HANDBOOK WRITING SKILLS

ON STYLE, STRUCTURE AND CONTENT

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This writing manual

This handbook involves the academic writing skills that students will practice throughout the period of their bachelor's and their master's degrees. The text comprises three parts. The first part describes **writing principles** and guidelines. The principles focus on how to present the content of any text and help the reader to understand what the writer intends to communicate. The second part of this handbook deals with the contents and structure of a **scientific review paper,** and will help students to write their **second year's scientific review paper and the third year's bachelor thesis**. The third part of this manual captures the structure and contents of an **empirical research paper**. This information should prove helpful in the completion of a number of writing assignments in the psychology curriculum. Examples are the report written as part of the **second year's research practical**, the **bachelor thesis** in the third year when a student decides to report on a self-conducted empirical study to complete the bachelor program, and the master thesis.

This handbook further provides details on how to use scientific citations and to create a references list, and gives information on how to define and prevent plagiarism. The final chapter focuses on the assessment process and provides the criteria of the theses grading forms. Note that the appendices are meant to provide examples of bad and good sentences and paragraphs, examples on how to quote the work of other writers, and links to the APA rules of creating tables and figures.

In The Elements of Style, the brilliant American humourist and writer E. B. White (author of Stuart Little and Charlotte's Web) quotes his mentor William Strunk:

"Vigorous writing is concise. A sentence should contain no unnecessary words, a paragraph no unnecessary sentences, for the same reason that a drawing should have no unnecessary lines and a machine no unnecessary parts. This requires not that the writer make all sentences short or avoid all detail and treat subjects only in outline, but that every word tell."

Principles of how to write a paper

Summary

Effective writing is explained via the so-called storyline approach. Writers create a storyline that runs through the entire paper and writers ensure that the reader keeps track of that story line. Successful writers accomplish this by attending to the proper wording, but also by structuring sentences, paragraphs and sections. Sentences must be written clearly and successive sentences should be strung together. These sentences are then called cohesive. A writer creates cohesion by starting a sentence with what a reader knows and ending a sentence with new information. A writer should also create a coherent text. To make that happen, paragraphs need to be connected and each paragraph starts with one introductory sentence, also known as: the topic sentence with a main point. This main point is then discussed during the remainder of the paragraph. A serious writer should thus apply general style guides to all levels of a text namely, words and phrases, sentences, paragraphs and sections.

This section of the handbook provides principles that may be useful to write any type of text. These principles are explained via a (loose) psychological approach of how to match a writer's communication intentions with what readers may expect and need.

> Writing principles mostly work, but are not written in stone.

Writing is for someone

Writers of any text should be aware of the intended audience. And it is equally important for a writer not to overestimate the prior knowledge of this audience. Readers often know less about a topic than writers may think, and writers should even assume that readers have to be helped in comprehending a text. It is therefore good advice to ensure that the reader has easy access to all contents that a paper (read: writer) attempts to convey. It is no surprise that graders of papers particularly expect the content of a paper to be easily consumed and interesting to read.

> Kurt Vonnegut (1922-2007):
>
> "If you scribble your thoughts any which way, your readers will surely feel that you care nothing about them. They will mark you down as an egomaniac or a chowder head, or worse, they will stop reading you."

What readers want: The storyline notion

A writer should attempt to communicate a story and create a storyline that runs through the entire text. A storyline may be viewed as similar to a schema (Bartlett, 1932) or a situation model (Kintsch, 1988) that develops as the text unfolds. A story line provides a consistent, logical and understandable string of topics. The writer should attempt to make sure that the reader understands the logic of the topic order and thus remains on the storyline from the beginning to the very end of the paper.

A reader is helped to keep track of the storyline when the writer's good writing style radiates throughout the text. This means that words form clear sentences. These sentences need to be strung together into a paragraph that helps the reading flow through the text from one topic to the next. This flow is further facilitated when successive paragraphs are connected.

In short, an uninhibited storyline makes for a coherent and readable text as it facilitates the flow of reading and helps to gradually expand the reader's knowledge. A serious writer may apply a number of writing principles to create such an

unhampered storyline. These principles need to pertain to all the levels in a text, namely words, sentences, paragraphs and sections.

Wording

The reading flow remains active when sentences are built by words that the reader understands and when the meaning of these words easily integrates into the storyline. The writer should help the reader to integrate a new concept into the storyline. This is done by properly introducing and explaining any new concept. A number of writing style recommendations regarding text wording may help to improve the reading flow:

> **The reading flow hampers** when the reader encounters an unexpected word that does not fit in the semantic context of the storyline. The flow hampers, because the reader will attempt to actively integrate the new concept.

- Be sparing in using foreign phrases, scientific or jargon words. It is better to use an everyday English equivalent.
- Some scientific writers think that learned writing implies that a sentence needs to be crammed with scientific words. These writers often produce incomprehensive scientific babble (psycho-babble) and they forgo their readers' needs.
- A writer should never use a long word or phrase where a short one will do. For example*: Self-administration of psychotropic substances = drug use.* If it is possible to cut a word out, always cut it out.
- Related to the former problems are the so-called nominalizations, which are nouns that actually should be verbs or adjectives (see example and video on the right). The use of nominalizations can be minimized by turning these nouns into active verbs and make sentences more readable.

> You may want to view a short video that is a **persuasion** of the **minimization** of the **production** of **nominalizations**. In other words: writers should minimize the use of these zombie nouns (YouTube link).

- Be aware of your choice in using the passive or active tense. Compare:
  > *It was investigated whether...(passive)*
  > *We investigated whether... (active)*

  Preferring the active tense may clash with the idea of avoiding personal language. But a writer may also pretend that a paper or study is a person: "This paper introduces…" or "This study focuses on …".
- Some sentences are difficult to understand simply because they have many adjectives. Serious pruning of such a sentence is recommended (see example on the right). Writing a text often resembles weeding a garden and a serious writer needs to become used to cut out everything that hampers a clear understanding of a text.

> The sentence:
>
> *The black volatile female dog bit the big angry red male cat.*
>
> could be pruned to:
>
> *The dog bit the cat.*
>
> **Improve text concision:**
>
> Serious writers should not hesitate to prune or weed out unnecessary parts from their texts.
>   According to the famous Dutch novelist Godfried Bomans (1913-1971), writing is deleting ("*Schrijven is schrappen.*").

Writing style guides are often ambiguous:

- Writing style guides often proclaim that sentences need to be short. It is true that a short sentence is mostly easier comprehended than a longer one. However, variation of sentence length is recommended in a text, as the repetition of many short sentences may also hinder the reading flow (staccato).
- Grammar school teachers often punish pupils who start a sentence with "because", "and" or "but". But there is no grammatical reason to forbid this and its usage often improves the reading flow (Williams, 1995).
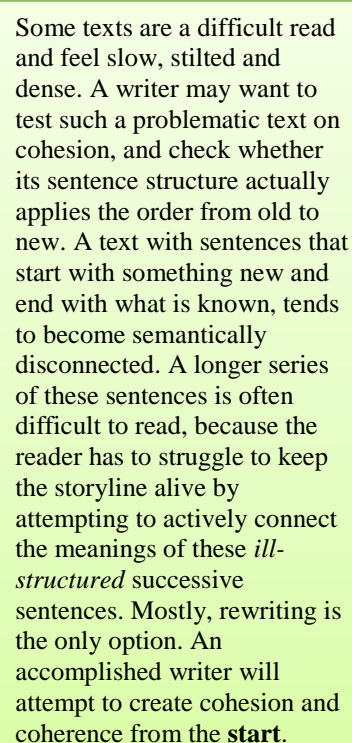
     Always focus on text readability and reading flow. In addition to proper word use, reading flow is also enhanced by improving the structure of sentences as is shown in the next section.

Sentence structure and cohesion: From known to new knowledge

The reading flow is certainly facilitated by a well-structured sentence. Such a sentence helps the reader to read and understand the text with minimal effort and is said to be **cohesive**. The writer accomplishes cohesion by starting sentences with what the reader already knows, while new knowledge appears during the remainder of each sentence (Williams, 1995). In this way, a string of sentences is said to be connected and cohesive and helps to form a semantic unit. These sentences are a first start to build a coherent text, as they help readers to remain on the storyline, and gradually expand their knowledge.

> Some texts are a difficult read and feel slow, stilted and dense. A writer may want to test such a problematic text on cohesion, and check whether its sentence structure actually applies the order from old to new. A text with sentences that start with something new and end with what is known, tends to become semantically disconnected. A longer series of these sentences is often difficult to read, because the reader has to struggle to keep the storyline alive by attempting to actively connect the meanings of these *ill-structured* successive sentences. Mostly, rewriting is the only option. An accomplished writer will attempt to create cohesion and coherence from the **start**.

     Transition words. To create cohesion by structuring each sentence from known to new knowledge, writers may apply a transition word or phrase to make a concise connection with what the reader already knows. Such a transition acts as a signpost in a text and may express a **conclusion** (e.g., adverbs *(Un)fortunately, ...Similarly, ...Certainly, ...Clearly, ...*), or a **contrast** (between sentences: *By contrast, ...On the other hand, ...However, ...Despite*), or leads the reader along a **series** (*First, ... Second, ... Third, ...; In addition ...Additionally ...Then...; Last, ... Finally, ... Also,...; Further, ...Moreover, ... Another...*). A transition may also signal an **implication** (*Therefore*, …; *It follows that* …; *In conclusion*, …; If …then. Note that signalling implications such as *thus* and *hence* are mostly used within a sentence.

