



# Using APA style for scientific communication

## (Session 1)

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(upgrading slides created by Sieghard Beller, Marco A. Hirnstein,  
Dominic Sagoe, Sigurd W. Hystad, and Asle M. Sandvik)





# Overview

- Why publishing? Why a rule system?
- structure
- language use
- mechanics of style: period (.), comma, abbreviations, parentheses, etc.
- figures and tables – some practical hints
- referencing
- your term paper
- publication process
- ethical issues (authorship, consent, plagiarism)





# Why publish?

- course requirements (read scientific reports, write up semester projects and theses)
- conduct research / clinical work and further your field
- «currency» of a scientific career (applications, institutional rankings, evaluation of research grants)



**CRISTIN**

Current Research Information System In Norway





# Why publish?

- scientific reasons (inform the scientific community, open critical discussions and stimulate research, avoid duplication of work)
- societal reasons (application of scientific findings, responsibility and benefit for society)
- pragmatic reasons (university education and qualification, scientific job, important for research careers – funding)





**Why do we have  
standards and what  
is their advantage?**



# Why standards?

- elements are harmonized (e.g., how a result section is written)
- enhance productivity (usually the best solution is made standard) and avoids duplication and waste
- increases confidence
- practicality (e.g., makes review process easier)
- learn it once, apply it many times





# Why publish in a certain style?

- a uniform style facilitates communication
  - author: help to write up research results
    - *express essential information, reduce distraction*
    - *adequate structure and language*
    - *provide statistical information in a uniform way and choose adequate graphical forms*
  - reader: help to read and understand results
- broad dissemination: used in many disciplines beyond psychology: sociology, economics, criminology etc. and by more than 1,000 scientific journals





# Why publish in APA style?

- simplicity and sobriety: promote simple, clear language and avoid unnecessary “flashy” style
- consistency: the reader knows where to find different kinds of information and concepts are used similarly within and between publications ("Are we talking about the same thing?")
- practical: the manuscript is prepared for publishers' typesetting





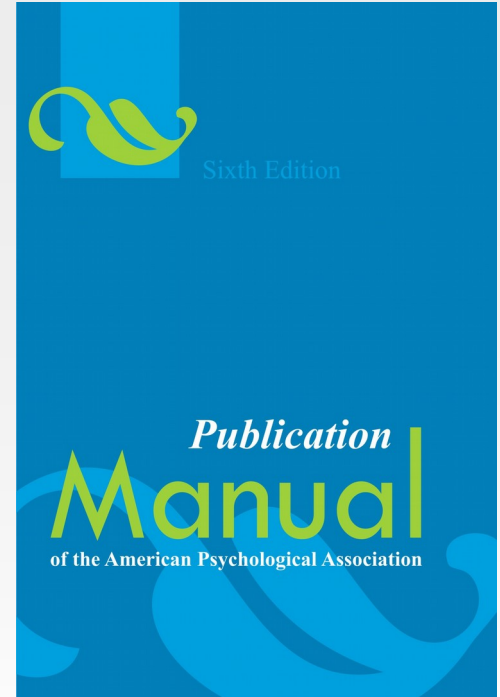


**What do you already  
know about the APA  
style?**



# A bit of history

- 1929: short article in Psychological Bulletin to prepare a set of simple rules (style guide) to facilitate communication of research
- 1952: Publication Manual of the American Psychological Association
- 2009: 6<sup>th</sup> edition (2010: 2<sup>nd</sup> printing, 272 pages)





# Content overview – APA manual

Writing for the behavioral and social sciences	types of articles; ethical standards; scientific knowledge; rights of participants; intellectual property rights
Manuscript structure and content	journal article reporting standards; manuscript elements
Writing clearly and concisely	organization; writing style; reducing bias in language; grammar and usage
The mechanics of style	punctuation; spelling; capitalization; italics; abbreviations; numbers; metrication; statistics; equations
Displaying results	general guidance; tables; figures; presenting electrophysiological data
Crediting sources	when to cite; quoting and paraphrasing; references
Reference examples	types and variations; examples by type; references to legal materials
The publication process	editorial process; author responsibilities





# Types of (scientific) articles

Primary / “original” publications: not previously published, peer-reviewed by experts, archived (for future reference)

- empirical study
- case study
- literature review
- theoretical article
- methodological article
- brief report, comment, book review, letter to the editor

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## Semester project

- empirical: reports research based on empirical data, tests hypotheses
- report from work as a research assistant
- review: analyzing existing literature





