Inductive and Deductive Coding

Alisha Tuladhar

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1. What is ‘coding’ qualitative data? (1/2)

- **Coding** is “the process of analyzing qualitative text data by taking them apart to see what they yield before putting the data back together in a meaningful way” (Creswell, 2015, p. 156).
- **Codes** or **nodes (in NVivo)** are “tags or labels for assigning units of meaning to the descriptive or inferential information compiled during a study” (Miles and Huberman, 1994).
- **To code** means to highlight a chunk of text under a particular node. A node stores all known information about a particular concept or category (Hilal and Alabri, 2013).

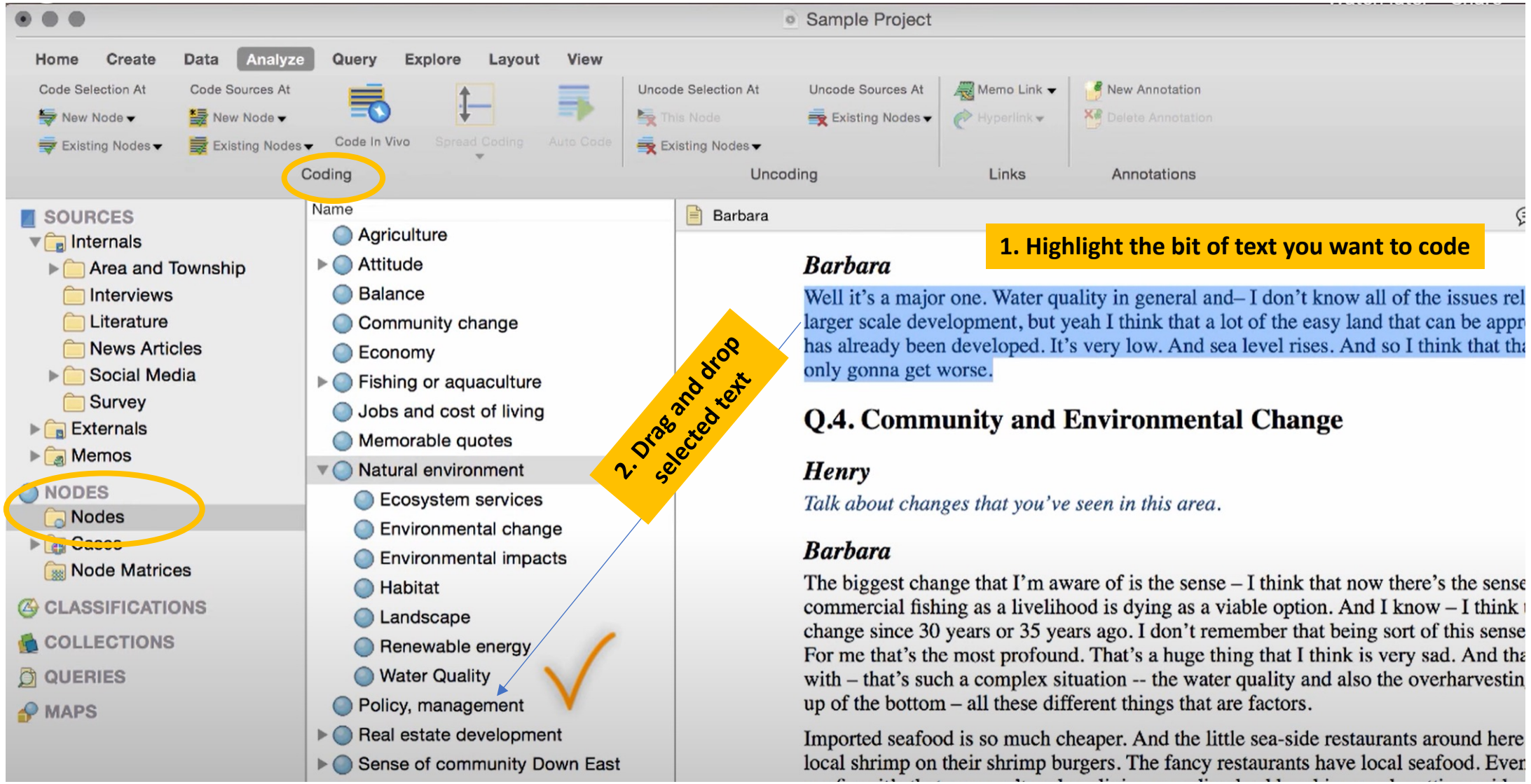
Creswell, J. (2015). 30 essential skills for the qualitative researcher. Los Angeles, CA: SAGE.
Hilal, A.H. and Alabri, S.S., 2013. Using NVivo for data analysis in qualitative research. *International interdisciplinary journal of education*, *2*(2), pp.181-186.
Miles, M., and Huberman, A., 1994. Qualitative data analysis. (p56) California: Sage Publications Inc.

