Human Coding & Interrater Reliability In Content Analysis

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Understanding Content Analysis

A research technique that relies on the scientific method for the objective, systematic, and quantitative description of the manifest content of communication.

(Berleson, 1952; Krippendorff, 1980; Neuendorf, 2002)

Number of decisions…

Human vs. Machine

We have complex and sophisticated content analysis software…

why on Earth use human coding?

Why Human Coding?

1. When the meaning of the variable is latent vs. objective (discrete judgment/interpretation)
   Attributions & sociocognitive variables (Lee et al., 2004)

2. When context matters
   Identity of Arizona charter schools (King et al., 2011)

3. When concepts are not easily identified by particular words or phrases
   Strategic actions (Zavyalova et al., 2012; Lamin & Zaheer, 2012)

4. To identify grounded or emergent variables or processes
   Identity resurrection (Howard-Grenville et al., 2013)

Example: Reputations in Conflict

- RQ: How do firms repair their multiple reputations in response to a negative event

- Using human coding content analysis to identify **response strategy**

- Unit of analysis: firm generated press release

Reputation Repair

Response strategy

- Coordinated communication and actions used to manage and repair reputation following a violation
(Barton, 2001; Benoit, 1995; Coombs, 2007; Elsbach, 2003; Pfarrer et al., 2008)

Defensive ⟷ Accommodative

Attempt to *avoid* damages by reducing a firm's perceived responsibility
(Coombs & Holladay, 2004; Elsbach, 2003; Tedeschi & Melburg, 1984)

Attempt to *manage* damages by proactively accepting responsibility
(Coombs & Holladay, 2004; Elsbach, 2003; Tedeschi & Melburg, 1984)

Sample Response Strategy: Accommodative

SAUSALITO, Calif.-(BUSINESS WIRE)-July 14, 2003-**Willis Lease Finance Corporation** (Nasdaq:WLFC), a leading lessor of commercial jet engines, today announced it will restate its financial statements for year 2000 ==due to an error in accounting== for the cost of an item of engine-related equipment sold during that year from its wholly-owned spare parts subsidiary, Willis Aeronautical Services, Inc. ("WASI"). WASI was sold in November 2000 and was accounted for as a discontinued operation in the financial statements for the year ended December 31, 2000.

As a result of the accounting error, $1.0 million of cost was not properly assigned to an asset sold in September 2000. Earlier in 2000, the asset was physically transferred from WLFC to WASI; however, due to the accounting error, the corresponding cost of the asset was not transferred to WASI's balance sheet. Subsequently, when the asset was sold by WASI out of its inventory, the cost of goods sold was understated by $1.0 million. ==The Company is finalizing its tax calculations, but it is expected that the error will reduce net income for 2000 by approximately $650,000.== WLFC had previously reported net income of $7.8 million for the year.

==“The error was discovered during the course of a review of uninstalled engine-related equipment during the second quarter of 2003,”== said Charles F. Willis, President and CEO. ==“We have instituted new procedures== to increase the visibility of our uninstalled engine-related equipment to our operational and management team. ==While the restatement is unfortunate, we believe it is appropriate to act decisively to address this matter.”==

Sample Response Strategy: Defensive

TROY, Mich., April 26 /PRNewswire-FirstCall/ -- **Kelly Services, Inc**., a global provider of staffing services, today announced record revenue and strong earnings growth for first quarter ended April 3, 2005.

On February 7, 2005, the SEC issued a general letter on lease accounting. As a result, nearly 250 public companies have announced lease related restatements, adjustments or reviews of lease accounting. The Company is in process of completing a review of its lease accounting practices, and in consultation with its audit committee, plans to restate its financial statements for 2002, 2003 and 2004 to reflect what are expected to be certain immaterial adjustments. This conclusion has been discussed with the Company's independent registered public accountants.

The Company is revising its accounting for branch leases to recognize step rent increases on a straight line basis over the lease term. For over twenty- five years, the Company had consistently recognized rent expense as paid.

How to Start?

- Start with theory!