     The grammatical order of sentence elements. Additionally, cohesive English sentences know a strict grammatical order of certain elements. For example: "The researchers sent their manuscript to the journal." consists of four important elements: The researchers *(subject)* sent *(verb)* their manuscript (**direct object**) to the journal *(indirect object)*. A sentence mostly reads better when these four elements remain as close to each other as possible. And unlike in some other languages, English verbs are often

positioned relatively **early** in readable sentences. Placing a verb late in an English sentence mostly hinders the reading flow as the verb is then too far away from the other three elements. See appendix 1 for examples of 'bad' sentences and potential solutions.

Paragraph structure and coherence

Any writer should know that paragraphs are not islands of knowledge that have no apparent relationship with the rest of the text. Instead, a text with connected paragraphs is often perceived as coherent and semantically meaningful. In other words, such a text helps the reader to keep the storyline intact across intentionally connected paragraphs. To make that happen, paragraphs need a certain structure.

> Williams (1995) argues that most paragraphs introduce **one** main point, which is then discussed during the remainder of the paragraph. This main point is part of the topic sentence and helps the reader to stay on the storyline.

Main point and topic sentence. The start of any paragraph is meant to keep the reader right on the story line. This means that the writer needs to mention the paragraph's main topic or **point** in connection to the reader's knowledge of the storyline so far. The paragraph introduces the main point in one topic sentence. This main point is then discussed during the remainder of the paragraph via arguments, justifications and explanations to stress the relevance of the main point.

Length of a paragraph. A paragraph mostly consists of at least three sentences. Extremely long or short paragraphs (less than three sentences) are of course suspect. **Short** paragraphs mostly lack a proper discussion. This is often a sign that the writer must either integrate the topic in an adjacent paragraph or needs some additional study on the topic to provide a detailed explanation. A **long** paragraph often lacks a proper structure and either need serious pruning or should be divided into separate but properly structured paragraphs with each a single main point and discussion.

Section headers and where to place them
A section heading (in APA format: 5 levels of headings) should be appropriate and capture the text that follows. The reader expects that the idea behind the section header immediately returns in the text. A writer of a well-written and coherent text should be able to identify positions in the text where a section may be started. Section headers are best positioned when the text is finished and the storyline is clear.

Testing text coherence
Experienced text editors often test the coherence of a text by reading only the first sentences of each successive paragraph to locate each main point. Incoherence may be detected if the reader/tester perceives a lack of flow among these

> **Cohesion is not coherence**
>
> The following text is cohesive as the sentences are connected, but the text is not coherent as the overall semantic structure makes little sense:
>
> "Many favour the colour blue. Blue sports cars go very fast. Driving in this way is dangerous and can cause many car crashes. Car accidents may cause a broken leg. A broken leg may cause a person to miss a holiday at the beach and that is sad."

main points. The tester should then try to find out why that is and whether it can be repaired.

To refine a text a writer needs to test the storyline in detail and verify if sentences and paragraphs have the proper structure. Sentences should be both cohesive and connected, and a larger text should be coherent and semantically sound. In general, the storyline notion makes it transparent why some texts are good reads while others remain unclear and are hard to plough through. See appendix 2 for examples of 'bad' paragraphs and some attempts to rewrite them.

Things you better avoid in scientific writing
Below is a list of examples that are not used in scientific paper writing:

- Do not **exaggerate** or make absolute claims in a scientific text, such as "It is **very** important", "These results **prove** that ..", "Women are better at multitasking than men". Scientific writers practice what is called **hedging** to soften absolute statements: **"It may be** important to …**",** "The results **suggest** that …", "Women **may be (tend to be)** better at multitasking than men".

> **Hedging** means that claims are worded in cautious language. Hedging helps a scientific writer to make statements that are as accurate as possible, and refer to the evidence available.

- Do not use **verb contractions** such as don't, doesn't, can't etc.
- A sentence should not switch between past and present tense.
- Plural and singular use should not be interchanged: "A **student** needs to practice writing for **their** bachelor thesis."
- Write an English text from scratch. A linguist will discourage writers who want to first write a text in their native tongue and then **translate** it into English. To have the text translated by a computer program is of course a grave sin and mostly a waste of time. Translating is a profession and any layman's translation is often characterized by an awkward mix of the two languages. Translating from Dutch or German into English may result in something we may call *Dunglish* and *Denglish*.

> It may be *perfect* Dunglish or Denglish to write *"My watch is not walking."*
>
> Prime ministers seem to be quite apt to create awkwardly translated phrases: *"I can stand my little man"* (Dries van Agt), or *"You may say you to me"* (Helmut Kohl). And the Dutch prime minister Joop den Uyl once said: *"The Dutch are a nation of undertakers"*.

Some of the things to avoid in scientific writing are merely **a matter of taste**. When in doubt, the writer should verify what the reader expects. That means that students should ask the individual(s) that assess and grade their paper about their preferences on:

- Right adjusting of a text may not be a good idea as MS-Word provides an imperfect physical typesetting of words that simply increases word distances and hampers the reading flow. Reading flow means that the reader's eyes and visual attention jump unhindered from word to word. This process is less efficient when successive words adjoin via larger and often irregular spacing.
- Scientific writers often refuse to use **quotes**. Quotes may interrupt the reading flow and could be difficult to integrate in the storyline. These writers believe

that a personally written text is preferable. APA nevertheless specifies quoting rules, which are listed in appendix 3.

- Never use a **metaphor**, simile or other figure of speech. Many readers are not native English speakers and using metaphors, proverbs and sayings will often muddle text clarity and hamper the reading flow.
- The word **like** is often problematic (often wrongly used) and hardly ever encountered in scientific texts.
- **Listed bullet points** (or numbers) are not a good idea in scientific writing. If you want to sum up a number of ingredients of a theory or concept, do that within one or two well-structured sentences. It is not a good idea to spend an entire paragraph on a dry listing of separate items. Always guard the reading flow and mention only those items that are needed to understand the text.
- **Personal language** does not belong in scientific texts, such as "I will study" or "my paper deals with…" Some scientific writers find that personal language makes their text appear subjective.
- **Punctuation**. Use commas and semicolons (;) sparingly as they often signal ill-structured and needlessly long sentences. Never use exclamation marks (!).

General formatting of papers: APA and FPN rules

A scientific paper should be carefully prepared according to the style recommended by the American Psychological Association or APA. This style is not merely an advice, but should be treated as a strict set of rules. APA style may not appear very important to a fresh-starting scientific writer, the faculty is about the application of APA style guidelines. Any scientific writer should thus abide to these guidelines, and this especially applies to literature citations and references.

There are, however specific **FPN formatting guidelines** that make sense and that may deviate from and even overrule the overall APA guidelines:

1. Use MS Word for writing any paper.
2. Use the standard Times New Roman 12 pts font (or Arial 11 pts).
3. You are allowed to use 16 pts font size for the title.
4. Throughout a paper, use 1.5 line spacing with no vertical spaces between paragraphs.
5. Do not use a **vertical spacing** between paragraphs
6. **Number your pages** throughout your paper. The title page is page 1, unless stated otherwise.
7. Set paper margins (upper, lower, right, and left) to 2.5 cm (the standard MS-Word setting).
8. Begin paragraphs with a horizontal indent, except when the paragraph follows a section heading (this is a FPN-rule as APA always requires a paragraph's start to horizontally indent). Use the MS-word ruler tool to accomplish indents.

What about grammar?

This handbook focuses on writing style and deals with structure and content of papers. The handbook is not meant to provide linguistic details on English grammar and syntax, even though these linguistic rules provide the proper building blocks for writing. In fact, psychology students are expected to have learned English grammar and syntax at high school.

Writers are expected to keep any paper tidy and error-free. Readers will not appreciate it at all when a text contains grammatical errors and typos. A simple spelling check is often a first step to remove these errors from a text. When in doubt about the proper grammar in a text, the writer should consult one of many sources on English grammar and syntax. One such source on the internet is:
https://owl.english.purdue.edu/owl/resource/594/1/

Even so, the general gist of this handbook is that even full knowledge of English grammar is not enough to produce readable texts. It is common knowledge that there are more individuals that know about grammar, than those who are able to produce readable texts. This means that additional attention is needed to turn any grammatically correct text into a readable one. The bottom line is that writers must have the will to improve their text to prepare it for the reader to consume. This also applies to scientific writing.
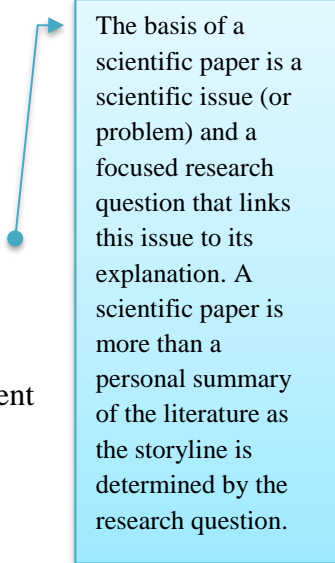
Writing a scientific paper

Summary

The overall structure of any scientific paper fits an hour-glass shape, which distinguishes an introduction, a middle part and a discussion. It is emphasized that a review paper needs a relatively short introduction of the research question and that the middle part of such a paper provides a well-structured answer based on empirical literature. In an empirical research paper, the introduction provides a more lengthy justification of why the problem is relevant and should be tackled on the basis of the research question. The middle part of an empirical paper then details the research methods and the results of the present study. Any scientific paper requires backup from empirical literature sources and utilises detailed APA standards for citations in the text and to list all references.

This section will focus on the similarities and the differences of two types of papers, namely the **literature review paper** and the **empirical research paper**.

