Using APA style for scientific communication
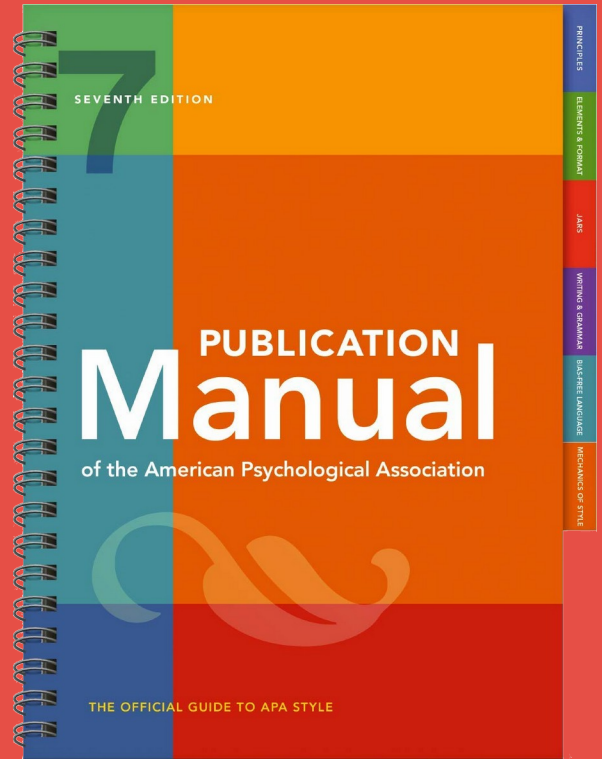## (Session 2)

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Overview

- Why publishing? Why a rule system?

- Structure

- Language use

- Mechanics of style: period (.), comma, abreviations, parentheses, etc.

- Figures and tables – some practical hints

- Referencing

- Publication process

- Ethical issues (authorship, consent, plagiarism)

Displaying results
Chapter 7

Displaying results: Purpose

- communication: tell others what your data mean (main purpose in publications)
- exploration: find out what your data mean
- calculation: displays that allow estimations / statistics
- compression: summarize several results
- decoration: attract attention of your readers
- storage: documentation for later use
- meta-analysis: study details → tables

How would you present results and why?

Displaying results: General rules

- **"Design data displays with your reader in mind" and assume you are the reader**
- rule of thumb: present up to three numbers in a sentence, four to 20 numbers in a table, and more than 20 numbers as graph
- present items to be compared next to each other
- keep free of irrelevant material and consistent with text
- include all necessary information: notes, labels
- labels: clear which element they refer to
- avoid novel abbreviations + explain all abbreviations
- number consecutively (Table 1, 2, …; Figure 1, 2, …)

Displaying results: General rules

Table/Figure 1

Table/Figure Title

here comes the
actual table / figure

Note. General note for the Table/Figure

[a] Specific note (applies to specific conditions)

* Significance note (only if required)

Table/Figure Number – bold
(**T**able/**F**igure start with capital)

Table/Figure Title – italic,
using Title Case Heading

Table/Figure Notes – regular

Displaying results: General rules

Table 1

Numbers of Children With and Without Proof of Parental Citizenship

Grade	Girls		Boys	
	With	Without	With	Without
Wave 1				
3	280[a]	240[b]	281	232
4	297	251	290	264
5	301	260	306	221
Total	878	751	877	717
Wave 2				
3	201	189	210	199
4	214	194	236	210
5	221	216	239	213
Total	636	599	685[a]	622

table number — Table 1

table title

stub heading: heading that describes the leftmost column

table spanner: heading that covers the entire width of the table body, allowing for further divisions

stub column or stub: leftmost column of the table; usually lists the major independent or predictor variables

column spanner: heading that describes the entries in two or more columns in the table body

decked heads: headings that are stacked, often to avoid repetition in column heads

column heading: heading that identifies the entries in just one column in the table body