- Deductive definitions of construct
  - Be as broad as you can – multiple definitions
  - Supplement with inductive revisions

- Decide how you want to operationalize
  - Binary, scale, etc.
  - Consider redundancies

- Create a codebook…

	A	Type	Definition
1		Type	Definition
2	1) Forgiveness	Categorical	explicit statement apoligizing (or similar statement asking for forgiveness) for restatement
3			the crisis management team takes responsibility for crisis, asks for forgiveness, and takes action to prevent a repeat of the crisis (Coombs, 2001)
4	Regret	Categorical	explicit statement of regret or sorrow regarding the event
5	Apology	categorical	a statement that acknowledges responsibility and regret for a trust violations (Kim et al., 2004)
6	2) Excuse	Categorical	self-serving explanations, or accounts, that aim to reduce persoanl responsibility for questionable events, thereby disengaging core components of the self from the incident (Schlenker et al., 2001)
7			questioning the organization's moral responsibility (Suchman, 1995)
8			account designed to minimize perceptions of responsibility for a negative event (Elsbach, 2003)
9	3) Justification	Categorical	redefining the means and ends retrospectively, in order to make the disruptive events appear more consonant with prevailing norms (Suchman, 1995)
10			accounts that are desigend to minimize the perceived negativity of an event (Elsbach, 2003)
11			Reframing or defining the situation in a different light (Sutton & Callahan, 1987)
12			restatements often include a reference to auditors to justify/reinforce the restatement - "upon consultation with our auditors" or "our auditors agree with our decision". Such statements are usually used in accomod
13	4) Scapegoat	Categorical	does the firm identify a scapegoat by stating that someone else is responsible for the crisis (Coombs, 2007) generally either a manager, auditing firm, or SEC
14	5) Action/Change	Categorical	did the firm take some action or make some change (restructure, hire/fire, policy change, etc.) to the organization in response to violation
15	6) Action Type	Open	A list of X possible actions taken in response to violation (try to caputre in consistent terms)
16	7) Reinforce - Bolstering	Categorical	Does the annoncement highlight past good deeds (Coombs, 2007) (This includes financial statements of health and other statements related to well-being of org.)
17	8) Reinforce - Ingratiation	Categorical	Does the organization praise stockholder (or other stakeholders) (Coombs, 2007)
18	9) Reinforce - Victimage	Categorical	Does the organization state that they are a victim or someone else's action (Coombs, 2007) This will be close to scapegoating, but not necessary. The account to suggest victimage without explicilty naming the culpri
19	10) Defiance	Categorical	Contesting the acusation and challenging the accuser, forcefully questions (Lamin & Zaheer, 2012)
20			Defy issue, reduce offensiveness if issue (may be related to justification; Benoit, 1995)
21	11) Decoupling/Defensive	Categorical	Includes scapegoating (Sutton & Callahan, 1987), avoidance (concealing, buffering, escaping; Oliver, 1991) and evasion (Benoit, 1995)
22			Implements a corrective action by distancing itself from the source of the problem (Lamin & Zaheer, 2012)
23			A RESTATEMENT can be defesnive based on the paucity of information provided
