

## APA STYLE – RULES AND GUIDELINES

### **Margins**

- 1 inch (all sides)
- Left margin straight, right margin jagged

### **Font**

- 12pt Times New Roman

### **Spacing**

- All double-spaced (right click in document, select paragraph, select double spaced, set spacing to 0 pt before and 0 pt after – you must do all these steps unless you have already changed the default settings in Word)
- No extra spaces after titles/headings/paragraphs

### **Indents**

- Normal tab for paragraphs (except Abstract – do not indent 1<sup>st</sup> line of abstract)
- Sections titles (Title of paper to being the Introduction, Methods, Results, Discussion, References) should be centered

### **Italics**

- Book/journal titles

### **Bold**

- Use to denote Method, Results, and Discussion
- Use to denote subsection (e.g., Participants, Materials) within Method section

### **Page Numbers**

- Top right corner on every page (in header)

### **Page Header**

- Shortened title (3-5 words) written in all caps
- Top left corner on every page using the header function in Word
- Title page should have header titled “Running head: SHORTENED TITLE IN ALL CAPS” (insert your own shortened title)
- Every subsequent page just has the title in all caps (i.e., SHORTENED TITLE IN ALL CAPS)
- Use a PC computer, double click in header section, you must insert page numbers first, then click “different first page” (this action will tell Word that you want to type a different header on the first page), type “Running head: SHORTENED TITLE IN ALL CAPS” on the first page, then go the second page and type “SHORTENED TITLE IN ALL CAPS”; only the first page should say running head but page numbers should start on 1 and follow sequentially
- Make sure header is in Times New Roman

### **Order of Sections**

- Title Page → Abstract → Introduction → Method → Results → Discussion → References → Appendix → Tables → Figures

### **Headers within the Paper**

- 1<sup>st</sup> level headers (e.g., Method, Results, Discussion) should be centered and bolded; text starts on the line below these words
  - The title on the Intro page is not bolded and “References” is not bolded on the reference page
- 2<sup>nd</sup> level headers (e.g., Participants, Materials, Procedure) start on a new line, are bolded, and left aligned; text starts on the line below these words
- 3<sup>rd</sup> level headers (e.g., discussing each type of material/survey used) start on a new line, are bolded, indented one tab, and have period after the information; text starts on the same line as this header
- 4<sup>th</sup> level headers (e.g., breaking the info down into smaller chunks under the 3<sup>rd</sup> level header) start on a new line, are bolded and italicized, indented one tab, and have period after the information; text starts on the same line as this header
- 5<sup>th</sup> level headers (e.g., breaking the info down into smaller chunks under the 4<sup>th</sup> level header) start on a new line, are italicized, indented one tab, and have period after the information; text starts on the same line as this header

### **Title Page**

- Make sure header is correct as described above and contains the words “Running head”
- Title of paper should be fully descriptive of the study but only be 12 – 15 words
  - Every major word in the title should be capitalized
- Center the title
- Center your name under the title – use your middle initial
- Center the name of your school under the your name
- Center title, name, and name of school in the middle of the page

### **Abstract**

- Title the page with the word “Abstract” centered, not bolded, on the first line of the next page after your title page
- Do not indent the first line of the abstract
- Abstract should be ~120 – 150 words that briefly describes the following:
  - Motivation for your study (i.e., sum up the Introduction) in ~ 2 sentences
  - Methods (i.e., what did you do) in ~ 2 sentences
  - Results (i.e., what did you find) in ~ 2 sentences
  - Conclusion (i.e., why is this important) in ~ 2 sentences

- Include 3-5 keywords that are relevant to your study centered on the page under the last line of text
  - The word “*Keywords:*” is italicized and followed by relevant words that are not italicized
- Do not report sample size, statistical results, where the study was conducted, etc. – the purpose is to present a broad overview
- This section should be the last section you write after you finish the paper