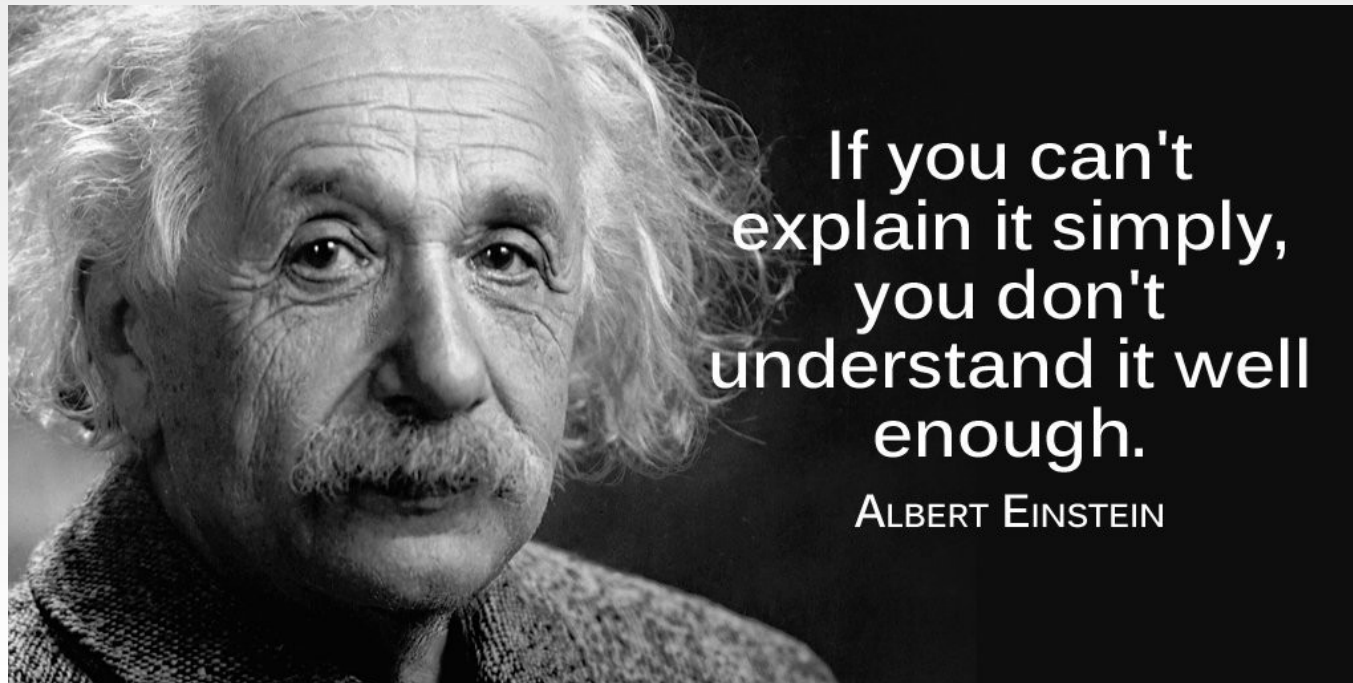
# Myths about scientific writing

- “It’s important what you write, not how you write”?  
No: Good content may be lost in bad language, style, structure.
- “The longer the better”?
  - parsimony and brevity is a scientific virtue
  - evaluation based on quality, not quantity
  - journals have space / word limits (e.g., Scientific reports: «should be no more than 4,500 words»; Current Biology: «usually limited ... to around 5000 words of main text»)





# Myths about scientific writing





# Myths and legends in the writing

UNIVERSITY OF BERGEN

NATURE

April 25, 1953

no. 4356

737

738

NATURE

April 25, 1953

Vol. 171

equipment, and to Dr. G. E. H. Dawson and the captain and officers of R.R.S. *Discovery II* for their part in making the observations.

\*Young, F. B., Gerard, H., and Jevons, W., *Phil. Mag.*, **66**, 119 (1910).

\*Langer, H., *Mon. Not. Roy. Astr. Soc., Geophys. Supp.*, **6**, 104 (1910).

\*Van Arman, W. S., Woods Hole Papers in Phys. Oceanogr., **11**, 131 (1916).

\*Kilham, V. W., *Ann. Mag. Nat. Hist. (Ser. 7)*, **11**, 111 (1916).

is a residue on each chain every 3-4 A. in the 2-direction. We have assumed an angle of 36° between adjacent residues in the same chain, so that the structure repeats after 10 residues on each chain, that is after 34 A. The distance of a phosphorus atom from the fibre axis is 10 A. As the phosphates are on the outside, cautions have easy access to them.

The structure is an open one, and its water content is rather high. At lower water contents we would expect the chains to tilt so that the structure could become more compact.

The novel feature of the structure is the manner in which the two chains are held together by the purine and pyrimidine bases. The planes of the bases are perpendicular to the fibre axis. They are joined together in pairs, a single base from one chain being hydrogen-bonded to a single base from the other chain, so that the two lie side by side with identical *z*-coordinates. One of the pair must be a purine and the other a pyrimidine for bonding to occur. The hydrogen bonds are made as follows: purine position 1 to pyrimidine position 1; purine position 6 to pyrimidine position 6.

If it is assumed that the bases only occur in the structure in the most plausible tautomeric forms (that is, with the keto rather than the enol configurations) it is found that only specific pairs of bases can bond together. These pairs are: adenine (purine) with thymine (pyrimidine), and guanine (purine) with cytosine (pyrimidine).

In other words, if an adenine forms one member of a pair, on either chain, then on those assumptions the other member must be thymine; similarly guanine and cytosine. The sequence of bases on a single chain does not appear to be restricted in any way. However, if only specific pairs of bases can be formed, it follows that if the sequence of bases on one chain is given, then the sequence on the other chain is automatically determined.

It has been found experimentally that the ratio of the amounts of adenine to thymine, and the ratio of guanine to cytosine, are always very close to unity for deoxyribonucleic acid.

It is probably impossible to build this structure with a ribose sugar in place of the deoxyriboses, as the extra oxygen atom would make too close a van der Waals contact.

The previously published X-ray data\* on deoxyribonucleic acid are insufficient for a rigorous test of our structure. So far as we can tell, it is roughly compatible with the experimental data, but it must be regarded as unproved until it has been checked against more exact results. Some of these are given in the following communications. We were not aware of the details of the results presented there when we devised our structure, which rests mainly though not entirely on published experimental data and stereochemical arguments.

It has not escaped our notice that the specific pairing we have postulated immediately suggests a possible copying mechanism for the genetic material.

Full details of the structure, including the conditions assumed in building it, together with a set of coordinates for the atoms, will be published elsewhere.