Plans and preparations required before the actual writing of a paper

Writing a scientific paper is always preceded by selecting a research topic and locating and studying high quality, published research literature on that topic. The university library offers various online tutorials on finding scientific literature (with leads, tips and tricks) and on databases (1, 2). The purpose is to create a personal understanding and structure of the scientific content of a topic. It therefore makes sense to create **detailed summaries** and mind maps of the information that the scientific literature provides. These texts and schematic representations are a necessary starting point, but **not** the end product. To transform newly acquired knowledge into a research paper, the writer needs to know about how to structure knowledge content into a paper.

> The basis of a scientific paper is a scientific issue (or problem) and a focused research question that links this issue to its explanation. A scientific paper is more than a personal summary of the literature as the storyline is determined by the research question.

The hourglass shape

The general outline of any scientific paper is schematically represented by an hourglass. The general idea is to describe a problem and to narrow it down to comprehensive proportions that will lead to a specific research question and answer. The hour-glass then widens again during the discussion section where the answer is placed in a wider theoretical or practical perspective. The hourglass shape applies to both the review paper and the empirical research paper. See the details on the next page.

A title should capture the main content of the paper (no longer than 15 words).

TITLE (page 1)

The abstract is a condensed version of the paper's content and includes its question and aim, how this aim was accomplished, the most important results and their scientific and/or practical implications or application.

ABSTRACT (page 2)

INTRODUCTION (page 3)

What's the problem?
Why should it be solved?
What is the research question?

The introduction starts with a description of a problem, which is a scientific or practical issue. The aim of the paper mostly overlaps with why the problem should be tackled. The aim could be scientific or there may be a practical reason. An introduction always leads compellingly a specific research question.

The details of an introduction **depend on the type of paper**.

- A **review paper** spends two or three paragraphs on a concise introduction of a single specific research question. More detailed theoretical background is described in the middle part to answer the question.
- The introduction of an **empirical research paper** describes in more detail the theoretical background that leads to the research question(s) or hypotheses. The questions are answered in the results section of the middle part.

MIDDLE PART

Also the actual content of the middle part **depends on the type of paper**:

- In a **literature review** the middle part specifies the answer to the research question. It represents the literature research of the writer and uses what detail needed to provide a clear answer to the research question. These details may entail theories, notions and findings.
- The middle part in an **empirical research paper** consists of a **method** and a **result** section. The method section describes how the research was conducted, and includes a description of the participants, the measurements, possible tasks, and manipulations. It also details the procedure, the research design and specifies the analysis of the data. The results section entails a systematic report of the results found and their confirmation by statistical tests.

DISCUSSION

Starts with the main issue of the paper and gives a short overview of the findings and their implications.

REFERENCES (new page)

Implications may include comparisons to existing theories and other research, or could entail practical or societal issues and may shape potential future research.

A failure to find expected results may be related to study limitations and often leads to suggesting new research.

APPENDICES

The references section presents a full overview of the citations that were used in the texts of the introduction, middle part or discussion sections. Citations and references require a so-called APA formatting.

Research papers sometimes have one or more appendices to include research material such as questionnaires, case descriptions or instructions.

The reader should continue with the subsequent pages for more detail about structure and content of the two types of papers.

The literature review paper in more detail

The literature review is often seen as an important starting point for further empirical research (Fernandez-Rios, & Buela-Casal, 2009). The specific reason for writing a review paper is to provide the reader with an overview of the relevant research literature that is not just descriptive but also offers a novel insight that inspires further research. Whatever the contents of a review paper, it always starts with a main scientific problem of which the solution is approached by a specific research question.

Research question as the basis of a review paper

Scientific readers often complain that literature review papers are not as structured or as straightforward as empirical research articles. This is sometimes true, but it is also easily remedied by basing the review paper on a concrete research question. A review paper requires the basic structure as outlined above: the review paper needs to have a beginning, a middle part, and an end.

The main topic of a paper can be anything. The basic requirement is that the selected topic has been investigated and that the studies are published in recognized psychology journals of high quality. The literature review is thus research based and its quality pivots on the writer's understanding of the relevant empirical research literature. The writer may present and discuss identified relations, contradictions, gaps, and inconsistencies that may pertain to theoretical aspects or to how the selected topic has been investigated.

> **The textbook approach: The lack of a specific research question**
>
> Papers without a specific question are mostly easily recognized by an expert paper grader. Such a paper mostly lacks a specific storyline and reads as a personal summary. The middle part mostly consists of a number of weakly related chapters and the discussion section is quite short as there is little to discuss.
>
> Paper graders often call this **a textbook approach** as it produces nothing more than an extended personal summary of the literature. The writer apparently knows the literature, but fails to create a story line. Such a storyline is only possible if the research question is specific and focused.

Title and abstract?

A writer often writes the title and the abstract if the paper is almost completed. These important aspects of any scientific paper will therefore be described later in this manual.

Introducing the research question

After thorough study, a writer mostly starts the actual writing of a review paper with creating an introduction of the research question that needs to function as a firm anchor of the storyline. Such an introduction should concern a description of the topic as the central problem, and somewhere in the introduction the writer should mention and explain why it is essential to tackle that problem. The

> Some questions are quite interesting but cannot be answered. We simple lack the knowledge to answer them and some questions even seem unnecessary:
>
> "Can handwriting style predict the age that an individual will reach?"
>
> "Are women better in seeing aura's than men?"
>
> "Are people reincarnated after death?"
>
> "When, after the big bang, did stars start communicating among each other across galaxies?"

introduction should properly introduce, that is, logically and compellingly lead the reader to the specific research question. As a rule, this question should be specific and must be **answerable**. Unsuitable research questions are mostly too broad, such as:

- What are the differences between men and women?
- How is schizophrenia caused?
- Why do children grow up?

These questions are concise and interesting of course, but they are not specific. The interrogative words **what**, **why** and **how** make the question unfocused. These questions will not lead to a storyline that will guide the reader audience through the text. Unfocused research questions often lead to the unfocused **textbook approach** mentioned on the previous page.

> **Contents of a specific research question**
>
> A specific research question comprises a relationship between two variables (the **problem**) and the potential **explanation** of this relationship, also a variable.

Making the research question specific. A better but still incomplete question would be: "Are women better at multi-tasking than men?" This question may become more specific when the writer understands the topic more fully. After additional study, the writer may have come to understand the problem better namely that multitasking has a negative relationship with task performance. The question now becomes: Is the relationship of multitasking and performance explained by gender differences? But gender differences could still be a lot of things and needs to be specified. More reading reveals that a number of factors are involved, but that one factor is that women remain calmer under pressure than men. This factor may be mentioned in the question, which then creates a specific point to work on in the answer section of a review paper, the so-called middle part.

> The resulting question may be:
>
> Are women better at multitasking than men because women remain calmer under pressure than men?

Length of the introduction section. A review paper mostly needs only two or three paragraphs to introduce the research question. The next part of a review paper (the middle part) will present the actual details from the research literature to provide the answer. In other words, too much detail in the introduction would give away the juicy bits too early. Remain general, but clear enough to introduce a focused question.

The middle part of a review paper

When the introduction is completed with a specific research question, the middle part starts with an informative heading. The content of the middle part concerns the arguments that are for or against the position that was taken by the research question. Note that these arguments need to be based on the available research of the paper's topic. In other words, the arguments need to be justified and should be logical.

In building successive arguments it is not useful to just summarize a lot of research. The middle section may then easily revert to a personal summary, often with

disconnected sections. It is important to continue the paper's storyline and to make sure that the reader stays on it. The writer may start the middle part with referring to the research question and aim of the study. From there the storyline should continue by adding relevant information from the empirical research literature that builds the knowledge base of the reader and gradually works toward the answer of the research question.

The middle part of a review paper may be organized in **connected sections**, each containing a number of paragraphs. These sections are integrated as part of the storyline. Readers do not appreciate isolated chapters that are combined at the very end. The writer should help the reader to follow the storyline and not turn it into a puzzle. The writing style principles covered in the first section of this handbook should be helpful in accomplishing that.

Scientific writers should attempt to be as **clear and as rational** as possible and base their arguments solely on empirically relevant observations (Fernandez-Rios & Buela-Casal, 2009). These writers must avoid emotional appeals and reasoning, they should avoid speculations that reach beyond the available research data, and they require taking great pains to avoid committing logical fallacies. The website **www.logicalfallacies.info** provides an informative, concise and useful taxonomy of logical fallacies and reasoning errors.

Confirmation bias
Writers should be aware of their own confirmation bias. The research question may have awakened a gut feeling about what answer the research literature will provide. However, to avoid confirmation bias, the writer should also read and report the papers that support a conclusion opposite to expectations.

The discussion section of a review paper

The end of any scientific paper is the discussion section. The writer continues the storyline by starting the discussion section with rephrasing the general issue and research question. This is mostly followed by an outline of the most important findings and what they imply. These findings are then discussed in light of similarities and differences with previous findings in the literature (scientific implications). The writer may attempt to explain how the present results (mis)match with (recent) notions and theories, and the writer may focus on potential practical (or even societal) implication. An example:

Discussion

This contribution had two objectives, namely to first show that effective violence prevention interventions apply an ecological perspective to prevent or manage workplace aggression and violence in several types of organizations and schools (Olweus, 2013). And second it was shown that Intervention Mapping (IM) can play a role in developing and implementing (Bartholomew Eldredge et al., 2016) such an intervention when planners become well-versed in the background of how violence between individuals occurs and can be prevented within the context of an organization (Gillespie et al., 2015).

