Getting Research Ideas / APA style writing

Week 2
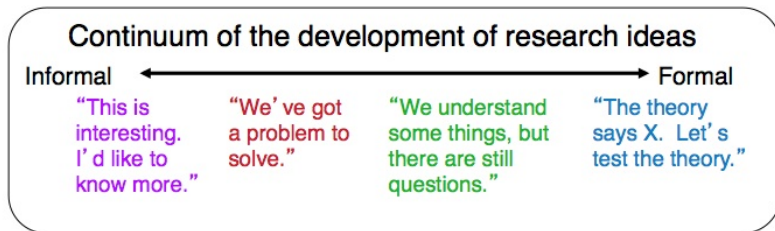
Where do ideas come from?

"Here is a first principle not formally recognized by scientific methodologists: When you run into something interesting, drop everything else and study it" – B.F. Skinner, 1956.

Where do ideas come from?

Research is driven by <u>curiosity</u>.

- ► We typically study things that *interest us*.

Continuum of the development of research ideas

Informal ←——————————————————→ Formal

"This is interesting. I'd like to know more."

"We've got a problem to solve."

"We understand some things, but there are still questions."

"The theory says X. Let's test the theory."

Where do ideas come from?

- <u>Observation</u>
    - **Direct observation**: things that you observe
    - **Vicarious observation**: what somebody else has observed and reported

- <u>Common sense</u>
    - Things we all think are true (e.g., "opposites attract")
    - Note: a lot of our common sense is contradictory
        - *Absence makes the heart grow fonder*
        - *Long distance relationships never last*

Where do ideas come from?

- <u>Past research</u>
  - Find out what research has already been done and ask yourself "what don't we know still?"
    - **Follow-up studies**: expanding the past research in more detail or new directions
    - **Improvements**: maybe you think past research had serious flaw or limitations

- <u>Identify a problem</u>
  - Perhaps there is an important problem that needs a solution
    - WWII – why did airplanes keep crashing?
    - Led to development of early cognitive theories of attention

Are my ideas good?

Evaluating your research ideas

- **Focus**: Is your idea specified enough to be manageable?
- **ROT rule**:
  - Replicable: is/was this just a one-time deal?
  - Observable: can you measure it?
  - Testable: can you test it and can you falsify it?

Replicable

Many interesting results are not accepted until they are *replicated*

- ▶ Cold fusion: results were never replicated and are not generally accepted by the scientific community.
- ▶ Extrasensory perception (ESP): demonstrated by Bem et al. (2011), very controversial study, results have not been consistently replicated.

Observable

Many interesting questions may not be examined experimentally because they aren't *observable* (either directly or indirectly)

- ▶ Do dogs think like humans?
- ▶ Is my experience of the color blue the same as yours?

Testable

Other hypotheses may not have objective *testability* (e.g., imaginary events)

- ▶ What if the dinosaurs hadn't become extinct?

Example: A research idea

Getting the idea

- **How do people remember things?**
  - This is a pretty big question
  - To begin to answer it, we've got to FOCUS
    - Break the general idea down into smaller, more specific ideas
    - Develop theories as to *why* and *how*
  - Then, we can begin using experiments to test parts of the theories

Example: A research idea

Focusing the idea

- **What does memory involve?**
  - Encoding – getting the memories in
  - Storage – keeping the memories
  - Retrieval – getting the memories out

- **Are all kinds of memory the same?**
  - Procedural vs. declarative memories
  - Pictures vs. words

- **How long do memories last?**

Example: A research idea

Evaluating the idea (ROT)

- Can we **re-do** the experiments, do we get similar results?
- How do we **observe** memory?
- Are our predictions **testable**?

Reading the literature will help GREATLY with evaluating research ideas

Reviewing the literature

- ▶ Why do a review of the literature?
- ▶ What is the literature?
- ▶ How do you search the literature?

Why review the literature?

What are the underlying motivations for doing a review of the literature?

- ▶ Getting ideas
- ▶ What has been done, what hasn't been done?
- ▶ Understanding the relevant theories
- ▶ What variables are important?
- ▶ Avoid past mistakes

What is the literature?