We are much indebted to Dr. Jerry Donohue for constant advice and criticism, especially on interatomic distances. We have also been stimulated by a knowledge of the general features of the unpublished experimental results and ideas of Dr. M. H. F. Wilkins, Dr. R. E. Franklin and their co-workers at

**MOLECULAR STRUCTURE OF NUCLEIC ACIDS**

**A Structure for Deoxyribose Nucleic Acid**

WE wish to suggest a structure for the salts of deoxyribose nucleic acid (D.N.A.). This structure has novel features which are of considerable biological interest.

A structure for nucleic acid has already been proposed by Pauling and Corey<sup>1</sup>. They kindly made their manuscript available to us in advance of publication. Their model consists of three intertwined chains, with the phosphates near the fibre axis, and the bases on the outside. In our opinion, this structure is unsatisfactory for two reasons: (1) We believe that the material which gives the X-ray diffraction in the salt, not the free acid. Without the acidic hydrogen atoms it is not clear what forces would hold the structure together, especially as the negatively charged phosphates near the axis will repel each other. (2) Some of the van der Waals distances appear to be too small; chains that close would hold the structure together, especially as the negatively charged phosphates near the axis will repel each other.

Another three-chain structure has also been suggested by Frazer (in the press). In his model the phosphates are on the outside and the bases on the inside, linked together by hydrogen bonds. This structure as described is rather ill-defined, and for this reason we shall not comment on it.

We wish to put forward a radically different structure for the salt of deoxyribonucleic acid. This structure has two helical chains each coiled round the same axis (see diagram). We have made the usual chemical assumptions, namely, that each chain consists of phosphate di-ester groups joining 5'-deoxyribose residues with 3',5' linkages. The two chains (but not their bases) are related by a dyad perpendicular to the fibre axis. Both chains follow right-handed helices, but owing to the dyad the sequences of the atoms in the two chains run in opposite directions. Each chain, looked at separately, resembles Furberg's model No. 1; that is, the bases are on the inside of the helix and the phosphates on the outside. The configuration of the sugar and the atoms near it is close to Furberg's 'standard configuration'; the sugar being roughly perpendicular to the attached ions. There

King's College, London. One of us (J. D. W.) has been aided by a fellowship from the National Foundation for Infantile Paralysis.

J. D. WATSON  
F. H. C. CRICK

The Molecular Structure of Nucleic Acids,  
Cavendish Laboratory, Cambridge.

April 4

\*Pauling, L., and Corey, R. B., *Nature*, **157**, 146 (1945); *Proc. U.S. Nat. Acad. Sci.*, **35**, 14 (1945).

\*Pauling, L., *J. Am. Chem. Assoc.*, **6**, 614 (1922).

\*Crick, F. H. C., *Biophys. J.*, **6**, 401 (1952).

\*Clegg, R. E., *J. Soc. Plastics*, **2**, 20 (1952).

\*Arthur, W. L., *Temp. Soc. Exp. Biol.*, **1**, Nucleic Acids, 66 (Camb. Univ. Press, 1947).

\*Wilkins, M. H. F., and Randall, J. T., *Biochim. et Biophys. Acta*, **10**, 142 (1953).

**Molecular Structure of Deoxypentose Nucleic Acids**

WHILE the biological properties of deoxypentose nucleic acid suggest a molecular structure containing great complexity, X-ray diffraction studies described here (cf. Arthur<sup>1</sup>) show the basic molecular configuration has great simplicity. The purpose of this communication is to describe, in a preliminary way, some of the experimental evidence for the polynucleotide chain configuration being helical, and existing in this form when in the natural state. A fuller account of the work will be published elsewhere.

The structure of deoxypentose nucleic acid is the same in all species (although the nitrogen base ratios alter considerably in nucleotides, extracted or in cells, and in purified nucleate). The same linear group of polynucleotide chains may pack together normally in different ways to give crystalline<sup>2</sup>, semi-crystalline<sup>3</sup> or paracrystalline<sup>4</sup> material. In all cases the X-ray diffraction photograph consists of two regions, one determined largely by the regular spacing of nucleotides along the chain, and the other by the longer spacing of the chain configuration. The sequence of different nitrogen bases along the chain is not made visible.

Oriented paracrystalline deoxypentose nucleic acid ('structure B' in the following communication) by Pauling and Corey<sup>5</sup> gives a five diagram as shown in Fig. 1 (cf. ref. 6). Arthur<sup>7</sup> suggested that the strong  $\pi$ -reflexion corresponding to the inter-nucleotide repeat along the fibre axis, the  $\approx 34$  A. layer lines, however, are not due to a repeat of a polynucleotide composition, but to the chain configuration repeat, which causes strong diffraction as the nucleotide chains have higher density than the interstitial water. The absence of reflexions on or near meridians immediately suggests a helical structure with axis parallel to fibre length.

Diffraction by Helices

It may be shown<sup>8</sup> (also Stokes, unpublished) that the intensity distribution in the diffraction pattern of a series of points equally spaced along a helix is given by the squares of Bessel functions. A uniform distribution of helix helices of varying orientation corresponding to the helix pitch, the intensity distribution along the helix layer lines being proportional to the square of  $J_n$ , the  $n$ th order Bessel function. A straight line may be drawn approximately through

Fig. 1. Five diagram of deoxypentose nucleic acid from B. coli. Fibre axis vertical.

the innermost maxima of each Bessel function and the origin. The angle this line makes with the equator is roughly equal to the angle between an element of the helix and the helix axis. If a unit repeats a times along the helix there will be a meridional reflexion ( $J_0^2$ ) on the  $n$ th layer line. The helical configuration produces side-bands on this fundamental frequency; the effect<sup>8</sup> being to reproduce the intensity distribution about the origin around the new origin, on the  $n$ th layer line, corresponding to  $C_n$  in Fig. 2.