Preventing and managing workplace violence often requires a change of cultural aspects in the local environment to redefine rules, procedures, conducts and expectations of employees on diverse organizational levels (Schneider et al., 2013). One indication of a successful cultural change would be the shared positive perceptions of employees that these aspects protect them from aggression in their workplace (Spector et al., 2015). […]

Restating the problem and its solution

A discussion section has citations

Connection to the literature

15

Ending a discussion section. If a paper is quite long, the discussion section will also take up some text and the reader is threatened to lose track of the paper's main point(s). In that case the reader may be reminded of the paper's main point(s) with a paragraph that sums up the findings and implications.

What about the title and the abstract? Two essential aspects of the paper are still missing, the abstract and the paper's title. They will be discussed at the end of the section about the empirical research paper since these two aspects are similar for the two paper types.

The empirical research paper in more detail

To communicate their findings, researchers write an empirical research paper/article and submit it to a peer reviewed science journal to be considered for publication. To be successful, such an article needs (among other things) to be structured and well-written.

> A falling tree does not make any sound if there is no one to hear it.

The hourglass structure of the empirical research paper is quite similar to the basic outline of the review paper. Page 12 provides the details of how the hourglass shape applies to both paper types, and also shows that the empirical research paper differs from the review paper in regards to two aspects, namely the introduction section and the middle part of the paper.

The introduction section of an empirical research paper

The introduction starts with a problem that is subsequently narrowed down by referring to the literature. This is the same for all (scientific) papers. However, the introduction of an empirical paper is mostly much longer than the introduction of a review paper. An empirical paper presents new research and the purpose is therefore to convince the reader that this new research is interesting and relevant within this field of psychology. To accomplish that, the introduction represents all the information from the literature that is necessary to convincingly and logically introduce the research question(s) or hypotheses. The writing principles should be quite helpful to make this work. See the example below:

> The introduction starts as in any scientific paper, by sketching and explaining a scientific problem. The problem may be unknown to the reader, but it should be made relevant from the start. The writer **always** applies (recent) literature to make the issue scientifically relevant.

Introduction

The prevalence of overweight/obesity continues to rise worldwide and whether or not this should be termed an epidemic (or even pandemic), severe obesity poses a serious health risk (see e.g., Olshansky et al., 2005)

Hedonic eating encourages overeating and hence promotes weight gain. Clearly though, the hedonic appeal of a high calorie snack is not equal for all individuals. For example, both restrained eaters and overweight/obese persons, relative to controls, are more prone to work for high calorie snacks (Giesen, Havermans, Douven et al., 2010; Giesen, Havermans, & Jansen, 2010; Giesen, Havermans, Nederkoorn, Strafaci, & Jansen, 2009). Successful weight loss or the prevention of excessive weight gain is often thought to hinge on the ability to suppress a hedonic eating motive (see e.g., Appelhans, 2009; Stroebe, Papies, & Aarts, 2008). Conceivably, this is all the more difficult if this appetitive motivation for palatable high calorie food is particularly strong. According to this line of reasoning one would expect that overweight/obese individuals show an exaggerated approach motivation for especially high calorie foods.

> The gap in the literature that leads to a possible explanation of the problem.

> The problem is narrowed down and specified by forming a relationship between two variables. Possible explanations of the problem are introduced and put down in specific research questions or hypotheses.
>
> The route toward the research question is longer in an empirical research paper as compared to a review paper.

[…]
… it remains to be determined whether overweight/obese individuals too display this excessive approach motivation for food and if so, whether this is more or less limited to high calorie snack foods. For the present study, we hypothesized that overweight/obese persons display a stronger approach bias toward specifically high calorie foods than normal weight controls do. To test this hypothesis we employed an SRC task very similar to the task used previously by Brignell et al. (2009).

> In this case, the research question is reformulated into a specific and testable hypothesis.
>
> Fields within psychology differ in whether they use research questions, expectations or specific hypotheses.

The two middle parts of an empirical research paper: Method and Results

The introduction and middle part of an empirical research paper are quite different. The introduction is meant to convince the reader that the present new study is relevant. The introduction therefore describes in depth all relevant previous results, and the recent theories and notions to back-up the relevance of the research question on which the newly reported research is based. The middle part then describes how this new research was done in the **Method** section, whereas the results of the research are reported in the **Results** section, in which every finding is also substantiated by a statistical test result. The following text illustrates both parts of the middle section.

> **Research paper versus review paper**
>
> The empirical research paper differs from the review paper. This becomes discernible in the length of the introduction and in regard to the specific contents of the middle section.

      The method section. The Method section describes in detail the present research that was needed to answer the research question. It is important to understand that these descriptions should be of such high clarity that an interested reader/researcher is able to use these descriptions to repeat/replicate the study.

      The Method section of a research paper always comprises a number of subsections. The main subsections involve descriptions of **participants**, **materials** and the **procedure**.

      Participants. The Method section starts with the subsection "Participants" (or sometimes "subjects") to describe the sample of participants in the research. All the relevant participant variables should be provided. How many individuals were observed or tested? How many men and how many women were included in the sample? What were their ages (report the age range, mean and spread)?

      Some research reports provide more details on their participant group as this is relevant to answer the research questions(s), but is also essential to replicate the study. Some studies report that participants are right-handed, have perfect vision and were tested negative on colour-blindness. Other studies select participants to form patient and control groups or ask participants to provide their body mass index as in the example below:

Method

Participants
Eighty-eight undergraduate students from Maastricht University were invited to take part in a study on choice behaviour and mental fatigue. […] Students were invited to take part on the basis of self-reported Body Mass Index (BMI; kg/m^2). […] Participants with a BMI ≥ 25 were classified as overweight or obese, participants with a BMI between 18 and 25 were classified as normal weight.

Materials. A second subsection of the method section is intended to describe the used material and/or equipment in the study. Equipment may involve computers or other specialized equipment, but instruments may also refer to questionnaires or the means to interview or observe participants. The heading of this subsection may be Materials or Instruments. The example below describes the use of both a subjective (visual analogue scale) and an objective measurement instrument (a reaction time task via a computer program):

Materials
   Hunger ratings. Participants rated their momentary hunger on a 100 mm Visual Analogue Scale (VAS) ranging from 0 "not at all hungry" (left anchor) to 100 "very hungry" (right anchor).
   Stimulus response compatibility (SRC) task. The task the participants had to perform was adapted from the SRC task described by Thewissen, Havermans, Geschwind, van den Hout, and Jansen (2007) and was programmed in E-prime (Psychology Software Tools, Inc). The task comprised two blocks of 80 trials. In each trial, either a 160 mm high x 215 mm wide food picture (10 different food pictures were used; e.g., a picture of chocolate cookies, grapes, crisps, et cetera) or a neutral picture (10 different neutral non-food pictures were used; e.g., a wooden shoe, a traffic cone, a cardboard box, et cetera) was displayed at the centre of the screen together with a manikin (an approximately 18 mm high x 10 mm wide matchstick figure) placed exactly between the outer border (either the upper or lower border) of the picture and the edge of the screen.
   Each block of trials had a different stimulus response assignment. In one block the participants were instructed to approach the food pictures with the manikin by using the up- or down arrow keys depending on the starting position of the manikin, and to avoid the neutral picture by moving the manikin away from the picture outside the screen. The following trial was initialized upon completion of the correct response (i.e., approach or avoidance) and the time to complete each trial was recorded (in ms). A correct response required a minimum of five consecutive key presses. In the other block, participants received the instruction to avoid the food pictures and to approach the neutral pictures as quick as possible. The order of these two blocks and the eight different trial types (position [above or

below] x picture [food vs. neutral] x instruction [approach vs. avoid]) per block was determined randomly for each separate participant.

The task was preceded by a practice session that comprised two blocks of 16 trials each. In one block they had to approach pictures depicting a chair and to avoid pictures displaying a lamp. This stimulus response assignment was reversed for the other block.

Procedure. A third part of the method section includes a description of the study procedure to illustrate how the research was conducted and what was expected of the participants. For example:

Procedure
The experiment was approved by a local ethical committee. Participants were instructed to eat two hours prior to the experiment and from that time on to refrain from food until participation. Participants were tested individually between noon and 6 PM. The experiment started with a brief verbal description of the general procedure of the experiment. After this, all participants also received written information regarding the experiment and were asked to sign a consent form if they still wished to participate.

The participant was asked to rate his degree of momentary hunger on a VAS, after which he first completed a task designed to assess the reinforcing value of a given snack food relative to the value of a fruit or vegetable alternative. Participants had to work for their highest liked snack food and their highest liked low calorie food (i.e. fruit or vegetable). Throughout the task the work effort required for snack food was gradually increased, thus allowing us to determine the relative motivation to work for or acquire high calorie snack foods. The task procedure is described in detail by Giesen, et al. (2010). This task was generally completed within 20 min and note that any 'earned' food was consumed only after the completion of both this so termed concurrent schedules task and the SRC task. … The participant was then thanked and received either a course credit or a € 7.50 monetary voucher as remuneration.

Authors of empirical papers usually include a subsection called **Analysis** to describe how the data were collected and processed, and what statistical design and tests were used. When the data are quite complex the writer also has to report on how this complexity was reduced to make statistical analyses possible. For example:

Data Reduction and Analyses
All analyses concerned the participants' response time latencies to the different trial types and stimulus response assignments in the SRC task. To remove outliers, reaction times were excluded per participant and per trial type if they were smaller than 200

20

ms or larger than 2.5 SD above the mean RT (10% of the data)
(see also Thewissen et al., 2008).