**Introduction** (*see info below about reading journal articles*)

- Title of your paper should be centered on the top line
- Opening paragraph
  - Provide an everyday example of concept
  - Get the reader interested in your topic
  - May want to provide any key definitions here to help the reader understand your concepts
  - Make the reader see why this topic is important in everyday life
  - State the overall goal/aim/purpose of the study (not the specific hypotheses) in the last sentence so the reader know where the paper is going
- Body of Introduction paragraphs
  - Review relevant literature in a pattern that goes from broad definitions/overview of the topic down to most specific, relevant studies for the current paper
  - Make sure you define all terms/concepts that the reader needs to know as soon as you talk about the concept – don’t leave the reader wondering what you are talking about at any point in your paper
  - All information in this section must be in your own words
    - The only exception, and it’s a rare exception, is related to definitions. If the original author defines the terms better and more concisely than you can, then you may use their definition. But you must properly cite a direct quote using quote marks, an APA citation, and page numbers.
  - I expect your entire paper to be in your own words; this process involves fully paraphrasing previous articles, not just changing a few words in a sentence.
    - Changing a few words but presenting the writing as your own is still plagiarizing. You need to fully reword the information and restructure every sentence. Making a good outline when reading the original source will make this easier.
  - Connect and link ideas using transition sentences
  - Organize the ideas/previous studies in a logical manner – think about this task as assembling a puzzle. How can you fit the pieces together to create a beautiful, cohesive picture for the reader?
  - You are building your case/argument about why the current study is necessary by explaining what has been done, why is it important, what is missing, and how will you fix the problem.
  - Each paragraph should have a strong topic sentence that introduces the paragraph; this sentence will provide a logical transition the reader if you frame it well.
    - To make a strong case, you need the reader to follow your logic; help them follow your logic by including easy-to-follow ideas with clear transitions.
  - Each paragraph that discusses previous research should follow the same format.
    - Briefly explain the purpose of the study
    - Briefly explain how they conducted the study
    - Briefly explain the important findings of the study (focus on what the reader needs to know for the current study – not every single finding)
    - Briefly explain why it is an important finding(s) and formulate a question or idea that was unanswered by the study and still needs to be answered by future research. This idea should generally transition into the information you present in the next paragraph.
  - Your literature review should start rather broadly and become more specific about how previous literature relates to the current study; the reader should be informed about the topic and expecting what you are about to tell them in the final paragraph
    - Think about this section as an upside down pyramid – start broad and big picture and then narrow the focus slowly for the reader by giving them more details and interesting findings to think about as you prepare them to understand why it is necessary to conduct the current study
  - Do not use fluffy words that are unnecessary when describing previous research
    - Example: “Previous studies have been conducted by researchers that show that testing oneself during studying improved learning (citation).” Just say “Testing oneself during studying improved learning (citation).” If there’s a citation after a statement, the reader knows these are research findings.
    - All verbs related to past research should be in past tense (e.g., improved, indicated, found, etc.)
- Final paragraph
  - You have two options for how to start this paragraph
    - Start this paragraph by briefly summarizing the main points of your literature review into a few “take home message” sentences then add info about the goal
    - Start this paragraph with the sentence, “The goal of the current study was to…”

- Briefly introduce the current experiment with minimal details; the full details will go in the Method section
- Every variable you are testing/discussing must have been talked about in your literature review
  - Do not add anything here that has not already been discussed in the literature review; this section is not the place to surprise your reader
- State hypotheses/predictions – must justify each hypothesis for the reader by citing previous research that led you to this specific prediction; you can just add the relevant citation to the end of the sentence
- If you are conducting an ANOVA, you must hypothesize about the expected differences (or lack of differences) for each main effect and the interaction; tell the reader exactly what you expect the data to reveal
- If you are conducting correlations/regressions, you must hypothesize about the strength and direction of the relationship between each variable you are researching
- If you are conducting *t*-tests, you must hypothesize about what differences you think will be significant and why

