Lab Manual:
Introduction to Research Methods in Psychology

Last revised: Fall 2020

Benjamin J. Tamber-Rosenau, Donald J. Foss, Gunes Avci

Table of Contents

Introduction to the Lab Manual and *Introduction to Methods in Psychology* Lab

How do we know about the effects of personality on, say, success in college? Or how do we know about the effects of child rearing practices on the personality of teen-agers? Or what leads people to be depressed, and what are the most effective ways to treat depression? Or...well, you get the idea: how do we know about any interesting question about human (or animal) behavior? The *Introduction to Methods in Psychology* class is in part designed to explore how we do know, and to give you the tools to further explore it yourself. To say it somewhat differently, the *Methods* class is designed to clarify some effective ways of **asking** such questions and some valid ways to go about **answering** them.

The Lab component of Methods is meant to give you hands-on experience using some important tools that will help you discover and understand what professional psychologists think we already know. Among these tools will be (1) the skillful ability to determine what has been studied in the past and what those studies have shown. Another aim of the Lab component is (2) to provide you with the experience of formulating your own test of an idea about how we humans function—speaking very informally, an idea about what makes us tick. Finally, the Lab component aims (3) to teach you the tools of scientific communication—how to describe your research to other scientists in a way that lets them understand what you did, why it is important, what you learned, and what questions have not been answered by your research.

In order to comfortably read what psychologists, neuroscientists, sociologists, and others have already studied and written, you have to understand the "culture of communication" in the sciences. In practice what this means is that you have to learn about the components of a research report and how they are organized. This culture has developed in order to facilitate written communication: authors do not have to worry anew about how to organize their reports every time they write one, and readers do not have to hunt for information but instead know where and how different kinds of information will be reported. To accomplish this, there is standard tradition that guides the structure and organization of such professional works. For you to successfully discover and make use of what has been done in the past, you have to understand and adopt that standard tradition.

Though they share broad outlines, there are minor differences in the way that

various sciences structure their research papers. In psychology and a number of related disciplines, the standard is set by the *Publication Manual of the American Psychological Association* (the APA). The *Pub Manual*, as it is typically called, has been around for decades and is now (as of October, 2019) in its 7th edition. These standards are frequently referred to simply as *APA style*.

We are going to get familiar with APA style in two ways. First, you have to grasp its organization and component parts in order to comfortably read the existing work—what some people call the technical literature of psychology. Second, the capstone project in this part of the *Methods* course involves your proposing an investigation (a *study*, as we often call it) that you will design. In addition, for that project you will write up the study as though you had actually carried it out. You won't in fact actually conduct the study—among other reasons, we don't have time for that here—but you will design a study that you *could* conduct and you will produce a written paper in APA style just as though you had. We'll return to that assignment later. For now, let's introduce you to APA style by discussing the overall organization of a research paper written in that style, as well as issues surrounding how you will acknowledge the work of others on which you will base your own research paper.

Section One: Reading and Writing Research Papers

Components of a Research Paper and their Relationship to APA Style

Summary and Guide to APA Style

Guide to Citations and References

Guide to Avoiding Academic Dishonesty and Plagiarism

Components of a Research Paper and their Relationship to APA Style

Let's say that you've found a research paper on a topic of interest. (In a separate lesson we'll cover how you can efficiently find such papers.) What will you want to know when you read that paper? Of course, the big picture answer is that you want to know if it answers a question of importance to you. But now, as a student of psychology, you're learning that one research paper won't completely settle the matter. Therefore, you'll have to critically assess that paper along with others.

To do that you'll have to look closer at that paper, to give it a critical reading. So let's consider what you'll want to find out when you take that closer look. For one thing, you'll want to pay attention to its title and who wrote it, and you'll probably be curious about what positions the author(s) had when they did the work. It would certainly be nice if you could then read a single paragraph that quickly summarized the whole thing—one that could tell you whether you want to really dig in and read the entire paper. If you do decide to read it, you'll quickly want to know what the authors (and others) thought about the problem when they started the work—what the existing ideas about it were, whether there were competing ideas, and what predictions the authors had about what would happen in their study. Once you've got that, you'll no doubt wonder how they carried out the study—about the methods they actually used to try to answer the question behind the study. For example, who were the participants? Were they children or adults? Were they representative of the gender and ethnic diversity in the country, or of just a subset of it? Of course, your questions about their methods go beyond knowing about the participants. You'll also want to understand exactly how the study was organized (its design) and how the participants were treated; plus you'll want to know if there were multiple groups of participants (the typical situation), and how each group was treated. In addition, you need to know what the researchers measured and exactly how they measured it. Then, naturally, a key thing of interest to you will be the results of the research; that is, how did things come out? So the authors need to tell you that—to describe and analyze the data they gathered. And they'll probably want to tell you what they think about the outcome. Did it support their ideas? What general lessons can we take from this study? Are there limitations to what we should conclude from it? And finally, you might be curious about whose work influenced these

authors. No one works truly independently, so honest scientists need to give credit where credit is due. If the report leaves any of these things out we'll feel that we didn't get the whole story—and we should always get the whole story.

The previous long paragraph presents an extensive list of things you want and need to know after reading a research paper. Remember, science is a public activity, so it is essential that all these things are stated in enough detail that, in principle, you could copy (replicate) the study if you had the time and resources to do so.

If we were to make a list of the sub-topics just mentioned, or try to outline them, we would be developing the structure of a standard research paper. In short, we would be (re-) inventing the outline of a standard style, for example, the *APA style.* One purpose of standardizing this list is to ensure that all these key aspects of the work are reliably communicated to the reader.

What follows, then, is an overview of the "official" APA style, which is currently embodied in the *Publication Manual of the American Psychological Association* (7th ed.). This overview is organized by the major components of a research paper. There will be two sub-sections for each component: one on content—that is, what needs to be covered; and one on some key details of the style itself. This overview can be read in two ways—and should be reviewed at least twice during the semester. First, this overview—especially the content sub-sections—should be studied before you begin to read the scientific literature in order to help you get the most from each study you read about. Second, both sub-sections within this overview should be treated as an outline or checklist of requirements as you do your own writing in APA style, which will be a large part of this class later in the semester.

In addition to this overview, we'll provide pointers to some excellent web sources, and to some very fine hands-on help housed here at UH, that can answer further questions you may have about APA style. You will probably have specific questions that lead you to consult those resources, but this overview is a great place to start!

Finally, you should be aware that some of the articles you read and cite might not completely comply with APA style! This is because most journals—even most Psychology

journals!—are not actually published by the APA[1]. Even though these non-APA journals often roughly follow APA Style, they may deviate from APA style in some ways[2]. The following overview notes which elements of APA style the authors of this lab manual believe are most frequently changed in non-APA journals, but **your *Intro to Methods* lab instructor will be the final authority on what you have to do when you write for this class. Unless your instructor tells you otherwise, you are expected to strictly follow APA style for student papers.** APA style for student papers is a little less fussy than APA style for professional papers. In the overview found on the following pages, you will find explanations of both, but remember that as a student, you can follow the student paper style in this class.

---

[1] As of May, 2020, the APA publishes 90 journals while the Clarivate *InCites Journal Citation Reports* database identifies 971 journals in various areas of Psychology, Neuroscience, and the Behavioral Sciences (with an additional 199 Psychiatry journals).

[2] For instance, of the approximately 90% of the Psychology and related-field journals that are not published by the APA, many allow authors to write in the first person, which means that they allow authors to use words such as "I," "we," and "us," that are prohibited in strict APA style. Other journals change the order of sections from APA style. For example, some journals move the detailed Method section to the end of the paper.

Summary and Guide to APA style

General writing guide:

Avoid language that may cause irritation, distraction, or interruptions. This includes:

- Linguistic Devices
    - Heavy alliteration (beginning each word with the same sound)
    - Accidental rhyming
    - Poetic expressions or idioms (particularly those that may not be clear to people without shared cultural background with the author)
    - Clichés
    - Mixed metaphors
    - Casual or conversational language (e.g., kids instead of adolescents or children)
- Biased Language
    - Words that carry some type of implied or irrelevant evaluations of the sexes, race/ethnic group, or social status of people.
    - Words with surplus or unintended meaning (i.e., cop instead of police officer).
    - Words that are considered to be offensive, either in the broader population or by the specific groups that the words are used to describe.

You should also avoid using a storytelling tone, especially once you are past the first paragraph of the introduction (which can be used to "sell" the reader on the importance of your topic or research question).

- Avoid the use of "you" (i.e., the following is unacceptable: "You might expect violent TV to cause violent behavior in children.").
- Avoid the first person (I, we, us) throughout the entire paper. Non-APA journals often disagree on this point, allowing the first person (and a more narrative account of research in general).
- Use the minimum number of words necessary to get the main point of your research paper across.

General formatting guide

- Research papers should be <u>typed</u> and <u>double-spaced</u> throughout—including the Title page, Abstract, and References.
- Your instructor may specify a particular <u>font</u>. If not, you may use any easily readable font. This document is printed in 12-point Cambria. The APA recommended fonts include 11-point Calibri, 11-point Arial, 10–point Lucida Sans Unicode, 12-point Times New Roman, or 11-point Georgia.
- If you include any figures in your paper, the text within the figures should use a sans serif font (a font where the ends of the lines making up each letter do not have "feet") for figure images. Popular sans serif fonts include Arial or Calibri.
- Your paper should have 1.0 inch <u>margins</u> on all sides.
- The paper should be <u>left-justified</u>, but not right-justified. That is, the right margin should be "ragged," as in this document.
- <u>Page numbers</u> should be on the upper right hand corner of every page, starting on the first (Title) page and running consecutively throughout the entire paper.
- In professional papers (but not student papers), each page should have a "running head" at the top left corner. The running head is an abbreviated title and is written in all caps, but you will not need to include one in a student paper.
- Make sure to indent the first line of each new paragraph throughout your entire paper, except for the abstract.

<u>Organization and Style</u>

One way to think about writing an APA style research paper—or a paper in many other formats, for that matter—is to think of an hourglass. Just as an hourglass is broad at the top, narrows, and then widens again, your writing should take you from general to specific and then back to general again. Similarly, an APA style paper includes an Introduction section, which begins by defining a big problem or question and gradually narrows to specific hypotheses. After the Introduction comes the Method and Results sections, which are detailed and specific. Finally, the Discussion section relates the specific findings of the study back to the broader literature and the original problem(s) described in the Introduction.

Papers written in APA style contain the following <u>sections</u>. For convenience the sections are numbered here but they are <u>not numbered</u> in the actual paper, though they do occur in this order. Even non-APA style papers will include these sections, though the order or the exact names of the sections could be different.

1. A **<u>Title</u> page**.

   The content:
   - The title should inform a prospective reader about the research project.
   - The title should be specific to your project; it should not be "Literature Review," or "Methods Project," or anything else that is about the class instead of the topic.
   - You should avoid titles that are funny or catchy but do not clearly explain what your study is about. You should also avoid vague titles that are too general to be informative (e.g., "A study of how people solve problems").
   - The title should be concise, meaning that it should use as few words as possible to clearly communicate its meaning.
   - Information about the author(s), called the byline, follows the title.
     - In a professional paper, you would provide your name and institutional affiliation.
     - In a student paper, you will provide **your name**, the **course number and name**, the **instructor's name**, and the **assignment due date**. Your instructor may ask you to include additional information.
   - A professional paper will include an author note, but student papers will not. The **author note** identifies each **author's** departmental and institutional affiliation, acknowledges financial support (like grants), acknowledges technical help or feedback from people who may not have contributed enough to attain authorship (such as technicians who helped collect data or colleagues who commented on the manuscript), and provides contact information for the corresponding author.

Style guide:

- While the APA *Publication Manual (7e)* does not limit the length of a title, it emphasizes keeping titles as short and concise as possible. For this class, it is recommended that your title fit on 1-2 lines and not exceed 12 words.
- The title should use upper- and lower-case letters.
- The title should be in bold print and centered on the first page about three or four double-spaced lines down from the top of the page.
- Then add an extra blank line of space followed by your byline (see content sub-section, above). Each element of your byline (e.g., your name, the course number/name, etc.) should be presented on a separate double-spaced and centered line. Your byline should not be in bold.

2. **Abstract** **page**.

The content:

The purpose of the Abstract is to provide the reader with a brief overview of the study. Most savvy investigators write the Abstract after completing the rest of the paper (in other words, after they have all the details in place that will be summarized in the abstract). Because space is so limited, it is critical to be clear and concise. Do not include any extraneous details or even extra words. A good test for this is to try reading a sentence leaving out a word or phrase; if the meaning does not change when the word is left out, you should probably leave it out. However, you should include:

- Information about the topic of the paper
- A statement of the research question
- Why the topic/research question is important
- Information about the participants
- The research hypothesis(es)
- The methods used (in extremely brief form)
- What you found (the results)

- A statement about the conclusions and/or the implications (for example, the practical significance) of the results.
- After the Abstract itself, professional papers include keywords. These give the reader a highly compact idea of the main topics of the paper.