   Weight, gender, and food approach/avoidance. To assess
whether overweight/obese participants show a stronger food
approach bias than the normal weight participants do, response
times for each participant (food approach vs. food avoidance)
were averaged for the food approach assignment and the food
avoidance assignment. These averaged RTs then served as the
dependent variable in a 2 (Group: overweight/obese vs. normal-
weight) x 2 (Gender: male vs. female) x 2 (Assignment: food
approach vs. food avoidance) ANCOVA with hunger ratings as
a covariate.

   The Results Section. The middle part of an empirical research paper is
completed by the Results section. The general idea is to provide an overview of the
results and of their statistical confirmation. The order of these descriptions (results vs.
statistics) depends on the part of psychology the research belongs to. In some fields,
the reader is immediately referred to a figure or table, whereas results sections in
other parts of psychology start with an overview of the statistical confirmations of the
research questions or hypotheses.

   In all cases, statistical test results and the relevant test values need to be
described in detail and according to APA standards. Tables and figures describe and
depict the found data patterns between independent and dependent variables. Both
tables and figures are numbered. A table's content is described via a heading and what
a figure depicts and illustrates is described by its caption underneath. Descriptions of
tables and figures need to be detailed in regard to the variables and where they are
located in the graph or table. See appendix 5 for some more details.

   Although the results section often comes across as technical, it should contain a
storyline and help the reader to understand. See below an example of a bar graph
followed by the text in the corresponding result section:

Results
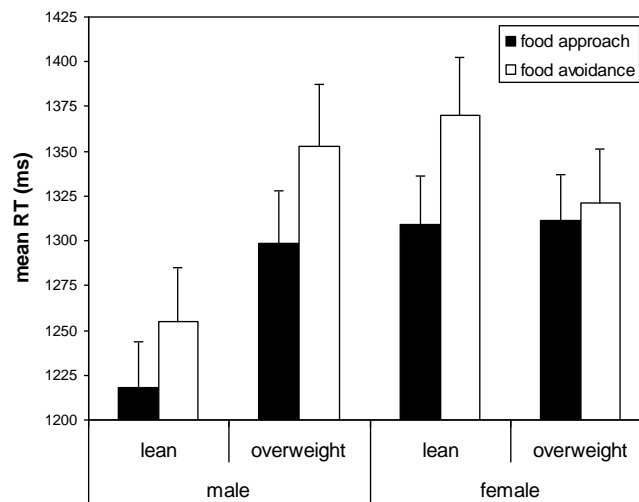
Figure 1. Mean RT (+SEM) per response assignment per gender and for each group.

In Figure 1, the mean RTs per assignment are displayed for each group and separately for each gender. When comparing the food avoidance assignment RTs and the food approach assignment RTs, no main effects were found (largest $F[1, 83] = 2.75$, $p = .10$), but a near significant Group x Gender interaction was found, $F(1, 83) = 3.75$, $p = .06$, $\eta^2_{partial} = .04$. This two-way interaction though is qualified by the overarching Group x Gender x Assignment interaction, $F(1, 83) = 5.09$, $p = .027$, $\eta^2_{partial} = .06$. In post-hoc analyses, we examined a potential two-way Group x Gender interaction for the food approach and food avoidance assignment separately. This interaction was found only for the food avoidance assignment RTs, $F(1, 83) = 5.16$, $p = .026$, $\eta^2_{partial} = .06$. We further examined this interaction by testing for a difference in mean RTs between the overweight/obese and normal weight participants for each gender separately by means of independent samples t-tests. These tests revealed a significant difference between the overweight/obese men and normal weight men ($t[42] = 2.24$, $p = .03$), but not between the overweight/obese women and the normal weight women in the sample ($t[42] = 1.03$, $p = .31$). Overweight/obese male participants were much slower to avoid food stimuli than the normal weight male participants were.
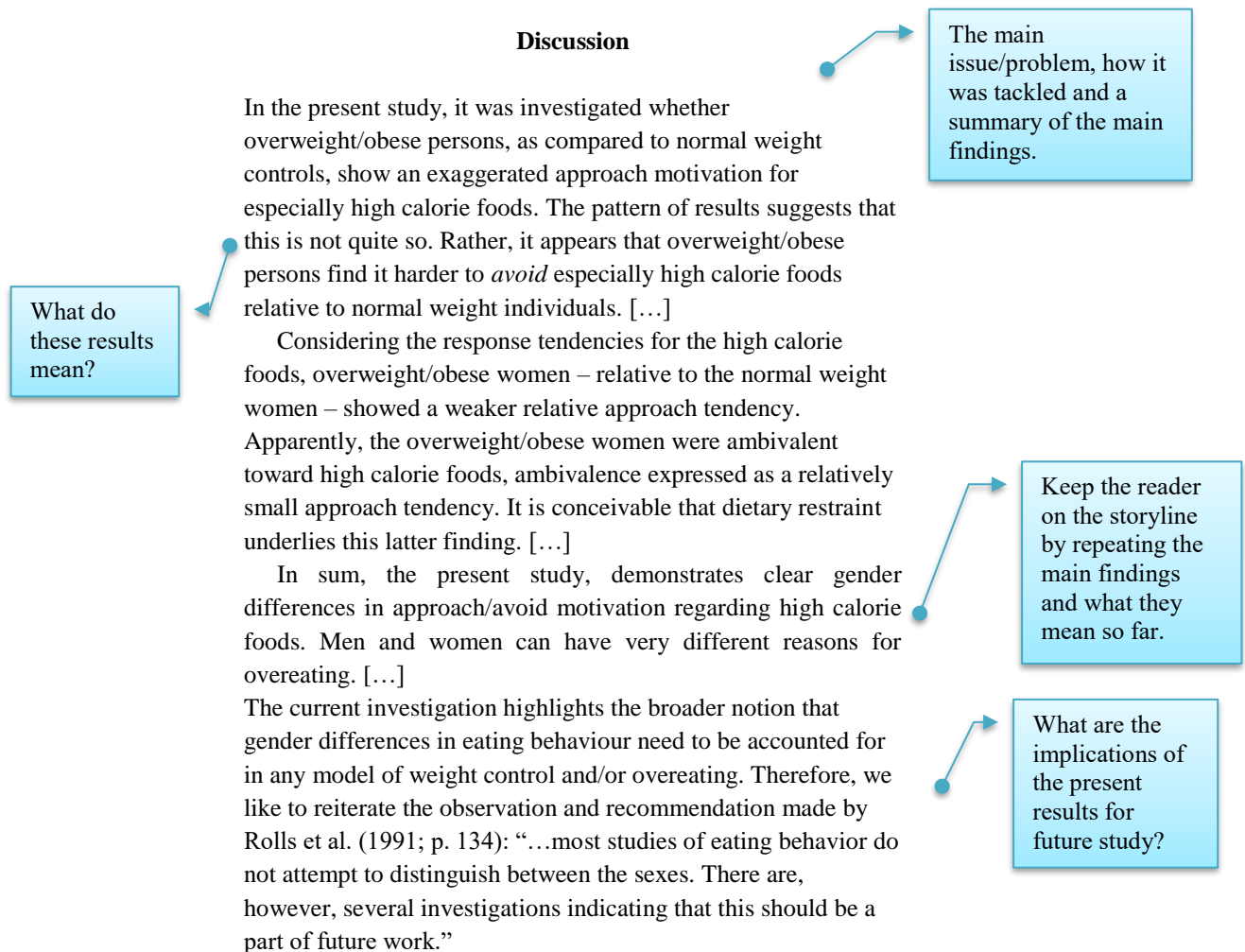
Some researchers also add a concise implication of their results into the results section.

In this way the reader keeps better track of the storyline.

The discussion section of an empirical research paper

The structure and content of the discussion section of an empirical paper and of the review paper are quite similar. Both follow the similar order of topics. To recap, the discussion starts with rephrasing the main problem and why it is important to investigate. The text then continues with a concise overview of the main results and

discusses their implications in terms of differences or similarities with other research findings. The writer may also address potential practical or even societal applications. Writers of an empirical paper often report on the limitations of their own research method and how to take these limitations into consideration in future research. An example of a well-structured discussion section is as follows:

Discussion

> The main issue/problem, how it was tackled and a summary of the main findings.

In the present study, it was investigated whether overweight/obese persons, as compared to normal weight controls, show an exaggerated approach motivation for especially high calorie foods. The pattern of results suggests that this is not quite so. Rather, it appears that overweight/obese persons find it harder to *avoid* especially high calorie foods relative to normal weight individuals. […]

> What do these results mean?

Considering the response tendencies for the high calorie foods, overweight/obese women – relative to the normal weight women – showed a weaker relative approach tendency. Apparently, the overweight/obese women were ambivalent toward high calorie foods, ambivalence expressed as a relatively small approach tendency. It is conceivable that dietary restraint underlies this latter finding. […]

In sum, the present study, demonstrates clear gender differences in approach/avoid motivation regarding high calorie foods. Men and women can have very different reasons for overeating. […]

> Keep the reader on the storyline by repeating the main findings and what they mean so far.

The current investigation highlights the broader notion that gender differences in eating behaviour need to be accounted for in any model of weight control and/or overeating. Therefore, we like to reiterate the observation and recommendation made by Rolls et al. (1991; p. 134): "…most studies of eating behavior do not attempt to distinguish between the sexes. There are, however, several investigations indicating that this should be a part of future work."

> What are the implications of the present results for future study?

