

## Lecture 32/Chapter 27 Putting Skills to the Test

- Seven Guidelines Applied to Night Light Article
- Chi-Square Analysis of Night Light Data

### Seven Guidelines (Review)

- Step 1:** Determine if study was sample survey, experiment, obs study, census, or anecdotes.
- Step 2:** Consider 7 Critical Components (details).
- Step 3:** Check for “Difficulties and Disasters” (sampling p. 69, exp. p. 90, obs. studies p. 96)
- Step 4:** Is info complete? If not, find original?
- Step 5:** Do results make sense?
- Step 6:** Are alternative explanations possible?
- Step 7:** Do results affect your attitude/lifestyle?

### Seven Critical Components (Review)

1. Source of research and funding
2. Researchers who had contact w. participants
3. Individuals studied, how they were selected
4. Variables studied [measurements, questions]
5. Setting (time, place)
6. Confounding variables [extraneous differences] if groups are compared
7. Magnitude of claimed effects or differences

### Example: *Night Lights Bad for Kids*

- **Background:** *Night Lights Bad for Kids*?
  - **Question:** How does each guideline apply?
  - **Response:** **Step 1 (design):** retro obs study
- Step 2 (7 Components):**  
#1 source/funding: (reputable?)

#2 researchers having contact w. participants:

#3 individuals/how selected:

**Example:** *Night Lights & 7 Guidelines*

**Response: Step 2 (7 Components)**  
continued:

#4 variables: explain: \_\_\_\_\_  
response: \_\_\_\_\_

#5 setting: \_\_\_\_\_

#6 confounding variables (diffs in groups compared): \_\_\_\_\_

#7 magnitude/quantify effect: \_\_\_\_\_

**Example:** *Night Lights & 7 Guidelines*

**Response: Step 3 Difficulties?** (Obs. p. 96)

1. Confounding variables? \_\_\_\_\_
2. Extending results inappropriately? \_\_\_\_\_
3. Using the past as a source of data? \_\_\_\_\_

**Example:** *Night Lights & 7 Guidelines*

**Response: Step 3 Difficulties**(sampling p.69)

1. Using the wrong sampling frame? \_\_\_\_\_
2. Not reaching individuals selected? \_\_\_\_\_
3. Having a low response rate? \_\_\_\_\_
4. Volunteer/self-selected sample? \_\_\_\_\_
5. Convenience or haphazard sample? \_\_\_\_\_

**Example:** *Night Lights & 7 Guidelines*

**Response:**

**Step 4** Information complete? \_\_\_\_\_

**Step 5** Do results make sense?

**Step 6** Alternative explanation? \_\_\_\_\_

**Step 7** Results' impact on you? \_\_\_\_\_

**SHEDDING LIGHT ON MYOPIA** The night light has long been a source of comfort for the young, to say nothing of the guidance it provides for adults who might otherwise stumble through the dark. But some researchers had theorized that the lights might cause nearsightedness in infants. Now a new study reports that the concern appears unfounded. Writing in this month's Investigative Ophthalmology and Visual Science, scientists say they can find no links between myopia, the medical term for nearsightedness, and the lights. The researchers...suggested another possible explanation for the findings...

Myopic parents are more likely to have myopic children, the researchers said. And such parents may be more likely to use night lights, leading to a possible misinterpretation.

### Example: *Night Lights & Chi-Square*

- **Background:** Article reports % myopic: darkness 10% of 172; nightlight 34% of 232; lamp 55% of 75
- **Question:** What are the observed counts?
- **Response:**

	Myopic	OK	Total
Darkness			172
Nightlight			232
Lamp			75
Total			479

### Example: *Night Lights & Chi-Square*

- **Background:** We have table of observed counts.
- **Question:** What are the expected counts?
- **Response:**

Obs	M	NM	Total
D			172
N			232
L			75
T	137	342	479

  

Exp	M	NM	Total
D			172
N			232
L			75
T	137	342	479

### Example: *Night Lights & Chi-Square*

- **Background:** Observed and expected counts are

Obs	M	NM	Total
D			172
N			232
L			75
T	137	342	479

  

Exp	M	NM	Total
D			172
N			232
L			75
T	137	342	479

- **Question:** What is chi-square? Conclusions?
- **Response:**