Unit 5

The Original Manuscript

Recommende order for writing an original manuscript

1. Tables and Figures
2. Results
3. Methods
4. Introduction
5. Discussion
6. Abstract

5.1 Tables and Figures

- Editors, reviewers, and readers may look first at titles, abstracts and tables and figures
- Figures and tables should stand alone and tell a complete story. The reader should not need to refer back to the main text.
- Use the fewest figures and tables needed to tell the story
- Do not represent the same data in both a figure and a table

When to choose a table and when a figure?

- Table
  - Give precise results
  - Display many values/variables
- Figures
  - Visual impact
  - Show trends and patterns
  - Tell a quick story
  - Tell the whole story
  - Highlight a particular result

Table title

- Identify the specific topic or point of the table
- Use the same key terms in tha table title, the column headings, and the text of the paper
- Keep it brief

Table footnotes

- Use superscript symbols to identify footnotes, according to journal guidelines
- Use footnotes to explain statistically significant differences
- Use footnotes to explain experimental details or abbreviations

Table formats

- Model your tables from already published tables!
- Don't re-invent the wheel!
- Use the "3 horizontal lines" principle

Types of figures

1. Primary evidence
    - prove things with images
2. Graphs
    - Line Graphs
        - Used to show trends
    - Bar Graphs
        - Used to compare groups at one time point
    - Scatter Plots
        - Used to show relationships between two variables
    - Tell a quick visual story
    - Keep it simple!
    - Make it easy to distinguish groups

- If it's too complex, maybe it belongs in a table

3. Drawings and diagrams
    - illustrate an experimental set-up or work-flow
    - indicate flow of participants
    - illustrate cause and effect relationships or cycles
    - give a hypothetical model

Figure legends

May contain:

1. Brief title
2. Essential experimental details
3. Definitioins of symbols or line/bar patterns
4. Explanation of panels
5. Statistical information

5.2 Results

- Summarize what the data show
    - Point out simple relationships
    - Describe big-picture trends
    - Cite figures or tables that present supporting data
- Avoid simply repeating the numbers that are already available in tables and figures
- Break into subsections, with headings (if needed)
- Complement the information that is already in tables and figures
    - Give precise values that are not available in the figure
    - Report the percent change or percent difference if absolute values are given in the table
- Repeat/Highlight only the most important numbers
- What verbe tense?

    - Use **past tense** for completed actions
    - Use the **present tense** for assertions that continue to be true, such as what tables show, what you believe, and what the data suggest