cell: point of intersection between a row and a column

table body: rows and columns of cells containing the primary data of the table

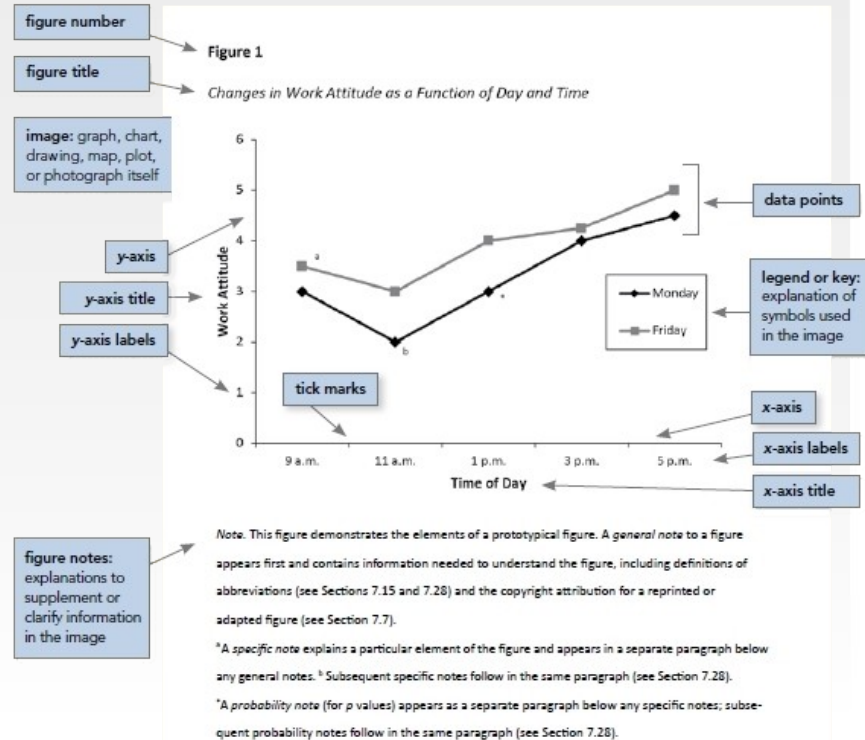**table notes:** explanations to supplement or clarify information in the table body

Note. This table demonstrates the elements of a prototypical table. A general note to a table appears first and contains information needed to understand the table, including definitions of abbreviations (see Sections 7.14–7.15) and the copyright attribution for a reprinted or adapted table (see Section 7.7).

[a] A specific note appears in a separate paragraph below the general note. [b] Subsequent specific notes follow in the same paragraph (see Section 7.14).

* A probability note (for p values) appears in a separate paragraph below any specific notes; subsequent probability notes follow in the same paragraph (see Section 7.14).

Figure 1

Changes in Work Attitude as a Function of Day and Time

figure number

figure title

image: graph, chart, drawing, map, plot, or photograph itself

y-axis

y-axis title

y-axis labels

tick marks

data points

legend or key: explanation of symbols used in the image

x-axis

x-axis labels

x-axis title

figure notes: explanations to supplement or clarify information in the image

Note. This figure demonstrates the elements of a prototypical figure. A general note to a figure appears first and contains information needed to understand the figure, including definitions of abbreviations (see Sections 7.15 and 7.28) and the copyright attribution for a reprinted or adapted figure (see Section 7.7).

[a] A specific note explains a particular element of the figure and appears in a separate paragraph below any general notes. [b] Subsequent specific notes follow in the same paragraph (see Section 7.28).

* A probability note (for p values) appears as a separate paragraph below any specific notes; subsequent probability notes follow in the same paragraph (see Section 7.28).

Displaying results: Tables

	Table X						
	Error Rates of Older and Younger Groups						
			Younger			Older	
	Difficulty	*M*	*SD*	*n*	*M*	*SD*	*n*
	Low[a]	.05	.08	12	.14	.15	18
	Moderate[b]	.05	.07	15	.17	.15	12
	High	.11*	.10	16	.26	.21	14

Note. This table has notes, the first of which is a general note.

[a]Specific note about "Low," which follows a general note. [b]Notes can continue in same block of text, and flow Left-Right and Top-Bottom.

p < .05. [probability notes come last]

Labels (left side, pointing to table parts):
- Number → Table X
- Title → *Error Rates of Older and Younger Groups*
- Headings → Younger
- Column spanner
- Table spanner
- Body
- Cell → .11*
- Notes

Displaying results: Titles

- Too general: Relation between College Majors and Performance

- Too detailed: Mean Performance Scores on Test A, Test, B, and Test C of Students With Psychology, Physics, English, and Engineering Majors

- Good: Mean IQ Scores of Students With Different College Majors

Displaying results: Notes

- **general note**: provides information related to the whole table; ends with explanations of abbreviations / symbols

- **specific note**: refers to a particular column, row, or cell. Indicated by superscript letter (e.g., a, b, c).

