Week 2 Lecture - Research Sources

Undergraduate Research Methods in Psychology

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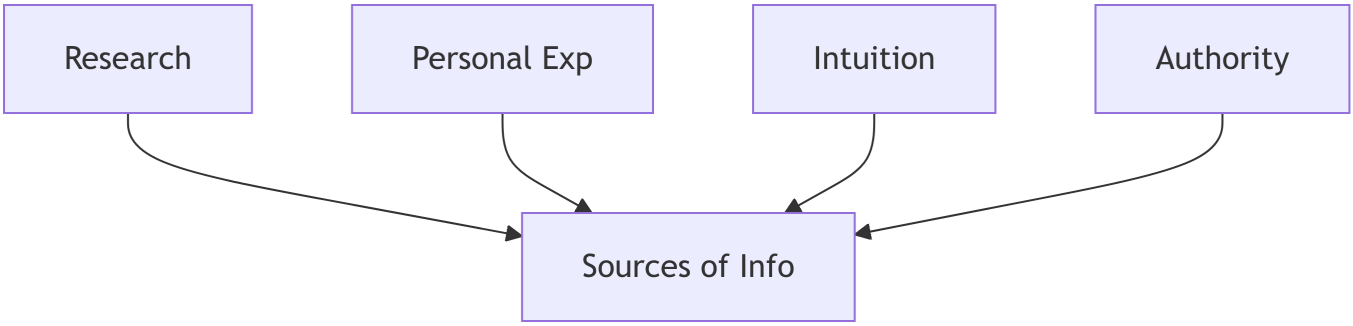
1 Overview

1.1 Overview

- We can gain _____ from many origins; this is true of both scientific and common sources and:
  - Scientific Sources:
    - Journal _____
    - Books and edited books
    - Scientific _____
    - etc.
  - Common sources:
    - _____ outlets (and lots of them!)
    - Newspapers
    - Think tanks (private "research")
    - "Well my friend said…"
- *But*, how do we _____ these sources - which ones are the "best" for drawing conclusions? (hint: research!)
  - Also, how do we read each of these _____ more critically?
- We'll compare 4 categories of sources:



2 Research vs. Personal Experience

2.1 Overview

- Personal experience is simply the _____ that comes at us from every-day life.
- This is when we learn from the _____ that occur to and around us.
- *Example:* I learn to walk carefully (like a penguin!) on ice because I have slipped in the past when walking normally. But does walking like a penguin actually work for

people to avoid slipping?

- We often rely on personal experience to make _____, but this does not always mean it is the most reliable source of information…

2.2 No Comparison

- A **comparison group** is a key _____ between scientific research and personal experience. We must compare our study results to some other benchmark, whether that is a _____ group (no intervention) or another type of intervention.
- Without a comparison group we have three _____ outcomes:
  - Our effect is _____ than control (no intervention) or other interventions
  - Our effect is _____ to control or other interventions
  - Our effect is _____ than control or other interventions

