Writing Papers

Summary

(1) Organization of a scientific paper

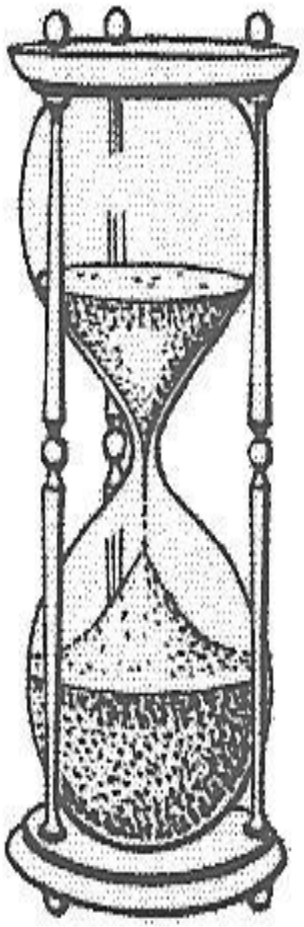
- Introduction
- Methods
- Results
- Discussion

(2) Tips for papers

Paper/presentation follows the experimental process

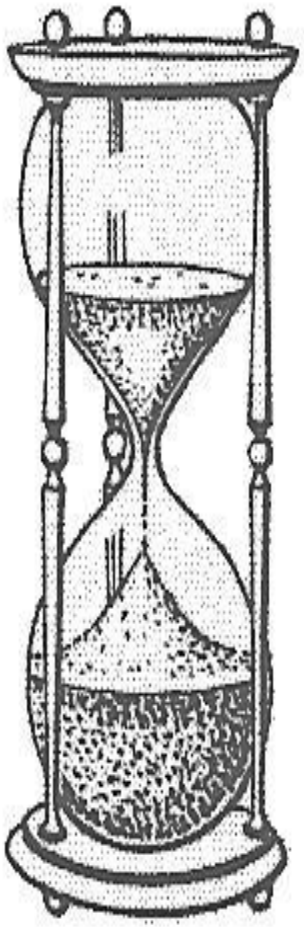
- Start with the big question
- What is already known? What are the gaps or contradictions?
- How will your study answer one of those?
- What will you measure to solve it?
- What do the results mean, starting with the specific and moving to the general

Good papers & presentations have an hourglass shape



- The very general question
- How past research has reduced that to more specific controversies
- The question you will answer
- How you tested it
- What you found
- What the results mean to the specific issue
- How this illuminates the larger question

Make a good hourglass and people will be talking about your simple idea for a long time…



- How is knowledge represented in the brain?
- propositional code vs. analogue of the real world
- Test whether people moving across a map in their mind's eye takes longer if the distance on the imagined map is further
- It does!
- Thus mental representation of the map is an analogue of the real map
- Human knowledge is an analogue of the real world, not a propositional code

Without a good hourglass, would we still be talking about this?

- If the authors of this study were not able to make a convincing connection between this result and a “big” issue would we be hearing about it today?

Paper marks in 260

Introduction /5

Methods & Results /5

Discussion & Conclusion /5

** Note that this is a guideline; marks may be deducted for improper referencing, etc.

The Introduction

State the big question: “How is memory organized?”

Literature review: different theories?

- questions and competing theories.
- how have other studies tried to answer them?
- how has past research left key questions?

What will you test to provide a better answer?

- hypothesis?