Primary Sources – reading the original report

- ▶ Journal articles
- ▶ Edited books (sometimes)
- ▶ Professional meetings (proceedings, abstracts)
- ▶ Electronic publishing (preprint servers, etc.)
- ▶ Faculty members and other personal communications

Secondary Sources – reading a report of the report

- ▶ Literature review (Psychological Bulleting, Annual Review of Psychology, etc.)
- ▶ Text books
- ▶ Citations in books and articles

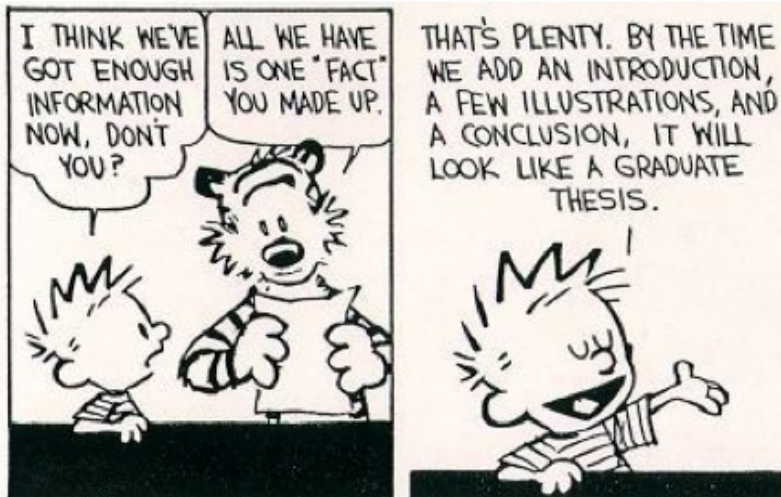# What is the literature?

Secondary Sources

Advantages:
- ▶ Good starting place
- ▶ Often reviews a LOT of relevant literature
- ▶ Relatively brief descriptions

Disadvantages:
- ▶ Somebody else's description
  - ▶ May be incorrect
  - ▶ May be biased
- ▶ Not enough detail for designing future studies

Reading and Writing with APA Style

Why review the literature?

What are the underlying motivations for doing a review of the literature?

- ► Getting ideas
- ► What has been done, what hasn't been done?
- ► Understanding the relevant theories
- ► What variables are important
- ► Avoid past mistakes

Reading a research article

What is the goal of a research article?

- Help the reader to:
    - Know about the research
    - Understand what was done (for further testing and replication)
    - Be convinced by the research (hopefully)
- Standardization of research report format
    - APA style
    - Organization and content reflects the logical thinking in scientific investigation
    - Standardization helps with clarity

# Misconceptions about scientific writing

1. Writing the paper is the routine part of the research process
   - Forces you to commit to your evidence and conclusions
2. Just the facts
   - The facts are just part of the **argument** that the author is making
3. *What* you say is all that is important; *how* you say it isn't important
   - Good writing leads to higher chance of accomplishing your goals

Writing style

Scientific writing tends to differ from other academic writings

- **Not** a creative writing exercise
    - Presenting an argument based on data and logical reasoning
- Try to **avoid** using direct quotes: restate things in your own words
- Avoid digression
    - Footnotes are rate; used only to elaborate/clarify a point. Try to do this in the text instead.
    - If long digressions, use the appendix

Writing resources
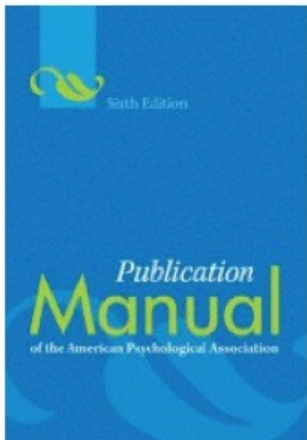
- ▶ The ultimate resource for APA style is the APA manual
- ▶ Chapter 8 of your textbook is good too
- ▶ Some websites are good (e.g., OWL Purdue)

Why a structured format?