Style guide:

- The Abstract starts on the second page. In other words, you will begin a new page (after the title page), just for the abstract.
- Just like all pages of a paper, the Abstract page should include the header. For a student paper, the header consists only of the page number at the upper right. (A professional paper would also include the running head.)
- The word "Abstract" is centered above the text and in bold print (and not in quotation marks or italics).
- Do not indent the first sentence of the Abstract itself.
- It is written in one paragraph. (Some non-APA style journals, especially those written for a medical or practitioner audience, will break the Abstract into paragraphs/sections corresponding to the Introduction, Method, Results, and Discussion.)
- The Abstract should be no more than 250 words. (Abstract length varies among non-APA journals, ranging from 100 to 500 word limits.)
- After the Abstract itself, professional papers will list keywords. To do this, indent and type "*Keywords:*" (italicized, but without quotation marks), and then list your keywords (typically, 3-5) separated by commas.

3. **Introduction**.

The content:

The goals of the Introduction are to introduce the reader to the problem being investigated and to review key background research and theory. You should "set the table" for your current study by:

- Stating the problem or question being investigated
- Explaining why this problem or question is important.

Then, describe influential past research on the variables of interest. State (when relevant):

- The basic approach and method of past studies
- Conflicting or uncertain prior results, or inconsistencies between prior studies
- Limitations of previous studies
- Gaps in our (collective) knowledge.

The overall idea of the preceding **review** is to motivate why one would do the work that you've done in this research. After you review the prior research, go on to perform **integration** of the reviewed information with the new ideas that you bring to the table:

- Describe the goals of the present study, and how they flow from or seek to refine or question previous work.
- State the variables of interest and how you are operationalizing them.
- Describe in detail the predictions that your theory or perspective makes about the results of the current study.
- List the formal hypotheses that you have about the expected outcomes.

Style guide:

- The Introduction section begins on a new page after the abstract (typically, page 3).
- Begin with the title of the paper at the top of this page, centered, and in bold print. This title should be the only heading at the start of the Introduction; **do not head this section "Introduction" or "Literature Review."**
- After that, the Introduction is written in normal paragraph form, with every paragraph indented. This includes the very first paragraph after the title.
- Write each section clearly:
  - Each paragraph moving your argument forward.

- o Every time you refer to someone else's work, include a formal citation of the work (and a corresponding reference in the References section; see below).
- o Each paragraph should end by setting up a smooth and clear transition to the next one.

4. **<u>Method</u>**

The content:

The Method section describes in detail how the study was conducted. In this section, you must provide enough detail that another researcher could replicate your study. It has a number of sub-sections:

Participants

- If using non-humans, this sub-section is labeled Subjects, instead.
- Tell how many were in each condition of the study.
- Explain from what population(s) they were recruited and how.
- State the demographic composition of the sample as appropriate (e.g., the sex, ethnicity, education level, etc.).
- If applicable, explain your inclusion and/or exclusion criteria. **Inclusion criteria** are characteristics that the potential participants must have if they are to be included in the study. **Exclusion criteria** are the characteristics that disqualify prospective participants from inclusion in the study.
- At minimum, sex and age of the participants should be described.
- Explain if/how the participants were compensated for participation in the research.
- Note that your participants all gave informed consent to participate in the research (or explain assent or exemption from informed consent) under a protocol approved by the IRB.

Design

- Describe the overall design of the study, including any detail that would be needed if someone wants to repeat your work.
- State clearly the independent and dependent variables and how they were operationalized in this work.
- Specify the type of design—for instance, experimental, quasi-experimental, or correlational; cross-sectional or longitudinal; within-participants, between-participants, or mixed.
- For a design in which the appropriate analysis is not self-evident, explain how the data you collect will be analyzed. In other words, what conditions will you compare? Or, what variables will be used as predictors vs. what materials will serve as outcome (criterion) measures?
- Explain the experimental conditions of the study (for experimental or quasi-experimental studies) and how they were organized.
- Be clear about which variables were studied between-participants versus within-participants.

Procedure

- State what happened in your study/to a participant in your study, generally in chronological order.
- Walk the reader through the procedures you used to collect the data.
- State how the participants were selected.
- If relevant, describe how participants were assigned to groups.
- Explain:
  - What, in appropriate detail, did the participants do at each point during the study?
  - What was the typical amount of time the participants were in the study?

- - If there was more than one session, how long did each session last and how much time intervened between the sessions?
  - This section is only complete when someone else could use it to replicate your procedures.

Materials
- Describe any standard tests/instruments/measures/materials you may have used, with appropriate citations.
- If you use standardized surveys or questionnaires, provide information about reliability and validity.
- Describe in greater detail any special materials that you put together for the study (though complete copies of these materials should be deferred to an appendix unless they are extremely short).
- Describe any special apparatus used in the study or any special measures you may have employed.
- Just as you did for the procedure, you should use the standard that the reader needs to know enough about what happened such that they could do it, too, based only on the information in your paper.

Style guide:
- The Method section continues immediately after the end of the Introduction; that is, it does not start a new page (unless it just works out that way).
- The word "Method" is centered on the page, in bold print, and capitalized (and without the quotation marks used here).
- Each of the sub-sections begins with the appropriate heading (e.g., Participants).
- The sub-section headings are each flush left on the page and in bold print.
- Each sub-section immediately follows the end of the previous one (that is, they do not start on a fresh page unless it happens to work out that way).

5. **<u>Results</u>** (note: you likely will not be asked to write a Results section without actually having results).

    The content:

- Summarizes the data collected and the analyses you conducted on those data.
- Describe the analysis(es) you carried out, with descriptive (e.g., means, standard deviations, correlations) and inferential tests (e.g., t-tests, ANOVAs, etc.) as appropriate.
- Provide the results of those analyses—report the data and the statistics.
- You may include tables or figures (e.g., graphs) to provide clear and readily understood summaries of the results.
- This is not the place to interpret or evaluate the results. (Non-APA journals might allow for basic interpretation within the results section in order to remind readers of the key question addressed by each analysis, and how well the results of the analysis answered the question.)

    Style guide:

- The Results section does not begin on a new page; it immediately follows the Method section (unless it just works out that way).
- The word "Results" is in bold print (without the quotation marks used here) and centered.
- In past versions of APA style, if you used tables or figures they were not inserted within the Results section. Instead, they were included as separate pages at the end of the paper. However, in the APA *Publication Manual (7e)*, the options have expanded: you may either include tables and figures at the end of the paper, or you may insert them in line with your text. If inserted in line, each table or figure is inserted after the end of the paragraph containing the first time it is called out (directly mentioned) in the text.
- In the Results section you will refer to tables by sequential numbering (e.g.,

Table 1 for the first table, Table 2, etc.) and similarly for any figures (a graph is a figure)—Figure 1, Figure 2, etc. For example: "As shown in Table 1, the 3rd grade students in the SuperSpecial Condition had consistently higher scores than those in the BlahBlah Condition, but this was not the case for the 4th graders."

6. **Discussion**

The content:

This is where you interpret the results, discuss their implications, relate them to previous studies/theory, and explain limitations of your study.

- Open the Discussion by briefly summarizing your key result(s) and stating whether your hypothesis(es) was or was not supported.
- Compare these results with others in the published literature:
  - o Are they consistent or inconsistent?
  - o Discuss possible reasons for any differences between your predictions and the results you obtained.
  - o Discuss possible reasons for any differences between your predictions and the other published results.
- State implications for the theories on your topic and/or for practical applications.
- Suggest limitations of your study—in other words, critique what you have done. That may help you suggest avenues for follow up work, which can be included in the Discussion as suggestions for future work.
- Throughout the Discussion, do not simply reformulate and repeat points already made elsewhere in your paper; each new statement should contribute to your conclusions.
- Conclude by summing up the one or two most important contributions of your study to the overall body of knowledge and scholarship on your topic.

Style guide:

- The Discussion section directly follows the Results section, with the word "Discussion" centered and in bold print (and without the quotation marks used here).

- The Discussion section does not begin on a new page; it immediately follows the Results section (unless it just works out that way).

- Discuss findings in the order that the hypotheses pertaining to them were presented in the Introduction

- You may include sub-headings for Limitations and Conclusions; regardless of whether you include these as distinct sub-headings, you will generally discuss these only after reporting support/rejection of your hypotheses and the relationship of your findings to the previous literature.

7. <u>References</u>

The content:

- The purpose of the References section is to give credit to the work of others when you relied on it for your paper.

- To allow your paper to be easily read, you will give brief citations in the text whenever you use someone else's writing, ideas, or results. These brief citations are pointers to the full reference, which is listed in the References section.

- A detailed *Guide to Citations and References* section is included elsewhere in this lab manual.

- Note that citation and references style vary greatly, with some journals using numbered citations. However, most Psychology journals use APA-style in the citations occurring in the text. These make it easier for readers to follow the attribution of cited materials, and they are also much easier for authors to use.

Style guide:

- Begin on a new page.
- The word "References" is centered at the top of the page and should be printed in bold according to the APA *Publication Manual (7e)*.
- Use APA style for all references (see *Guide to Citations and References*, elsewhere in this lab manual).
- Every work cited in the text must appear in the References section.
- Only works that are cited in the text can appear in the References section—there are no "general background" references because these do not appropriately distinguish the work of others from your own novel work.
- References appear in alphabetical order by the first author's last name.
- References use "hanging indents" in which the first line of a reference is **not** indented, but all subsequent lines are indented.
- References are **not** numbered.
- References are double-spaced, just like the rest of the paper.
- Do not leave extra blank lines in between references.

8. <u>Figures and Tables</u> (These are technically optional, but most professional papers have them. As the saying goes, "a picture is worth 1000 words.")

The content:

- The purpose of a figure is to relay information to a reader in a way that is more clear than simply describing it in text or with numbers.
- Figures can also be used to emphasize the most important results of a study.
- The purpose of a table is to relay more complete information to a reader than can be included in a text description without severely disrupting the flow of the text.

Style guide:

- Figures and tables are presented in the order they are referenced in the text.

- Figures and tables are numbered separately. In other words, a paper can have both a Figure 1 and a Table 1.
- If presenting figures and tables at the end of the paper, then each figure and table is presented on its own page. First, present all tables; then, present all figures.
- According to the 7th edition of APA style, you can instead present figures and tables "in line"; that is, within the main text of your paper.
- Every figure requires a number, title, and caption, which are presented below the figure.
- Every table requires a title and a note explaining any abbreviations used in the table.
- Every figure or table included in the paper must also be called out in the text.
- For graphs:
  - Line graphs imply that you know something about the spacing of the conditions on the x-axis. Therefore, only use line graphs (or scatter plots) for data on interval or ratio scales.
  - Bar graphs may be used for other kinds of measurement scales.
  - Place the independent variable on the x-axis and the dependent variable on the y-axis (if you have an independent and dependent variable).
  - Always include a legend explaining the meaning of colors/patterns/shapes for lines/bars/markers in the graph.

9. **Appendix** (optional)

The content:

Appendices can be used to present supplemental information or complete test instruments or stimulus sets that would disrupt the flow of the main text.

Style guide:

- Begin section on a new page.
- The Appendix section is sometimes published, but also may be reserved for online "supplemental" content without print publication.
- The Appendix section should be titled "Appendix X," which should be centered and bolded, with X replaced by a sequential number.
- You should refer to each appendix in one or more places in the paper.

Guide to Citations and References

There are two main components to giving proper attribution to your sources: citations and references. In APA style, **citations** are the notations in the body of your paper that give attribution of an idea, fact, quotation, etc., to another work or author. (In other styles you may come across in scientific journals, citations may be presented using footnotes or endnotes instead of in text). **References** are the listed works that you have cited throughout your text, and they come at the end of your manuscript, in their own section. Both citation and reference of each source you use is critical. **Every source that you cite must appear in your reference list, and every listed reference must be cited in your paper.**

Citations

APA style uses two (and only two) pieces of information in the vast majority of citations—the last name(s) of the author(s) and the year of publication. This information may be presented in one of two in-text citation styles: the **narrative citation** or the **parenthetical citation**. You may freely switch between these in your writing.

Parenthetical citations come immediately after the cited information, and simply contain the author(s) and year in parentheses. For example, if citing a 2018 publication on fruit by Jane Doe, you might write, "Apples come in many colors, including red, green, and yellow (Doe, 2018)." If the publication had two authors, you would list both and use an ampersand: (Doe & Smith, 2018). If it had three or more authors, you would switch to "et al." notation: list the first author followed by "et al." which yields the result, (Doe et al., 2018). "Et alia" is always abbreviated "et al." and is a Latin phrase meaning "and others." In 7e APA style—in contrast to older forms of APA style—you should use "et al." for all works with more than two authors, every time you cite them (even the first time).