- **probability note**: indicates how asterisks and other symbols are used in the table to indicate p values.

Note. Factor loadings greater than .45 are shown in boldface. M = match process; N = non-match process.

[a] N = 25. [b] One participant did not complete the trials.

$* p < .05. ** p < .01. *** p < .001.$

Displaying results: Tables

Should...

- be concise
- only include essential content
- be logically ordered and easy to grasp
- be designed to show a specific "meaning"
- have a brief but clear and explanatory title
- be designed in a familiar way ("standardization")
- be integral to the text, but interpretable in isolation
- be consistent with other tables (design, labelling)

Displaying results: Table checklist

- is it really necessary?
- does every column have a column head?
- are all abbreviations explained?
- are notes in the correct order (general – specific - probability)?
- is the title brief and explanatory?
- is the table referred to in the text?
- are all comparable tables consistent?
- (permission from copyright holder?)

Displaying results: Figures

Types for different kind of information

- graphs: relationship between quantitative variables

- charts: process information (flow charts)

- maps: spatial information

- drawings: pictorial information

- photographs: direct visual representation

Displaying results: Figures

Figure 3. Scatter plots of age against MD for all tracts of interest. Linear regression lines and associated standard errors are shown for each gender. The splenium subplot uses a different y-axis to the others due to its much greater variability across individuals.

Individual data point

Regression line

Legend

Caption
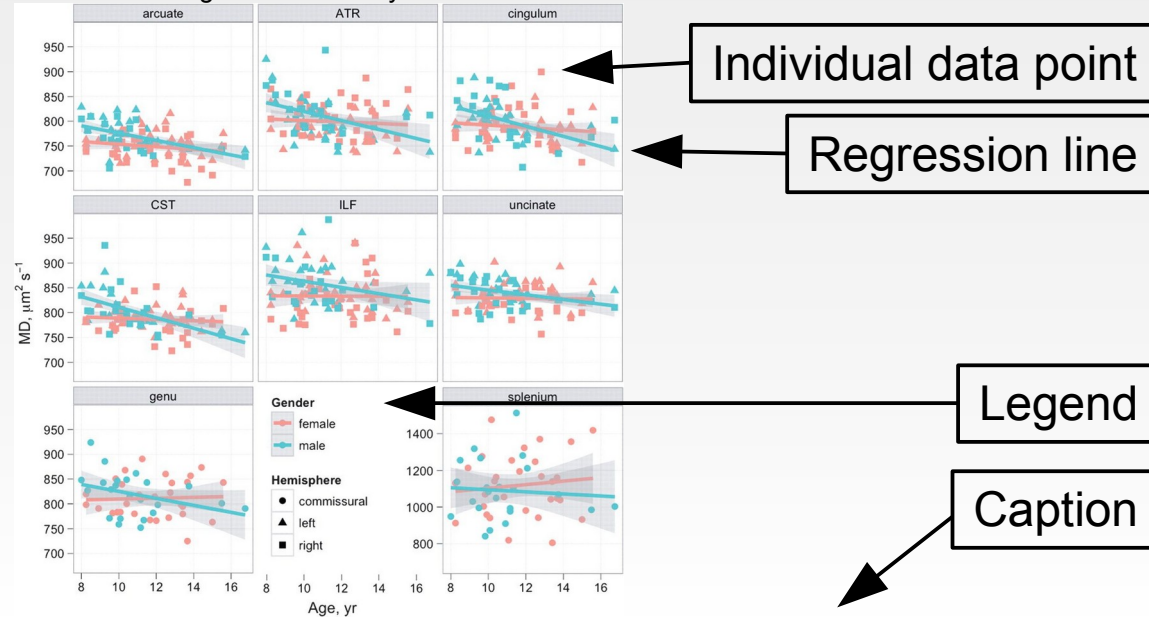
Example figure, showing **graphs**

Clayden, J. D., Jentschke, S., Muñoz, M., Cooper, J. M., Chadwick, M. J., Banks, T., Clark, C. A., & Vargha-Khadem, F. (2012). Normative development of white matter tracts: Similarities and differences in relation to age, gender, and intelligence. *Cerebral Cortex, 22*(8), 1738–1747. https://doi.org/10.1093/cercor/bhr243