1. What is ‘coding’ qualitative data? (2/2)

In NVivo, coding a chunk of text to a node works like this…

Note: This snapshot is NVivo 12 in Mac. In Windows, this looks slightly different but the processes are the same.

Picture Source: Organize your nodes – YouTube, Mac Version



2. Which types of coding exist?

Check out Johnny Saldaña's ***Coding manual for Qualitative Researchers*** *to find out more about lots of different approaches to coding!*

There are various approaches to coding, three key ones are:

1. Deductive coding
2. Inductive coding
3. Abductive coding

When coding, you can use deductive coding, inductive coding, or abductive coding. ALL can be done manually or supported by the use of software (like NVivo).

The next slide will show what deduction and induction process generally is…

General

Process of **deduction** and **induction** in **qualitative data analysis**

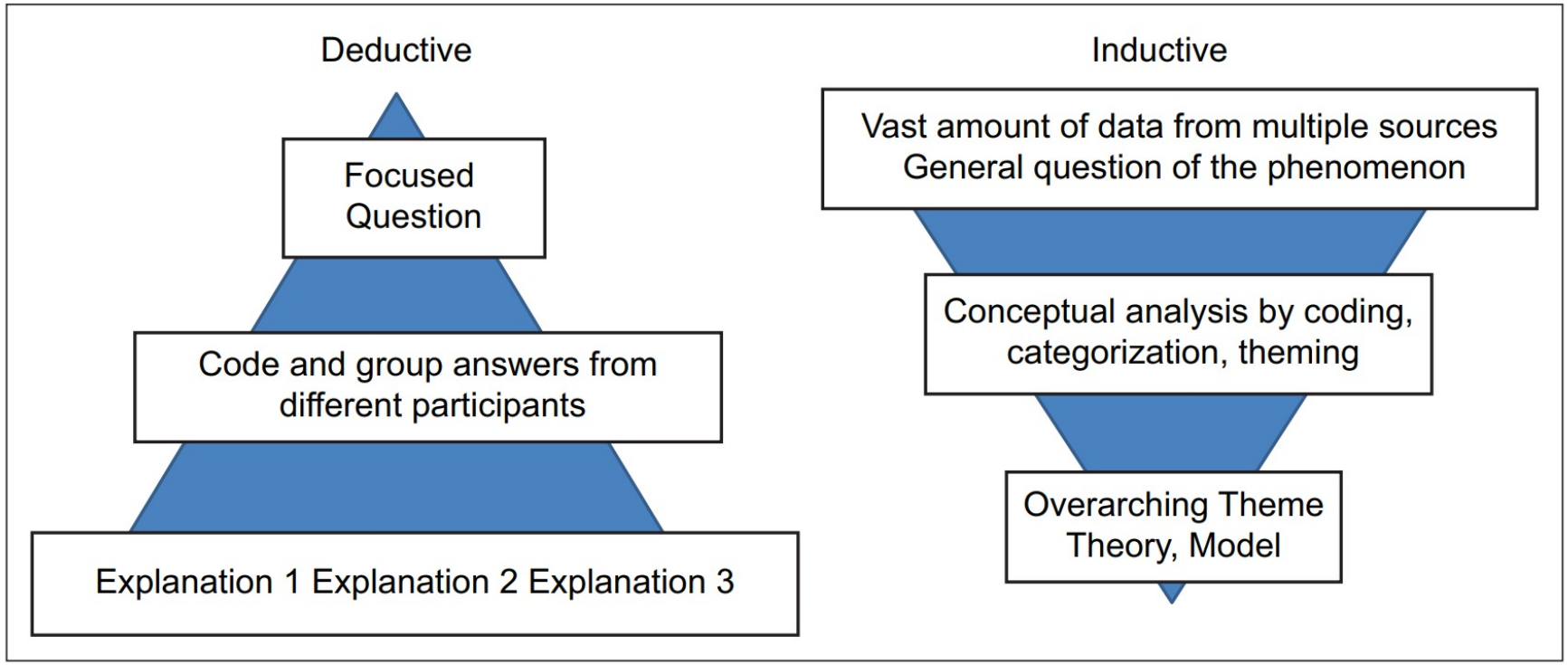
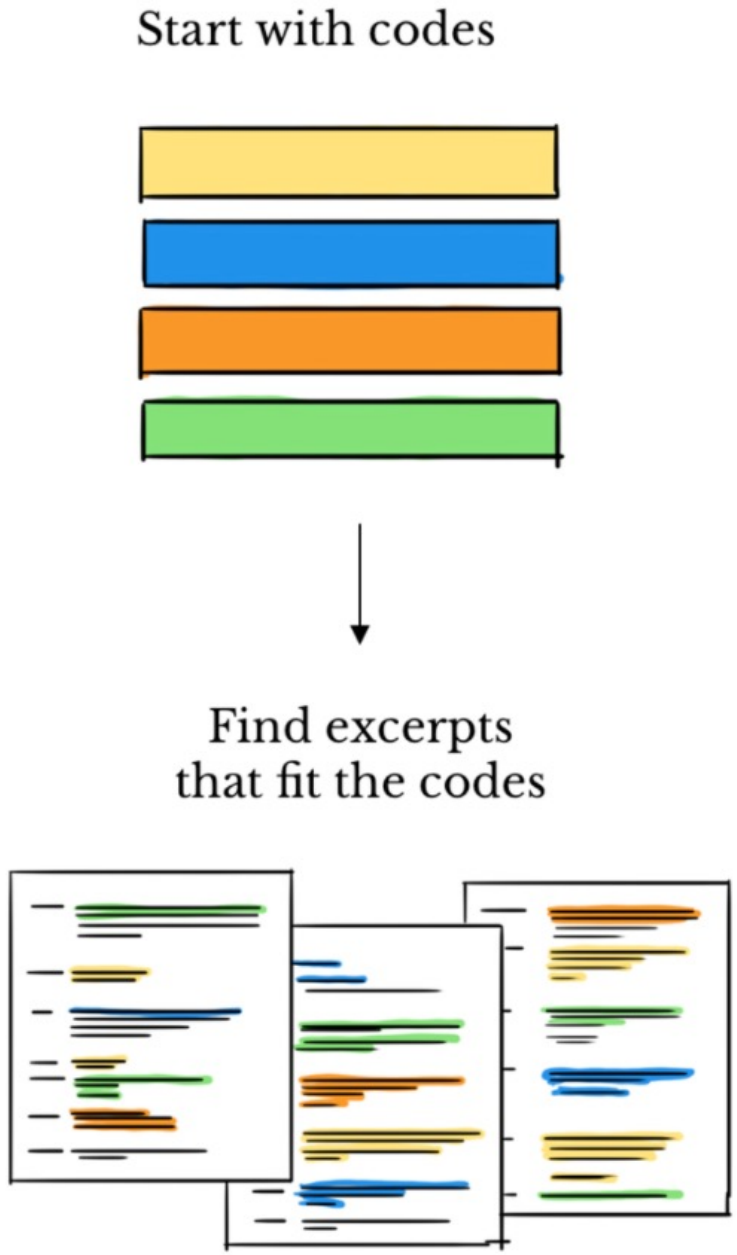


Figure 1: Approaches to qualitative data analysis.

Ravindran, V., 2019. Data analysis in qualitative research. *Indian Journal of Continuing Nursing Education*, 20(1), p.41. Available from: IndianJContNsgEdn20140-2749687_073816.pdf (ijcne.org)

2.1. Deductive coding (1/5)

A *Deductive approach* to coding is where a **pre-defined list of codes** are prepared before starting the coding process, e.g., creating a codebook (Linneberg & Korsgaard, 2019; Miles, Huberman, and Saldaña 2013).