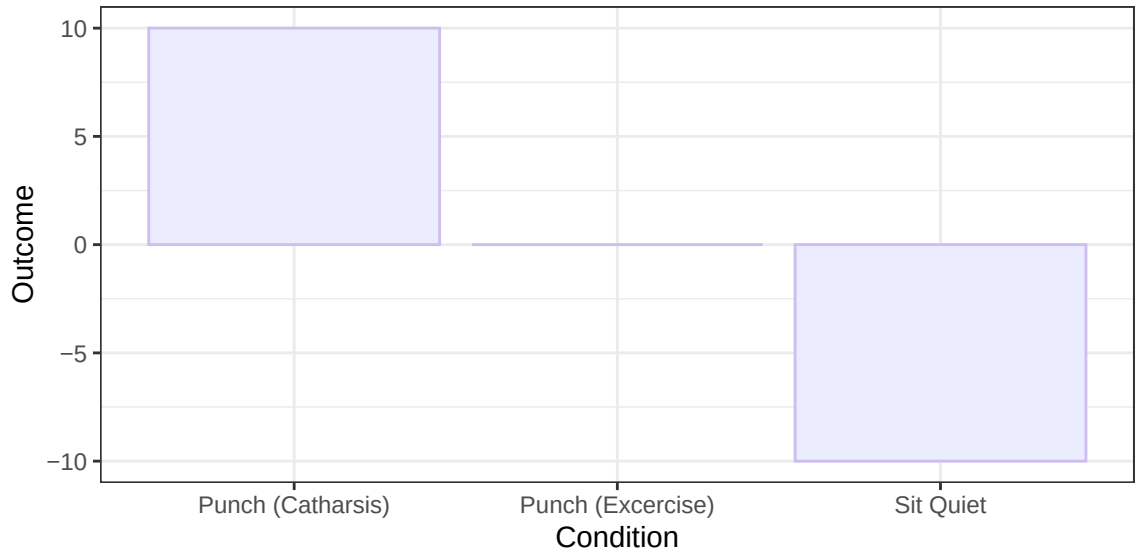
- **Example:** A researcher performs a social intervention to reduce feeling of hostility towards an "out-group". It seems like the participants don't harbor any major negative feelings towards the out-group at the end of the study. A success!? Maybe…
  - Why are the _____ (potentially) wrong here? What other comparisons are possible?
- You may have some belief about the _____ of an intervention (from personal experience), but you won't have good _____ of its "real" effect, without a comparison group.

2.3 Experience is Confounding

- Why did something happen? _____ make it difficult to determine causation in our personal experiences. Confounds are variables that may change how or why something happens.
- Example: A professor addresses you in a disappointed tone on the first day of class. You assume it is due to them just disliking students.
  - Why are the _____ (potentially) wrong here? What other explanations are possible?
- Because of confounds, there may be these _____:
  - The professor had a rough day at home and it taking it out on students (unfairly)
  - You forgot your first assignment, and were late
  - The professor has mistaken you for a different student
  - Any number of other possibilities!
- In our own lives it is difficult to impossible to isolate individual causes for certain outcomes, but in research, we have _____ and statistical controls for confounds

2.4 Research > Experience

- In research settings, we can better control for the _____ of confounds, and create comparison groups
- **Example:** Bushman's study (catharsis theory)



- Another tale of why scientific process > _____

2.5 Probability in Research

- Individual differences are _____ in theories! There are exceptions/edge cases to all hypotheses and, as we mentioned in the last lecture, we cannot account for all possible scenarios with a single _____.
- Research is always _____ which means it try to capture the majority of experiences or the net average of all cases
  - Which may mean your experiences may contradict the _____ of evidence in the research body - but that doesn't mean that your experience or the research consensus is "wrong"
- Connect to your previous statistics class: conclusions are based on p-values, which, in turn, are essentially a _____ of a certain outcome.
- A single case does not fully invalidate a theory or hypothesis. Instead, it may represent a unique case that differs in some way than the others. We must research _____ to understand why!
- *Example:* A medical doctor understands that a blood pressure drug works for _____ individuals with hypertension - but one of their patients isn't responding to it.

3 Research vs. Intuition

3.1 Bias in Intuition

- Recall that _____ is often like a "hunch" or a "gut feeling". We may describe intuition as being "pre-scientific."
- Unfortunately, our intuition may be swayed by certain sources of _____ in how we think…

3.1.1 Convincing Narratives

- Have you ever met someone who could really _____ a story? Maybe a friend who is really good at making stuff up or a salesperson.
- Freud certainly could! Many of his early theories drew on observations that *seemed* reasonable _____, and his psychoanalytic theory is prevalent to this day.