24	12) Accomodative	Categocial	Admits that alligations are true, or initating an action...to assist (Lamin & Zaheer, 2012)
25			Includes accepting responsibility (Sutton & Callahan, 1987), compromising (balancing, pacifying, bargining; Oliver, 1991), acquiesence (habit, imitate, comply; Oliver, 1991), and mortification (Benoit, 1995)
26			account that accept full responsibility for a negative event, but claim regret (Elsbach, 2003)
27	13) Reticence	Categorical	Is there silence about the issue or non-disclosure?
28			a statement in which the accused party explains that he or she cannot or will not confirm or disconfirm the veracity of an allegation, as a means of responding to a trust violation (Ferrin et al. 2007)
29	**for 16-19, can only be 1		
30	14 a & b) Logic	List	What type of logic is used to explain the event (technical, conformatory, character)(Love & Kraatz, 2009)
31			Technical - Delivery of outputs valued by audiences; deals only with numbers and information (performance, competence, ability, quality, value)
32			Conformatory - Conformity to cultural rules, norms, and beliefs that exist at the field level (normative, isomorphic, standard, consistent with prevailing)
33			Character - Perceived trustworthyness and reliability (fairness, justice, trust, benevolance, integrity, commitment)
34	15a) Quote	Categorical	Presence of a direct quotation from high level manager (CEO, President, Board, CFO) NOT from PR or communications staff
35	15b) Quote Source	List	List of possible source quotes (CEO, COO, President, Chairman) if duality, choose CEO
36	16a) Bundled	Categorical	was there material in the press release regarding additional events not related to restatement (earning announcement, etc.)
37	16b) Bundle Type	Open	What type of information is bundled? Can be technical (try to capture in consistent terms)
38	17) Filing delay	Categorical	Does the firm acknowledge that the restatement will cause a delay in filing additional SEC documents?
39	18) Prominence	Scale (1-3, 1 higher)	How prominent is the restatement (1- in headline of press release; 2- in body of press release, 3- end or press release or footnote) (Files, Swanson, Tse_2008)
40	19) Core Restatement	Categorical	A core restatment deals with income, revenue, cost of sales, and/or operating expenses. Non-core involve special items, non-operating expenses, merge items, etc. (Palmorse et al., 2004)
41	20) Magnitude (income)	Number	What is the difference (summer over all periods) of the restated net income from the orginally reported net income? (Palmrose et al., 2004)
42	21) Direction	Categorical	Is the restatement positive? (1 if yes, 0 otherwise). Focus on income (Palmrose et al., 2004)
43	22) # of Quarters	Numeric	how many quarters does the restatment affect? (Palmrose et al., 2004)
44	23) Multiple Items	Categorical	were their multiple issues related to the restatement. For example, did the company mis-classify earning AND make a calculation error on depreciation
45	24) Anticipatory / Open ende	Categorical	is the company uncertain about the final totals or true nature of the restatement? Does the announcement feel anticipatory? Is the final resolution left open-ended?
46	25) Why	Categorical	Does the restatement provide an explainaion why. What is common, why is deeper explaination.
47			example what statement - "we reclassified offsetting revenues and expenses...."
48			example why statement - "we did this because our accountants misclassified the income..."