5.3 Methods

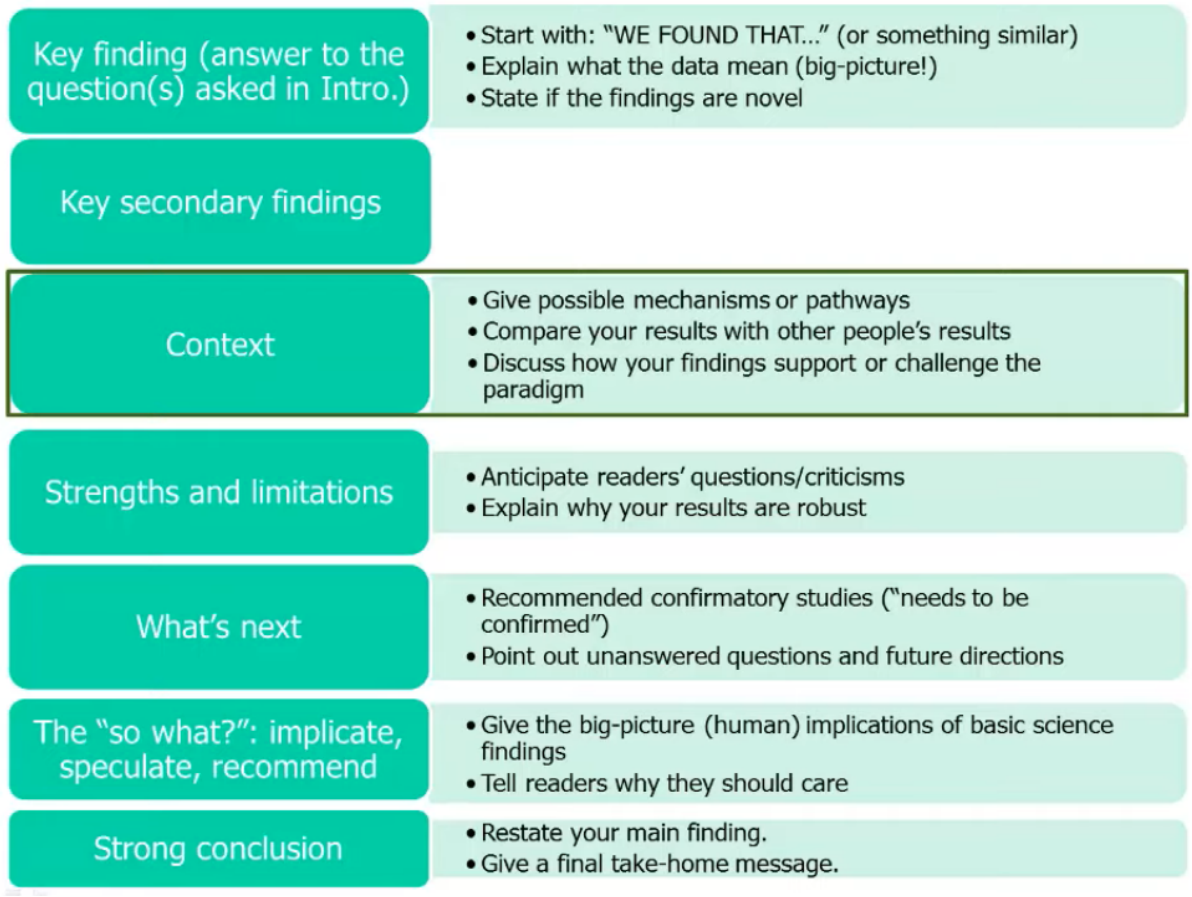
- Since you can talk about the subjects of your experiments, "we" can be used sparingly while maintaining the active voice
- Give a clear overview of what was done
- Give enough information to replicate the study
    - Who, what, when, where, how, and why
    - Materials
    - Participants/subjects
    - Experimental protocol/study design
    - Measurements
    - Instruments
    - Analyses
- Be complete, but make life easy for you reader!
    1. Break into smaller sections with subheadings
    2. Cite a reference for commonly used methods
    3. Display in a flow diagram or table where possible
- You *may* use jargon and the passive voice more liberally in the methods section
- Verb tense
    - Report methods in past tense
    - Use present tense to describe how data are presented in the paper
- Use the active voice!
    - More lively!

5.4 Introduction

- Typically 3 paragraphs long. Recommended range: 2 to 5
- It is **not** an exhaustive review of your topic. Should focus on the specific hypothesis/aim of your study
- Structure:
  - Background, known information
  - Knowledge gap, unknown information
  - Hypothesis, question, purpose statement
  - Approach, plan of attack, proposed solution
  - Why does your approahc fills the gaps
- Keep paragraphs short
- Write for a general audience (clear, concise, non-technical)
- Take the reader step by step from what is known to what is unknown. End with your specific question
- Emphasize how your study fills in the gaps
- Explicitly state your research question/aim/hypothesis
- Do not answer the research question (no results or implications)
- Summarize at high level! Leave detailed descriptions, speculations, and criticisms of particular studies for the discussion

5.5 Discussion

- Structure:
  - Answer the question asked
  - Support your conclusion (your data, other's data)
  - Defend your conclusion (anticipate criticisms)
  - Give the "big-picture" take-home message
- What do my results mean and why should anyone care?



- Showcase good writing!
  - Use the active voice
  - Tell it like a story
- Start and end with the main finding
  - "We found that..."
- Don't travel too far from your data
  - Focus on what your data do prove, not what you had hoped your data would prove
- Focus on the limitations that matter, not generic limitations
- Make sure your take-home message is clear and consistent
- Verb tense:
  - **Past,** when referring to study details, results, analyses, and backgorun research
  - **Present,** when talking about what the data suggest

5.6 Abstract

- Overview of the main story
- Gives highlights from each section of the paper
- Limited length (100-300 words)
- Stands on it own
- Used, with title, for electronic search engines
- Most often, the only part people red
- Structure:
    - Background
    - Question/Aim/Hypothesis
    - Experiments (Quick summary)
    - Results (Key results found, Minimal raw data)
    - Conclusion: Theanswer to the question asked/take-home message
    - Implication, speculation, or recommandation
- May be structured with subheadings