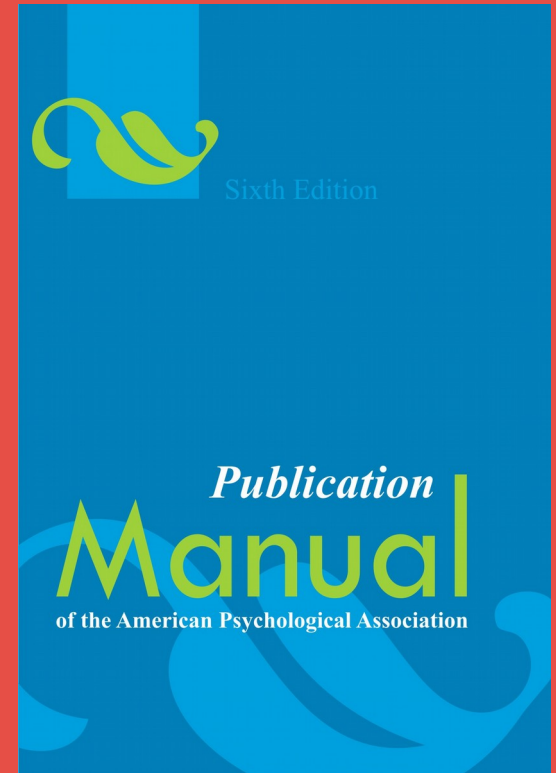
We will now briefly analyze in physical terms some of the effects of the shape and size of the repeat unit or nucleotide on the diffraction pattern. First, if the nucleotide consists of a unit having mirror-symmetry about an axis parallel to the helix axis, the whole diffraction pattern is modified by the form factor of the nucleotide. Second, if the nucleotide consists of a series of points on a radius at right-angles to the helix axis, the phases of reflexions scattered by the helices of different diameter passing through each point are the same. Summation of the corresponding Bessel functions gives reinforcement for the inner-

Fig. 2. Diffraction pattern of system of helices corresponding to the five diagram of deoxypentose nucleic acid. The origin of the helix is parallel to the fibre axis. Points are plotted about it on the equator and on the first, second, and third layer lines. The meridional reflexion  $J_0^2$  is shown at a given radius being dependent to the helix. About  $C_n$  on the  $n$ th layer line the helical reflexions are plotted for a unit diameter of 12 A.

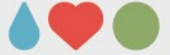
Nobelpriiz for physiology and medicine 1962: Watson, J. D., & Crick, F. H. C. (1953). Molecular structure of nucleic acids. *Nature*, **171**, 737-738.



# Manuscript structure (Chapter 2)







# Manuscript structure: IMRaD

- **Introduction:** What is the problem? Why is it interesting?  
*Background – purpose of investigation – hypotheses*
- **Methods:** How was the investigation conducted?  
*Detailed description of the procedures, enabling replication*
- **Results:** What was observed / found?  
*Report of findings and analyses: values/quantities; tables; figures*
- **Discussion:** How can the results be understood?  
*Summary; interpretation; strengths & limitations; implications*
- Title and author information, abstract & keywords; references; acknowledgements, conflict of interest & funding, appendices etc.





# Manuscript structure: Hourglass

The article begins broadly becomes more specific until you introduce your own study. Method and results are most specific. The discussion explores the results and their implications.

Individuals differ radically from one another in the degree to which they are willing and able to express their emotions...

In this study, we recorded the emotional reactions of both men and women to filmed...  
We hypothesized...

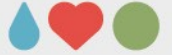
(Method) One hundred male and 100 female undergraduates were shown two movies...

(Results) Table 1 shows...

These results imply that sex differences in emotional expressiveness are moderated by...

If emotions can incarcerate us by hiding our complexity, at least their expression can liberate us by displaying our authenticity.





# Structure: Headings

- manuscript structure and use of headings is key to clear and “logical” communication
- structure provides impression of manuscript quality
- Note: Formatting rules apply to manuscript preparation (in print different styles may be used)

## General rules

- start with level 1, use as many levels as required
- no heading “Introduction” (APA) – some journals use
- headings are hierarchically organized (sub-headings “belong to” the previous, higher headline)
- headings are in the same font as the text (Times New Roman, 12 point), but differ in alignment and style (bold and italic)





# Manuscript structure: Headings

General: Times New Roman, 12 point,  
double-spaced

Previous paragraph ends here.

**Level 1: Centred, Bold, Uppercase  
and Lowercase Letters**

The text starts here...

... and ends here.

**Level 2: Flush Left, Bold, Uppercase  
and Lowercase Letters**

The text starts here...

**Level 3: Indented, bold, lower-  
case letters only, ending with period.**  
The text starts here...

*Level 4: Indented, bold + italic,  
lowercase letters only, ending with  
period.* The text starts here...

*Level 5: Indented, italic, lowercase  
letters only, ending with period.* The  
text starts here...





# Manuscript structure: Headings

If the text requires only one level, use Level 1.

Typical for short articles (e.g., some types of term papers)

Manuscript Title

Introduction, introduction, introduction, introduction.

**Method**

**Level 1**

Method, method, method, method, method, method.

**Results**

**Level 1**

Results, results, results, results, results, results.

**Discussion**

**Level 1**

Discussion, discussion, discussion, discussion.

