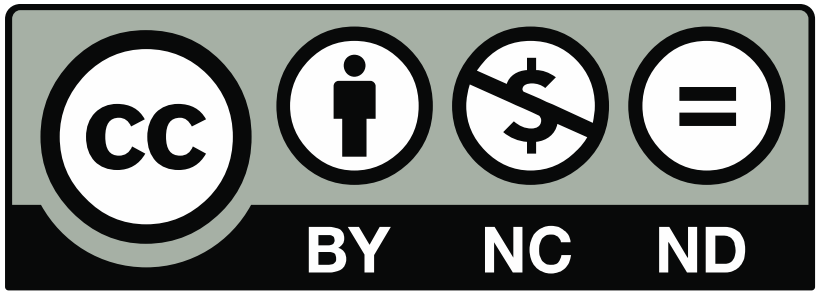
Be prepared to go back to the data multiple times

Be reflective, step back and look for the big picture

See how the the findings tell a comprehensive story about your phenomenon of interest

Thank you!

sylviab@stanford.edu



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