### **Method**

- The word “Method” should be bolded and centered but do not use a new page for this section
- The word “Participants” should be left aligned and bolded after the Design section; hit enter, then tab, then start typing
  - “Twenty-two undergraduates (15 women, 7 men, 2 unknown;  $M_{age} = 22.4$  years; age range: 18-25 years) were recruited from a midsized university in Southeast.”
    - You can use this exact format; your sentence needs to tell me all this info
  - “Participants reported their ethnicity as Hispanic ( $n = 21$ ) or non-Hispanic ( $n = 76$ ) and race as Caucasian ( $n = 68$ ), Multiracial ( $n = 27$ ) and Asian ( $n = 2$ ).”
    - You can use this exact format to list anything that is important about your sample
  - Include information about how your participants were recruited/selected
  - Include information how the participants were compensated
  - This section should include all relevant information about your participants. For example:
    - If you’re doing language based tasks, report whether your participants were fluent English speakers
    - If you’re doing education based tasks, report participants’ education level
    - If you’re doing relationship based tasks, report participants’ sexual orientation and relationship status
    - You need to assess and report any features that are relevant to your study
  - Do not refer to participants as subjects
    - Animals = subjects
    - People = participants
- The word “Materials” should be left aligned and bolded after the Participants section; hit enter, then tab, then start typing
  - The goal of this section is to let your reader know exactly how you measured and/or manipulated your variables – be descriptive about the important elements but do not include details that are not important for replication
  - If many different types of materials are used, break them up into subsections
  - Each subsection title should start on a new line, be indented one tab, bolded, and then have a period after it. On the same line, start typing information about that measure/material. Do this process for each new measure used in the study to make it easier for your reader to understand each type of measure you used.
  - You need to include every measure that you used in your study
  - Explain whether the materials were completed on a computer or on paper
  - Each measure should include the following information
    - A citation if you used a published measure or information about how it was created and validated if you are using a measure that you created
    - How many items were included on the measure
    - The scale of the items reported in APA format and what the scale means
      - “Participants indicated their agreement with the statement on a 5-point scale (1 = *strongly disagree* and 5 = *strongly agree*) with higher scores showing greater agreement.”
      - This formatting is APA and should be followed exactly
    - You can include the actual question(s) presented to participants if they are brief; if they are important and lengthy, include them in an appendix at the end of the paper and refer the reader to the appendix by saying (see Appendix) after you discuss the measure
    - If you have different conditions, be sure to clearly explain what materials were used for each condition
    - Talk about the materials in the order that they were presented to participants
    - If you included any pilot testing or manipulation checks, be sure to clearly explain them to the reader
- The word “Procedure” should be left aligned and bolded after the Participants section; hit enter, then tab, then start typing
  - The goal of this section is for the reader to visualize exactly how you conducted the study so they could replicate your study
  - Include important step-by-step details about how your study was conducted – focus on what someone would need to know to replicate your study
  - What instructions were given to the participant?
  - What order were the tasks completed given in your study?
    - Did you counterbalance anything?

- Were participants tested individually or in a group?
  - How were participants assigned to conditions?
- Be brief but the reader should be able to visualize exactly what happened and have enough details to reproduce your study
- End with a statement similar to “At the conclusion of the study, researchers thanked and debriefed participants and answered any questions about the study.”

### Results

- The word “Results” should be bolded and centered but do not use a new page for this section
- The goal of this section to report the statistical test, results, and brief interpretation of all your data
  - When reporting ANOVAs or *t*-tests, state which groups/variable scored higher or lower
  - When reporting correlations, state whether it was a weak, moderate, or strong correlation and explain what the positive or negative sign means regarding the scores
  - Every time you report a statistic, you must report what kind of test you used to get that statistic
- Every letter that relates to a statistic must be italicized
- As a general rule, report 2 decimal places for all numbers (e.g., 23.126 would be 23.13 but use three decimal places for  $p < .001$  if SPSS tells you that the significance value is .000)
- Pay close attention to the examples below, your results must be formatted exactly the same
- Do not get creative – report each test and finding exactly the same; results are hard enough to comprehend so don’t make it harder by reporting the findings in different formats. Use parallel sentence structure so that each sentence reads the same.
- Start talking about the simplest information first (e.g., main effects before interactions; correlations before multiple regressions)
- Do not talk about how the data relates to your hypotheses; you will do this type of interpretation in the first paragraph of your Discussion section
- Only  $p$  values less than .05 are significant; APA prefers you report the actual  $p$  values
  - $p = .031$
  - For significance values of .000, report them as  $p < .001$
  - Discuss results that were significant and results that were not significant b/c they are both important, but be sure you clarify that it is or is not significant
- For *t*-tests, you will report:  $t(31) = 7.86, p < .001$  where 31 is your degrees of freedom (independent samples =  $n - 2$ ; one sample =  $n - 1$ ; paired samples =  $n - 1$ )
  - An independent samples *t*-test indicated that females ( $M = 4.27, SD = 2.14, SE = .07$ ) spent significantly more time on the computer each week than males ( $M = 3.99, SD = 2.00, SE = .07$ ),  $t(1813) = 2.83, p < .01$ .
- For correlations, you will report  $r(304) = .13, p = .02$  where 304 is your degrees of freedom not your total number of participants ( $df = n - 2$ )
  - A moderate, significant positive correlation between income and overall health indicated that those who reported higher income were more likely to report being healthier,  $r(89) = .25, p = .02$ .
- For ANOVAs, you will report the *F*-values:  $F(1, 42) = 1.35, p = .25$ 
  - Degrees of freedom (1, 42)
    - 1 = Use the df that SPSS gives you for each variable for the first number you report (i.e., it’s the number of levels of each IV minus 1) – look in the df column and then find the associated df for each variable. A variable with 2 levels would have a df of 1; a variable with 3 levels would have a df of 2
    - 42 = Use the error df that SPSS gives you for the second number you report (i.e., it’s usually the number of the number of participants minus number of independent groups in your design); this between subjects 2 x 2 design would have had 4 groups (2 x 2 = 4) and 46 participants (46 – 4 = 42)
  - The *F*-value and the significance value will be presented in SPSS
- You will report a *F*-value for each main effect and an overall *F*-value for the interaction
  - To determine if scores differed depending on participants’ level of distraction or note taking, a between-subjects 2 x 2 (Distraction [used phone, no phone] x Note Taking [took notes, no notes]) ANOVA was conducted (see Table 1). A significant main effect for note taking indicated that the scores of participants who did take notes ( $M = 3.31, SD = .99$ ) were lower than the scores of participants who did not take notes ( $M = 1.65, SD = .92$ ),  $F(1, 42) = 5.21, p = .01$ . There was not a significant main effect for distractions because quiz scores from participants who did use their phone ( $M = 1.96, SD = 1.11$ ) were not significantly lower than participants who did not use their cell phones ( $M = 2.81, SD = 1.20$ ),  $F(1, 42) = 1.91, p = .13$ . Additionally, there was a significant interaction between distractions and note taking, which indicated that the effect of distractions on quiz scores depended on note taking,  $F(1, 42) = 5.02, p = .02$ . A simple effects analysis showed that participants who did not take notes while they used their cell phone ( $M = 1.82, SD = .98$ ) scored significantly lower than participants who took notes while using their cell phone ( $M = 2.91, SD = .84$ ),  $F(1, 42) = 4.21, p < .05$ .