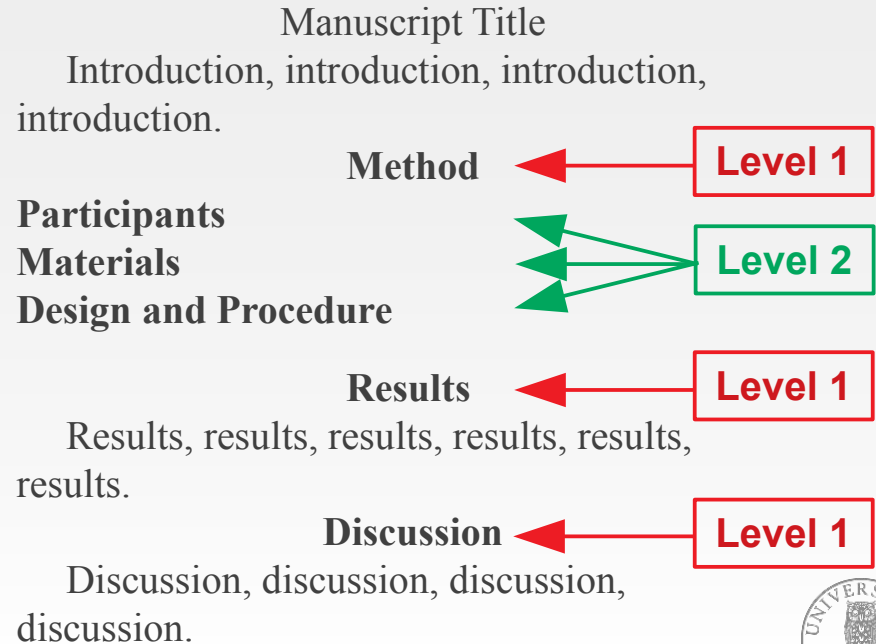




# Manuscript structure: Headings

If the text requires two levels, use Level 1 and 2.

Typical for empirical articles (and empirical term papers).

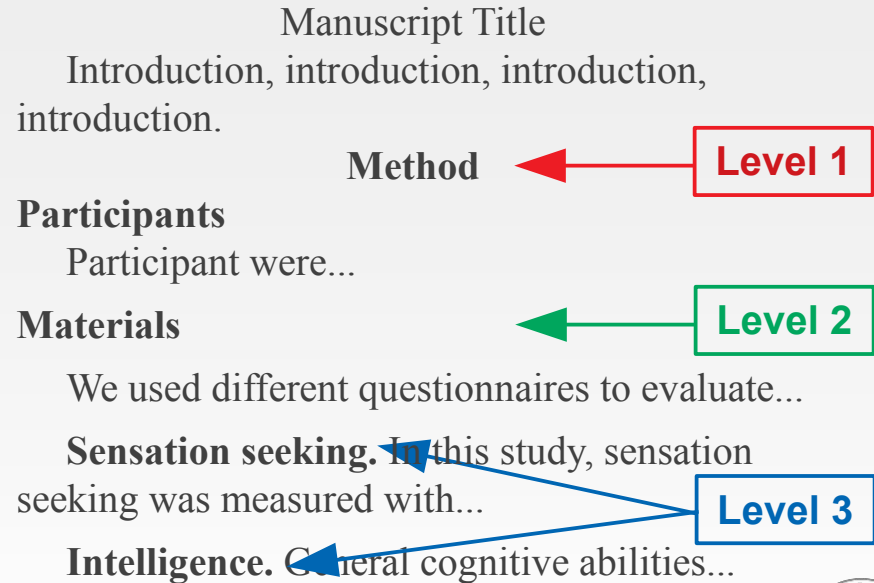




# Manuscript structure: Headings

If the text requires three levels, use Level 1, 2 and 3.

More than three levels are rarely necessary. If it is, then use Level 4 or even 5.





# Manuscript structure: Introduction

**Opening statement:** introduce background and nature of the problem investigated

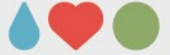
1. Use prose, not jargon.
2. Don't plunge readers into the middle of your problem... lead them step by step.
3. Open with a statement about people... not psychologists / specialists and their research.

**Wrong:** Several years ago, Ekman (1972), Izard (1977), ... pointed to psychology's neglect of the affects and their expression...

**Right:** Individuals differ from one another in the degree to which they are willing and able to express their emotions...





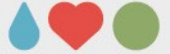


# Manuscript structure: Introduction

**Literature review:** Summarize the current state of knowledge in the area.

1. do not simply list studies; try to integrate them in your argument and tell a coherent «story»
2. avoid non-essential details
3. if you criticize: criticize the work, not the author(s) of a study
4. cite others generously





# Manuscript structure: Methods

Describe the method in such a detail that the study can be replicated.

## Participants

Who participated? How recruited?  
Incentive/reward? Response  
rate/dropout?  
Age (M, Std), sex distribution, other  
variables of relevance to the topic.

## Material

Questionnaires, stimuli, special  
equipment, ...  
Full materials often as appendix  
(or online Open Science Framework)

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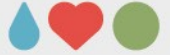
## Procedure

steps of the investigation (e.g., in which  
order where stimuli presented, which  
questionnaires were administered,  
approximate duration)  
give a feel of what it was like to be a  
participant

## Design / Statistical analyses

independent / dependent variables  
techniques for controlling error variance  
(randomization, balancing)  
analysis methods (ANOVA, t-test, etc.)  
use labels that are easy to recognize:  
“group 1 and 2” vs. “1\$- and 20\$-group”





# Manuscript structure: Results

- “Give the forest first and then the trees.”
  - central findings first (focus on your experim. manipulated variables)
  - state a finding, then elaborate / qualify it.
- relate results to your hypotheses

We hypothesized that men would be more emotionally expressive than women and expected that men should produce more tears during the presentation of film clips... As summarized in Table 1, men do cry more... in all four conditions produced an average of 1.4 cc more tears than women ( $F_{(1,112)} = 5.79, p < .025$ ). Only in the ... condition did the men fail to produce more tears. However, this effect did not reach significance. Except for the ... condition, the hypothesis that men cry more received empirical support.