Displaying results: Figures

Figure 3. The Mafa flutes consist of two functional components, a resonance body made out of forged iron and a mouthpiece crafted from a mixture of clay and wax. The flute is an open tube which is blown like a bottle, and has a small hole at its bottom end with which the degree to which the tube is opened or closed can be controlled. The depicted set of Mafa flutes is "refined" with a rubber band.
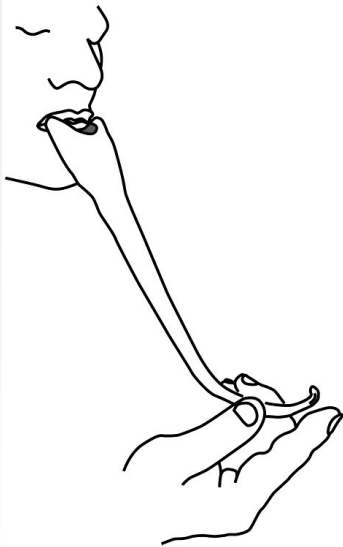
Example figure, combining a **drawing** (left) and a **photo-graph** (right)

10 cm

Fritz, T. H., Jentschke, S., Gosselin, N., Sammler, D., Peretz, I., Turner, R., Friederici, A. D., & Koelsch, S. (2009). Universal recognition of three basic emotions in music. *Current Biology, 19*(7), 573–576. https://doi.org/10.1016/j.cub.2009.02.058

Displaying results: Figures

Figure 2. Baseline hypothetical structural equation model for the perception of safety (latent variables with their indicators).
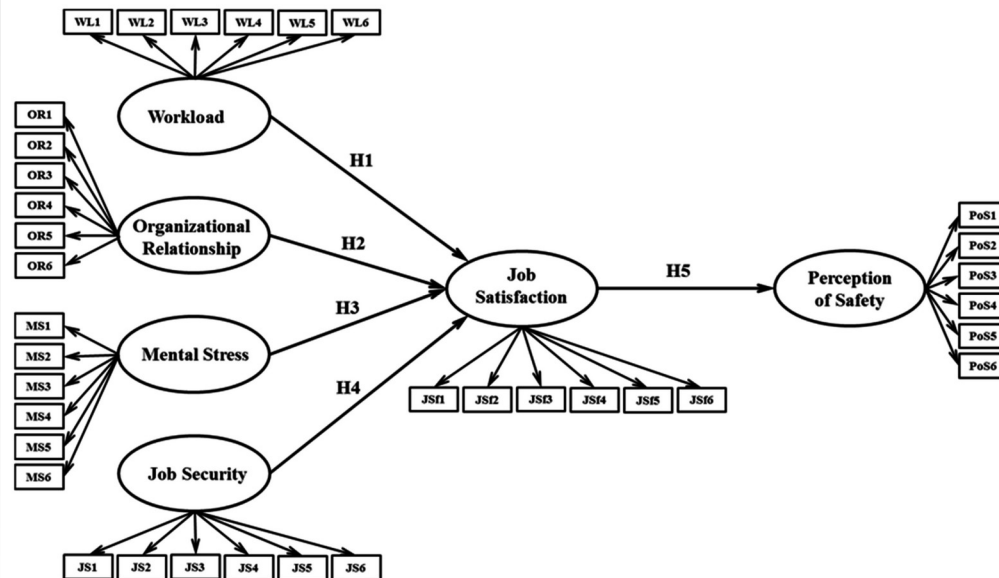
Example figure, showing a **chart**

Necessary?
Yes: it gives a sense of the structure that is more difficult to convey by text.

Idrees, M. D., Hafeez, M., & Kim, J.-Y. (2017). Workers' Age and the Impact of Psychological Factors on the Perception of Safety at Construction Sites. *Sustainability, 9*(5), 745. https://doi.org/10.3390/su9050745

Results: Figure checklist

- is the figure required and is it free of unnecessary material?
- is it simple and clear?
- is the caption descriptive of the content?
- are all elements clearly labeled (legend)?
- is the figure mentioned / related to in the text?
- are all comparable figures consistent?
- is the resolution sufficient for reproduction?
- is it in an acceptable file format (journal/publisher)?
- (permission from copyright holder?)