Narrative citations flow more naturally with your writing because (some of) the citation information is incorporated into the sentence. Narrative citations follow the same rules as parenthetical citations concerning what information to include and whether to use a single author name, two author names, or et al. However, narrative citations include the

author name, and sometimes the year, in the sentence. Unlike parenthetical citations, narrative citations use the word "and" instead of an ampersand when listing two authors. Returning to the example of a paper about fruit, you might use a narrative citation by writing either: "Doe (2018) reported that apples come in many colors, including red, green, and yellow," or, "In 2018, Doe reported that apples come in many colors…."

Regardless of the citation style you choose, **do not include extraneous information, either directly as part of the citation or in the surrounding text.** Instead, include only the required author and year information. Students often think that more information (such as the author's place of employment, location, or first name, or the article title or journal name, or the month in which an article was published) is helpful—but these **cannot** be included in the in-text citation. The purpose of combining in-text citations with a references section is to have complete information available (in the references) while minimizing disruption to the sentence and paragraph structure, easing the readability of the document. Including extraneous information disrupts the flow of the writing and distracts the reader with irrelevancies.

If you need to cite multiple works together, you can combine them in a single parenthetical citation. To do so, you list them in alphabetical order (by first author) in the same set of parentheses, and you separate each work from the others using a semicolon. For example, to cite Jane Doe's 2018 apple paper along with John Smith's 2014 paper on bananas and Johanna Schmidt and Jane Doe's 2019 collaboration on citrus, you might write, "Many kinds of fruit can be found in yellow-skinned varieties (Doe, 2018; Schmidt & Doe, 2019; Smith, 2014)." If two papers have identical author lists, you will compress their citations into a single author list with two years listed. For instance, if you want to cite both Jane Doe's 2018 apple paper and her additional 2003 paper on melons, you would cite these as "(Doe, 2003, 2018)."

There are a few **exceptions** to the citation rules detailed above:

- If you cite two or more works that have identical author lists and were published in the same year, you will differentiate them by adding a letter to the year of publication—for instance, Doe et al. (2018a) and Doe et al. (2018b). These same letters must be used consistently throughout your paper, and they will be added to the reference list as well.

- If you cite works from the same year by two different authors who share a last name, you may include first initials (or names, if they also share first initials). For instance, if you cite both a 2018 paper by Jane Doe and a different 2018 paper by Steven Doe, you would them as J. Doe (2018) and S. Doe (2018).
- If you cite the same work multiple times within a single paragraph, you may skip the year after the first citation as long as it does not make it ambiguous which work you mean to cite. However, once you begin a new paragraph, you must include the year again.
- If you are directly quoting another work, or very closely paraphrasing it, you must include a page number for the quotation in your in-text citation. For instance, you might write, "Doe (2018, p. 17) notes that the Opal 'is widely considered among growers to be a less-than-desirable yellow apple crop due to its low drought resistance.'"

References

Once you provide an in-text citation, you have told your reader that someone else (or your past self, if you are citing your own prior research) deserves the credit for something you described. However, that citation does not provide full information, so your References section must include everything you cite. Below are examples of how to reference several types of sources. Be sure to pay attention to the case of each part of the reference (for instance, article titles are written in sentence case while journal names are written with each major word capitalized) and when to use (and not use) italics. In **APA** style, you will include familiar identifying information (like authors, title, etc.), but there is also one piece of information that is probably unfamiliar: the Digital Object Identifier **(DOI).** A DOI is a standardized unique number given to articles, papers, and books by publishers to identify a particular publication; it can be formatted as a URL by adding the prefix https://doi.org/. The DOI is included in the reference for all works that have a DOI. It goes at the end of your reference and there is no period at the end. If your article has no DOI, which may happen with older articles, simply omit the DOI from the reference.

Journal Article with One Author

Author, A. A. (Year). Title of article. *Title of Periodical, volume number* (issue number if and only if the first page of the journal for every volume begins with page 1), pages. doi formatted as URL

Merz, J. (1983). Questionnaire for measuring psychological reactance. *Diagonistica*, *29*, 75-82. https://doi.org/10.1016/b978-0-12-129840-1.50013-2

Journal Article with Two Authors

Author, A. A., & Author, B. B. (Year). Title of article. *Title of Periodical, volume number*, pages. doi formatted as URL

Jahn, D., & Lichstein, K. L. (1980). The resistive client: A neglected phenomenon in behavior therapy. *Behavior Modification*, *4*, 303-320. https://doi.org/10.1177/014544558043002

Journal Article with Three or More Authors

Author, A. A., Author, B. B., & Author, C. C. (Year). Title of article. *Title of Periodical, volume number*, pages. doi formatted as URL

Shoham-Salomon, V., Avner, R., & Neeman, R. (1989). You're changed if you do and changed if you don't: Mechanisms underlying paradoxical interventions. *Journal of Consulting and Clinical Psychology, 57*(5), 590-598. https://doi.org/10.1037/0022-006X.57.5.590

Journal Article with 21 or more authors

Separate each author's initials from the next author in the list with a comma. Use an ampersand (&) before the last author's name. If there are 21 or more authors, use an ellipsis

(but no ampersand) after the 19th author, and then add the final author's name.

Pegion, K., Kirtman, B. P., Becker, E., Collins, D. C., LaJoie, E., Burgman, R., Bell, R., DelSole, R., Min, D., Zhu, Y., Li, W., Sinsky, E., Guan, H., Gottschalck, J., Metzger, E. J., Barton, N. P., Achuthavarier, D., Marshak, J., Koster, R., . . . Kim, H. (2019). The subseasonal experiment (SubX): A multimodel subseasonal prediction experiment. *Bulletin of the American Meteorological Society, 100*(10), 2043-2061. https://doi.org/10.1175/BAMS-D-18-0270.1

Article in Electronic Journal

When citing an article in an electronic journal (and today, nearly all journals are published online, regardless of whether they also publish a print version), include a DOI if one is associated with the article. A DOI is a permanent electronic resource address that will redirect to the current hosting location of an electronic article.

Baniya, S., & Weech, S. (2019). Data and experience design: Negotiating community-oriented digital research with service-learning. *Purdue Journal of Service-Learning and International Engagement, 6*(1), 11–16. https://doi.org/10.5703/1288284316979

When DOIs for an electronic journal are not available, use a URL instead.

Denny, H., Nordlof, J., & Salem, L. (2018). "Tell me exactly what it was that I was doing that was so bad": Understanding the needs and expectations of working-class students in writing centers. *Writing Center Journal, 37*(1), 67–98. https://www.jstor.org/stable/26537363

Article in a Magazine

Peterzell, J. (1990, April). Better late than never. *Time, 135*(17), 20–21.

Article in a Newspaper

Lastname, F. M. (Year, Month Date). Title of article. *Title of Publication*. URL

Schultz, S. (2005, December). Calls made to strengthen state energy policies. *The Country Today*, 1A, 2A.

Richards, C. (2019, December 9). Best music of 2019: Lana Del Rey sings lullabies about the end of America. *Washington Post*. https://www.washingtonpost.com/entertainment/music/best-music-of-2019-lana-del-rey-sings-lullabies-about-the-end-of-america/2019/12/06/6e82c5ec-15d8-11ea-a659-7d69641c6ff7_story.html

Review

*Please note that "review" means a review of a **single book** or other piece of writing, not a review of a topic. Such topic review articles, which you will encounter more frequently, should be cited as typical journal articles (see above).*

Baumeister, R. F. (1993). Exposing the self-knowledge myth [Review of the book *The self-knower: A hero under control*, by R. A. Wicklund & M. Eckert]. *Contemporary Psychology, 38*(5), 466–467.

Webpage or Piece of Online Content

Please note that this does not include electronic publication of journal articles, which should be cited as journal articles (see above).

APA style differentiates between a standalone webpage and a webpage that is part of alarger website. When a page is part of a larger website (such as in the example of an article on Medium used below), the name of the website is included as the source. On the other hand, if

the webpage is a standalone site or if the name of the website is the same as the author, then the website is not explicitly listed as the source.

If the page names an individual author, cite their name first:

Lastname, F. M. (Year, Month Date). *Title of page*. Website. URL

Price, D. (2018, March 23). *Laziness does not exist*. Medium.
      https://humanparts.medium.com/laziness-does-not-exist-3af27e312d01

If the resource was written by a group or organization, use the name of the group/organization as the author. Additionally, if the author and website name are the same, omit the site name from the citation.

Group name. (Year, Month Date). *Title of page*. URL

American Society for the Prevention of Cruelty to Animals. (2019, November 21). *Justice served: Case closed for over 40 dogfighting victims*.
      https://www.aspca.org/news/justice-served-case-closed-over-40-dogfighting-victims

If the page's author is not listed, start with the title instead. Additionally, include a retrieval date when the page's content is likely to change over time (like, for instance, if you're citing a wiki that is publicly edited).

Title of page. (Year, Month Date). Website. Retrieved Month Date, Year, from URL

Tuscan white bean pasta. (2018, February 25). Budgetbytes. Retrieved March 18, 2020, from https://www.budgetbytes.com/tuscan-white-bean-pasta/

Wikipedia Article

Title of article. (Year, Month Date). In *Wikipedia.* URL of archived version of page

Quantum mechanics. (2019, November 19). In *Wikipedia*.

https://en.wikipedia.org/w/index.php?title=Quantum_mechanics&oldid=948476810

Electronic or Kindle Books

It is not necessary to note that you have used an eBook or audiobook when the content is the same as a physical book. However, you should distinguish between the eBook or audiobook and the print version if the content is different or abridged, or if you would like to cite the narrator of an audiobook.

Lastname, F. M. (Year). *Title of book*. Publisher. URL

Lastname, F. M. (Year). *Title of book* [eBook edition]. Publisher. URL

Lastname, F. M. (Year). *Title of book* (N. Narrator, Narr.) [Audiobook]. Publisher. URL (if applicable)

Entry in an Online Dictionary, Thesaurus, or Encyclopedia with an Individual Author

Lastname, F. M. (Year). Title of entry. In F. M. Lastname (ed.), Title of reference work (edition). Publisher. URL or DOI

Martin, M. (2018). Animals. In L. A. Schintler & C. L. McNeely (Eds), *Encyclopedia of big data*. SpringerLink. https://doi.org/10.1007/978-3-319-32001-4_7-1

Book [entire book written by the same author(s)]

Author, A. A. (Year of publication). *Title of book*. Publisher Name.

Brehm, J. W. (1966). *A theory of psychological reactance*. Academic Press.

Book Chapter [book contains chapters in which each chapter is written by different author(s)]

Author, A. A., & Author, B. B. (Year of publication). Title of chapter. In A. A. Editor & B. B.
Editor (Eds.), *Title of book* (pages of chapter). Publisher Name.

O'Neil, J. M., & Egan, J. (1992). Men's and women's gender role journeys: Metaphor for
healing, transition, and transformation. In B. R. Wainrib (Ed.), *Gender issues across the
life cycle* (pp. 107-123). Springer.

For additional information and examples of how to cite different types of sources (e.g.,
citing organizations as sources, sources with no author listed, multiple sources with the same
author, online sources), see the following websites:

- https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/reference_list_basic_rules.html
- https://apastyle.apa.org

Guide to Avoiding Academic Dishonesty and Plagiarism

As you conduct your information search and begin writing your research proposal, it's important that you follow the principles of *academic honesty* and avoid all kinds of plagiarism in your work.

Psychology Department's Official Statement

"The Department of Psychology investigates all allegations of academic dishonesty. Should a student be found guilty of an academic honesty violation at a department hearing, a sanction will be placed on his or her academic transcript until graduation. This sanction is in addition to any other sanction imposed as a result of the hearing. This could include, but is not limited to, a zero or failure on the assignment or exam in question, or failure in the course."

What is academic (dis)honesty?

Academic dishonesty: Any action that a person knows is wrong with regard to getting credit for work that they have not done. This includes, but not limited to:
- cheating on tests or assignments
- copying homework
- passing off other people's words and ideas in a paper or project as your own, AKA *plagiarism*
- "recycling" your own work from another class or publication without acknowledgement, a.k.a. "self-plagiarism"

Plagiarism: The act of taking another person's words, ideas, or work and passing them off as your own original work. Plagiarism involves the intentional or negligent use, by paraphrase or direct quotation, of the published or unpublished work of another person or entity without full and clear acknowledgment. Plagiarism may be a concern in any of your scholarly work, which includes, but is not limited to, papers, exams, oral/written reports, homework assignments, research proposals, and visual presentations.