To ease communication of what was done

- Forces a minimal amount of information
- Provides a logical framework (for argument)
- Provides consistent format within a discipline
  - People know what to expect
  - Where to find the information in an article
- Allows readers to cross-reference your sources easily

Major goal: Clarity

Communicate with clarity

- ▶ Write for the reader
  - ▶ Think about your audience, what do they already know, what don't they know
- ▶ Avoid overstatements
  - ▶ Be conservative in your claims
- ▶ Emphasize the positive
  - ▶ Focus on how the data supports a theory, not just on how it refutes another theory

Major goal: Clarity

Communicate with clarity

- Avoid:
  - Jargon when possible
  - Slang and colloquialism
  - Sexist and biased language
- Be concise
  - Don't use a whole paragraph when two sentences will do
  - Longer papers don't mean better papers
  - Eliminate unnecessary redundancy
  - Use simple words (sentences) rather than complicated words (sentences)

Major goal: Clarity

Communicate with clarity

- ▶ Use concrete words and examples
- ▶ Check your work!
  - ▶ Read it over, make sure that you say what you mean to say
- ▶ Use a consistent format (APA style)
  - ▶ Helps your reader understand your arguments and the sources they're built on
  - ▶ Helps you keep track of your sources as you build arguments

APA style: Parts of a research report
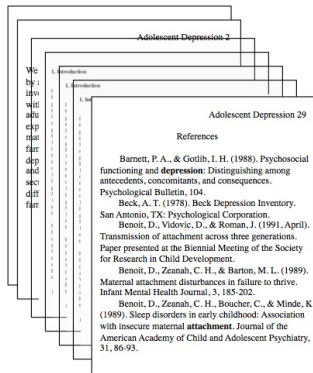
- ▶ Title page
- ▶ Abstract
- ▶ Body
- ▶ References
- ▶ Authors notes
- ▶ Footnotes
- ▶ Tables
- ▶ Figures

The anatomy of a research article

The basic parts of a research article:

- ▶ Title and authors – gives you a general idea of the topic and specifically who did it
- ▶ Abstract – short summary of the article

Title page

Running head – will go on each page of published article, no more than 50 characters

Title should be maximally informative while short (10 to 12 words recommended)

Order of Authorship sometimes carries meaning

Affiliation – where the bulk of the research was done

Running Head: ADOLESCENT DEPRESSION   1

Adolescent Depression and Attachment

Ima G. Student and Soyam Eye

Topnotch University

- Published title pages will look a bit different, but you'll find these pieces of information. Typically the body of the article will begin as well.

Abstract

Abstract: Short summary of entire paper

- 100-120 words
- The problem/issue
- The method
- The results
- The major conclusions

Recommendation: write this after you've finished rest of the paper

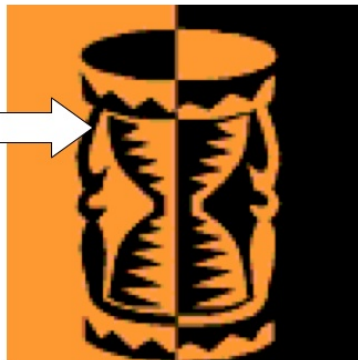Good first contact, but remember that it is short on detail

- Shows up on PsycInfo
- Gets skimmed before reading the article

Body of article

- Hourglass shape

Start broad
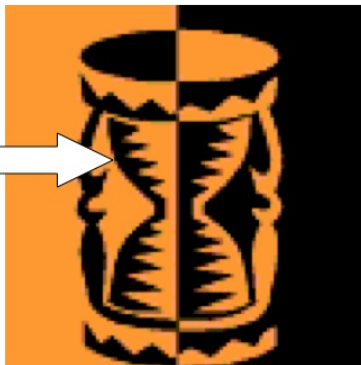
   Background
   Literature Review

Body of article

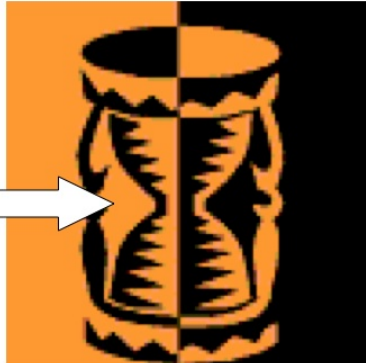- Hourglass shape

Narrow focus
Statement of purpose
Specific hypotheses
(at least at conceptual
level)