# Manuscript structure: Discussion

- take up the story from the introduction: begin by summarizing the central results of the study, relate the findings to existing research.
- proceed from specific matters to more general ones (hourglass).
- do not simply repeat the results, interpret them: what inferences can be drawn?
- strengths & limitations of the study? which questions remain unanswered? negative or unexpected results? provide suggestions that help to answer these questions
- don't end with "Further research is needed ...", but with a strong take home message





# Structure: Title and abstract

**Goal:** Provide a quick overview for the reader

*Should reflect the content accurately, include important keywords (for literature search), and be composed / revisited after article completion*

## **Title**

- length: 10-12 words
- fully explanatory by itself
- mention the most important aspect(s) of the study
- let the data guide you

## **Abstract**

- about 150 words, no paragraph
- cover: background, participants & method, findings, conclusions and implications
- remove unnecessary words & details, write clearly ...





# Structure: Title and abstract

## **Neural correlates of music-syntactic processing in two-year old children**

Music is a basic and ubiquitous socio-cognitive domain. However, our understanding of the time course of the development of music perception, particularly regarding implicit knowledge of music-syntactic regularities, remains contradictory and incomplete. Some authors assume that the acquisition of knowledge about these regularities lasts until late childhood, but there is also evidence for the presence of such knowledge in four- and five-year-olds. To explore whether such knowledge is already present in younger children, we tested whether 30-month-olds ( $N = 62$ ) show neurophysiological responses to music-syntactically irregular harmonies. We observed an early right anterior negativity in response to both irregular in-key and out-of-key chords. The N5, a brain response usually present in older children and adults, was not observed, indicating that processes of harmonic integration (as reflected in the N5) are still in development in this age group. In conclusion, our results indicate that 30-month-olds already have acquired implicit knowledge of complex harmonic music-syntactic regularities and process musical information according to this knowledge.





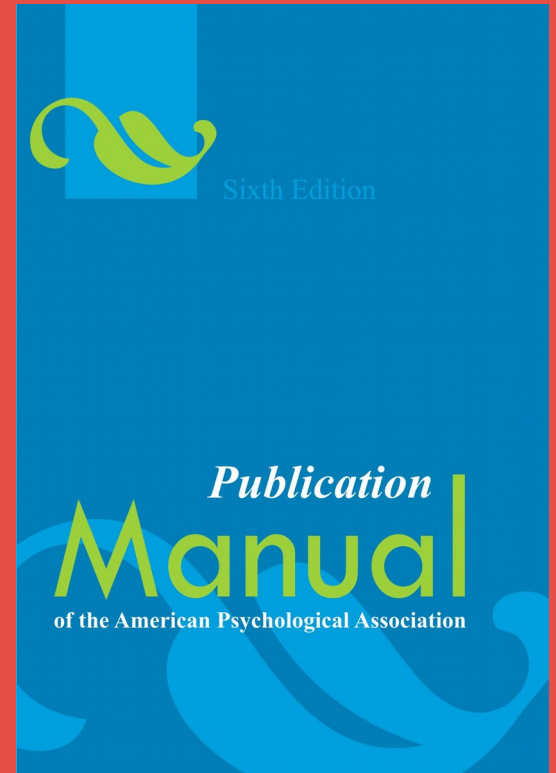
# Structure: Title and abstract

## Neural correlates of music-syntactic processing in two-year old children

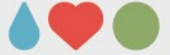
Music is a basic and ubiquitous socio-cognitive domain. However, our understanding of the time course of the development of music perception, particularly regarding implicit knowledge of music-syntactic regularities, remains contradictory and incomplete. Some authors assume that the acquisition of knowledge about these regularities lasts until late childhood, but there is also evidence for the presence of such knowledge in four- and five-year-olds. To explore whether such knowledge is already present in younger children, we tested whether 30-month-olds (N = 62) show neurophysiological responses to music-syntactically irregular harmonies. We observed an early right anterior negativity in response to both irregular in-key and out-of-key chords. The N5, a brain response usually present in older children and adults, was not observed, indicating that processes of harmonic integration (as reflected in the N5) are still in development in this age group. In conclusion, our results indicate that 30-month-olds already have acquired implicit knowledge of complex harmonic music-syntactic regularities and process musical information according to this knowledge.



# Writing style (Chapter 3)







# Writing style

- aim for a continuous thematic development
  - continuity in words and concepts
  - don't use synonyms for important concepts (e.g. “tattooing” vs. “body art” “body modification”)
  - use repetition: same word, same meaning
  - use parallel construction: repetition of sentence structure
- use transitional devices
  - time links: First, ...; Next, ...; After, ...; While, ...
  - cause-effect links: Thus, ...; Therefore, ...; Consequently, ...
  - addition links: In addition, ...; Moreover, ...; Similarly, ...
  - contrast links: Conversely, ...; However, ...; Although...



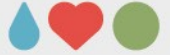


**Scientific Jargon**  
by Dyrk Schingman  
Oregon State University

After several years of studying and hard work, I have finally learned scientific jargon. The following list of phrases and their definitions will help you to understand that mysterious language of science and medicine.