There are **different types of plagiarism** and all are serious violations of academic honesty:

- **Direct Plagiarism** is the verbatim copy of a section of someone else's work without attribution and without quotation marks. Direct plagiarism includes but is not limited to purchasing a paper; copying and pasting entire sections of a website, an article, or another person's essay; or copying (with or without modifications) smaller sections from another source. Attribution entails appropriate use of quotation marks or paraphrase; either must be coupled with appropriate use of in-text citation. *Merely mentioning a source somewhere without crystal-clear attribution of each idea and/or quotation is unacceptable.*

- **Self Plagiarism** is "recycling" your own previous work without acknowledgment. Self plagiarism happens when you submit your own previous work, or parts of your previous works, while presenting them as new work. Such self-plagiarism is still plagiarism because it results in dual credit for single labor. If you want to reuse a prior assignment from another class, you need to (1) get permission from *both* professors and (2) indicate in your new work that it is based on your previous work (for instance, this could be included in an author note on your title page). The same policies apply if you are retaking this class and you want to revise a previously-submitted assignment from a past semester of this class. If there is any doubt whatsoever, ask your instructor.

- **Accidental/Unintentional Plagiarism** occurs when you misattribute your sources, or unintentionally paraphrase a source by using similar words, groups of words, and/or sentence structure without attribution. You must learn how to cite your sources and to take careful and accurate notes when doing research. To avoid accidental plagiarism, we suggest that you always include attribution for anything you write down, even just when taking notes for your own use. *Accidental plagiarism is still plagiarism.* Cases of accidental plagiarism are taken as seriously as any other plagiarism and are subject to the same range of consequences as other types of plagiarism.

How do I avoid plagiarism?

Common accidental plagiarism cases include using words or passages from the original source without using quotation marks and/or without citing the source; using different citation formats within the same assignment so that attribution is unclear; or using a citation format improperly. These mistakes all boil down to one easy way of avoiding plagiarism: *cite your sources by using proper APA style*. You need to give credit when you directly quote someone else's words or even when you merely paraphrase their ideas. It is better to over-cite than to under-cite.

> **Direct Quotations**: When you use someone else's exact words, place in quotes, AND give citation (including a page number).
>
> > Example: "In some urban classrooms, children arrive without any notion of sharing behavior" (Perry, 2009, p. 43).
>
> It is **NOT** a good idea to use many (or any, typically) direct quotations in your papers. Direct quotes generally indicate to your reader (and in a class, to the professor assigning you a grade) that you did not really understand the material you are quoting enough to paraphrase it in a way that incorporates the quoted material with your own topic or ideas. Though using direct quotes properly does not indicate plagiarism, they still should be avoided in almost all cases.
>
> The APA manual separately regulates the use of short and long quotes:
> - Short Quotes:
>   - Fewer than 40 words
>   - Incorporated into the body of your essay
>   - Always enclosed in quotation marks
> - Long Quotes:
>   - 40 words or more
>   - Start on a new line
>   - Indented as a block quote

- Double-spaced
- Quotation marks are not needed because the combination of the citation and the indent shows that it is a quote

Paraphrasing: You state someone else's ideas in your own words AND give citation. When you paraphrase, you cannot directly copy. You cannot copy a few important phrases but take out what is between. You cannot simply rearrange phrases into a new order. You cannot copy text, then replace some words with synonyms while keeping the original sentence structure. All of these are instances of plagiarism because they use someone else's words and/or sentence structure, but present them as your own words or sentence structure. Paraphrase must instead summarize someone else's ideas in your words (with attribution via a citation, just not quotation marks). A good paraphrase should focus the paraphrased ideas on your current topic or relate the paraphrased ideas to your own

Example:

Original source: Bowling is an enjoyable pastime. It is loved by many young people in the United States.

Paraphrased version: One fun activity that many American teenagers enjoy is bowling (Smith, 2020).

Better paraphrased version, if your paper is specifically about teenagers in Houston: Because many teenagers find that bowling is an enjoyable leisure activity (Smith, 2020), it can be presumed that the widespread closure of bowling alleys in Houston over the past decade has disappointed local youths.

For **additional information on in-text citations**, see the *Guide to Citations and References* (above) or check out the following website:
https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/in_text_citations_the_basics.html

It is important to follow **proper APA format** when citing sources in the text of your proposal. Use the following style manual (available at the library information desk) to format your citations:

American Psychological Association. (2019). *Publication Manual of the American Psychological Association* (7th ed.). American Psychological Association.

Section Two: Assignments and Exercises

Sample Study Summaries for Critique: Brief Study Summaries

Longer Sample Study Summaries for Critique:

- To Smoke or Not to Smoke

- Don't Sit So Close to Me

- The Personality and Voting Study

- The English-French Connection Experiment

- Shared Book Reading between Children and Adults

Additional Assignments and Exercises

Brief Study Summaries

For each study described below,

1. *State the independent variable(s) and the dependent variable(s).*
2. *What is the hypothesis being tested?*
3. *Spot the problem / confound and state what it is.*

I. Prof. Reeder was asked by the University Library to test two devices and their associated software meant to scan written materials and read them aloud. To make the test a practical one, she was able to recruit 40 blind college students and test each of them, 20 on each device. Reeder assigned the students at random, half to Device A and half to Device B. She flipped a coin and Device A was used to scan and read an economics text to the first group of 20. Device B was used to scan and read a psychology text to the other group of 20. Students in the second group were both happier with the device and did better on a follow up exam over the material. Reeder concluded that Device B was the superior one. Do you think that blind students would get the best benefit currently possible if Device B was purchased by the library?

II. Natalie Dresser, a graduate student in psychology, was interested in examining how quickly one can learn a new skill depending upon the size of a reward during learning. She selected 30 college students who had never played golf before and gave them 15 days of instructions and practice on learning how to putt the ball (hit it accurately over short distances). For the first five days she gave them $1 every time they hit the target. For the next five days she upped the reward to $5 every time they hit the target; and for the final five days she rewarded them with $10 for every accurate putt. Natalie found that putting performance improved as the size of the reward increased. She was disappointed when she found out that this was not a novel or surprising result. Her disappointment got even worse when her advisor pointed out that there was also a fatal flaw in the study. What do you think was the fatal flaw in the study?

III. Professor X. R. Size wanted to see whether the activities available at a summer camp that were focused on science activities helped children do better in school the following year. She selected 100 students who had gone to summer camp (Camp Group) and matched them

for age and gender with 100 students who had not (Control Group). Sure enough, on average the Camp Group did better the next school year. Why would you not be impressed by this study?

IV. Dee Nominator tested 5th graders on their math skills with fraction problems (e.g., 2/5 + 4/6 = ?). In a set of six schools near her office she gave the children problems that had previously been on worksheets and given as homework. In six schools close to her apartment the children received the same problems, but they had not seen them on earlier worksheets. Nominator found that children who had practiced on those problems did better than those who had not. What should she conclude about the value of such practice on solving fraction problems?

V. Forty participants in a study were asked by Dr. Sweetner to rate two soft drinks whose identities were not revealed (they were simply labeled Brand X and Brand Y). The investigator was careful to ensure that all participants had enough time to thoroughly taste each soft drink. The participants first tasted Brand X (a highly sugary drink) for one full minute and then were given a salty snack to remove the taste of X from their mouths. This was followed by tasting Brand Y (a lightly sugary drink), also for one minute. The researchers found that Brand X was favored significantly more often than Brand Y and submitted that result to the *Journal of Soft Drink Science*. The paper was rejected, though, because the investigators had a flaw (or two) in their study. What are the flaws in their study?

VI. The coach believes that one's leadership skills are improved by being on the football team. In order to test this, he instructs an assistant, Buck Wurm, to find a standard test of leadership and to give it to the 75 team members and also to a random group of 75 other male students matched with the players for age and ethnicity. Sure enough, the football team members do score significantly higher on leadership than the non-players. Coach concludes that he was correct. However, Buck felt that he had an ethical duty to deliver sad news to the coach—namely that his study showed no such thing. Do you think Buck is correct that the study shows no such effect? If so, why?

To Smoke or Not To Smoke

Executives at a large corporation hired a psychologist to evaluate two organization-sponsored smoking cessation programs. These programs differed in that one was based on behavior modification (Plan B) and the other relied on cognitive restructuring (Plan C). Plan B included the employees changing their environments in order to eliminate temptations to smoke. Plan C encouraged the employees to change their views about smoking and to only think of the negative aspects associated with the unhealthy habit (i.e. cancerous, expensive, etc.) Smoking cessation was defined as the scores on a saliva test which would detect the presence of nicotine and scores on a self-report measure.

The psychologist obtained a list of all employees who, as part of a previous survey, had indicated their desire to quit smoking. These people were contacted and 85% of the original group of employees were still working at the company or had not changed their minds about participating. Two hundred employees from this remaining group were randomly assigned in equal numbers (100) to either Plan B or Plan C. Each program lasted 6 months, during which time smoking behavior/cessation in each group was monitored.

At the end of the program, participants were given a questionnaire designed to assess attitudes toward the company and the smoking cessation program. Because of transfers within the company, firing and quitting of employees, and other undocumented reasons, only 75 out of 100 in the Plan C Group finished the program, and only 50 of the 100 original participants from the Plan B Group completed the 6 month program. The psychologist judged that these sample sizes were still sufficiently large to adequately assess the effect of the programs.

A statistical comparison of participants from the two groups revealed that employees enrolled in Plan B remained smoke-free significantly more than persons completing Plan C. Moreover, the attitude assessment at the end of the program revealed that employees who completed Plan B had significantly better opinions of the company and the program than did persons in Plan C. On the basis of these results, the psychologist concluded that Plan B was better than Plan C.

Don't Sit So Close to Me

A social psychologist wants to test the implications of a theory of personal space. He thinks that people will differ in their reaction to others who intrude in their personal space depending on the perceived status of the intruder. Specifically, he predicts that people who are viewed as having higher status in some way will be permitted to move closer than those who are not viewed as having higher status. Thus, the investigator arranges to conduct an experiment using undergraduate students as participants wherein he manipulates status by controlling the manner in which individuals are introduced to a participant. Confederates of the researcher (all male graduate student research assistants) are introduced as interviewers in one of three ways, as: "an undergraduate honors student working for me" (i.e., the faculty member); "an undergraduate student working for the psychology department"; or "a graduate student working for me." Prior to testing any participants, three different confederates were randomly assigned one of the roles to play and subsequently kept that role throughout the experiment.

For the experiment, participants volunteered to be interviewed for an extra credit opportunity. Participants were scheduled in groups of three and were randomly assigned to one of the three introduction conditions when they appeared for the interview. Each participant was taken to a different small room with two chairs, supposedly to be interviewed. The confederates were introduced by the psychologist to participants as they entered the interviewing room. After being introduced to each participant, the confederate-interviewer took his chair and placed it within 6 inches of the participant, conducted a simulated interview for 5 minutes, and then left. The confederate-interviewer actually measured how many participants moved their chairs away, even slightly, when he sat close to them.

After many participants were tested in this manner, the psychologist found that significantly fewer people adjusted their seating position when the interviewer was introduced as a graduate student than when the interviewer was introduced as an undergraduate. There was no difference in the number of moves made by participants in the two conditions in which the interviewers were introduced as undergraduates. The investigator concluded that his hypothesis was supported.

The Personality and Voting Study

Read this description of a study. Then,

1. *State what type of study is described. For example, is it a case study, a correlational study, an experimental study, or what?*
2. *What is (are) the independent variable(s) or predictor variable(s)?*
3. *What is (are) the dependent variable(s) or criterion variable(s)?*
4. *What do you suppose is (are) the hypothesis (hypotheses) of the study?*
5. *Is the study a well-designed one? If not, state why not, and how you would fix it.*

Many people wonder how others could possibly disagree with them about which candidate is the best one for a particular office (say, President of the USA). A political scientist took this a step further and wanted to know if there is a relationship between how people tend to vote and certain personality characteristics they may have. The investigator wrote a proposal to fund a study on this question and sent it to a private foundation that supports work on "Democracy and voting behavior." The foundation awarded him a grant to do the work, and so he offered $10.00 each to the first 100 people who volunteered to fully answer a set of questions posted on the Internet. To help ensure that the people who responded were old enough to vote, his offer was publicized on a popular Internet dating site. In order to carry out the study, the investigator built descriptions of two fictitious candidates running for president, giving one of them a stereotypical "liberal" set of positions on issues of the day and the other one stereotypical "conservative" positions on those issues. He asked each respondent to vote for one or the other of these candidates. In his sample, 55% voted for the "liberal" candidate and 45% voted for the "conservative" one.

He also asked each respondent to answer a set of standard questions designed to find out if he or she was (a) relatively extroverted (outgoing) vs. introverted (reserved), and (b) was relatively compassionate vs. callous, and (c) was relatively curious vs. cautious. Each of these three personality "dimensions" was measured by using a ten-point scale, where, for example, a score of 1 meant very compassionate and a score of 10 meant very callous. Therefore, each respondent got three scores, one for each of these three personality

dimensions.