Measurement Issues

M = t + e
(measure = true score + error)

Source of (systematic) error = Humans
  Coder misinterpretation, poor scheme, inadequate training, inattention/fatigue, recording error, rogue coder!

Thus, we need *reliability* – the extent to which a measuring procedure yields the same results on repeated trials

More specifically, *interrater reliability* – the amount of agreement or correspondence among two or more coders
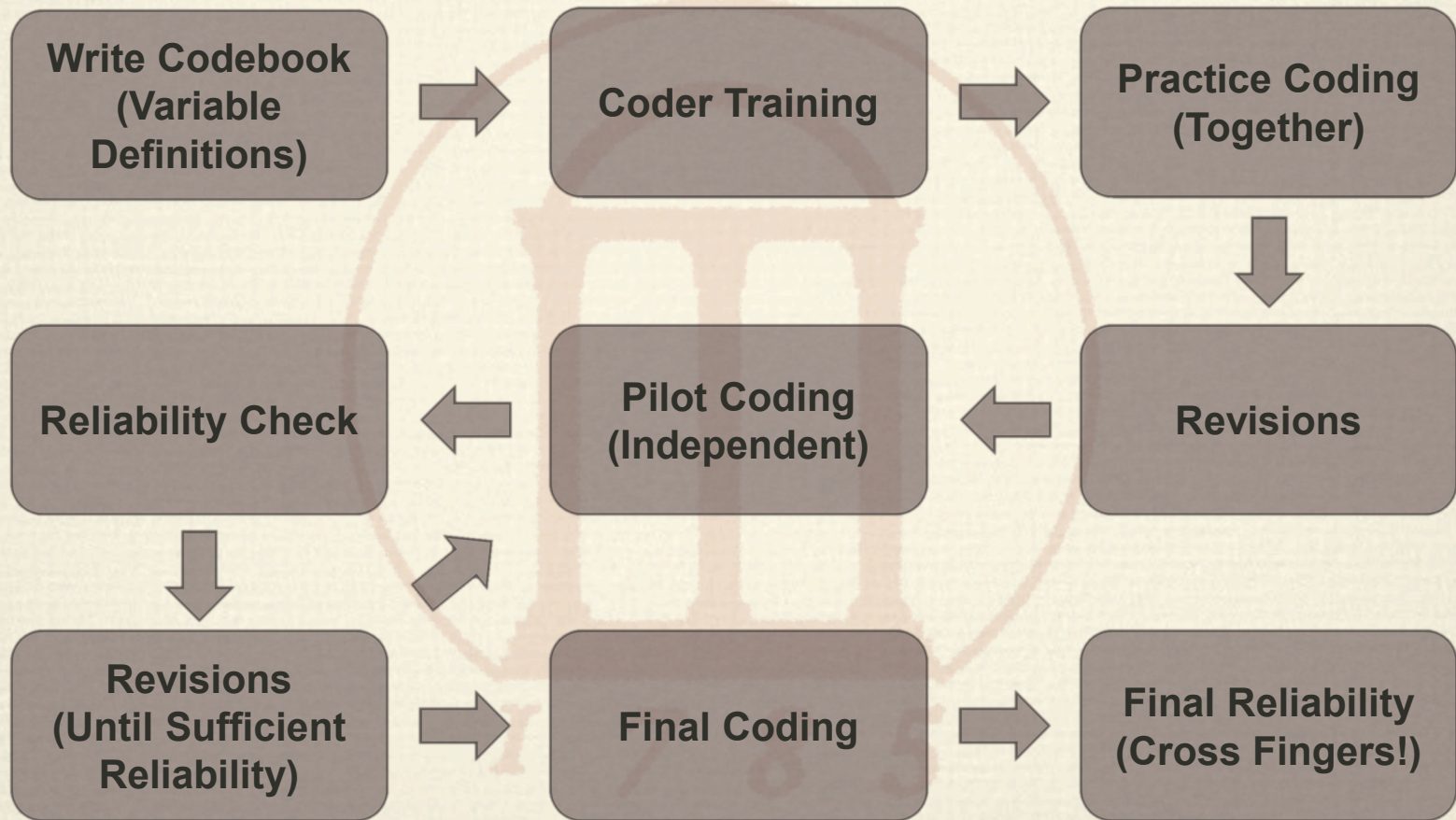
Why Reliability?