Linneberg, M. S., & Korsgaard, S. (2019). Coding qualitative data: a synthesis guiding the novice. Qualitative Research Journal, 19(3), 259-270. https://doi.org/10.1108/QRJ-12-2018-0012

Miles, M.B., Huberman, A.M. and Saldaña, J., 2013. Qualitative Data Analysis: A Methods Sourcebook. Thousand Oaks, CA: SAGE, 2014. 381 pp.

Image source: Deductive and inductive approaches — Delve (delvetool.com)

2.1. Deductive coding (2/5)

Why use it?

"This approach helps ~~focus the~~ coding on those issues that are known to be important in the existing literature, and it is often related to theory testing or theory refinement.

It is also a helpful approach if the aim of the study is to generalize analytically across cases (Rowley 2002, Eisenhardt 1989).

Indeed, if the study is theory-driven, the theoretical framework may be converted into a coding framework. Even if you engage predominantly in deductive coding, the process can still remain flexible."

Linneberg, M. S., & Korsgaard, S. (2019). Coding qualitative data: a synthesis guiding the novice. Qualitative Research Journal, 19(3), 259-270. https://doi.org/10.1108/QRJ-12-2018-0012.

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2.1. Deductive Coding (3/5)

Pros:

- Deductive coding helps **focus** the coding on those issues that are known to be important in the existing literature
- Thus, it allows you to approach your analysis in a very tightly focused lens and quickly identify relevant data.
- Helpful for theory testing or theory refinement.

Cons:

- You could miss out on some very valuable insights as a result of this tight, predetermined focus.

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Gioia, D.A., Corley, K.G. and Hamilton, A.L., 2013. Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational research methods*, *16*(1), pp.15-31.