Methods

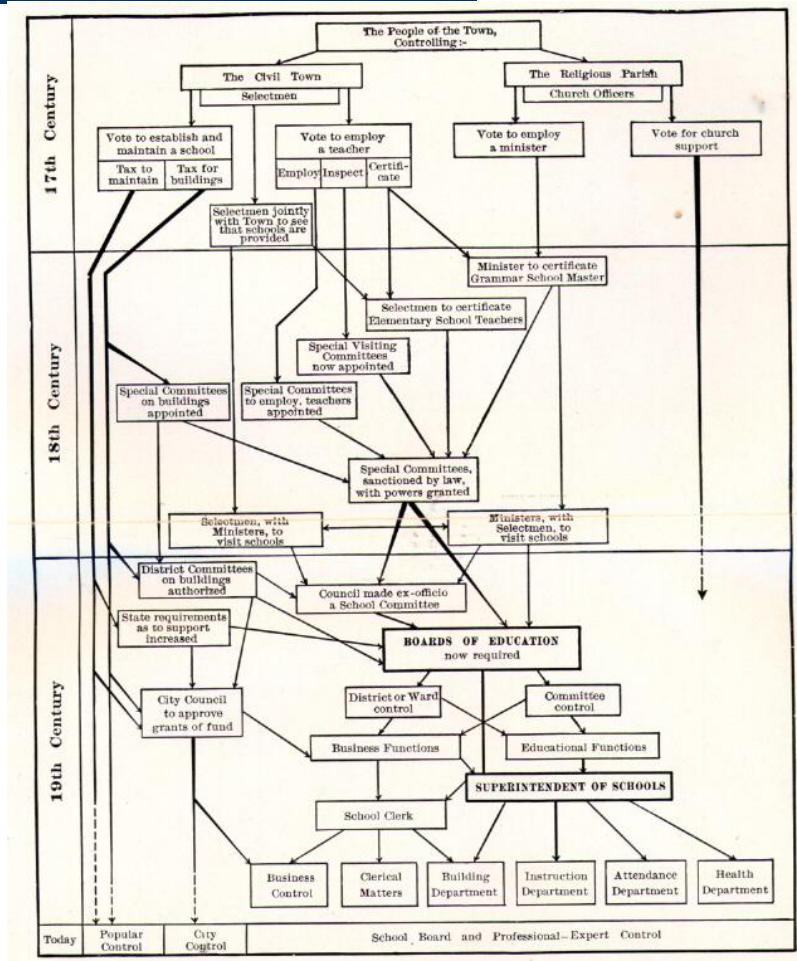
- Who were your subjects, how many?
- What specific comparisons?
- How exactly did you measure?
- Mention aspects of your design that provide control
- Can I replicate your experiment from these instructions?

Results

- Do your stats! Means, StdDev & T-tests
  - report your significance level ($p < .05$ or $p = .03$)
- Relevance: Focus on the key comparisons that answer the important question(s)
- Clarity: What kind of charts/tables best communicate the differences that you think are important?

Results: charts and graphs

- Use charts and graphs that best express your important results
- Communicate, avoid unnecessarily complex charts
- Avoid charts that list raw data



Discussion

1st) Main results and what they mean

2nd) Put this in the context of other studies, how does this result compare with other measures of the same thing?

3rd) How does this impact theoretical debates? Did you help answer a bigger question?

4th) Future research: what is left unresolved?
How could you test it?

Discussions continued: cognitive psychologists are sneaky

- Many studies in cognitive psychology use reaction time or accuracy to argue for a fundamental cognitive process

  -i.e. “because it takes longer to imagine going across a bigger mental map all knowledge representation is analog”

  - Are there other explanations?

  - How could you test?

** This is also a good way to brainstorm!

Tips for papers: Clarity

- Tell a story:
  - What did we want to know?
  - Why?
  - How did we find it out?
  - What does it mean?
- Focus on the main points of the experiment
- People will remember what you wrote if there is a clear take-home message

What if we did two experiments?

- If the first experiment produced no effect but the revised one did, write up the second experiment
  - Exception: if you think the lack of an effect tells you something more!
- If your experiment(s) showed no effects report what you think that means, why this might have occurred, trends, etc.
- If you ran two experiments with effects report both

Writing up two experiments (in five pages)

- Introduction: background and hypotheses
  - To test hypothesis A we did experiment A
  - To test the hypothesis B we did experiment B
- Method
  - In the first experiment we… (full detail)
  - Experiment B was similar to experiment B except…
- Discussion: write it up however you think best accounts for your data

General pointers for papers

- Be concise
  - The page limit for the body is 5 pages double spaced
- References: no hard min/max, but the reader should feel a good sense for the background theory in the introduction and conclusion
- Attention to detail
  - Follow APA format
  - Edit and proofread!