Final discussion paragraph. The researcher wants to end the discussion by demonstrating to the reader that the research adds to the understanding of the problem that the paper commenced with. This may be achieved by outlining the most relevant results and their theoretical and potential practical implications.
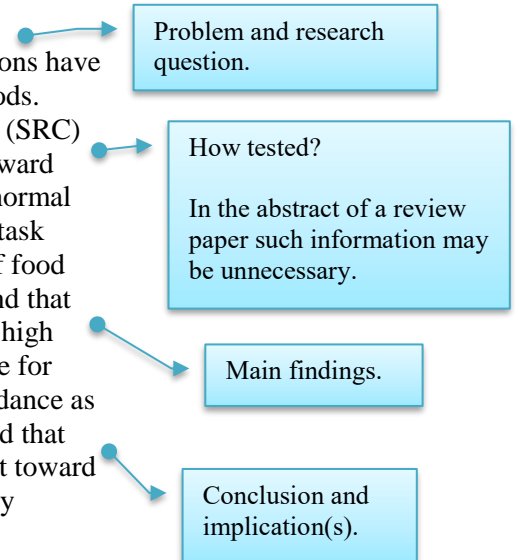
The parts of scientific papers that are written last: Abstract and title

Abstract. A scientific paper's introduction is usually preceded by an abstract. The abstract captures the entire article's content and that is why the abstract is written last. Readers, however, will often first read a paper's abstract to decide whether to continue with the rest of the paper. That is why the abstract needs to be both brief and clear, and is written as a single paragraph no longer than 150 words. References have no place in an abstract. Key words are often added after it. For example:

Abstract

In this study, we hypothesized that overweight/obese persons have an exaggerated approach tendency toward high calorie foods. Testing this hypothesis, a stimulus response compatibility (SRC) task was used to assess approach-avoidance tendencies toward food in both overweight/obese participants ($n = 42$), and normal weight controls ($n = 46$). The SRC task is a reaction time task measuring how fast one approaches and avoids pictures of food and non-foods according to given instructions. It was found that overweight/obese men are slower at avoiding particularly high calorie snack foods. But this does not appear to be the case for overweight/obese women who showed nearly as fast avoidance as approach toward the high calorie food cues. It is concluded that overweight/obese women, rather than men, are ambivalent toward high calorie foods, which is the likely result of high dietary restraint.

> Problem and research question.

> How tested?
>
> In the abstract of a review paper such information may be unnecessary.

> Main findings.

> Conclusion and implication(s).

Keywords: appetite; approach-avoidance; dietary restraint; gender; obesity

Title page. Most papers have a title page with a title that captures the content of the paper, but also the writer's name (ID), context (faculty, programme, and course), potential supervisor(s) and a word count. Page numbering mostly starts at this page.

The title itself needs to be informative, but cannot be longer than 15 words. Hilary Glasman-Deal (2010; p. 225) aptly notes that the title predicts and describes the content of the paper as accurately as possible. Glasman-Deal is right, but it should be added that the title should also attract readers. Writers want readers to read their coherent papers, and should ensure that the content of the title immediately returns in the first sentences of abstract and introduction.

The research paper as shown above had an initial title:

"Individual differences regarding automatic approach-avoidance tendencies towards high energy dense foods"

This title covered the content of the paper, but was not attractive enough to a wide readership. The final title was the following, pithier one:

<div align="center">"Weight, gender, and snack appeal"</div>

But a title may also refer to the research question:

<div align="center">*"Overweight individuals have a high approach tendency toward high-calorie foods"*</div>

Citations and the reference list

All scientific work is based on empirical literature. This means that scientific writing always needs citations within all parts of the main body text, and that a paper is completed by a list of all the literature sources referred to. There are programs that make it easier to apply citations and references and the faculty provides the program Endnote. A scientific writer must know the rules for citing and for creating a reference list.

Citations

The standard way of how psychologists refer to sources within the science literature is outlined by the American Psychological Association (APA) in their Publication Manual. The APA rules for within-text citing state that surnames of the authors of the consulted source and the year in which that study was published should be mentioned in parentheses. For example:

One author:
> Redden (2008) found that merely perceived variety can slow satiation
> Merely perceiving variety can slow satiation (Redden, 2008)

Two authors:
> According to Lowe and Levine (2005), food intake is governed by physiological needs and hedonic eating motives.

If the published study was written by two authors, then always mention both authors. The writer can refer to that study directly as in the example above or indirectly as in the example below:

> Food intake is governed by physiological needs and hedonic eating motives (Lowe & Levine, 2005).

The devil is in the details

Note that in this example, the author surnames are also placed between parentheses and now the conjunction 'and' is replaced by '**&**'.

To complicate things further, APA rules dictate that the first citation of an article or book chapter with three, four, or five authors, must list the surnames of all these authors. Subsequent citations of the same source only mention the surname of the first author followed by et al. (which means "et alii" and is Latin for "and others") as in the following examples:

Direct citation:
> To test this hypothesis we employed an SRC task very similar to the task used previously by Brignell et al. (2009).

Indirect citation:
> To test this hypothesis we employed an adapted version of an SRC task used in a previous study (Brignell et al., 2009).

A cited source with more than 5 authors always mentions the surname of the first author followed by 'et al.' (as in the example above). When a work has 6 or more authors, it always mentions the surname of the first author followed by 'et al.'.

The position of citations within a sentence
Some researchers prefer indirect citing and mostly position their citations between parentheses at the end of a sentence. These researchers feel that such a citation does not interrupt the reading flow. When a writer begins a sentence with a citation, such a usage may violate the sentence structure as explained in the first part of this writing manual. In that case, it needs some writing skill to create a cohesive string of sentences.

New scientific writers often begin a sentence with a citation to give them some security. A rookie scientific writer would start a paragraph like this, which still reads as a personal summary (The thumb down icon therefore means that rewriting is still required):

> In a scientific study of van Doorn and Hulsheger (2013), the researchers did an investigation to find out whether positive self-views would function as a shield against the impact of job demands on psychological strain reactions. They could show that positive self-views had a negative impact on the relationship between job demands and strain reactions.

Any critical reader would immediately notice quite some redundancy in the otherwise grammatically correct text. In fact, the terms *study*, *researchers*, *investigation*, *find out* and *show*, all refer to a single concept that needs not to be repeated over and over again. Moreover, the relationship between all the studied variables is mentioned twice. The writer may want to improve the reading flow and rephrase much of this *psycho-babble*, and also complete the new text by an indirect citation:

> Positive self-views weaken the relationship between job demands and strain reactions (van Doorn & Hulsheger, 2013).

<div align="center">or</div>

> Employees with positive self-views experience less strain in situations of high job demands (van Doorn & Hulsheger, 2013).

References

A reference list is positioned after the discussion section and starts on a new page. All references are placed in alphabetical order on the basis of the surname of the first author of the paper. For citations and references, one should apply strict APA (American Psychological Association) rules. APA manuals are to be found in every university library and can also be bought/ordered at the Study Store. Many websites also explain the finer details of how to prepare your paper and endnotes in APA style.

The following are some examples of several reference types (articles, book sections and edited books). Note that there are strict styling rules per reference type:

Journal article

Template:

Author, A. A., Author, B. B., & Author, C. C. (year). Title of article. *Title of Periodical*, *xx*, pp-pp. doi:xx.xxxxxxxxxx

Please include the digital object identifier (doi), when provided by the journal publisher. This number uniquely identifies the paper referred to.

Examples:

Appelhans, B. M. (2009). Neurobehavioral inhibition of reward-driven feeding: Implications for dieting and obesity. *Obesity, 17*(4), 640-647.

Bongers, P., Jansen, A., Havermans, R., Roefs, A., & Nederkoorn, C. (2013). Happy eating: The underestimated role of overeating in a positive mood. *Appetite*, *67*, 74–80. doi:10.1016/j.appet.2013.03.017

Journal article with more than 7 authors: cite the first 6 authors and then the final author:

Kilpelainen, T. O., Qi, L., Brage, S., Sharp, S. J., Sonestedt, E., Demerath, … Loos, R. (2011). Physical activity attenuates the influence of FTO variants on obesity risk: A meta-analysis of 218166 adults and 19268 children. *PLoS Medicine*, *8*, e1001116.

The weird page range in this reference is because this paper is an 'e'lectronic (i.e., digital) and not a paper publication.

Book reference

Template:

Author, A. A. (1967). *Title of work*. Location: Publisher.

Example:

Meyer, M. F. (1921). *The psychology of the other one*. Columbia: The Missouri Book Company.

Book chapter in edited book

Template:

Author, A. A., & Author, B. B. (1995). title of chapter or entry. In A. Editor, B. Editor, & C. Editor (Eds.), *Title of book* (pp. xxx—xxx). Location: Publisher.

Example

Morris, E. K., & Todd, J. K. (1999). Watsonian behaviorism. In W. O'Donohue, & R. Kitchener (Eds.), *Handbook of behaviorism* (pp. 15-69). London: Academic Press.

A paper may make references to **other sources** than the ones mentioned here.

The APA manual specifies how these sources need to be referenced.

Table of contents

A table of contents (TOC) is required to finalize any extended research paper written at FPN. Such a table is positioned on a separate page immediately before the abstract. The writer must decide on which (sub-) headers are informative items of a TOC. When the text has many sections and sub (sub) sections, it may not be necessary to represent all these headers in such a table. A complex TOC may even discourage a reader and it is advisable to avoid a 'table of clutter'.

Fraud and plagiarism

Researchers can make all kinds of claims, but these claims need to be backed up by research through verifiable citations and reference lists. The same applies to students, even though some students find it tempting to simply paste a paper together with beautifully long sentences and even whole paragraphs cut from the already written works of someone else. This type of copying is considered **plagiarism** since a student would then take credit for someone else's work. Scientific papers therefore always cite sources or ideas, arguments, and findings (APA, 2010).