Some practical hints

in the APA manual:

- **checklists to ensure completeness (Chapter 3)**
  https://apastyle.apa.org/jars/

- **checklists and example tables and figures (Ch. 7)**
  https://apastyle.apa.org/style-grammar-guidelines/tables-figures/sample-tables
  https://apastyle.apa.org/style-grammar-guidelines/tables-figures/sample-figures

- **some general instructions into graphics**
  https://doi.org/10.1198/jcgs.2009.07098
  https://r4ds.had.co.nz/ (chapter 3 and 28)
  https://www.r-graph-gallery.com/

Some practical hints

- consider color / BW graphics (some journals, esp. those in print, charge for color figures); use BW if there is no advantage of color

- think about how to distinguish your groups / conditions (i.e., always use the same / similar colours / pattern for your experimental groups or conditions)

- are there «natural» colours for groups / conditions (i.e. colours that are typically associated with the group)?

- be consistent with your colour scheme / use of pattern

Some practical hints for using software to help when preparing manuscripts

Software you currently use

Word processor:

Microsoft Office (offline)	29 respondenter	62 %	
Microsoft Office365 (online)	17 respondenter	36 %	
Google Docs		0 %	
LibreOffice	1 respondenter	2 %	
LaTeX		0 %	

Software you currently use

Reference management:

None	36 respondenter	**77 %**	
EndNote X9	7 respondenter	15 %	
EndNote Online	1 respondenter	2 %	
Mendeley		0 %	
Zotero	1 respondenter	2 %	
Intet svar	2 respondenter	4 %	

Software that may be helpful

Open-source software:

- sustainability: try to use (and invest in learning about software) that you can continue to use without paying

- black box

- keep control of your data: often you "pay" with data

- vendor lock-in

- large companies might change their business model at short notice → often difficult to switch
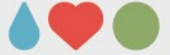
Software that may be helpful

Software for statistics and working with graphics:

- SPSS vs. jamovi (*jamovi.org*) or JASP (*jasp-stats.org*)

- Inkscape (*inkscape.org*) and vector-based graphics
  GIMP (*gimp.org*) and bitmap-based graphics

- inserting references in Google Docs
  creating graphs in Google Sheets

- zbib.org for quick formatting of references

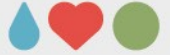# Software that may be helpful

Software for reference management, literature databases:

- EndNote vs. Zotero (*www.zotero.org*) or
  Mendeley (*www.mendeley.com*)
  zoteroBib (*zbib.org*) for quick-and-dirty

- quality of meta-data: Oria or Google Scholar vs. PubMed or
  PsychInfo

Summary

- why scientific findings should be published and why there are standards for scientific presentation
- how a scientific report in psychology should look like
- how to write in a scientific style
- how to present your results – some practical hints
- how to refer appropriately to the work of others
- how to write your own papers and theses
- how the publication process works and how to deal with ethical issues (authorship, plagiarism, etc.)

How / where can you get help?

- https://apastyle.apa.org/; https://apastyle.apa.org/jars
- https://www.unit.no/tjenester/norsk-apa-referansestil
- examples in the **APA manual**
  sample papers (pp. 50 – 67)
  https://apastyle.apa.org/style-grammar-guidelines/paper-format/sample-papers
  table checklist and examples (pp. 207; 210 – 223)
  https://apastyle.apa.org/style-grammar-guidelines/tables-figures/sample-tables
  figure checklist and examples (pp. 232; 234 – 250)
  https://apastyle.apa.org/style-grammar-guidelines/tables-figures/sample-figures
  reference overview and examples (pp. 313 – 352)
  https://apastyle.apa.org/style-grammar-guidelines/references/examples

Literature

American Psychological Association (Ed.). (2020). *Publication manual of the American Psychological Association* (7th ed.). American Psychological Association. https://doi.org/10.1037/0000165-000
Chapters 1 (pp. 3-26), 2 (pp. 29-67), 3 (pp. 71-108), 4 (pp. 111-127), 8 (pp. 253-278), and 9 (pp. 281-309) are mandatory. This book is a reference work and is relevant for term papers, theses, research, etc.

Sternberg, R. J. (Ed.) (2018). Guide to publishing in psychology journals (2nd ed.). Cambridge University Press. https://doi.org/10.1017/9781108304443
Many practical tips on how to write empirical papers and literature reviews.

Rosnow, R. L., & Rosnow, M. (2011). Writing papers in psychology (9th ed.). Cengage Learning.
A good book for students writing term papers in APA-style.

Bem, D. J. (1995). Writing a review article for Psychological Bulletin. *Psychological Bulletin, 118*, 172-177. https://doi.org/10.1037/0033-2909.118.2.172
Excellent and entertaining introduction to the art of article writing