Scientific Phrase	Translation
"It has long been known"	I didn't look up the original reference.
"A definite trend is evident"	These data are practically meaningless.
"While it has not been possible to provide definite answers to the questions"	An unsuccessful experiment, but I still hope to get it published.
"Three of the samples were chosen for detailed study"	The other results didn't make any sense.
"Typical results are shown"	This is the prettiest graph.
"These results will be in a subsequent report"	I might get around to this sometime, if pushed/funded.
"The most reliable results are obtained by Jones"	He was my graduate student; his grade depended on this.
"In my experience"	Once.
"In case after case"	Twice.
"In a series of cases"	Thrice.
"It is believed that"	I think.
"It is generally believed that"	A couple of other guys think so too.
"Correct within an order of magnitude"	Wrong.
"According to statistical analysis"	Rumor has it.
"A statistically oriented projection of the significance of these findings"	A wild guess.
"A careful analysis of obtainable data"	Three pages of notes were obliterated when I knocked over a glass of beer.
"It is clear that much additional work will be required before a complete understanding of this phenomena occurs"	I don't understand it.
"After additional study by my colleagues"	They don't understand it either.
"Thanks are due to Joe Blotz for assistance with the experiment and to Andrea Schaeffer for valuable discussions"	Mr. Blotz did the work and Ms. Shaeffer explained to me what it meant.
"A highly significant area for exploratory study"	A totally useless topic selected by my committee.
"It is hoped that this study will stimulate further investigation in this field"	I quit.





# Writing style

- avoid wordiness and redundancy
  - they were both alike
  - a total of 68 participants
  - four different groups saw
  - has been previously found
  - small in size
  - period of time
  - at the present time
  - the reason is because
  - very close to significance
  - based on the fact that





# Writing style

- avoid wordiness and redundancy
  - they were both alike
  - a total of 68 participants
  - four different groups saw
  - has been previously found
  - small in size
  - period of time
  - at the present time -> now
  - the reason is because
  - very close to significance
  - based on the fact that -> because





# Writing style

- use of past and present  
**past:** for everything that (a) you or your participants did in your study; or (b) has been done and written about in the literature  
**present:** when talking about (a) findings in front of the reader; or (b) conclusions that were/are true
- avoid sexist connotations  
“policeman” -> “police officer”; “chairman” -> “chairperson”
- avoid “labelling” and use accepted designations  
“schizophrenics” -> “people diagnosed with schizophrenia”  
“homosexuals” -> gay men, lesbians, transgender people





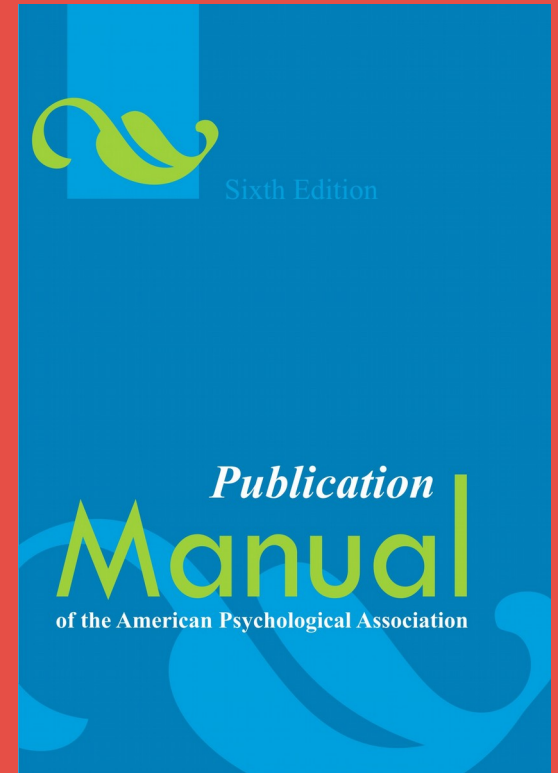
# Writing style

## Three strategies to improve writing:

1. Planning: draft an outline, identify ideas, define structure -> elaborate the structure
2. Incubation: write a draft and put it aside for a while -> re-read and re-write
3. Feedback: write your paper and ask colleague(s) for comments -> re-write according to review



# Mechanics of style (Chapter 4)





# Mechanics of style: Period (.)

- + to end a complete sentence
- + initials of names: J. R. Smith
- + for Latin abbreviations: a.m., cf., i.e., vs., ...
- + for reference abbreviations: Vol. 1, p. 6, pp. 7-9
  
- acronyms: APA, SSB, ...
- US state names: NY; Washington, DC
- measurement abbreviations: cm, kg, min (but: in. = inch)
- web addresses in text («look up <http://www.apa.org>.» -> «look up the APA website (<http://www.apa.org>).»)







# Mechanics of style: Comma (,)

- + in series of 3 and more items: «the height, width, or depth» or «in a study by Stacy, Newcomb, and Bentler (1991)...» or «in another study (Stacy, Newcomb, & Bentler, 1991)...»
- + to set off the year in dates: «April 18, 1992, was the date...»
- + to set off the year in reference citations: (Patrick, 1993)
- + to separate groups of three digits: 1,000 = one thousand
- to separate parts of measurements: 8 years 2 months; 3 min 41 s





# Mechanics: Quotation marks (“” “”)

- + for irony, slang, invented expressions (only first time usage):  
the “good-outcome” variable ... value of the good-outcome variable; what is considered as “normal” behaviour...
- + to set off the title of an article in the text: Riger’s (1992) article, “Epistemological debates, ...”, was cited...
- + to reproduce materials or instructions: The first item was “could be expected to...”
  