- Validity of coding scheme

- Results are not idiosyncratic to rater subjectivity

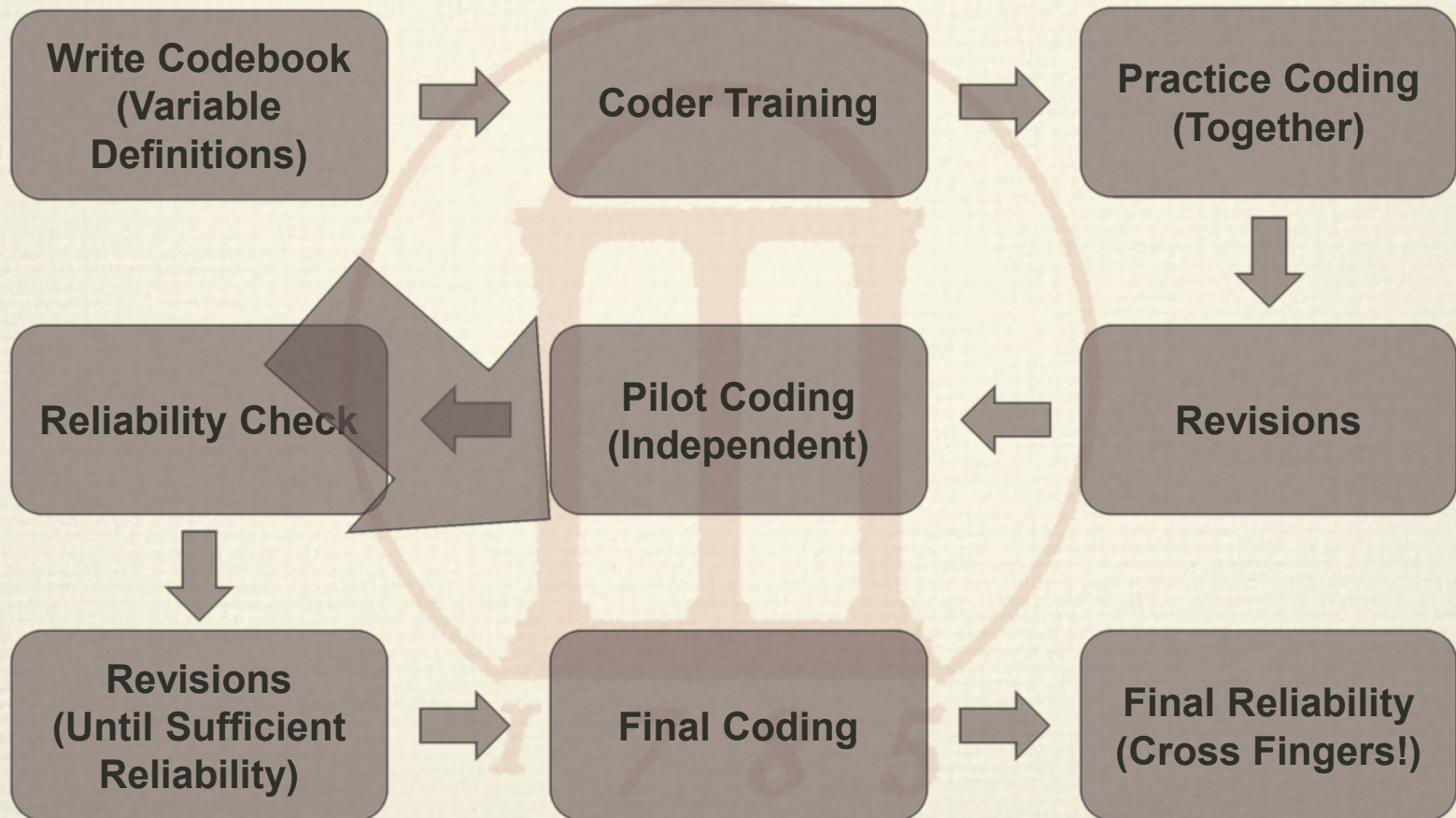- Allows for the use of multiple coders

- Replication over time

Reviewers are going to ask for it!

Reliability Flowchart
(Neuendorf, 2002; Weber, 1990)

Avoid the Temptation!

```
Write Codebook          →    Coder Training      →    Practice Coding
(Variable                                               (Together)
Definitions)
                                                            ↓

Reliability Check   ←        Pilot Coding       ←        Revisions
                             (Independent)
     ↓

Revisions           →        Final Coding       →    Final Reliability
(Until Sufficient                                    (Cross Fingers!)
Reliability)
```

Avoid the Temptation!

Write Codebook (Variable Definitions)

Final Coding

Final Reliability (Cross Fingers!)

Reliability Measures

Measure	Type	Best for	More than 2 coders?
Percent Agreement	Agreement	Nominal	No
Holsti's Method	Agreement	Nominal	No
Scott's Pi	Agreement (w/ chance)	Nominal	No
Cohen's Kappa	Agreement (w/ chance)	Nominal	Yes
Krippendorff's Alpha	*Agreement (w/ chance)*	*Any*	*Yes*
Spearman Rho	Covariation	Ordinal	No
Pearson Correlation	Covariation	Interval/ratio	No
Lin's Concordance	Covariation	Interval/ratio	No

Other Thoughts

- Codebook and form - make the set so complete and unambiguous as to eliminate individual coder differences

- At least **2 coders**, 10% overlap ranging between **50-300 observations** depending on sample size

- Reliability can be low when coding subjective into objective, thus cut-offs can be lower (.67-.80)….if reviewers allow it…..

- **Blind coding is preferable**

- What to do with variables that are **not reliable**?

  - Redefine variable, split variable, re-train coders , drop variable, drop coder, integrate non-content analytic data

- Need **separate reliability for each measure**

Tips

- Develop habits & routines

- Code daily, but avoid fatigue

  - 2 hours max for me

- Spend time up front

- Familiarize self with content texts and theory

- Invest in training!

  Revise early and revise often!

References

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