Body of article

- Hourglass shape
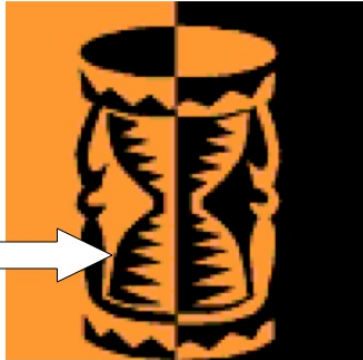
Most focused
- Methods
- Results

Body of article

- Hourglass shape

Broaden

Discussion
Conclusions
Implications

Body of article

Introduction – gives you the background that you need

- ▶ Issue and background
  - ▶ What is it? Why is it important/interesting?
- ▶ Literature review
  - ▶ What has been done? What theories are out there?
- ▶ Statement of purpose
  - ▶ What are you going to do and why?
- ▶ Specific hypotheses (conceptual level)
  - ▶ What do you expect to find?

Body of article

Introduction – gives you the background that you need

- ▶ Reading checklist
  - ▶ What is the author's goal?
  - ▶ What are the hypotheses?
  - ▶ If you had designed the study, how would YOU have done it?
- ▶ Writing checklist
  - ▶ Be cohesive
  - ▶ Be relevant (why are the reviewed studies relevant?)
  - ▶ Work on the transitions (make the flow logical)

Body of article

Method – tells the reader <u>exactly</u> what was done

- Enough detail that the reader could actually replicate the study.
- Subsections:
    - Participants – who were the data collected from
        - How many, where were they selected from, any special selection requirements, details about those who didn't complete the experiment
    - Apparatus/materials – what was used to conduct the study
    - Design
        - Suggested if you have a complex experimental design, often combined with Materials section
    - Procedure
        - What did each participant do? Other details, including operational levels of your IV(s) and DV(s), counterbalancing, etc.

Body of article

Method – tells the reader <u>exactly</u> what was done

- Enough detail that the reader could actually replicate the study.
- Reading checklist
  - Is your method better than theirs?
  - do the authors actually test the hypotheses?
  - What are the independent, dependent, and control variables?
  - Based on what the authors did, what results do YOU expect?
- Writing checklist
  - Is is clear why the procedures were selected?
  - Are any assumptions explicit and defended?
  - Is the level of detail sufficient for replication?

Body of article

Results – results stated, but not interpreted yet

- ▶ Verbal statement of results
- ▶ Tables and figures
  - ▶ Referred to in the text, but actually get put into their own sections at end of manuscript
- ▶ Statistical outcomes
  - ▶ Descriptives, inferential stats, etc.

Body of article

Results – results stated, but not interpreted yet

- ▶ Reading checklist
    - ▶ Did the author get unexpected results?
    - ▶ How does the author interpret the results?
    - ▶ How would YOU interpret the results?
    - ▶ What implications would YOU draw from these results?
- ▶ Writing checklist
    - ▶ Is it clear how the hypotheses are tested by the analyses?
    - ▶ Would a graph or table help clarify the results?
    - ▶ What questions might the reader still have, and how could I answer them in this section?

Body of article

Discussion – Interpret the results

- ▶ Relationship between purpose and results
- ▶ Theoretical (or methodological) contribution
- ▶ Implications
- ▶ Future directions (optional)

Body of article

Discussion – Interpret the results

- ▶ Reading checklist
    - ▶ Does YOUR interpretation or the authors' interpretation best represent the data?
    - ▶ Do you or the author draw the most sensible implications and conclusions?
- ▶ Writing checklist
    - ▶ Have you stated your most convincing argument?
    - ▶ Do the conclusions follow straightforwardly from the results?

The rest

- References
- Footnotes
- Tables and figures

Checklist – things to watch for

- Clarity
- Acknowledge the work of others (avoid plagiarism)
- Active versus passive voice
  - Active: Summers and Jordan (2009) hypothesized that speakers use too much passive voice
  - Passive: It was hypothesized by Summers and Jordan (2009) that speakers use too much passive voice
- Avoid biased language
- Appropriate use of headings
- Correct citing and references
- Good grammar