  - This is a sort of "just-makes-sense" thought process, where we think - "well, naturally, it just _____ that way"

- However, this intuition can be an incorrect _____ and may prevent us from fully exploring whether things are actually as we think they are
- *Example:* "Scared straight" program for scaring kids out of certain lifestyles

3.1.2 Availability Heuristic

- *Example:* Anyone afraid of shark attacks in the ocean?
- You may think that they happen often, but really, they are exceedingly _____. But because of popular media and news hype, the idea of shark attacks is much more readily **available** cognitively.
- A **heuristic** is just a cognitive _____, it allows us to skip the process of thinking to come to conclusion. However, in the scientific theory-data-hypothesis cycle, it threatens to obscure what is actually going on
- This heuristic often causes over- or under- estimations of certain situations occurring

3.1.3 Present/Present Bias

- The **present/present bias** may be best understood as an extension of failing to account for _____ groups (see No Comparison)
  - If we don't see a possible outcome, do we fully account for it?
- *Example:* Remember Harlow's monkeys' third option…
- *Additional Example:* I ran in sneakers A and my run was great because of them! But what about sneakers B?
- This may also be understood as also reflecting a _____ to recall certain (critical) events, but not others

3.1.4 Confirmation Bias

- This is our tendency to _____ our already closely-held beliefs by selectively praising, criticizing, and noticing information that reinforces the belief
  - *Especially* relevant to situations like politics, where people have a great motivation to protect "their" _____

- This often causes _____ bias in evidence-gathering and is likely to lead to a single conclusion: "I'm right"
- *Example:*
  - Google search: "Evidence that the earth is flat" vs.
  - "Evidence of the earth's shape"

3.1.5 Bias Blind Spot

- Recall those last few examples of bias? _____ are just as susceptible to those same fallacies as anyone else.
- It pays dividends to be _____ and curious towards possibilities, even when our intuition, experiences, and even research may say otherwise.
- Especially as scientists, there is a _____ to believe *we* are uniquely resistant to bias, *we aren't*
  - Want to eliminate bias? Prove it with sound science, methods, and reporting

3.2 Intuitive Thinking vs Scientific (Empirical) Thinking

- Taken together, there are lots of ways that intuition and _____ experience can let us down in the general conclusions we _____
- In science, we are interested in using *empirical* principals to guide our thinking and writing, as to capture the overall _____ in data and phenomena (remember, science is probabilistic)
- Simply "conducting research" does not _____ protect us from biases - we must be keenly mindful of the risks on biases in our research processes, starting with literature reviews