> **Psychology professor found guilty of fraud**
>
> In 2011, Diederik Stapel, a social psychologist Professor and Dean at Tilburg University, was found to have fabricated data out of whole cloth. He was fired and a committee examined and proved the size of the fraud and to be extensive.
>
> Thus far, 54 internationally published papers (co-)authored by Stapel have been retracted. Among these retracted papers was a high profile publication in the journal Science in 2010. In this paper Prof. Stapel claimed to show that a disorderly environment promotes stereotypical thinking. The data were fabricated and in many instances the studies had never even taken place.
>
> Diederik Stapel has handed back his doctorate and he will never be able to work in academia again.

All written assignments at FPN are checked for plagiarism. If you do research, remember that the data is the property of Maastricht University and you must submit all the raw data to your research supervisor once you complete your research. If you are caught plagiarizing or committing research fraud, you will have to appear before the exam committee who will decide on terms of punishment.

Detect plagiarism

Plagiarism is considered an academic crime and should be avoided at all cost. A researcher needs to know what is considered as plagiarism. The following examples illustrate what is still considered plagiarism:

1. Copying a paragraph from a given source, changing two words in every sentence and then to provide a reference to the original source.
2. Copying a paragraph from a textbook, giving a citation.
3. Self-plagiarism: To re-use a paragraph or even a whole section from an earlier completed writing assignment.

> These are all forms of plagiarism, with or without a citation. Such copywork is often easily detected, as the writer suddenly appears to change the writing style.
>
> Solution: Rewrite the entire paragraph.

Since some authors can write their ideas and describe difficult concepts with such ease and skill, it can be tempting to copy those texts. But all writers and also scientific writers must write their own texts, and start with a fresh storyline for every new paper.

Avoid plagiarism

Paraphrasing and summarizing. A scientific writer should be dedicated to avoiding plagiarism and should know how to correctly **paraphrase** and to **summarize** (Bailey, 2011). This boils down to using one's own words. Simply copying a paragraph and replacing one or two nouns, verbs, or adverbs with its synonyms in each sentence is **not** paraphrasing. That is still considered as plagiarism. Simply changing the order of the sentences a bit is also an example of improper paraphrasing and remains to be plagiarism. FPN paper graders or the plagiarism scanning software readily recognizes paraphrasing such as this. Correct paraphrasing is expressing the same idea as the source does, but in one's own words.

The same is true for **summarizing**. A scientific writer may cite a source and may merely wish to summarize some important points explained by the original source. This is considered as plagiarism since it is essentially just copying a paragraph and then reducing the text in size by removing a few words.

Important links
- The university provides a web-tutorial on [Referencing and Avoiding Plagiarism](#).
- The faculty's education and examination regulations [EER/OER](#) spend a large article 10 on Fraud and Plagiarism.

The assessment and grading of scientific papers (FPN)

Paper grading criteria

Faculty regulations (EER/OER final page) determine that paper graders must consult the handbook writing skills for criteria to grade papers regarding writing style, structure and contents. There is a size to both the bachelor and master thesis. As off study year 2019-2020, both the bachelor thesis and the master thesis must contain around **6000 words**. These average numbers of words exclude the references list and possible appendices. Students should always agree with the supervisor on the size of a thesis. The faculty provides detailed procedures (deadlines) on how to submit theses and on the role and activities of paper graders.

Assessment forms

An assessment form provides an official means to grade a paper/thesis and communicate this to the student and to the FPN administration for filing. The grade then becomes visible in the student's portal. Forms to grade papers and theses provide final feedback on the important aspects and criteria of the final version of a paper or thesis. These criteria are detailed in the previous chapters of this handbook. Below are the grading criteria of assessment forms of the bachelor and the master thesis in FPN.

Bachelor thesis grading criteria:

Abstract - Concise and accurately reflects the aims, results, discussion and conclusion of the paper	
Introduction and problem statement - Problem/topic: Concrete, clear and guiding - Introduction: representative and relevant to the problem/topic - Argumentation of its broader societal/theoretical relevance - Structure moves from broad outline to a more narrow and specific question/aim	
	Method - Adequate for answering the research question - Correct operational definition of the core constructs - The research method is justified
Middle sections - Correct definition of concepts and core constructs - Literature and theory are relevant	*Results* - Correct description of statistical analyses and data - Correct interpretation of findings
Discussion and conclusions - Structure: moving from a specific discussion of the study results to its broader implications - Reformulation of the research question or primary aim of the paper - Summary of the main findings - Discussion of limitations, implications, and recommendations for further research	
Literature - Representative and relevant for the given topic and central question of the paper - Adequate referencing (i.e., APA style)	
Form - Coherent structure and narrative - A clear division between primary and secondary aims - Intelligible and objective research language - Appearance and clarity of the organization of the paper (TOC, page numbers, et cetera) - Adequate line of argumentation and reasoning	

Master thesis grading criteria:

Quality of abstract: Abstract is concise and accurately reflects the aims, results, discussion and conclusion of the thesis

Introduction and description of research question/hypothesis: Research question is adequately introduced, is concrete and clear with sufficient background information

Creativity and originality of research question: The thesis makes an original contribution to knowledge, i.e. the student himself/herself generated the research question based on the literature

Theoretical understanding: The student demonstrates understanding of the relevant theoretical framework

Structure and organization of the thesis: The thesis is coherent: it has a clear structure and direction, and focuses on main issues (no irrelevance)

Critical and innovative approach to research: The student demonstrates an independent, critical and innovative approach to research

Design and methods are conform research question: The student demonstrates ability to independently choose and apply justified methods that can answer the research question

Understanding and description of statistical analysis: The student demonstrates understanding of the statistical analyses and described them adequately

Presentation and description of results: The student has presented and described the results in a correct and logical way

Adequacy and correctness of tables and figures: Tables, figures and appendices are complete, adequate, and correct

Ability to discuss findings in relation to literature and new insights: The student shows understanding of the significance of the results and shows the ability to discuss the results in relation to the (latest) research literature and to discuss new insights based on the results

Conclusion follows logically from arguments developed in paper: The thesis presents well-founded conclusions drawn from the results and arguments given in the thesis

Level of language use, citations and references: The thesis contains no such structural, grammatical or spelling errors that complicate reading. The thesis is written in a coherent, formal academic style. Citations in the text and references are correct and complete

Publication level of thesis: The thesis in its current form is eligible for publication

Level of independence: The student worked very independently on the thesis

Contribution of supervisor: The contribution of the supervisor to the thesis was minimal

Processing of feedback: The student addressed the given feedback adequately

Literature used as background in this writing manual

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

Bailey, S. (2011). *Academic Writing. A Handbook for International Students* (3rd ed.).
    Oxon: Routledge.

Bartlett, F.C. (1932). *Remembering: A Study in Experimental and Social Psychology*.
    Cambridge, England: Cambridge University Press.

Glasman-Deal, H. (2010). *Science Research Writing for Non-Native Speakers of
    English.* London: Imperial College Press.

Kintsch, W. (1988). The use of knowledge in discourse processing: A construction-
    integration model. *Psychological Review, 95,* 163-182.

Strunk, W., & White, E. B. (2000). *The Elements of Style* (4th ed.). Needham Heights:
    Allyn and Bacon.

Williams, J.M. (1995). *Style: Toward Clarity and Grace*. Chicago: The University of
    Chicago Press.

In summarised form this text is available at:

http://www.bartleby.com/141/

You may also want to read some elegant critical remarks on this little book on *how to write* by Strunk and White (2000):

http://chronicle.com/article/50-Years-of-Stupid-Grammar/25497

Williams' text is often regarded as an excellent book on how to write. Some comments on the main approach are found here:

http://grammarteaching.wordpress.com/2012/04/13/review-of-style-lessons-in-clarity-and-grace-by-joseph-williams/

Appendix 1: Examples of 'bad' sentences

Below are some examples of sentences that most readers perceive as more difficult to read (these receive a thumb down). There are many ways of rewriting each of these 'bad' sentences and some attempts are shown (receiving a thumb up):

👎 Psychologists, often serious about their profession and proud of their accomplishments, but as any other scientist, need practicing writing skills.

> It already helps to replace commas by active verbs.

👍 Psychologists are often serious about their profession and proud of their accomplishments. But as any other scientist, psychologists also need to practice writing skills.

👎 The elderly, who now get a double personal exemption (an elderly couple gets four exemptions worth $1,080 per exemption, instead of only two), would be abolished.

> Delete unneeded information.

👍 Older citizens no longer receive a double personal exemption of $2,160.

👎 Much too frequently, the criminal escapes the scene of a crime because he manages to escape the visual capability of the responding officers.

> Simplify pompous language (a)
>
> or
>
> Simply state the truth (b).

👍
a. A criminal often escapes a crime scene, because he remains invisible to the responding officers.
b. Responding officers mostly arrive too late at a crime scene to arrest a criminal.

👎 It is the wordiness of my writing that is indicative of the fact that there is little that I have to say.

> Simplify and be concise

👍 I have little to say.

👎 Scientists disagree with each other due to their different opinions.

> Circular reasoning without any explanation at all. Rewrite and be specific!

👍 Scientists disagree.

👎 The elimination of needless nominalizations is dependent on the reversal of the conversion process.

> Example of a sentence with nouns that should be verbs (**nominalizations**).
>
> Sometimes it is best to identify the actor that is meant in such a sentence and use an active verb.

👍 A writer needs to turn nouns into verbs to eliminate needless nominalizations.