Once he had these data the investigator looked to see if he could predict how a person voted by where he or she fell on each of the three personality dimensions. However, if someone did not complete the task, for example by not completing the personality assessment questions, that person was excluded from the study.
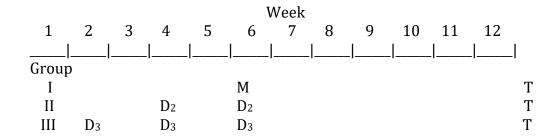
The English – French Connection Experiment

A French psychologist, M. Ory, is interested in the relationship between how one studies the material to be learned and one's memory for that material a month or more later (one's long-term memory). The options he considers for how the material is studied are either (1) all at one time (called the massed study technique, M), or (2) to break up the study periods (called the distributed study technique, D). He designs an experiment in which college students are presented 20 names of occupations (e.g., *lawyer*) and are asked to learn the associated French words (e.g., *l'avocat*). In each case the participants are given a final test (T) in week 12 of the investigation. It tests the material by giving the English words and asking for the French equivalent of each.

In the Massed study condition (M) of the experiment, all of the material (that is, all 20 items) are studied during one 90-minute session and tested for how well they have learned them at the end of that session. The professor decides to have two different distributed study conditions. In the D_2 condition he has students study the items in a 45-minute session and tests them on those items at the end of that session; and then two weeks later he has them re-study the items (also for 45 minutes), and tests them again. In the D_3 condition he has the students study the items (for 30 minutes) and tests them over those items in one session; and he does the same in a second session two weeks later (also for 30 minutes); and then again, two weeks after that, for another 30 minutes he has them study the items a third time and tests them. As noted above, the long-term memory for all three groups, M, D_2, and D_3 is tested (T) in Week 12 to see if their memories differ depending upon which group they were in.

Also, when the experiment was conducted Prof. M. Ory asked the participants about their preferred way to study. Though the terms "massed" and "distributed" were not used by him, each participant was asked if he or she preferred to study in what amounted to the massed (M) or the distributed (D_2 or D_3) way. They were then assigned to their preferred way to study (that is, to the experimental group that best fit their previous study habits) in order to make them most comfortable with the procedure.

Shown below are two different ways in which M. Ory might have designed the study described above.

DESIGN A

                                    Week
    1   2   3   4   5   6   7   8   9   10   11   12
___|___|___|___|___|___|___|___|___|___|___|___|
Group
    I   M   T
    II D_2 D_2 T
    III D_3 D_3 D_3 T

DESIGN B

                                    Week
    1   2   3   4   5   6   7   8   9   10   11   12
___|___|___|___|___|___|___|___|___|___|___|___|
Group
    I   M   T
    II D_2 D_2 T
    III D_3 D_3 D_3 T

Questions:

1. *What are the IV(s) and the DV(s) in these designs?*

2. *What is (are) the question(s) being asked? The hypotheses?*

3. *One of these designs has a serious confound. Which one, and what is that confound?*

4. *Both designs share another serious problem. What is it?*

Shared Book Reading between Children and Adults

Some investigators have found that young children in families with lower socio-economic status (SES) hear many fewer words than those in higher SES families (the "word gap"), and that this word gap may help account for part of the achievement gap in school (for example, in reading comprehension scores) between lower and higher SES children. The word gap was originally claimed to be about 30 million words by the time of kindergarten, but others have since reported smaller gaps (e.g., four million words).

An investigator wanted to see if the gap in language development could be modified if caregivers spent time in "shared reading" with their young children. The investigator recruited families with the help of local houses of worship that had both lower and higher SES families as members. He did this until there were 50 families in each SES category. An adult member of each family was paid $50/week for six months to be the person who would spend time in shared reading with a three-year-old child in the family. The books were provided to all families, as were instructions and training on ways to 'share' the reading time (e.g., frequently asking the child to name pictures, to guess what will happen next in the story, etc.). Half the children were assigned to the "low" shared reading group = two days / week they spent 20 minutes doing the shared reading activity; and half to the "high" shared reading group = 4 days / week they spent 40 minutes in shared reading. In order to ensure that the correct amount of time spent in shared reading was taking place, every session for every family was recorded via a cellphone link, and undergraduate research assistants spot-checked each session.

At the start of the study the average scores on a "Standard Language Development Test" (SLDT) were 6.1 (on a ten-point scale) for the children from the low SES group, and 7.4 for the children from the high SES group. At the end of the six-month experimental period the average scores on the SLDT were as follows:
- For children from the low SES background: 6.4 for the 20-minute group, and 6.8 for the 40-minute group.
- For children from the high SES background: 7.5 for the 20-minute group, and 7.7 for

the 40-minute group.

In general, the investigators were interested in the nature and size of the improvements in the SLDT scores by the various groups of children.

Please write out the following:

1. *A description of the design used in this research project.*

2. *The independent and dependent variables.*

3. *The likely hypotheses.   Please provide your best assessment of the specific hypotheses that the investigators were trying to test.*

4. *If you see any gaps in description of the study, please note them and state how you would fill in those gaps.*

5. *State whether the hypotheses were confirmed by the results of the study.*

6. *Construct a Table or a Figure that neatly shows the outcomes of the study.*

7. *How many possible main effects and interactions can the study evaluate as designed?*

8. *Do you see any issues with the external validity of this study? With the internal validity?*

Additional assignments and exercises

Note: Your instructor may give additional assignments, modified versions of the assignments included in this section, or a completely different set of assignments. **Do not assume** that the assignments in this section are the exact assignments your instructor will use; follow your instructor's in-class instructions and syllabus at all times.

List of included assignments:
1. In-class reading/critique exercise
2. Research proposal topic brainstorming (bring to the library training session, if your instructor is including one)
3. Mini-article review
4. Narrowing down your research proposal topic list
5. Full journal article review
6. Detailed proposal topic assignment
7. APA citation exercise
8. Literature review prompt
9. Literature peer review assignment
10. Method section prompt
11. Method section peer review assignment
12. Discussion section prompt
13. Abstract prompt
14. Abstract and Discussion section peer review assignment
15. Full research proposal peer review assignment
16. CITI research ethics and practice training instructions
17. Ethics roleplaying resource and vignettes
18. Replication vs. generalization I: Will it replicate?
19. Replication vs. generalization II: A real-world replication crisis?
20. SONA alternative credit assignment (for students wishing to earn extra credit but unable to participate in the SONA system)
21. The Elevator Pitch

1. In-class reading/critique exercise

Part I (10-15 minutes)

Purposes:

- To dip your toes in the water of the scientific literature
- To critically examine research in order to detect problems with study design that might lead to alternative explanations of the results

Your instructor will point you towards one of the (very) abbreviated study descriptions (see *Brief Study Summaries* above). You can apply these same instructions to any of the study descriptions in that section or other study summaries provided by your instructor. Your instructor may also ask you to answer the questions posed above the study summaries.

Instructions:

1. Form groups of 2-3 students.
2. Read assigned text (2-3 minutes)
3. Discuss each of the questions below with your group (3-5 minutes). One person should take notes for the group as it answers the questions.
4. Discuss your answers with the whole class (5-7 minutes). The instructor will facilitate the discussion.

Part I questions for the groups to answer:

1. Do you agree with the author's conclusion?
2. What other possible explanation(s) for the results can you come up with?
3. What kind of relationship could this study show—correlation or cause and effect?
4. *If you answered correlation*: What measures or variables were correlated with one another? *If you answered cause and effect*: What was the cause? What was the effect?

Note: It is suggested that students engage in two rounds of Part I focused on different abbreviated study descriptions before moving on to Part II. Students should form new

groups for each round of Part I, and should again form new groups for Part II.

Part II (15-20 minutes)

Purposes:
- To wade a bit deeper into the water of the scientific literature
- To identify important aspects of a research study

Your instructor will point you towards one of the longer study descriptions (see above).

Instructions:
1. Form groups of 2-3 students.
2. Read assigned text (3-5 minutes)
3. Discuss each of the questions from Part I with your group (3-5 minutes). One person should take notes for the group as it answers the questions.
4. In addition, discuss the questions below with your group (3-5 minutes). Again, one person should take notes.
5. Discuss your answers with the whole class (5-10 minutes). The instructor will facilitate the discussion.

Additional Part II questions for the groups to answer:
1. Identify the independent and dependent variables (or predictor and criterion variables) in this study. If relevant, list the levels of the independent variable.
2. Can you identify a specific confounding factor that threatens the internal validity of this experiment? Explain why it is a threat to the study's internal validity.
3. How can this study be improved to protect the internal validity of this experiment?

2. Research proposal topic brainstorming

Purposes:
- To begin to identify a topic for your semester-long research proposal
- To generate topics with which to practice searching the scientific literature

Instructions:
In the space below, write down 3-5 broad potential research topics. These should be topics that interest you enough to consider spending the semester researching and writing about them. At this point, the topics can be very broad, but they must be specific enough to generate a literature search. A topic can be described in a short phrase or a full sentence. **Be sure to bring this topic list to the library/literature search session if your instructor has scheduled one.**

Examples:
Too broad to be useful:
- Neuroscience
- How do children learn?
- Color perception

Too narrow for now:
- The role of dopamine d2 receptors in the hippocampus in the formation of spatial memories
- Do English monolingual and Vietnamese/English bilingual children differ in learning to discriminate musical pitch?
- Do differences in linguistic color category name boundaries across cultures predict psychophysical scaling of color differences across those cultures?

Just right:
- How do we remember and navigate through space?
- How do children learn pitch?
- What is the influence of language on color perception?

List your topics here:

1.

2.

3.

4.

5.

3. Mini-article review assignment

This assignment will provide you with some practice at identifying the important parts of a research article and discussing limitations of studies. Your instructor will indicate one of the article summaries in this lab manual, or an alternative text, for you to work from.

Instructions:

Complete the questions below. Please copy the questions listed below into a new document and answer each one in the context of the assigned article summary. You should be writing (very approximately) 1-5 lines of typed 10- or 12-point text in response to each item. The percentages after each questions reflect the value of each answer in computing your score on this assignment.

---

1. What was the purpose of the study? (5%)

2. What hypothesis/hypotheses were evaluated in the study? (10%)

3. Summarize the study methods in your own words. (10%)

4. What were the independent (or participant) variable(s)? (5%)

5. What were the levels of each of these independent (or participant) variables? (10%)

6. How was each independent (or participant) variable operationally defined? (10%)

7. What were the dependent variable(s)? (5%)

8. How was each dependent variable operationally defined? (10%)

9. Summarize the results. (10%)

10. What do the authors conclude? (5%)

11. What are some potential problems/limitations you found with this study? List and explain at least two. (10%)

12. Give a solution to one of the problems/limitations you named in Question 11. (10%)

4. Narrowing down your research proposal topic list

This exercise is intended to follow immediately after a lecture introducing the research proposal as the semester-long backbone project for the class.

Part I (10 minutes)

Your instructor's introduction to the research proposal paper and/or other class activities should have helped you narrow down your broad research topics. **Now, identify your top two**. (Feel free to add new ones to your list now, too.) Then, for each of these top 2, ask yourself—and write down the answers to—the following questions:

1. What is my research question (**not just topic**)?
2. What is the main IV/PV I want to investigate? How will I operationally define it?
3. What is the main DV/CV I want to investigate? How will I operationally define it?
4. What is my hypothesis?
5. What research method (e.g., experimental, survey, etc.) will I use?

After answering each of the above questions for your top two proposal topic ideas, **choose just one** to use going forward.

Part II (10 minutes)

Pair up with **one** other person with whom you have not already discussed research topics.

Person 1: Take 2-3 minutes to explain your **top one** research topic proposal idea to Person 2.

Person 2: Take 2-3 minutes to critique Person 1's idea. Be specific about your concerns, especially as they relate to the Part 1 questions!

Now, switch roles: Person 2 explains, Person 1 critiques.

5. Full journal article review

Overview

You will review a provided article. There may be multiple articles to choose among, depending on your instructor's preferences—just choose one for this assignment! The article review is an opportunity for you to show how well you can read and interpret an example of psychological literature.

You will need to submit **one Word document** on Blackboard, answering all the questions/outline items listed below. Your answers will, in most cases, be very specific, and can be found directly in the article you are assigned to review. **Do NOT copy directly from the article** (the only situation in which you cannot avoid this would—possibly—be the participants section). Explain everything as if you were telling an intelligent 8th grader about the study. Sometimes, you will have to do some critical thinking and make decisions.

Writing Your Article Review

Your Article Review is to be written in <u>outline format</u>. That is, use section headings and subheadings, exactly in the format demonstrated below. Include all of the information that each section describes. (The easiest way to do all that is to type directly into the Word version of this document, which your instructor can distribute to you.)

I. Reference [ungraded since we have not yet covered this – but try!]
Here, you are to write out exactly how the article would look in the <u>reference section</u> of another article, in complete APA style. See the example below:

Festinger, L., & Carlsmith, J. (1959). Cognitive consequences of forced compliance. *The Journal of Abnormal and Social Psychology*, *58*(2), 203-210.

