



Writing papers

Honors Seminar



Reporting Results

Today's goal:

Teach how to write a research paper

Outline:

- Writing strategies
- Section by section
- Style points



Writing strategies

How to write a paper



Writing strategies

Specificity hourglass:

Broad intro

Generic research
questions

Specific study hypotheses

Study setup and results

More generic discussion

Broad conclusion

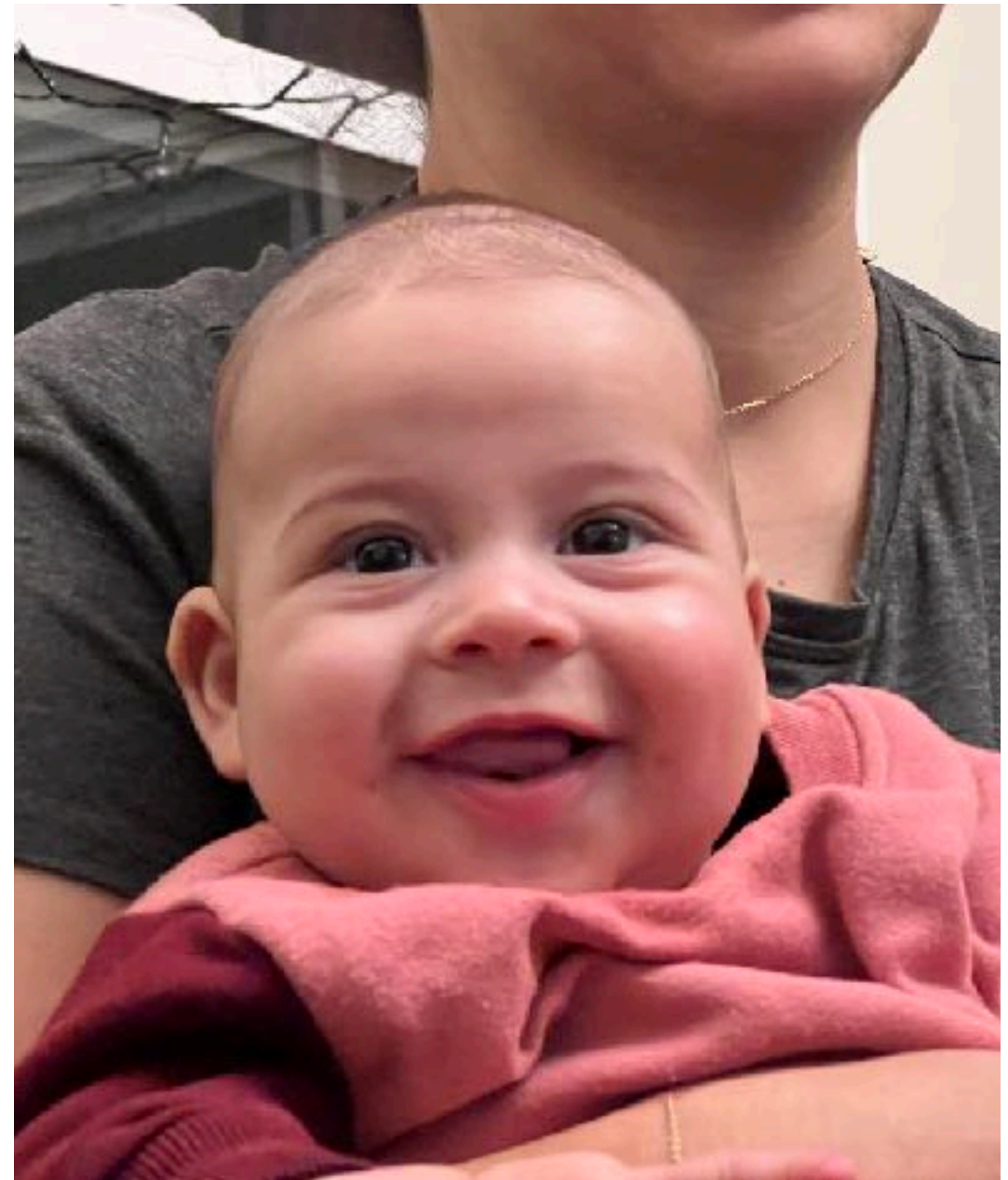




Writing strategies

Write your paper five times!

1. Outline
2. Key sentences
3. First draft
4. Understandable draft
5. Thorough edit
6. (usually additional edits)





Outline + sentences

Outline each section

“Organize” the paper (enhance flow, prevent duplication)

Using “keywords”, what are the main arguments?

Each of these keywords will become a paragraph

For each paragraph, write the key sentence

The main takeaway of the paragraph

The rest of the paragraph will be in service of this key sentence... Write it carefully!



First draft

Write the paragraph around each key sentence

Connecting sentences, clarifications, arguments, examples

Must be in support of the key sentence!