4 Research vs. Authority

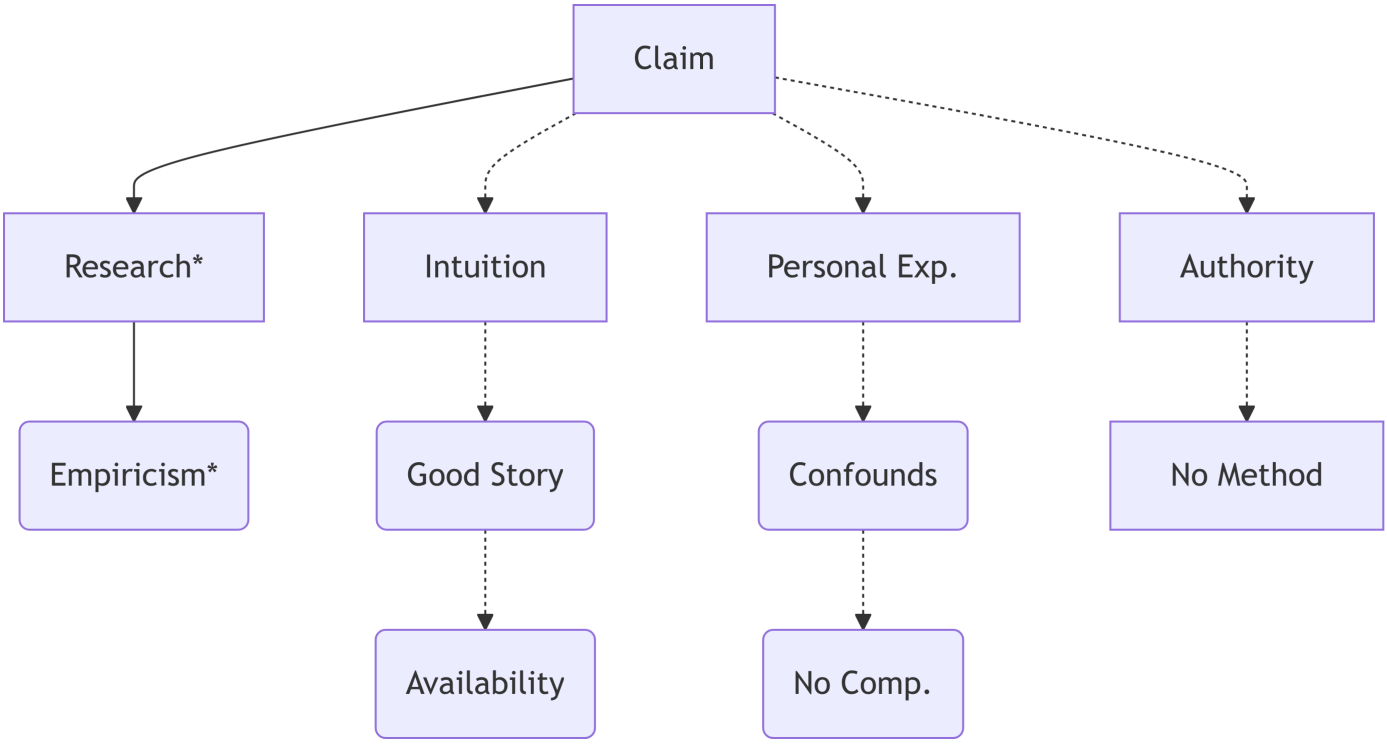
4.1 Faults in Appealing to Authority

- We tend to _____ many authorities throughout our lives: parents, teachers, professors, textbooks (via their authors), administrators, etc.
- However, we ought to distinguish between trusting a _____ for their perceived expertise and trusting *a process* for producing sound claims

  - Why do we trust journal articles? It isn't just because the researchers are simply _____, but rather, that the peer-review process is well set up to prevent poor science from slipping through

- Therefore, we must _____ *the method* by which a person comes to a conclusion, rather than basing our opinion of the person. This is the purpose of written articles, to interrogate the *how*, rather than the *who*

4.2 Flow Chart of Claims



5 Examining Research Sources

5.1 Types of Articles

- **Original Empirical Journal Articles:** Some form of _____ study in which a scientific process and analysis were conducted. These are often some type of novel observation or _____. Usually contains some form of introduction, methods, results, and discussion.

- **Literature Review Journal Articles:** A comprehensive literature review that _____, synthesizes, and compounds the many available empirical studies in a specific research area. Often, comes across as an extended introduction section.
  - Also, a great starting point when doing a literature review for your own _____!
- **Meta-analysis:** An extension of a literature review articles that calculates a _____ effect size from the surveyed research studies. A more quantitative version of a classic literature review.

5.2 Types Books

- **Scientific Books:** a full-length scientific book written by the same single or multiple authors throughout. Focuses on a single _____, and functions as a sort of extended literature review.
- **Edited Books:** a collaborative effort in which many experts compose _____ on specific topics. These are usually not peer-reviewed to the same extent as journal articles - but the authors are usually some of the most respected researchers in an area. Be careful of appeals to _____ because of this!
  - These are popular among applied practitioners of psychology (_____), because it allows them to keep up with developments and ideas in a nice range of areas.

5.3 Finding & Reading Research

- We will cover this in a separate workshop/presentation! This is a critical skill to develop as an early researcher, and is fairly complicated.
- We will also cover how to determine the sections of articles, and what questions you should ask of yourself in each section.

5.4 Scientific Journalism's Role

- Empirical articles will *always* be the _____ way to gain scientific knowledge. Edited books, literature reviews, meta-analyses, etc. may all be good _____ sources as well.

- However, popular scientific journalism may help you find new, findings to your interests - just don't cite it directly. Instead, go to the original articles.