2.1. Deductive coding (4/5)

The process →

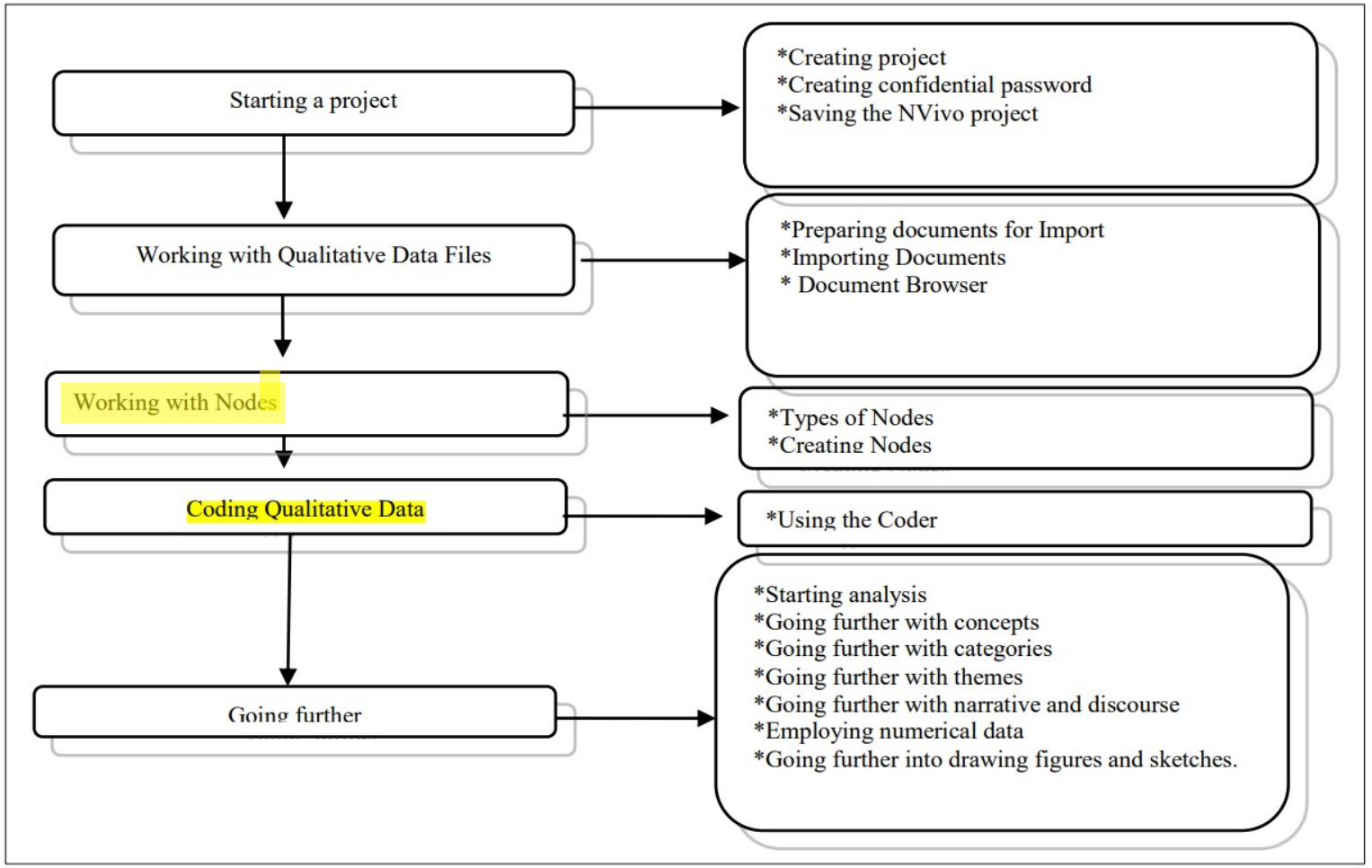


Figure 1
Procedure Followed in Applying NVivo Software.

AlYahmady, Hamed Hilal and S. S. Alabri, 2013. "Using Nvivo for Data Analysis in Qualitative Research." *International Interdisciplinary Journal of Education* 2: p.181-186.

2.1. Deductive coding (5/5)

Where is a deductive approach to coding common?

- Codebook approaches within Thematic Analysis (Braun and Clark, 2021 ,p.39)
- Framework analysis (also abductive) (Srivastava and Thomson, 2009)
- And many more depending on the orientation.

Can you think of others?

NOTE: (Systematic) literature reviews can focus on both deductive and inductive coding process- it depends on how you go about it.

Braun, V. and Clarke, V., 2021. Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches. *Counselling and Psychotherapy Research*, 21(1), pp.37-47.

Srivastava, A. & Thomson, S. B. (2009).Framework Analysis: A Qualitative Methodology for Applied Policy Research. *JOAAG,* Vol. 4. No. 2

2.2. Inductive coding (1/3)

Inductive coding is when **codes are generated directly from the data**. Inductive coding is great for exploratory research or times when you want to come up with a new theories, ideas or concepts. It is particularly helpful where not much is known about the phenomena or concept before. The researcher does not start with preconceived notions of what the codes should be but allow the narrative or theory to emerge from the raw data itself.

