

## Doing the Observation Exercise

### Tips

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## Methodological Concepts in Assignments

- Observation
  - Operationalizing a variable
  - Inter-subjective reliability
- Experiment
  - Isolating causal relations by controlling extraneous variables
  - Logic of randomization
- Questionnaire
  - Operationalizing a variable with multiple indicators
  - Construct validity (relations among different measures)

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## Examples of Things to Study

- People in public places
- TV commercials
- TV shows
- Radio shows or ads
- Magazine ads
- News articles (from newspapers or electronic archives)

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## Preliminary Unstructured Observation

- Partners can do this separately, does not have to be at exactly the same time or on the same subjects
- But agree on the type of object you are observing or type of place you are observing people in
- You may observe together if you wish, but write your observations and ideas for research separately before discussing them

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## Sampling Choices

- You must end up trying to observe the **same** units of analysis.
- You must end up with at least 30 cases (units of analysis)
- Two options:
  - #1 You can sample by a rule (in which case defining the rule is operationalizing the sample and counts toward making the project “non-obvious)
  - #2 Select sample documents separately and then trade for observation or agree whom to observe in a given time period.

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## Option 1: Sampling by Rule

- Don't “cheat”, create a rule and then follow it independently. Examples:
- Observe everyone who comes through the door
- Watch all commercials on channel 7 between 7 and 8 pm
- Use keyword search to find all articles about murder in May of 2002

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## Option 2: Pick Subjects Directly

- To save time when you cannot observe together, you may each choose a sample of 15+ documents (e.g. magazine ads), observe and code the variable for them, then trade samples.
- In field observation, you may agree which subject to observe for a given time period.
- The observations of the **variables** must be 100% independent – you must not peek at the others' coding or discuss it in any way.

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## Testing Reliability

- You **must** observe the same subjects **independently**, without checking each other's work
- If you sampled by rule, calculate sampling error and locate those subjects you both observed
- Calculate the percentage error (disagreement) in coding the dependent variable

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## Calculating Reliability -1

$N$  = total number of distinct people seen (by both or either)

$S_1$  = sample difference 1: number of times partner 1 observed a subject partner 2 did not see.

$S_2$  = sample difference 2: number of times partner 2 observed a subject partner 1 did not see.

$A$  = number you agree on: same subject, same variable code.

$C$  = coding difference: number of times you observed the same subject but coded the variable differently.

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## Calculating Reliability - 2

- **Coding Error:**  $CE = C/(A+C)$  (proportion you both saw that you disagree about in the variable).
- **Sample selection error:**  $SE = (S1 + S2)/N$  (proportion of total cases that one person saw but not the other).

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## Evaluating Reliability

- Perfect reliability is the goal, zero errors
- But for this assignment, need to do a variable that is complex enough that this is not “easy”
- Even 10% error is fairly high for reliability
- Try to understand the source of all errors and how they could be avoided
- If error is low, discuss what you did well in the procedures to produce low error

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## Conditional Percentages

- 1) Dependent variable is qualitative
- 2) Cross-tabulate the data
- 3) Calculate percentages for the dependent variable separately within each category of the independent variable.
- 4) Compare the percentages across categories of the independent variable

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## Cross-tabulate the Data

		Independent		
		Male	Female	Total
Dependent	Bite	11111111	1111	
	Lick	11111	1111111111	
	Other	11	111	
	Total			

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## Calculate Cell, Row, Column Totals

		Male	Female	Total
Dependent	Bite	8 11111111	4 1111	12
	Lick	5 11111	10 1111111111	15
	Other	2 11	3 111	5
	Total	15	17	32

Check the row and column totals against the data before proceeding

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## Calculate Conditional Percentages

		Independent		
		Male	Female	Total
Dependent	Bite	8/15=.533	4/17=.235	12
	Lick	5/15=.333	10/17=.588	15
	Other	2/15=.133	3/17=.176	5
	Total	15	17	32

Check that each column adds to 1.0 within rounding error.  
 $.533+.333+.133=.999$   $.235+.588+.176=.999$

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## Final Table

	Male	Female
Bite	53%	24%
Lick	33%	59%
Other	13%	18%
Total	99%*	101%*
(N)	(15)	(17)

Interpretation:  
 Males bit 53% of the time compared to 24% of the women (a percentage difference of 29%); females licked 59% of the time compared to 33% for males (a percentage difference of 26%). "Other" was only slightly different for men and women.

It is OK to use the original proportions or to turn them into percents.

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## Conditional Means

- 1) Dependent variable is quantitative
- 2) List the values for the dependent variable separately for each category of the independent variable
- 3) Calculate the mean for the dependent variable separately for each category of the independent variable.
- 4) Compare the means across categories of the independent variable

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## List Dependent Variable Scores by Independent Variable

Males	<i>Dependent variable is number of seconds it took to complete sales transaction.</i>	Females
13 17		47 42 56
22 23		25 17 79
26 44		36 23 82
34 10		24 74 23
10 29		31 49 57
19 55		69 29 14
39 31		39 55 33
33 27		33 31
30 16		30 47
22		22 26
42		

$N_m = 20$  (number of males)  
 $\sum x_m = 542$  (sum of scores)

$N_f = 27$  (number of females)  
 $\sum x_f = 1093$  (sum of scores)

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### Calculate Means Separately for Each Group

Males  
 13 17  
 22 23  
 26 44  
 34 10  
 10 29  
 19 55  
 39 31  
 33 27  
 30 16  
 22  
 42

$$N_f = 27 \text{ (number of females)}$$

$$\sum x_f = 1093 \text{ (sum of scores for females)}$$

$$\text{Mean}_f = \sum x_f / N_f = 1093/27 = 40.48$$

$$N_m = 20 \text{ (number of males)}$$

$$\sum x_m = 542 \text{ (sum of scores for males)}$$

$$\text{Mean}_m = \sum x_m / N_m = 542/20 = 27.10$$

Females  
 47 42 56  
 25 17 79  
 36 23 82  
 24 74 23  
 31 49 57  
 69 29 14  
 39 55 33  
 33 31  
 30 47  
 22 26

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### Final Table

	Men	Women
Mean Seconds for Transaction	27.1	40.5
(N)	(20)	(27)

Interpretation: Women took 13.4 seconds longer than men, on average, to complete their transactions.

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### Hypothesis Testing

- **Confirms:** statistical association in the direction predicted which is fairly strong
- **Disconfirms:** opposite direction from prediction OR zero association when you predicted a non-zero statistical association
- **Indeterminate:** statistical association is in the direction you predicted, but is weak

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## Testing Prediction of Zero Association

- This is harder to falsify
- Only an exactly zero association confirms
- A large association disconfirms
- A weak association is indeterminate.

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