

# Getting Started in Research

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PSY 3500

# Hypotheses

- **Hypothesis**: A statement about a specific idea to be tested.
- Most often, a hypothesis makes a statement about the relation between two **variables** or about what will happen under a particular **condition**.
- Hypotheses should include **predictions** about specifically what the researcher expects to find.

# Examples

- Mice who are exposed to natural settings will have **fewer instances of cocaine self-administration** than mice exposed to built settings.
- Parents who participate in Lamaze will have **easier labor and deliveries** than parents who do not take Lamaze.

# Exercises

- Identify two constructs that may be related: for example, marital satisfaction and depression
- Form a hypothesis about the specific relationship between these two constructs.

# What is a theory?

- An organized set of ideas that describe or explain how things work, guide what we choose to study, and help us to generate ideas.

Examples:

Attachment Theory

Bioecological Theory

# Writing Research Reports

- Scientists distribute their work through:
  - journal publications
  - books
  - presentations at professional meetings
  - personal contact

# What Distinguishes a Research Report?

- Research reports have reference sections
- Research reports are NOT in popular magazines, books, or newspapers.
- Research reports are not typically available to the public online.
- Research reports discuss scientific experiments.

# Sections of a **Research Report**

- **Title page**

- (title, authors' names, affiliation, and a running head).  
The title should state the central topic and not be too long.

- **Abstract**

- A one page summary of research, no more than 120 words. Briefly describe your research question, the method, the main results, and your conclusions.

# Sections of a **Research Report**

- **Introduction**

- Begins on page 3 with the title at the top. Its purpose is to introduce the topic and review related, past studies.

- **Method**

- Describes the experimental method in enough detail so that the experiment can be replicated. Includes participants, procedure, materials/measures.



# Sections of a **Research Report**

- **Results**

- present results, do not interpret results here.

- **Discussion**

- the purpose is to interpret and evaluate results.

- **References**

# Two Types of Journal Articles

- **Empirical Article**

- A research report that describes one or more studies.

- **Review Article**

- An article that summarizes many studies (does not include a method section).

# Pointers for Reading a Journal Article

[https://www.youtube.com/watch?v=SKxm2HF\\_-k0](https://www.youtube.com/watch?v=SKxm2HF_-k0)

EDITORIAL

## Ten simple rules for structuring papers

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### Overview

Good scientific writing is essential to career development and to the progress of science. A well-structured manuscript allows readers and reviewers to get excited about the subject matter, to understand and verify the paper's contributions, and to integrate these contributions into a broader context. However, many scientists struggle with producing high-quality manuscripts and are typically untrained in paper writing. Focusing on how readers consume information and the process of writing



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writing and reading papers are key skills for scientists. Indeed, success at publishing is used to evaluate scientists [1] and can help predict their future success [2]. In the production and consumption of papers, multiple parties are involved, each having their own motivations and priorities. The editors want to make sure that the paper is significant, and the reviewers want to determine whether the conclusions are justified by the results. The reader wants to quickly understand the conceptual conclusions of the paper before deciding whether to dig into the details, and the writer wants to convey the important contributions to the broadest audience possible while convincing the specialist that the findings are credible. You can facilitate all of these goals by structuring the paper well at multiple scales—spanning the sentence, paragraph, section, and document.

Clear communication is also crucial for the broader scientific enterprise because “concept transfer” is a rate-limiting step in scientific cross-pollination. This is particularly true in the biological sciences and other fields that comprise a vast web of highly interconnected sub-disciplines. As scientists become increasingly specialized, it becomes more important (and difficult) to strengthen the conceptual links. Communication across disciplinary boundaries can only work when manuscripts are readable, credible, and memorable.

The claim that gives significance to your work has to be supported by data and by a logic that gives it credibility. Without carefully planning the paper's logic, writers will often be missing data or missing logical steps on the way to the conclusion. While these lapses are beyond our scope, your scientific logic must be crystal clear to powerfully make your claim.

Here we present ten simple rules for structuring papers. The first four rules are principles that apply to all the parts of a paper and further to other forms of communication such as grants and posters. The next four rules deal with the primary goals of each of the main parts of papers. The final two rules deliver guidance on the process—heuristics for efficiently constructing manuscripts.

# Get an Idea

*“Finding the question* is often more important than finding the answer. ... Science does not begin with a tidy question. Nor does it end with a tidy answer.” – John Tukey, 1980

1. Start with a general topic (e.g., communication disorders, depression, talkativeness)
2. What informal observations do you have about this? What does the prior research said about it?
3. Now you have an idea!

# Turn the Idea into an *Empirically Testable Idea*

“Questions expressed in terms of a single variable or relationship between variables”

- Discussion section of a recent article about your idea
- Start at the ground level: how frequent or intense is it? If already known:
  - Ask about the behavior’s causes
  - Ask about the behavior’s effects
  - Ask about whether the cause or effect is differential (does it affect a certain type of person more?)
- If all this is known, how well is the behavior measured? Could it be improved?
- Do we know the pathway of the effect from one variable to another?

# Evaluate Your Empirical Question

## Is it interesting?

1. The answer is in doubt,
2. The answer fills a gap in the research literature, or
3. The answer has important practical implications.

## Is it feasible?

Consider:

- time,
- money,
- equipment and materials,
- technical knowledge and skill, and
- access to research participants

# The Research Literature

Let's take a look

1. Start with recent work
2. Look for review articles (they have loads of info)
3. Organize your search (Mendeley or Zotero)

Exercise: Find 3 articles that match a research idea that you have generated