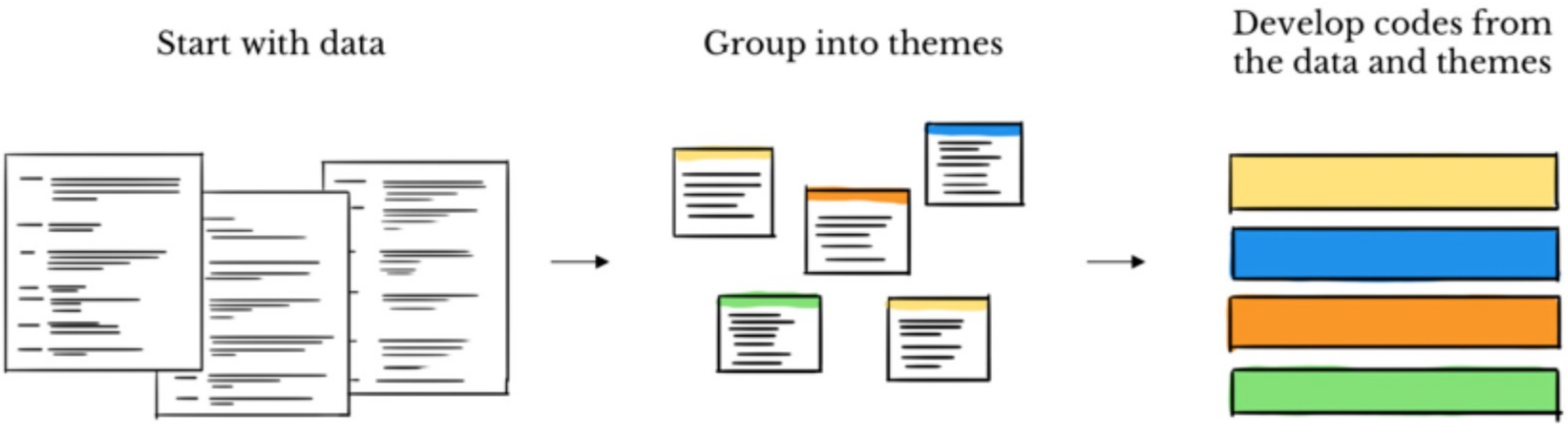


Image source: Deductive and inductive approaches — Delve (delvetool.com)

2.2. Inductive coding (2/3)

Pros:

- Researchers are not restricted by preconceived codes.
- One is able to draw meanings from the data and understand codes as identified inductively from data (thus highly data-driven).

Cons:

- Findings could overlap with already published studies.
- Messy data, difficulty in organizing, need to think carefully through the encoding process.

Linneberg, M. S., & Korsgaard, S. (2019). Coding qualitative data: a synthesis guiding the novice. Qualitative Research Journal, 19(3), 259-270. https://doi.org/10.1108/QRJ-12-2018-0012

Gioia, D.A., Corley, K.G. and Hamilton, A.L., 2013. Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational research methods*, *16*(1), pp.15-31.

2.2. Inductive coding (3/3)

Can you think of more?

Where is an inductive approach to coding common?

- grounded theory (Glaser & Strauss, 1967)
- reflexive thematic analysis (Braun and Clark, 2021)
- interpretative phenomenological analysis
- discourse analysis
- qualitative content analysis (Cho & Lee, 2014)
- in exploratory studies; where theoretical concepts are not immediately available to help grasp the phenomenon (Linneberg & Korsgaard, 2019).

Braun, V. and Clarke, V., 2021. Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches. *Counselling and Psychotherapy Research*, 21(1), pp.37-47.
Cho, J. Y., & Lee, E.-H. (2014). Reducing confusion about grounded theory and qualitative content analysis. *The Qualitative Repor*t, 19, 1–20.
Glaser, B. G., & Strauss, A. L. (1967). The discovery of grounded theory: Strategies for qualitative research. Aldine.
Linneberg, M. S., & Korsgaard, S. (2019). Coding qualitative data: a synthesis guiding the novice. Qualitative Research Journal, 19(3), 259-270. https://doi.org/10.1108/QRJ-12-2018-0012.

Spot the difference!

Inductive Coding (codes from data):