Add connections whenever they are implicit

Key sentence is usually at the beginning or end

Structure:

Academic: arguments → conclusion (key sentence)

Grant/industry: statement (key sentence) → supporting arguments



“Reader” edit

Re-write the paragraph, keeping the reader in mind; for each sentence:

Do they understand it?

Is it relevant (to the key sentence)?

Does it connect (are there gaps, is it out of order)?

Is it convincing?



Thorough edit

Review and edit each other's sections, keeping in mind:

Do I understand it?

Do I find it relevant (to the key sentence)?

Does it connect for me?

Do I find it convincing?

Finally: get an external review (fellow student, advisor)

Give specific instructions

Flag points of contention (discuss them to find a solution)



Paper sections

How to write each section of your paper



Paper sections

Title and abstract

Intro

Related work*, hypotheses*

Methods, results

Discussion, limitations and
future work

Conclusion





Introduction

Present the main argument all the way in the beginning

This should read like an interesting and useful finding

Then unpack your writing

What is the purpose?

What have I contributed?

What problem have I solved?

What does this relate to? How is it similar, how is it different?

How does it extend beyond this field?



Introduction

Defend your work: Why is it important?

Some statistics

Research questions (ingoining focus and/or final focus)

Main takeaway/contributions/signposting

At the end of the intro:

A reader must know if they want to read the rest

A reviewer must be on board with your ideas

Don't overclaim or underclaim your scope; keep it on topic



Related work

Conduct a literature review after you are done with the main findings

Juxtapose your work against the found literature; What opinions and findings you accept and reject?

Only present related work if it is in service of the argument/theory

- Don't summarize their results

- Instead explain why they are relevant



Methods

Needed for any empirical work

Start with an overview of your study (what and why)

Subsections for:

- Participants (demographics and recruitment, if applicable)

- System (importance/detail depends on the study a bit)

- Procedure (step-by-step description of the study)

- Manipulations (independent variables)

- Measurements (dependent variables)



Methods

A good methods section makes the paper replicable

If space is a concern, use the appendix, or create a technical report

“Defend” your methods by citing related work using the same methods



Results

The structure depends on the type of study

- First give some basic descriptive statistics

- Then main results

- Then additional results (robustness etc.)

Refer back to the hypotheses wherever possible



Results

Displaying results:

Statistics: as text or tables

Effect sizes: graphs

Put the findings in common terms, but don't extrapolate





Discussion

1. Remind the reader about your overall goal
2. A summary of the findings: Did you accomplish your goal?

Keep this short: a single paragraph is enough!

3. Reflect on each of your research questions

Explain how your results answer the question

How does it compare to findings from related work?

4. Discuss the implications of your findings

This is where you can extrapolate on the results



Limitations

Limitations and future work

They are often combined, sometimes part of discussion

Discussing limitations can mitigate potential criticisms

General structure:

- The limitation
- Why it is actually not a limitation (or at least not a huge limitation), OR
- Why we couldn't resolve it (a tradeoff), AND
- How future work can resolve this limitation



Conclusion

Go back to your motivation (from the intro)

Why did you conduct this study?

Did you make any progress?

What is the main implication of your work?

I usually end on a “future outlook”



Title and abstract

Most important parts of the paper!

99% of the time, reviewers are selected based on title and abstract only!

Also what makes readers decide whether to download the paper

Title usually gets decided on during the writing process

For me, often during the “key sentences” part

The abstract is usually something I do at the end

Or at least that's when I iterate on it



Abstract

Summary of the paper, usually 200 words or less

What is the problem/gap

Your research question or conjecture regarding this problem/gap

What did you do (type of study, methods!, etc.)

What were your main findings (not all of them; usually only the most relevant ones)

What is your main implication (I tend to emphasize only the most important one)



Style points

Some notes on writing style



Language use

Keep it simple!

Straightforward writing is better than rhetorical flourish

Remove unnecessary words

E.g. in order to -> to

Avoid passive language

Active language tends to be more concise



Language use

Avoid gendered language

Most importantly, when writing about “the user” use “they/ them” (or use the plural “users”)

~~Don't~~ Do not use contractions!

Its vs. it's (the latter should be “it is”!)

Users' vs. user's vs. users

Avoid colloquial language

Figure out, pretty good



Be consistent!

Consistently use the same terms

E.g. “participant” or “subject”? “System” or “program”?

Follow the provided template

Headings, captions, etc.

Citations/reference style

Past or present tense?

Past tense: something you did (methods and results)

Present tense: implications (intro and discussion)

Related work: either way is possible, but be consistent



Users/participants

When you talk about your study/results: participants

Older participants were more less to disclose

When you talk about implications: users

This suggests that older users are more concerned

Be consistent with this!





Final tip

If you want more tips, read
Bem 2002!

Linked in the syllabus
table