### Discussion

- The word “Discussion” should be bolded and centered but do not use a new page for this section
- The first paragraph should restate your hypotheses, summarize your results, and explain whether your results support your hypotheses.
  - This section should be the “easy to read version” of your results sections.

- Do not use numbers when explaining your results; there are no stats in this section
- The next paragraph or two should relate your findings to previous research
  - You should cite a majority of the sources from your Introduction section, especially the ones where you reported exact findings from their studies. For class papers you should cite all studies from the Intro.
  - Did your data support or add additional support to previous findings?
  - Did your data refute or contradict previous findings?
  - Do not ever use the word prove or disprove.
  - Use suggestive language because science is constantly changing and is affected by many different factors
    - Example: “Our data supported the idea that taking notes is important for retention (insert citation for other research on this topic). Interestingly, our data suggested that using cell phones only lowered scores of participants who did not take notes, which may indicate future researchers should examine how distractions affect retention using a variety of settings and by varying the difficulty of material to be learned.”
    - Use the words “may”, “suggest”, “could indicate”, “was consistent”, “provided support for”, etc. when talking about how your data fits with peer-reviewed literature; you can’t be sure of anything until you do additional research
- The next paragraph or two should discuss limitations/flaws of your study and provide suggestions for how to strengthen future research
  - Critically think about why you did not replicate previous research. Provide possible explanations if you failed to replicate previous research.
  - Critically think about ways that future research could improve on your study
  - You must point out a limitation, explain why it’s important and could affect your study, and suggest a way to address this limitation in future research
    - It’s not enough to say, “Our study only used college students, so future researchers should examine other samples.” Why is this limitation important? How does it affect the interpretation of your results? What samples should future researchers test? How can future research overcome this flaw?
    - Being critical is not as important as offering useful suggestions
- The final paragraph should tie everything together and leave the reader with a take-home message
  - Restate the important findings of your study
  - Explain how these findings can help future researchers and the general population
  - Answer the question of why anyone should care about your data – give a big picture message