II. Design

a. Type of Design [5%]

Here, you give a very short answer as to what type of design the researchers used. Examples include: correlational, experimental, naturalistic observation, case study, archival, survey, etc. More than one may apply, particularly if the article you are reviewing contains multiple experiments.

b. Explanation of Design [5%]

Describe *why* it is that type of design. For example, if it is an experimental design, describe the control conditions and how they randomly assigned participants to groups.

III. Variables

a. IV / DV or Predictor / Criterion [5%]

Did the study feature Independent (or Person/Participant) and Dependent Variables or did it feature Predictor and Criterion Variables?

Example:

The study featured predictor and criterion variables.

b. Variables [5%]

Here you will list each of the variables and tell me what they mean, in your own words, as if you were explaining the variable to an intelligent 8th grader. **Bear in mind that a study can have multiple variables in each of these categories!**

Example:

PV: Self Esteem: A self-evaluation of one's worth or value.

CV: Academic Performance: The degree of success a person achieves in an academic setting.

c. Operational Definitions for the IV (or non-manipulated person variable)/PV [5%]

List the same variable(s) as in part (b), but now explain how it/they were

manipulated or measured, in concrete terms.

Examples:

IV: Memory load: Manipulated by asking participants to remember 1, 2, 3, or 4 colors on a trial of the memory task.

PV: Self Esteem: Measured by the Rosenberg Self-Esteem Scale

d. Operational Definitions for the DV/CV [5%]

List the same variable(s) as in part (b), but now explain how it/they were measured, in concrete terms.

Example:

CV: Academic Performance: Measured by GPA

IV. Hypotheses [10%]

State the hypothesis or hypotheses.

V. Participants [5%]

List all of the information given about the participants (number, age, sex, etc.) in each part of the paper.

VI. Procedure [15%]

Briefly describe the procedures used in the study. Do not copy the procedure section! Explain what they did in your own words. Be very detailed. **Pretend that you are writing a cookbook recipe for a very complicated dish, for a reader who has no idea how to boil water!**

VII. Measures [5%]

Provide a name and description for each of the measures/questionnaires used in the study. Examples:

- Rosenberg Self-Esteem Scale-10 item measure of global self-esteem; 4 point Likert scale; anchors at 1=strongly disagree and 4=strongly agree; reliability of .85

- GPA-total number of grade points obtained divided by total number of grade points attempted

VIII. Results [15%]

Give a basic description of the results: what were the results main findings in each study/analysis within the article?

IX. Future Directions:

a. **Future research directions - identified by the researchers [5%]**

b. **Future research directions - your own ideas [5%]**

X. Limitations

a. **What are some of the limitations of the study identified by the researcher(s)? What could the researchers have done that would have made the study better? [5%]**

b. **What limitations other than those mentioned by the authors did you find with the study? [5%]**

6. Detailed proposal topic assignment

For this assignment, think about what psychology topic you are interested in and would like to investigate for your Literature Review and eventual Research Proposal Paper. Your choice of topic should be guided by the brainstorming exercises in class. This assignment will help you take that topic from an idea to a study design that your Literature Review can build to and your Research Proposal Paper can explain in full.

This is the first time your instructor will review your proposal topic. Whatever topic you choose, you should stick with it for the rest of the semester unless your instructor suggests a change, or you seek and receive his/her approval to switch topics.

---

1. What specific topic would you like to research for your research proposal paper? **10%**

2. What is your even **more specific** research question? **10%**

3. List a complete set of working hypotheses that exhaustively cover all possible outcomes. For instance, if you were researching whether reading or taking practice tests is a more effective study strategy, you might have three hypotheses:

    H0 (null hypothesis): reading and practice tests will lead to equivalent test scores

    H1: reading will improve test scores more than practice tests

    H2: practice tests will improve test scores more than reading

    Notice how these three example hypotheses cover all possible outcomes of your

research study—this is the **method of multiple working hypotheses**[3], which helps to combat confirmation bias.

Note that if you have more than one independent variable, you may need to list all the combinations of all the possible outcome for each variable—so two IVs will lead to up to nine hypotheses, three IVs would lead to up to 27, etc. (In practice, some combinations of possibilities make little sense, or several hypotheses can be described together in a factorial design, so that the number of possible hypotheses to discuss does not explode quite so quickly.) The rapid increase in hypothesis complexity as you manipulate multiple variables is a good reason to keep your research proposal simple, or to explain your hypotheses in terms of main effects and interactions if you design a more complex study.

Note that this question may be easier to answer fully after you consider questions 4 and 5, below.

Given all this, what hypothesis or hypotheses will you investigate? **20%**

4. What will be your independent (or predictor) variable(s)? How will you operationalize it/them? **10%**

5. What will be your dependent (or criterion) variable(s)? How will you operationalize it/them? **10%**

---

[3] The method of multiple working hypotheses was devised by Chamberlin and initially published in 1890. Even though it is 130 years old, it is well worth reading for any scientist in any experimental field. A somewhat more modern take on the idea was published by Platt in 1964, and is extremely snarky. The references for these papers are:

Chamberlin, T. C. (1890/1965). The method of multiple working hypotheses. *Science, 148*, 754-759.

Platt, J. R. (1964). Strong inference. *Science, 146*, 347-353.

6. How would the results of this study contribute to society? In other words, why would this study be important? **10%**

7. What do you already know about this topic? **10%**

8. To start investigating this topic, what are some keywords that you would use to search PsycINFO or another database? **5%**

9. List at least 3 peer-reviewed empirical primary scientific articles that provide relevant background information for your study. In other words, **these should be peer-reviewed empirical journal articles in which the authors of the article actually conducted the reported research**. Quantitative meta-analyses are also acceptable. While review papers will also be very helpful to you, they are not acceptable for the purpose of this question.

    You should have read at least the abstract of each of these articles before handing in this assignment and listing them here.

    Give the APA-style citation for these articles, or your best effort at APA style given what has been taught in class so far. **At minimum,** you must list each author (last name, first initials); year of publication; article title; journal name; journal volume; journal pages. **15%**

7. APA citation exercise

Give both the in-text citation and the reference for each of the following resources. You should give the citation for a direct quote without integrating it into your writing.

1. Author(s): John Smith
    Year: 2016
    Title of article: A Study of College Students,
    Page number: article pgs. 20-30; quote pg. 24
    Journal: College Learning Review, volume: 4, issue 2

In-Text: "... out of every ten students feels nervous about exams" _____.

Reference: _____

_____

_____

2. Author(s): Robert Tran and Jamie Pan
    Year: 2001
    Title: Symptoms of Adult-Onset Cardiac Disease,
    Journal: Medical Practices, volume: 10
    Page number: article pgs. 80-85; quote on pg. 83

In-Text: "...showed few symptoms after two weeks of treatment" _____.

Reference: _____

_____

_____

3. Author(s): Karen Marisol

    Year: 2008

    Title: Statistics for Social Sciences

    City of Publication: San Francisco, California

    Publisher: Mountain Publishing

    Page number: quote pg. 214

In-Text: "...to show the eigen values" _____.

Reference: _____

_____

_____

4. Author(s): Jean Blue and Bill Tidings

    Year: 2001

    Title: Love and Respect: A View of Marriage

    City of Publication: Houston, Texas

    Publisher: Ivy Publishing, Inc.

    Page number: quote pg. 113-114

In-Text: "...habits leading to cohabitation" _____.

Reference: _____

_____

_____

(exercise continues on next page)

5. Author(s): Hannah P. Hao

   Date of Publication: July 21, 2012

   Date of Access: April 1, 2014

   Title of webpage: Records of Insurance Coverage of Elderly

   Sponsoring Organization: Organization for Insurance Development

   URL: http://www.insurancedev.org/data/insurance/elderly-coverage/245

In-Text: "…no coverage available" _____.

Reference: _____

_____

_____

6. Author(s): No specific author

   Date of Publication: March 3, 2001

   Date of Access: June 01, 2019

   Title: Coordinating Investment strategies for young adults

   Main Page Title: Investment Strategies

   Sponsoring Organization: Opportunities in America

   URL: http://www.oppsinamerica.org/strategies/investment/01/usa

In-Text: "…by building on previous investments" _____.

Reference: _____

_____

_____

8. Literature review prompt

Your assignment is to turn in a complete, polished draft by the due date specified by your instructor. If your instructor decides to conduct a peer-review exercise based on the literature review, you will also need to bring a printed copy to class on the day of the peer review exercise.

General Instructions

This is a paper, not just an assignment.
- You will be held accountable for writing clarity, spelling, grammar, word usage, etc.
- Use complete sentences
- Use proper punctuation
- Make sure to choose your words carefully—this is not a conversation, and you have time to revise, so be sure to use words that mean what you think they mean!
- Write concisely! You can say the same thing in two lines or two pages—be sure to choose the former approach!

Your paper will follow a standard format.
- Start with a Title page
- After the Title page, you will need about 3 pages of content (unless your instructor says otherwise). Your instructor may set a maximum page length for the content.
- End with a References section.
- Use APA Style throughout.

You will review empirical literature relevant to your research topic.
- Your literature review must summarize, relate to one another, and relate to your topic a minimum number of peer-reviewed, empirical primary sources published in scholarly journals. This means that each of these papers must be original research conducted by the authors of the paper.
- You may cite additional papers that do not meet these criteria (reviews,

theory/opinion pieces, clinical practice recommendations, etc.), but they do not count towards the required number of sources.

- Consult your instructor for the required number of sources for your literature review. Typical numbers are 4-6 for these student papers, while published research articles often review as many as 20-30.

Suggested project outline:

1. APA-style Title page
2. General introduction to your topic (~1/2 page)
   a. What is the general topic?
   b. Why is this topic interesting or important?
   c. Transition to how it has been/is studied in the past
3. Literature review proper: Review the studies. There are two ways to approach this:
   a. First option – **use if the papers you are reviewing can be organized by topic**. For instance, if you are researching selective visual attention during auditory distraction in children, you might not be able to find individual studies dealing with all three aspects of your project. Thus, you might review some papers on selective visual attention in children, and some other papers on selective visual attention during auditory distraction (in adults). In this case, you might organize your literature review around these two topics. The length of each topic subsection will probably be about ½ page per study you review in it.
      i. Use a heading to indicate the more specific topic you are reviewing first
      ii. Discuss what is known about this topic. For each relevant fact, cite at least one source using a proper APA in-text citation.
      iii. After you explain the current knowledge, investigate how confident we can be in it. This can take the form of identifying problems or limitations in single studies, or it can entail identifying differences between studies in how they operationalize a key variable.
      iv. As you discuss each study, also note its approach (for example, was it experimental or correlational? Was it longitudinal or cross-sectional?)

     v. If you are critiquing the study's methods, explain them sufficiently so that a reader will be able to understand the problem—do not assume that your reader has read the studies you are reviewing.

     vi. You also need to relate each fact you discuss to your own topic. Explain why someone who is reading your paper to learn about your topic should care about what these previous studies found! More specifically, how do these reviewed facts support or conflict with **your** hypothesis?

     vii. Use a new heading for each new topic, and repeat the above within that subsection.

b. Second option – **use if the papers you are reviewing all deal with a single topic.** Use at least one paragraph (about 1/2 page) per study. Each paragraph should have roughly the following structure:

     i. Identify the study using a proper citation. Work this in naturally (like you see in the papers you are reporting on)—**do not** ever write something like "The first study is by Smith and Jones (2018)."

     ii. Why did the authors do this study?

     iii. What approach did the authors use? (For example, was it experimental or correlational? Was it longitudinal or cross-sectional?) Give additional detail on their method, <u>if relevant </u>to understanding their conclusions and limitations.

     iv. What were the authors expecting to find and why?

     v. What did the authors actually find?

     vi. What is important about these findings in the context of your study? In other words, how is it related to your topic?

     vii. How is this study related to the other studies you are reviewing?

     viii. What are the limitations of this study, particularly as they relate to its ability to support or reject **your** hypotheses?

     ix. Transition to next study

4. Integration: Tying it all together - Here, you need to consider all the studies you reviewed. (~1/2 page)

a. At the end of the day, what do we already know? What do we still not know?

b. Collectively, what are the gaps/inconsistencies in this body of research based on this literature review?

c. Why are these inconsistencies important?

d. How will your study fill these gaps?

e. Indicate briefly your major idea or hypothesis

5. APA-style references section

This assignment is (most of) the introduction to the research paper you will develop over the course of this semester. For further guidance on the Introduction section, consult the *Summary and Guide to APA Style* earlier in this lab manual.

9. Literature review peer review assignment

Purposes:
- Help your peers out/get help from your peers to improve the literature review papers—before they are graded!
- By learning to constructively and specifically critique the work of others, you will become better at editing your own work.