- for the anchors of a scale: ranging from 1 (all) to 5 (never)
- for linguistic examples: use of farther and further
- to introduce technical terms: compared to *meta-analysis*, ...





# Mechanics: Quotation marks (“” “”)

- use double quotation marks to enclose quotations in text  
The “placebo effect” disappeared...  
but single quotation marks to mark quotations within a quote  
Miele (1993) found that “the ‘placebo effect’ disappeared...”
- don’t use “” at begin or end of block quotations (> 40 words):  
Miele (1993) found the following:  
    **“The ‘placebo effect’ disappeared when... (p. 276).” but**  
Miele (1993) found the following:  
    The “placebo effect” disappeared when... (p. 276).  
In another study... (next sentence after block quotation)





# Mechanics of style: Parentheses ()

- + to set off independent elements
- + to introduce abbreviations
- + to set off letters identifying a series
- + to set off reference citations in text
- + to enclose the citation or page of a direct quotation
- + to enclose statistical values or degrees of freedom
- within parentheses (()) but brackets ([]) back to back

## *Examples:*

The patterns were statistically significant (see Figure 5).  
...the galvanic skin response (GSR).

...including: (a) synonyms ... (b) descriptors ..., and (c) symptoms ...

Dumas and Dore (1991) reported this ... described elsewhere (Hong & O'Neil, 1992).

The author stated, "The effect disappeared ..." (Lopez, 1993, p. 311).

This effect was significant ( $p = .031$ ).  
 $t(75) = 2.19$  /  $F(2, 116) = 3.71$

**Not:** (the galvanic response (GSR)).

**But:** (the galvanic response [GSR]).

**Not:** (e.g., optimism) (Cantor, 1986).

**But:** (e.g., optimism; Cantor, 1986).



# Mechanics of style: Brackets []

- ! *use brackets infrequently*
- + to enclose the limits of a confidence interval (CI)
- + to enclose material inserted in a quotation not by the original writer within parentheses
- don't use them if commas are sufficient to set off statistics that include parentheses

## *Examples:*

95% CIs [-7.2, 4.3] and [9.2, 12.4].

“when [his and others’] behavior were studied”  
(Hanisch, 1992, p. 24).

(The results of the control group [n = 8] are also reported in Figure 2.)

Not: (as Imai [1990] has concluded).

But: (as Imai, 1990, has concluded).

Not: significant (t[75] = 7.4, p < .01).

Not: significant [t(75) = 7.4, p < .01].

But: significant, t(75) = 7.4, p < .01.





# Mechanics of style: Italics

- ! *use italics infrequently*
- + titles of books, films etc.
- + introduction of terms, labels etc.
- + words that could be misread
- + letters used as statistical symbols
- + journal & volume in reference list
- common foreign phrases
- Greek letters
- mere emphasis
- letters used as abbreviations

## *Examples:*

The book *The Elements of Style*...

The term *backward masking* means...

the box labelled *empty* was...

the *small* group [label not size]

Cohen's *d*; *p*-value; *df* = 3

*American Psychologist*, 26, 46-67.

Not: *a priori*, *per se*, *vis-à-vis*, ...

Not:  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$ ,  $\epsilon$ , ...

Not: It is important to bear in mind that this process is not proposed as a stage theory of developments...

Not: inter-trial interval (*ITI*)





# Mechanics of style: Abbreviations

- ! use abbreviations sparingly, don't use unfamiliar abbreviations (difficult to remember, especially if used infrequently)
- must be written out when mentioned for the first time: ... heart rate variability (HRV)
- Unless they are accepted
  - as words: IQ, HIV, AIDS, etc.
  - units of measurement: h / hr, min, s, ms, kg, etc.
  - common Latin abbreviations
    - used only in parentheses: *compare = cf., for example = e.g., and so forth = etc., that is = i.e., namely = viz., versus / against = vs.*
    - also permitted in text: *and others = et al.*
  -



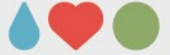


# Mechanics of style: Numbers

- use numerals only for 10 and more: In total, five students dropped out. In total, 10 students dropped out.
- use number words to start a sentence: Fifty-five percent of the students completed the tasks, 45% did not.
- use number words for fractions: One fifth of the class. A two thirds majority.
- combine numerals and words to increase clarity: «2 two-way interactions»; «Ten 7-point scales»  
but: «The first two items»; not: «The 1st two items» or: «The first 2 items»
- use a zero before the decimal point only when the statistic / function can exceed 1: 0.23 cm; Cohen's  $d = 0.70$ ; 0.48 s
- report exact p values to two or three decimal places:  $p = .03$ ; write  $p < .01$  for p values less than .01;  $p = .031$ ; write  $p < .001$  for p values less than .001







# 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
- 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.)





# Literature

**American Psychological Association (2010): Publication Manual of the American Psychological Association (6th ed.). Washington, DC: APA.**

Chapters: 1 (pp. 9-20), 2 (pp. 21-60), 3 (pp. 61-86), and 6 (169-192) are mandatory. This book is a reference work and is relevant for term papers, theses, research, etc.

Sternberg, R. J. (Ed.) (2000). Guide to publishing in psychology journals.

Cambridge UK: Cambridge University Press. doi: 10.1017/CBO9780511807862

Many practical tips on how to write empirical papers and literature reviews.

Rosnow, R. L., & Rosnow, M. (2011). Writing papers in psychology (9th ed.).

Toronto, Canada: Thomson Wadsworth.

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. doi: 10.1037/0033-2909.118.2.172

Excellent and entertaining introduction to the art of article writing





**Thank you very much  
for your attention!**