### References

- The word “References” should be centered, do not bold; use a new page for this section
- References should be arranged in alphabetical order in your References section
- References should be double spaced and have a hanging indent
- Only capitalize the first word in the journal article’s or book chapter’s title; always capitalize the first word after a colon
- Capitalize every major word of a book; capitalize every major word of the name of the journal
- Italicize the name of the journal or name of the book
- PsychINFO will give you an APA citation (look to the right after you click on an article and find the icon that looks like a note card), but these citations are usually not formatted 100% correctly
- Google information or consult the APA manual for unusual references
- APA formatting requires you include a doi # (digital object identifier) for each reference; if no doi is available the include info about the URL (i.e., Retrieved from <http://cogprints.org/57808/1/ECSPF.F07.pdf>) where you would normally put the doi
- Formatting for journal articles:  
Meissner, C. A., & Brigham, J. C. (2001). Thirty years of investigating the own-race bias in memory for faces: A meta-analytic review. *Psychology, Public Policy, and Law*, 7, 3-35. doi:10.1037/1076-8971.7.1.3
- Formatting for books:  
Aboud, F. (1988). *Children and Prejudice*. London: Blackwell Publishers.
- Formatting for chapters within an edited book  
De Houwer, J., & Moors, A. (2010). Implicit measures: Similarities and differences. In B. Gawronski & B. Keith Payne (Eds.), *Handbook of Implicit Social Cognition* (pp. 176-193). New York, NY: Guilford Press.

### Table

- See APA manual, example papers, and internet for what your table should look like; use a new page for each table
- Make sure title is descriptive about what the table is displaying for the reader
- Tables are only for data that were not included in your Results section
- Only include horizontal lines, never include vertical lines

- You must re-type the data, copying and pasting from SPSS will not work – make sure it 12 pt. Times New Roman font
- Must be numbered and include a descriptive title
  - Table 1 is not italicized and appears on the first line of the page
  - The actual title is italicized and appears on the next line
- Must be referred to in your paper

### **Figure**

- See APA manual, example papers, and internet for what your graph should look like; use a new page for each table
- Make sure all axes are labeled and in Times New Roman 12 pt. font
- Preferably presented in black and gray
- Must be referred to in your paper
- If you show a scatterplot for correlations, add a line of best fit so the reader can see the direction of the correlation
- If you use bar or line graphs for ANOVAs, you must include standard error bars for each bar or line; you will need to type in the exact standard error values into Excel that SPSS gives you for your graph
  - Google how to include custom standard error bars for your specific version of Excel
- Do not include vertical or horizontal lines related to the x or y axis within your graph
- Make sure your title is descriptive about what the graph is displaying for the reader and is double spaced; title should go under your graph

*Figure 1.* Mean differences between reaction times for congruent and incongruent trials in the affective priming task. No differences were found among the age groups.

### **Citations within Your Paper**

- Do not include anything but the authors' last names and the year it was published
  - Do not include their first name or initials, do not include the journal title, do not include the school – nothing but last names and date
- You must always include a date every time you mention a study; if you include their names, then you include a date
- You must always cite a source if you are referring to any type of research or data.
- Within your paper, you need to follow all of these rules:
  - If you have one or two authors, you will always write out both last names then add a comma and the date
  - If you have three to six authors, you will write all authors' last names the first time you cite them add a comma and the date. The second time you cite the authors, you will include the first author's last name followed by et al., then a comma, then the date
    - Note that the word "et" is Latin for "and" and does not have a period after it; "al." is an abbreviation for "alia" which means "others" and does have a period after it
  - If you have 7 or more authors, then you just write the first authors name followed by et al. and the date every time you talk about the study
- If you use the citation within the actual sentence it should look like this (*try to avoid doing this type of citation*):
  - First time you talk about the study = "Jones, DeBruine, Little, Conway, and Feinberg (2006) found..."
  - Second and every subsequent time = "Jones et al., (2006) found..."
  - If included in the sentence, spell out the word "and"
- If you include the citation at the end of the sentence it should look like this (*try to always do this type of citation*):
  - First time you talk about the study = "...indicating a gender difference (Jones, DeBruine, Little, Conway, & Feinberg, 2006)."
  - Second and every subsequent time = "...indicating a gender difference (Jones et al., 2006)"
  - If included in a parentheses, use the "&" symbol
- APA prefers that you put citations in parentheses (like the second example) at the end of sentence instead of make them the subject of the sentence as shown in the first example
  - Why? Because you should focus on the findings not who did the research
  - No reason to emphasize the authors; emphasize their work and findings
- If you have multiple studies in a parentheses at the end of the sentence, put studies in alphabetical order based on the first author's last name – do not ever rearrange the order of the authors' names within a study – see example paragraph below
- All references in your paper must be in your reference section and vice versa
- You need to cite everything that is not your own idea
  - Cite definitions
  - Cite findings
  - Cite ideas or suggestions that are not yours
  - Cite measures you use in the Method section