Part I (20-25 minutes)
- Get in groups of two. Make sure that your partner is not someone who you've previously worked with in this class.
- Exchange papers. Take 10-15minutes to closely read your partner's paper. Let your partner read your complete paper before discussing.
- Students are encouraged to mark up the papers they are reading as they go.
- After both students are done reading, it's time for critique. Each student should spend about 5 minutes critiquing the paper he or she just read.
    - Let one person give complete feedback before moving on to the other person.
    - Start by finding at least one nice thing to say about the paper you just read.
    - Make sure to also criticize—but do so constructively. Constructive criticism means helping to identify solutions, not just problems.
    - As your partner critiques you, take notes on his/her feedback!
- The instructor should circulate throughout this exercise and answer questions as they arise. Common questions and their answers should be announced to the class.

Part II (10-15 minutes)
- Get in a **new** group of two, again with someone you have not worked with before.
- Take 5-7 minutes to **skim** your partner's paper. Look for the big ideas, and try to identify important information that is missing. This time, ignore minor issues (e.g., style) and be sure to focus on content.
- When both students are done reading, critique one another for 3-5 minutes each.
    - Again, start with something positive.
    - Then, criticize big-picture organization, ideas, or content—not minor grammar or style issues.
    - Again, take notes!
- The instructor will continue to circulate and answer questions.

10. Method section prompt

These prompts are complementary to the lecture material on the Method section; make sure to review your instructor's teaching before writing this section.

You will write a complete Method section in **enough detail that someone else could exactly replicate your study knowing only what is in your Method section**. Method sections vary greatly in length depending on the complexity of the study design and the kind of study being described. Often, even if a scholarly journal limits the length of manuscripts they will consider for publication, the Method and Results sections will be allowed unlimited length because they are the key record of the research.

Your Method section should include several sub-sections, as described elsewhere in this lab manual: Participants, Design, Procedure, and Materials. Be sure to properly cite any procedures you derived from previous studies or materials you report using (e.g., test instruments). Also be sure to describe procedures for obtaining and documenting informed consent for participation from your research participants, and state that your study protocol was approved by the IRB.

If you approach requires any special analytic procedures (e.g., data preprocessing for a neuroimaging or electrophysiological study), be sure to describe those procedures in detail. If your study requires statistical approaches more complicated than correlations or t-tests, you should describe the statistical approaches you (would have) used. For instance, if you performed a study examining the effects of region and season of birth on fluid intelligence as measured by the Raven's Progressive Matrices (RPM) test, you might say:

> RPM (Raven, 1981) scores were entered into a two-way ANOVA with the factors birth region (levels: New England, Mid-Atlantic, Southeast, Southwest, Mid-west, Plains, West, Pacific Northwest) and birth season (Winter, Spring, Summer, Fall). Main effects and interactions were assessed using the SPSS software package (IBM Corp., Armonk, New York).

As you write your Method section, compare the Procedure and Materials against your hypotheses. Do you have everything you need to answer your research question? Are you collecting data that is not relevant to your research question? There should be a purpose to everything you do in your study.

Most importantly, be specific at all times. You are writing a Method section as if you have already conducted your study, so numbers of participants and other details should be concrete, not approximate.

11. Method section peer review assignment

Purposes:

- Help your peers out/get help from your peers to improve the Method sections.
- By learning to constructively and specifically critique the work of others, you will become better at editing your own work.

Instructions (about 45 minutes)

- Get in groups of three.
- Group with people you don't typically work with.
- Take 5 minutes to read Person 1's Method section (yes, you'll need to share the papers—or, bring two copies; or, share your papers electronically).
- Person 2 and Person 3: each take 5 minutes to discuss and critique Person 1's paper.
  - Start by finding at least one positive thing to praise about it.
  - Then give specific and constructive criticism: suggest solutions, not just problems.
- Switch roles and repeat, until each student's paper has been critiqued.
- Take notes on the feedback you get!
- The instructor will circulate and be available for questions.

12. Discussion section prompt

Write a brief Discussion section (your instructor will give more detail, but likely at least 2-3 pages). Your Discussion should obey the guidelines described earlier in this lab manual, with the major exception that you don't have results, so you cannot definitively interpret your results! Instead, you should explain your predicted results and interpret them, and then explain alternative results and interpret those. In each case, relate the results to the previous literature. As you do this, you will cite additional peer-reviewed scholarly publications that you did not already discuss in your Introduction (your instructor will tell you if there is a required minimum number). This is also an excellent place to cite and discuss previous theoretical review articles and explain how your (expected) results would be consistent with or reject existing theories.

A brief set of requirements for the Discussion includes:
1. Presents possible results and what each possible result means for the hypotheses from the Introduction. May give equal weight to all possible results, or primarily discuss expected result, but must have at least some significant discussion of unexpected possible outcomes. The ratio could be 50/50, 60/40, maybe even 70/30— NOT 99/1.
2. Relates each set of possible results to other, published literature.
3. Discusses practical/theoretical implications.
4. Discusses limitations.
5. Discusses future directions.

13. Abstract prompt

Write an abstract that describes your research project. This should be the last part of the paper that you write, even though it is the first section most people will read. Follow the style and content guide earlier in this lab manual. Because you will not have results, you should explain your predicted results and how you would interpret them. Then, go on to explain alternative possible results and how you would interpret them.

A brief set of requirements for the Abstract includes:
1. Topic/significance/question
2. Participants
3. Hypotheses
4. Method
5. Conclusion/implications

14. Abstract and Discussion section peer review assignment

Purposes:
- Help your peers out/get help from your peers to improve the remaining sections of your paper.
- By learning to constructively and specifically critique the work of others, you will become better at editing your own work.

Part I - Abstract (about 15 minutes)
- Get in groups of three.
- Group with people you don't typically work with**.**
- Take 2 minutes to read Person 1's Abstract (yes, you'll need to share the papers—or, bring two copies; or, share your papers electronically).
- Person 2 and Person 3: each take 1 minute to discuss and critique Person 1's paper.
  - o Start by finding at least one positive thing to praise about it.
  - o Then give specific and constructive criticism: suggest solutions, not just problems.
- Switch roles and repeat, until each student's paper has been critiqued.
- Take notes on the feedback you get!
- The instructor will circulate and be available for questions.

Part II – Discussion (about 25-30 minutes)
- Get in groups of two.
- Group with people you don't typically work with**.**
- Take 10 minutes to read each other's Discussion sections.
- Each person should take about 5-10 minutes to critique the other student's Discussion.
  - o Start by finding at least one positive thing to praise about it.
  - o Then give specific and constructive criticism: suggest solutions, not just problems.
- Switch roles and repeat, until each student's paper has been critiqued.
- Take notes on the feedback you get!
- The instructor will circulate and be available for questions.

15. Full research proposal peer review assignment

Previous peer review assignments focused on a single section of the Research Proposal paper. Here, you will instead read and critique another student's entire paper, *as a whole*. You should focus on the big picture:

- Does the Method actually provide a way to test the predictions made in the Introduction?
- Has the literature review been expanded into a full Introduction by adding content at the end to briefly explain hypotheses, methodological approach, and operational definitions?
- Does the Discussion explain both the interpretations that would stem from the predicted results, and the alternative interpretations that would stem from obtaining different, non-predicted results?
- Does the paper read as a single document with a consistent writing style and consistent use of terminology throughout?
- Is the title appropriate to the content of the paper?
- Does the abstract adequately summarize the key points of the rest of the paper?
- Does the overall structure of the paper obey APA Style?

Trade papers with one person whose work you have not peer reviewed before. Read that person's paper completely. Feel free to mark up their paper. When you are done reading, thoroughly critique it. Start with the big-picture items listed above, and only turn to smaller issues if there is extra time after you each have critiqued the other's paper.

The instructor will circulate and answer questions.

The instructor may opt to circulate a rough rubric for the Research Proposal paper to assist you in critiquing each other's papers and to assist you in editing your own paper. One such rubric is abbreviated here, but your instructor may have different expectations. **A thorough description of what needs to be included in each section of your paper appears in the**

beginning of this manual, in *Summary and Guide to APA style.* Notes on additional requirements for this particular assignment are included as needed.

1. **Title page – 5%**
2. **Abstract – 5%**
3. **Introduction – 15%**
4. **Method – 15%**
5. **Discussion – 15%**

    > Note: For this assignment, you must present possible results and what each possible result means for the hypotheses from the introduction. You may give equal weight to all possible results, or primarily discuss expected result, but you must have at least some significant discussion of unexpected possible outcomes. Acceptable ratios are 50/50, 60/40, or maybe even 70/30—not 99/1.

6. **References – 5%**
7. **APA Style within Abstract and Main Body– 10%**
8. **Writing Clarity and Quality – 10%**
    a. Proper grammatical sentences
    b. Appropriate word choice
    c. Concise/does not repeat to fill space
    d. Does not make logical leaps but actually spells things out for the reader
    e. Is it clear, or am I guessing what you are trying to say?
9. **Contains required number of peer-reviewed empirical primary sources – 20%**
    a. Appropriately distributed – for instance, if requirement is to cite 8, it should cite at least four in the Introduction, three in the Discussion, and one more in any location in the paper.
    b. Actually uses cited works in some meaningful way.
10. **In addition to all of the above, the instructor will take off points from the relevant section(s) for any of:**

a. **Failure to properly attribute** paraphrase or quotations (note that if this verges from formatting error into plagiarism, the academic honesty process will be used)
b. **Failure to cite factual assertions** that are not widely-accepted, every day knowledge. For instance, "Depression is increasingly common among current college students, compared to prior college cohorts," would require a citation to back it up, while "The sun rises in the east and sets in the west," would not require a citation.
c. Citing of sources that your writing makes clear **you did not actually read**
d. **Over-use of direct quotations** where paraphrase is feasible

16. CITI research ethics and practice training instructions

Your instructor may ask you to complete an online training in research ethics through the CITI system. Any student working with human research participants in a research lab will also need to complete this training—so if you have already completed this training, your instructor will likely not require you to repeat it.

To complete the training:
- Go to https://www.citiprogram.org/
- Click "register" and follow prompts to select UH and continue. Register in the "Student Researcher- Undergraduate" role.
- Once registered, sign up for your course. When prompted, answer the course selection questions as follows:
    o Q1: COI course - choose No.
    o Q2: Human subjects research - choose Group 2: Social-Behavioral-Educational Researchers
    o Q3: Good clinical practice - choose Not at this time.
    o Q4: Responsible conduct of research - choose Social and Behavioral Responsible Conduct of Research Course
    o Q5: Laboratory animal welfare- choose I am not engaged in teaching or research activities involving animals in any capacity.
    o Q6: Laboratory animal welfare - do not check any options.
    o Q7: Aseptic surgery - choose No.
    o Q8: Export controls - choose No.
- Take the course
- Print your completion certificate to PDF and hand in.

17. Ethics roleplaying resource and vignettes

Your instructor may wish for you to participate in a research ethics role-playing exercise, or you may wish to run through one or more exercises in a small group setting. Suitable exercises are available from the National Science Foundation funded Online Ethics Center for Engineering and Science at https://www.onlineethics.org/Resources/RCRroleplays.aspx.

Additional sample exercises for individual consideration or group discussion follow.

I. Red Tape

It's March 3 and you are the newest undergraduate research assistant in the laboratory of Dr. Ulysses P. Tyght. You've been trying to get research experience so that you can get that all-important letter of recommendation for when you apply to graduate school next year, and Dr. Tyght's graduate student, Dez P. Rate, finally invited you to assist with her final push at data collection for her doctoral dissertation! Dez is on a really tight timeline too, and needs her data right away. She gets you set up to recruit research participants on SONA and teaches you the protocol to run them in her study of visual perception. She is hoping to collect all the data she needs next week, March 10 – 16, so she can analyze them and finalize her research in time to graduate in the spring. Without having these new data by the 16th, Dez won't be able to graduate in time to begin the prestigious postdoctoral fellowship she has lined up. She needs you to wait until next week to run participants, though, because the IRB has not yet approved this new version of her study which uses color images instead of the black and white images from the previous versions of her study. But wait, isn't March 10 the start of spring break? What will you do? And, more importantly, why?

II. Getting Personal

You are a clinical psychology graduate student treating patients under the supervision of a licensed psychologist as part of your training. Your patient, Bob, has agreed to let you video record his treatment sessions for the purpose of your education. At Bob's most recent appointment, you suddenly realized that acute attacks of the mental health disorder for which he is being treated always happen about five minutes after a subtle change in his facial expression. You're very excited because no one has linked attacks of this disorder to changes in facial expression before. This link could make thousands of people's lives better by allowing prophylactic treatment before attacks of the disorder even begin. You are about to

give a talk on the disorder at a conference next week... and if you could show such strong evidence as a video recording of Bob's face before his attack, this could really make your professional reputation, too! Is there a way you can ethically show this video? If so, how? If not, why not?