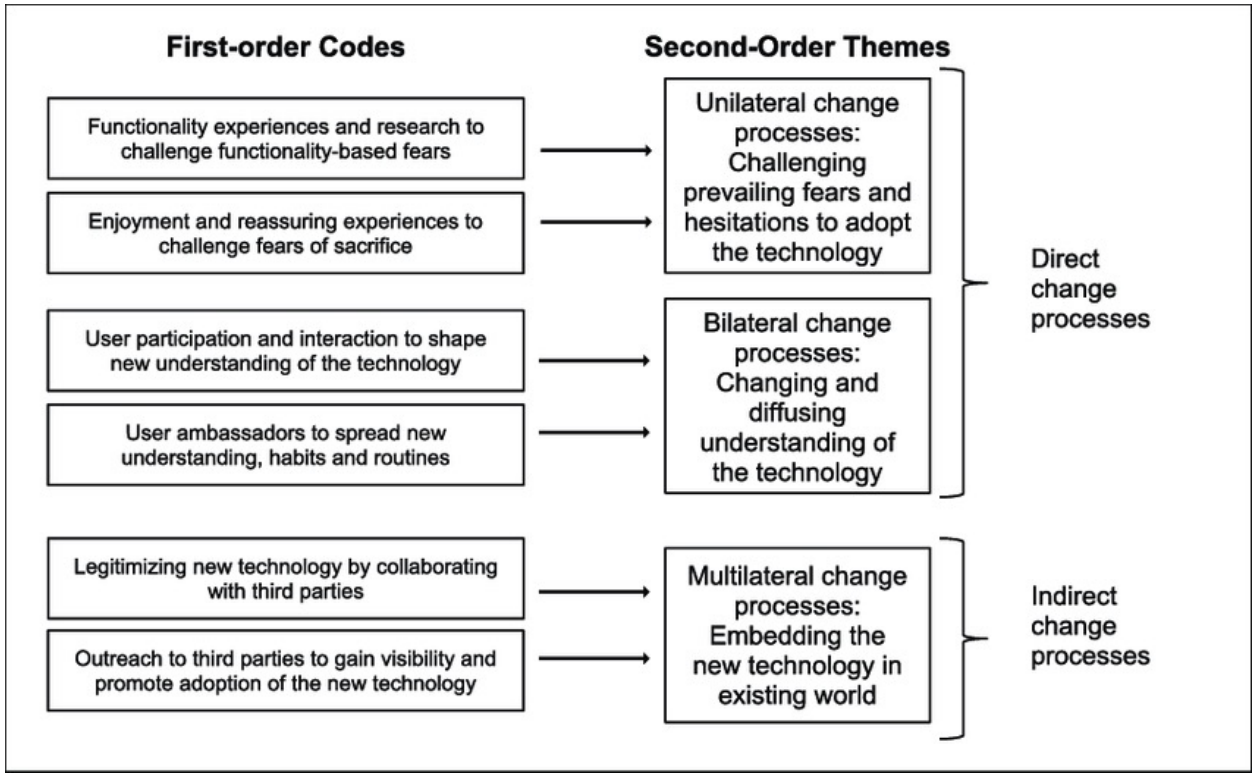
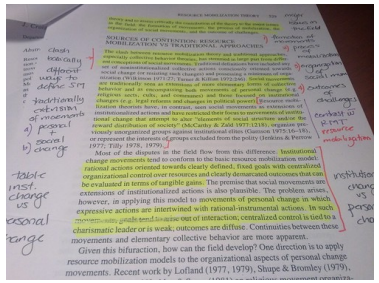


Figure: Overview of inductive coding structure

Source**: Purtik**, H. and Arenas, D., 2019. Embedding social innovation: Shaping societal norms and behaviors throughout the innovation process. *Business & Society*, *58*(5), pp.963-1002.



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Deductive Coding (codes from literature review and prior theories):

Theoretical area	Category	Codes
Role strain theory	Work–life conflict	• Work conflict at home/family • Home/family conflict at work
Role accumulation theory	Work–life enrichment	• Work enrichment at home/family • Home/family enrichment at work
Boundary theory and Border theory	Boundaries and borders	• Defining work domain boundaries • Defining home/family boundaries • Crossing boundaries • Perceptions of boundary keepers • Perceptions of boundary crossers

Table: Deductive coding and analysis from literature review and theory

Source: **Field,** J.C. and Chan, X.W., 2018. Contemporary Knowledge Workers and the Boundaryless Work–Life Interface: Implications for the Human Resource Management of the Knowledge Workforce. *Frontiers in psychology*, *9*, p.2417.

2.3. Abductive coding

Just a mix of deductive and inductive coding??

Abduction encompasses a combination of inductive and deductive elements and tends to cycle back and forth between data and theory (Pierce, 1978).

> *"By doing this, the researcher remains open to surprises in the data while at the same time staying attuned to existing theories….The abductive approach is attuned to looking for surprises in the data in the way that one has an interest in rethinking the existing theories." (Pierce, 1978 in Linneberg & Korsgaard, 2019))*

Thus, it allows a flexible theoretical framework and flexible approach to the empirical framework (Linneberg & Korsgaard, 2019).

Linneberg, M. S., & Korsgaard, S. (2019). Coding qualitative data: a synthesis guiding the novice. Qualitative Research Journal, 19(3), 259-270. https://doi.org/10.1108/QRJ-12-2018-0012.

3. Summary

- Data analysis and the coding process needs careful planning – regardless of whether the approach is to be based on inductive, deductive or abductive approaches/techniques.
- Qualitative data analysis can be *deductive* – concept-driven/theory testing, *inductive* – data-driven/theory building or a combination of both, abductive.
- Either approach can be undertaken manually or facilitated by using software (like NVivo).
- Your analysis must build a body of evidence designed to help answer your research question & add to the body of knowledge in your field of study.