- If you say “Studies indicated that blah blah affects blah blah.” then you must include at least two citations – you can’t talk about previous research without citing it. The reader should easily be able to go and find your sources for such claims. You cannot say “Numerous studies have investigated when children form racial bias.” without adding numerous citations.
- When to cite a study:
  - Cite when study is first mentioned – beginning of most paragraphs
  - If the study is the only thing described in paragraph – do not cite again until the final sentence
    - Start and end the paragraph with the citation so your reader knows the paragraph refers solely to this research
  - If other studies in paragraph – cite each study when you talk about it to make it clear to the reader which study you are referring to within the sentence. A reader should be able to easily find the study you are talking about at any point if they have additional questions or want more details.
  - Same study carries over to next paragraph – cite again
- Example of scientific writing and how to cite:
  - It is commonly accepted that racial bias, as measured by explicit (i.e., verbal or written responses) tasks, typically emerges by ages 3 to 5, with bias soundly in place by age 6 to 7, and then declines in many children after age 7 (Aboud 1988; Bar-Tal, 1996; Doyle & Aboud, 1995; Doyle, Beaudat, & Aboud, 1988; Jackson, 2011; Katz, Sohn, & Zalk, 1975; Williams, Best, & Boswell, 1975). The first established assessment of racial bias in children, the Preschool Racial Attitude Measure II, required children to decide whether adjectives like “bad”, “good”, or “nice” applied to a Caucasian child or an African American child (Williams et al., 1975). To circumvent the forced-choice nature of these tasks, other similar measures such as the Multi-Response Racial Attitude Scale allowed children to assign traits to either child or both children (Doyle & Aboud, 1995; Doyle et al., 1988). A different measure, designed to disentangle personal beliefs from societal knowledge, asked children to indicate what most people would say about an ingroup or outgroup member, and then indicate what they personally think about an ingroup or outgroup member (Augoustinos & Rosewarne, 2001). Among these explicit tasks, there are large variations regarding what construct is assessed (i.e., societal knowledge about stereotypes versus personal endorsement of racial bias) and the types of stimuli used to represent race (i.e., drawings versus photographs, adults versus children).
- Try to avoid using direct quotes, but if you do then
  - Put the verbatim text in quotation marks
  - Cite at beginning or end of quote and add page numbers
  - Block indent quotes of 40 or more exact words – there is no reason to do this technique in scientific writing b/c you should rephrase the passage in your own words

***Reading Journal Articles (see document about how to critique a research article)***

- The goal is to find articles that are similar to each other but address different aspects of your topic
- When reading an article look at the abstract, the last paragraph of the Introduction, and the first paragraph on the Discussion section to get a quick overview of the purpose and results from the study
- Once you find a great article, look at the references in the article and look at the link in PsychINFO that says “time cited in the database” to find articles that have referenced this article
- If, after reading these sections, the article seems like a great fit, then start reading it from the beginning and create an outline to guide your Introduction section
- Take active notes to compose an outline each time you read a good article
- Good outlines will make writing your paper much easier because you can just take your notes and turn them into cohesive sentences and paragraphs
- Everything you include in your outline should be in your own words so that you can just retype your notes into sentences in your paper; if you need to use the author’s words be sure to put quote marks around it and make it clear to yourself that it’s a direct quote from the article (then rephrase this information later when you have had time to think about it)
- When making an outline:
  - Read the Introduction for the background info about why they conducted the research
    - Be on the lookout for good references that you may want to include in your paper
    - Note whether they include an operational definition or explain the construct well – you may want to use their definitions in your paper (but you will rephrase and cite these definitions)
    - Note important information that may relate to or help your project
  - Read the Method for the basics of why they did what they did
    - Who were the participants? How did they conduct the study? What types of groups did they use?
    - See if there are any good IVs or DVs they used that could guide your research
    - Pay attention to the construct validity of their IVs and DVs – did they measure their constructs well?
  - Read the Results section to see what tests they used – pay attention more to their words than their numbers
    - Did they find significant correlations? Did they find significant differences between groups? Did they find a significant interaction?
    - If you are not clear on this information, skip down to the Discussion to see how they explained their results and then try to integrate their interpretation back to the numbers to help remind yourself about what the stats mean.