Appendix 2: Examples of 'bad' paragraphs

A *bad* paragraph may be grammatically correct, but readers may perceive it as unconnected to the previous text, or readers may feel that such a paragraph is dull and is difficult to understand. Any accomplished writer should be able to recognize such a paragraph and to improve its readability. This is done by establishing a proper introduction of a topic and discussing it. See below for some attempts which also demonstrate that scientific writing should generally be more concise that the writing used in a descriptive novel:

When all else was stripped from him, the great Cyrano de Bergerac, with his dying breath, was able to say, that he had had his panache. Though there is nothing of the dying breath about the Irish Museum of Modern Art, there is nevertheless a fundamental and very obvious dilemma facing its board and director: how does a new museum of modern art come into existence, in the last decade of the twentieth century, and find for itself pictures to hang on its walls?

The issue that our new museum faces is how to start a new collection of paintings. (the paragraph was shortened to a sentence, and the writer has now space to explain more)

> The paragraph starts with an analogy and then forces the reader to *connect* it to an incoherent and exaggerated text about the issue that the museum faces.
>
> One solution is to make things shorter and state the main issue.

There are a variety of cohesive devices, both lexical and grammatical, of which linkers (*and, so ,but*) are just one. To apply cohesion is best done by paying close attention to the way sentences are linked in a paragraph. Identifying lexical chains in texts - that is, repetitions, the use of synonyms and hyponyms, and words from the same lexical field - is also a useful way of alerting a reader to the key role that lexis has in binding a text together.

A writer improves cohesion in a paragraph by paying close attention to the way the subsequent sentences are linked. The writer can choose from a number of cohesive devices, such as the use of conjunctives (*and, so, but*). Cohesion also implies that a text has so-called lexical chains, which include repetitions of main topic words, and the use of synonyms and hyponyms. A cohesive text comprises the proper wording and sentence structure, which allows the reader to bind a text together.

> This paragraph on cohesion could be improved on cohesion, and there is no strict distinction between the concepts cohesion and coherence.
>
> The paragraph remains vague on how a paragraph must be structured.

Coherence is more elusive but it has a lot to do with the way that the propositional content of texts is organised. If the content of a (written) text is organised in such a way that it fulfils the reader's expectations, it is more likely to achieve its communicative effect. This means that beginners can be helped to write coherent texts through the analysis of the generic features of particular text types. This has long been the approach to teaching business, technical, and academic writing. More important still, is second-guessing the intended reader's questions, and then answering them. This means that it is

> One way to improve coherence is by turning this paragraph into a more clear and active text.
>
> Some meanings are quite unclear:
>
> Elusive?
>
> What are generic features?
>
> How can second-guessing lead to a clear idea?

important that, when doing writing tasks, writers have a clear idea both of the purpose of the text, and of the intended readership. Good writers are able to "keep their reader in mind". Keeping your reader in mind does not guarantee coherence, but it would seem to be a prerequisite.

Coherence is not the same as cohesion. This is because coherence depends on the overall semantic content of a text. Such a text is more communicative when it provides the content and structure that the reader expects. This means that rookie writers should practice to both identify and create the overall semantic structure of texts. And writers of any type of text need to listen to what the reader wants. In other words, writers should have a clear idea of the purpose of the text and should know the intended readership. Accomplished writers of coherent texts are persistent in keeping their readers in mind and this is not restricted to academic writing, but also pertains to business or technical writing.

Coherence can be considered as a writing tool. In fact, some anecdotes often violate coherence on purpose:

> After visiting Africa, Captain Spaulding recounted his safari adventures:
> "One morning I shot an elephant in my pyjamas. How it got in my pyjamas, I do not know."

But some texts violate coherence altogether and become a hit. This song text conveys the general feeling of being free and happy:

> "It might seem crazy what I am about to say
> Sunshine, she is here you can take a break
> I am a hot air balloon that could go to space
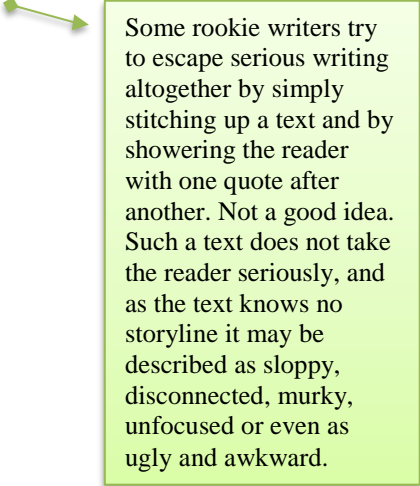> With the air like I don't care, Baby by the way."
>
> Pharrell Williams - "Happy"

Appendix 3: How to use quotes in scientific work (not recommended).

Every scientific writer needs to know about the strict APA rules of how to place quotes in a text. Knowing these rules does not mean that a writer can quote effectively or must use them in the first place. It is mostly hard work to match a quote with the storyline of a paper.

Despite these sincere warnings to be very cautious with quoting, a scientific writer needs to know the rules of how to quote in APA style. Some examples:

> Behavioural economist Dan Ariely (2012, p. 78) noticed the following: "In an average semester, about 10 percent of my students come to me asking for an extension because someone has died—usually a grandmother."

Some rookie writers try to escape serious writing altogether by simply stitching up a text and by showering the reader with one quote after another. Not a good idea. Such a text does not take the reader seriously, and as the text knows no storyline it may be described as sloppy, disconnected, murky, unfocused or even as ugly and awkward.

- If the quote is over 40 words long, the writer needs to present it as a separate block of text.

> Behavioural economist Dan Ariely (2012, p. 78) noticed the following:
>
> "In an average semester, about 10 percent of my students come to me asking for an extension because someone has died—usually a grandmother. Of course I find it very sad and am always ready to sympathize with my students and give them more time to complete their assignments. But the question remains: what is it about the weeks before finals that is so dangerous to students' relatives?"

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Appendix 4: The introduction section of a review paper (example)

The example is from the introduction of a 2007 paper written by Remco Havermans and Anita Jansen on evaluative conditioning.

> As preferences and aversions are important determinants of human behaviour, much research has been devoted to understanding the nature of human likes and dislikes. Some preferences and aversions are innate, such as the preference for sweet tastes and the aversion for bitter tastes. However, most preferences and aversions are acquired with experience (Capaldi, 1996). Associative learning has been proposed as the primary mechanism underlying such development of likes and dislikes (De Houwer, Thomas, & Baeyens, 2001). In 1975, Levey and Martin demonstrated associatively acquired affect. In this seminal study they first let participants categorize pictures of paintings as liked, neutral, or disliked. In the subsequent conditioning phase, neutral pictures were consistently paired with either a liked, disliked, or another neutral picture. At test, where participants had to evaluate the pictures that had been presented during conditioning, it was found that the neutral pictures paired with the disliked stimuli were evaluated as more negative. Similarly, the neutral pictures paired with the liked pictures were now evaluated as more positive. Martin and Levey (1978) coined the term evaluative conditioning (EC) in referring to this apparent associative learning of preferences and aversions.
> […]
> Although EC has been studied extensively over the last three decades there is still considerable debate concerning the associative nature of the learning of likes and dislikes. In this chapter, we summarize different demonstrations of EC and discuss to what degree these findings can be conceptualized as a form of Pavlovian stimulus-stimulus learning. The foremost accounts of EC are evaluated in the light of this discussion. It is argued that none of the present models of EC provide a satisfactory account of EC. In the second part of this article we discuss the development of a new model to account for the variety of EC effects.

The introduction of any scientific paper starts with the description of a problem.

The writer now introduces the main issue of the paper.

*The **aim**: why is it necessary to tackle the problem and thus why is this paper important.*

The writer is free to position the aim in the introduction. Such a point could be made early but also later as in this example.

In this case, the research question is formulated as an aim/statement. A detailed and workable question for this paper may be:

"Do individuals develop their liking or disliking of food intake via Pavlovian learning?"

As in this example, the introduction section of some review papers may be completed by some lines with details on what comes next. Some papers even end their introduction with an overview of what topics were searched for in what database, and on the basis of which keywords. Students should discuss and agree with their supervisor on the necessity of adding such a paragraph or create a separate method section.

Appendix 5: Tables and figures in a paper

Figures and tables in scientific papers are embedded in the text of the results section and are meant to help the reader to understand the results. Importantly, tables and figures should not become islands in a text and should be timely and appropriately referred to in the text of the paper. Such a description should contain detailed information of the data patterns and may convey statistical results to confirm the visible patterns. An example:

> …Table 1 provides the raw performance scores of the three tests. Figure 2 depicts the overall data patterns at time 1 and 2 (panels) of the route performance test scores as a function of test type and concurrent task. At first glance the data patterns did not dramatically change from measurement time 1 to 2, which may explain the absence of two- and three-way interaction of time with both other factors. There was however a significant main effect of time on test results ($F(1, 39) = 41.17$, $p < .0001$, $\eta^2 = .51$)….

It is not permitted to copy tables and figures from statistical software output into a paper. Paper writers must create their own tables and also make figures presentable before adding them to a paper. All tables and figures should be numbered (e.g. Table 1, Table 2; Figure 1, Figure 2).

Table formatting. Each table should have an individual title, italicized and presented with each word capitalized (except *and*, *in*, *of*, *with*, etc.). Horizontal lines can be used in tables to separate information and make it clearer. Do not use vertical lines. A table can be either single-spaced or double-spaced. Keep the table readable and the spacing consistent. Some APA examples are presented on this site:

Figure formatting. See the site below for a checklist and some APA examples of figures.