- Read the Discussion section to see what they found, what it means, limitations of the study, and directions for future research
  - The first paragraph or two should rephrase their results in words instead of numbers
  - Did their results confirm or refute their hypothesis and previous research?
  - What are some limitations and can you use these ideas to help form your study?
  - What is the “big picture” take home from their study and how can this guide your research?

### ***Important Things to Remember***

- Science writing is not creative writing – your goal is to be concise, precise, and “to the point” – cut out all the fluff
- Ask yourself constantly – What is the point of telling the reader this information? Is every sentence as clear and concise as possible?

### ***Writing and Editing Your Paper***

- You must edit your paper multiple times – there is absolutely no way to write a great paper in one sitting. Trust me on this one. You will need to edit multiple times.
- Give yourself time. Do not start your paper the night before or day it is due. I promise that you will not get a good grade.
- Do each one of these steps then take a break from the paper. Fresh eyes produce better writing.
- When you get to the 3<sup>rd</sup> and 4<sup>th</sup> rounds of editing, print out your paper. Typos are easier to catch in print than on a screen.
- Pre-writing
  - Make a rough draft outline of what you need to include, especially for the Introduction
  - Think about how you will structure your ideas and building your story – let this outline guide you as you write to add cohesiveness and flow to your writing.
  - The better outline you make, the easier and better your paper will be.
- 1<sup>st</sup> round of writing
  - Word vomit on the page. Get all the ideas and information typed up into a document. Do not stare at a blank screen, just start typing what you know.
  - Copy, cut, paste are your friends. In the modern age of writing, you can move and change anything.
  - Don’t worry about formatting here; this step is just to get you started on writing
- 2<sup>nd</sup> round of writing
  - Go back through and clean up your word vomit. Check for/add topic sentences that introduce and transition your ideas.
  - Read critically to see if you left out any important information that will help your reader understand your study/ideas.
  - Make sure each section has accurate and comprehensive details.
- 3<sup>rd</sup> round of writing
  - Check for grammar, verb tense, subject-verb agreement, typos, mechanics of English, and double check the numbers in your Results section.
- 4<sup>th</sup> round of writing
  - APA checking – make sure that your paper is APA formatted using all the rules and guidelines in this document.
- 5<sup>th</sup> round of writing
  - First, start at the end of your paper and read each sentence starting with the last sentence first. This process will help you find any last minute typos b/c you won’t be “expecting” the sentence (i.e., your brain will be doing more bottom up processing instead of top down processing).
  - Second, read your paper from the beginning and ensure that it’s as awesome as you can possible make it.

### ***Mechanics of APA Writing***

- Numbers
  - If measurement or statistic, write digits
  - If ten or greater, write digits; if less than ten, write word
  - First word of sentence, write word (i.e., Ninety-seven not 97)
- Pronouns
  - If possible, avoid “I”, “we”, “you”, “he”, “she”, “he/she”, “he or she”, “s/he”, “my”, “our”.
  - Only use “we” and “I” when referring to you and/or your colleagues as researchers when discussing your methods or statistics.
  - Do not ever refer to previous researchers using use gendered pronouns (i.e., “She found that people often...”) – we try to reduce gender specific speech in scientific writing.
- Contractions
  - Do not use them; write out the word
- Consistency
  - Use the same terms for the same concepts throughout your paper (i.e., if you are talking about perspective taking, do not refer to it as perspective taking in one paragraph and empathy in another paragraph).
- Jargon/slang/colloquial terms
  - Do not use overcomplicated definitions (i.e., “We conducted an empirical investigation of the aesthetic ratings of mature homo sapiens’ facial orientations”) should be “We examined adults’ facial attractiveness.”)



- Do not use slang or things that can be difficult to translate into another language
  - “On the other hand...”; “In other words...”; YOLO; etc.
- Research/Study/Experiment
  - Research – a broad area of work examining ideas
  - Study – set of experiments published together in a paper
  - Experiment – specific investigation or test of a question
- Researcher/Author/Experimenter
  - Researchers/Authors – people who conducted the study
  - Experimenters – people who administered the actual experiment
- Past Tense Verbs
  - All verbs should be past tense. Pretend the research has already happened.
    - Wrong – This study shows that it is important to consider age when examining racial bias.
    - Right – This study showed the importance of considering age when examining racial bias.
    - Wrong – The current study will investigate...
    - Right – The current study investigated...
- Active Voice
  - Try to avoid passive voice whenever possible – make the subject of the sentence active.
  - The easiest way to do this task is to search your paper for the words “were” and “was” and then restructure the sentence.
    - Wrong – “Participants were shown 12 pictures.”
    - Right – “Participants saw 12 pictures.”
    - Wrong – “Research was done to test...”
    - Right – “Research tested...”
- Referring to Previous Research
  - Avoid phrases like “Previous research indicated...” or “Based on previous research”
  - If you are talking about it in your paper and citing it, then clearly it was past research. It is unnecessary to use those extra words, so just jump right into what the research found.
  - Avoid starting a sentence with a reference to authors because this places the emphasis on the people and not what they found. The emphasis should be on the findings, not the researchers.
    - Wrong – Baron and Banaji (2006) found that 6-year-old children demonstrated implicit racial bias.
    - Right – As early as 6-years-old, children demonstrated implicit racial bias (Baron & Banaji, 2006).

### Abbreviations / Acronyms

- Abbreviations
  - Usually it is best to avoid except for common ones (e.g., IQ, MMPI, ESP, etc.) instead just write out what you mean
  - If abbreviating, first time it is mentioned spell it out and indicate abbreviation in parentheses; after that, only use abbreviation
    - Right – “The affective priming task (APT) measures implicit bias. The APT has been used...”
- Common Acceptable Abbreviations:
 

i.e., – “that is”	e.g., – “for example”
etc. – “and so forth”	vs. – “versus”
et al. – “and others”	& – “and” (rarely used – see citations)

  - Right – “Measuring implicit bias (i.e., non-verbal bias) has been done using a variety of tasks (e.g., the implicit association task, the affective priming task).”
- Statistical Abbreviations:
 

<i>M</i> – mean	<i>SD</i> – standard deviation
ANOVA – analysis of variance	<i>F</i> – ANOVA statistic
<i>t</i> – t-test statistic	SE = “standard error”
<i>p</i> – significance value	<i>r</i> – Pearson correlation
- Measurement Abbreviations:
 

s – seconds”	min – minutes
hr – hours	% – percent
m – meters	mm – millimeters
g – grams	kg – kilograms
lb – pounds	in. – inches

### Word Choices

- Affect vs. Effect
  - Affect is a verb meaning “to influence”
    - “The participants’ scores were affected by the...”
  - Affect can be a noun and synonym for “emotion”

- “The positive images increased positive affect in the participants...”
  - Effect is a noun and is synonym for “outcome”
    - “The manipulation had a large effect on scores...”
  - If you can substitute the word “result” or “outcome” then you need the word “effect”. If not then use “affect.”
- Its vs. It’s
  - “It’s” is only used as a contraction for “it is” or “it has” – otherwise you use “its”
- Feel vs. Believe
  - Feel refers to sensory experiences
    - “I feel warm in this room even though it’s only 74 degrees.”
  - Believe refers to thoughts
    - “Researchers believe that stress can precipitate a psychotic break.”
- Since vs. Because
  - Since refers to time
    - “It’s been a long time since I saw my dog.”
  - Because refers to cause and effect
    - “Because I miss my dog, I am going home this weekend.”
- Less vs. Fewer
  - Less refers to a continuous quantity that is difficult to count
    - “The mood was less hostile when they arrived.”
  - Fewer refers to a quantity that you can count
    - “Fewer students attend class on Friday.”
- Whether vs. Whether or not
  - Whether refers to alternatives
    - “Students decided whether to have class outside.”
  - Whether or not should never be used
- The word “this”
  - Anytime you use this word, you should always put a word after “this” to clarify what you are referring to in the sentence.
    - “This handout is very extensive and detailed.”
- The word “they”
  - Be careful when you use this word because it can quickly get confusing for the reader as to whether you are referring the participants or researchers. Make sure you are clear and specific when you use this word.
- Err on the side of caution when making claims in scientific writing
  - Wrong – “Our results clearly showed that people always performed worse when they were multitasking.”
  - Right – “Our results indicated that people tended to perform worse when they were multitasking.”

### ***Websites You May Find Useful***

- Quick Guide to Performing Stats in SPSS
  - <http://www.ats.ucla.edu/stat/spss/whatstat/whatstat.htm>
- Quick Guide to Writing Stats
  - <http://www.psych.uw.edu/writingcenter/writingguides/pdf/stats.pdf>
- Excellent Guide to APA Style
  - <https://owl.english.purdue.edu/owl/section/2/10/>