III. Detecting an Anomaly

You are famous behavioral neuroscientist Marcus Holmes. You made your career by showing that monkeys are able to think through problems much like humans can. In your latest study, you showed six monkeys a video of another monkey taking a treat from a baby monkey. Then, you brought the same baby monkey from the video into the room, and gave the adult monkey subject two treats. You hypothesized that the adult monkeys would show empathy and share the treats with the baby, and you were right—for three out of the six monkeys. However, the other three adult monkeys kept all the treats for themselves. After thinking about it, you came up with a different reason why each of the three monkeys who did not share did something other than what you expected—one of those monkeys is old and must be too senile, one of those monkeys is young and must not have developed empathy yet, and one of those monkeys is just a mean primate who never was nice to any other monkey ever. All three of these selfish monkeys were obviously exceptions that proved the rule. You decide to write up your new study for submission to a journal. When you write it up, you only report the behavior of the three monkeys who shared. What is wrong with what you did? What could you have done instead?

IV. Secret Spy

You are conducting a social psychology experiment to see if people use more curse words when speaking with friends or family. To conduct this research, you use a sound-activated recording device that your participants wear all day long, every day, for a month. Your research participants are aware that you are recording sound and have given permission. Unbeknownst to your participants, your recorders also have a GPS tracker in them and you are able to trace their movements all month long. Of course, you would never tell anyone where your participants went, but it is a technological challenge to disable these GPS recordings, which are saved as part of the audio recordings, and you don't have the funds to buy new recorders without the GPS tracking. What is your best course of action? Why?

18. Replication vs. generalization I: Will it replicate?

For each pair of potential study designs below, rank your confidence that one can generalize the results of the original study to the new study. That is, pick the one that you think will more likely replicate the results of the original study. Why did you assign your ranks as you did?

Original study: Middle-class residents of New York City are asked to fill out a set of items that measure their attitudes toward Americans of African descent.

A. New study: Middle-class residents of Rome, Italy are asked to fill out a set of items that measure their attitudes toward Italians of African descent.

B. New study: Wealthy residents of New York City are asked to fill out a set of items that measure their attitudes toward Americans of African descent.

Original study: Students at the University of Houston in a statistics class of 50 are asked to estimate their degree of anxiety on a scale of 1 to 10 if called upon by the professor to work a problem at the front of the class.

C. New study: Parents of University of Houston students are asked to estimate their degree of anxiety on a scale of 1 to 10 if called upon by a professor to work a statistics problem at the front of the class.

D. New study: Students at Beijing University in China in a statistics class of 50 are asked to estimate their degree of anxiety on a scale of 1 to 10 if called upon by the professor to work a problem at the front of the class.

Original study: Students who commute to UH were asked which they would pick if asked to choose between a lower priced apartment that is an hour's drive from school and a higher priced one that is a 20 minute drive from school.

E. New study: Students from Houston, TX who have been accepted to UH but have not yet attended were asked which they would pick if asked to choose between a lower priced apartment that is an hour's drive from school and a higher priced one that is a 20 minute drive from school.

F. New study: Students from Waco, TX who have been accepted to UH but have not yet

attended were asked which they would pick if asked to choose between a lower priced apartment that is an hour's drive from school and a higher priced one that is a 20 minute drive from school.

Original study: Middle-aged American men who were online on their computers were observed by companies such as Facebook to select online ads that featured lots of bright colors at the red end of the spectrum and graphics that took up more than 50% of the page.

   G. New Study: Same study but with middle-aged Canadian women.

   H. New Study: Same study but with teen-age Australians.

Original study: Students at UH are participants in a research project which found that dividing one's studying of a topic into numerous but relatively short episodes is more effective than studying the same total amount of time in just two episodes.

   I. New study: Students at the Free University of Berlin (in Germany) participate in a highly similar study.

   J. New study: Students at Beijing University (in China) participate in a highly similar study.

Original study: A group of high school honors students were given a chance to anonymously respond to an online survey. The survey asked them whether they had used an illegal substance in the past month.

   K. New study: A group of high school honors students were given a chance to respond to an unsigned survey handed out in their calculus class. The survey asked them whether they had used an illegal substance in the past month. They turned the survey in at the end of class.

   L. New study: A group of construction workers building a new high school were given a chance to respond to an unsigned survey handed out on the job site and turned in at the end of their shift. The survey asked them whether they had used an illegal substance in the past month.

19. Replication vs. generalization II: A real-world replication crisis?

Purpose:

To consider whether Psychology is suffering from a crisis of replication, or a crisis of generalization

Instructions:

1. Read the following two papers. Both are available for free at the supplied URLs so long as you log in via the UH library system.

> Open Science Collaboration. (2015). Estimating the reproducibility of psychological
> > science. *Science, 349*(6251), aac4716. doi:10.1126/science.aac4716
> > https://science.sciencemag.org/content/349/6251/aac4716/tab-pdf
> Gilbert, D. T., King, G., Pettigrew, S., & Wilson, T. D. (2016). Comment on "Estimating
> > the reproducibility of psychological science". *Science, 351*(6277), 1037.
> > doi:10.1126/science.aad7243
> > https://science.sciencemag.org/content/351/6277/1037.2/tab-pdf

2. Decide what you think—which publication is correct? Write a 1-2 page (double spaced) essay stating your view and defending it.

3. Bring your essay to class.

4. In class, read this paper:

> Anderson, C. J., Bahnik, S., Barnett-Cowan, M., Bosco, F. A., Chandler, J., Chartier, C. R., . .
> > . Zuni, K. (2016). Response to Comment on "Estimating the reproducibility of
> > psychological science". *Science, 351*(6277), 1037.
> > doi:10.1126/science.aad9163
> > https://science.sciencemag.org/content/351/6277/1037.3/tab-pdf

5. In groups of two, trade response papers. Read one another's papers.

6. Discuss whether your position has changed or not after reading your peer's view and Anderson et al. (2016). Explain to your partner why you stand by or have changed your position.

7. The instructor will facilitate a discussion with the whole class on whether there is a replication crisis or not, and whether there is a generalization crisis or not, in Psychology.

20. SONA alternative credit assignment (for students wishing to earn extra credit but unable to participate in the SONA system)

Some students cannot earn credit through the SONA system, either because they have been banned from the system (e.g., for repeated missed appointments) or because they are ineligible for most studies (e.g., they are under the age of 18). If you fall into one of these categories, you can ask your instructor about an alternative to participating in research through SONA. Alternative assignments are at the discretion of your instructor, but some suggested assignments are below.

1. Attend and critique a research colloquium
The Psychology department has occasional research colloquia from outside speakers, and several areas of the department have regular talks from graduate students, postdoctoral fellows, and faculty. Attend one of these hour-long research talks. Write a 3-5 page response paper summarizing and critiquing the presented research.
Suggested value: up to 5 SONA credits, depending on paper quality.

2. Critique an instance of pseudoscience in the media
Popular-audience podcasts, television shows, and blogs all engage with science—sometimes very well, and sometimes very poorly. Find an instance in which one of these either gets the science very, very wrong, or gives credence to pseudoscience. Write a 3-5 page response paper summarizing and critiquing the presented information, explaining the mistakes of the media presentation, how it fell prey to these mistakes, and suggesting how such mistakes can be overcome in the future.
Suggested value: up to 5 SONA credits, depending on paper quality.

21. The Elevator Pitch

Objectives

Create and deliver your own elevator pitch about your research proposal. The pitch is a short, succinct statement that neatly sums up your research proposal and why it matters.

Instructions

To complete this assignment, you will create and deliver a 1-2 minute elevator pitch, and video-record your performance. You can start with writing out some notes for yourself, then practice a few times. **Record the final version using your laptop or phone.**

This assignment is meant to be fun and to reveal your creativity. So, feel free to let your personality shine through.

What's an Elevator Pitch?

An Elevator Pitch is a quick synopsis of your background and experience. In our context, it will summarize your research proposal. The name comes from the idea that it should be short enough to present during a brief elevator ride. Usually, elevator pitches range from 30 seconds to about 2 minutes.

Everyone should have an elevator pitch ready because you never know when an opportunity will present itself. When it happens, it's always best to be as prepared as possible, because it could change the course of your career and your life.

How to Write the Pitch:

1. The **Hook**: A good opener is important to capture the attention of the listener, so they keep listening for the next minute. So, make sure that you have a good opener that includes information about **the problem** that you have addressed in your research proposal.
2. Your **Solution**: Now that you've introduced the problem, it is time to explain how your research solves it. This is the essence of your research.

3. The **importance**: This is the part that puts your research in a larger context and connects it to a real-world application. You try to answer questions such as, "Why is it necessary that you do this research?" Or, "Why should we care?", or "Why does it matter?" If possible, tie your research to a public concern (public health, education, mental health, etc.) or self-interest (being healthier, better memory, making money, etc.).

Last words

Use plain language; keep it simple and short; and practice, practice, practice.

Section Three: Further Resources for the Research Proposal Assignment

Writing a Research Proposal for this Class

Steps in Writing a Research Proposal

Using Library Resources for your Research Proposal

Sections of the Research Proposal

Writing a Research Proposal for this Class

Your research proposal will be the capstone project of this class. You are expected to use all that you have learned this semester and turn in a quality product.

- You will **not** be collecting data (you are just proposing a research study).
- You **will** need to include a Discussion section that discusses the conclusions/ implications if your hypothesis is supported <u>and</u> the conclusions/implications if your hypothesis is not supported by your proposed research (i.e., what would it mean if your hypothesis was supported? If it wasn't supported?). (Note: You are expecting to find support for your hypothesis, so discuss the conclusions and implications for supporting your hypothesis first).
- You will **not** make up results of data collection efforts or data analysis for your study in order to write you Method or Discussion sections. You will simply discuss what it means if your hypothesis(es) is supported and what it means if it is not supported.
- You will need to include enough references in your proposal to support your arguments and predictions. They need to be peer-reviewed articles/periodicals or books. Your instructor may set more strict requirements (e.g., must cite at least eight empirical journal articles in addition to any reviews or book chapters; must cite at least four such papers in the introduction and at least three in the discussion).

Emphasis will be placed on your Introduction and Method sections, as they will compose the bulk of your proposal. In addition, you will be expected to provide clear and sound arguments for your ideas.

As you write, you should consider the thorough guide to APA style writing at the beginning of this lab manual (see *Summary and Guide to APA Style*). Rather than giving redundant to-do lists, this manual relies on that section to explain your research proposal assignment except that, as detailed earlier on this page, you should not make up and results or include a results section. As a consequence, your discussion will focus on possible outcomes and their interpretation.

Other Important Information

- When selecting a topic area, be sure and choose something that interests you (you will be putting a lot of time into it). Most importantly, KEEP IT SIMPLE!

- Your paper may be written mostly in the future tense. For example,

  The problem to be investigated is....

  Expected results are....

  Participants will be....

  The materials to be used will include....

- Alternatively, you may opt to use past tense (as if you had actually done the research). Whichever you choose, be consistent!

Steps in Writing a Research Proposal

1. DO NOT WAIT UNTIL THE LAST MINUTE TO BEGIN YOUR PROPOSAL.

2. Carefully review the preceding sections of this manual. These sections contain important information about finding a topic and conducting library research.

3. Identify a topic area for your proposal.

4. Find articles in the library related to your topic, read the abstracts of these articles, and save PDFs of (or print) articles you think will be useful to you in supporting your arguments.

5. Discuss your proposal idea with your lab instructor and/or the psychology librarian.

6. Make revisions to your proposal idea based on feedback from your instructor.

7. Get writing!

8. <u>Hand in your proposal on time!!</u>
   **Make sure you know the late policy for this assignment. This may vary by instructor.

Using Library Resources for Your Research Proposal

The purpose of this section is to introduce you to the information resources and library services that will be of use to you during the development of your research proposal. At the library you can find scholarly books, articles and websites that will help you

- Develop your research.
- Find previous studies related to your research question.
- Use existing research to help you identify potential hypothesis, dependent and independent variables, and methods of measurement for your research proposal.
- Write the literature review section of your research proposal.

If you need additional assistance when conducting your research for this class, please contact the University of Houston M.D. Anderson Library. You can do so at https://libraries.uh.edu/contact/ and you can contact the Psychology Librarian by visiting the library guide for this course at https://guides.lib.uh.edu/psyc2301.

Resources: Selecting a Topic

The first step in beginning your research proposal is selecting an appropriate research topic. You may already have a topic within psychology that you would like to explore; however, if you are undecided, the library contains a variety of information materials you can consult to help you choose a research proposal topic that interests you.

You may want to start by exploring the resources listed below for broad, general topic areas in psychology. Skimming through these resources may help refresh your memory about important topics and areas of study within the field. You may also find it helpful to consult the APA's *List of Psychology Topics* at https://www.apa.org/topics. However, you should be aware that this list focuses on high-level topics and leaves out much of experimental psychology. Thus, while it is one good starting point, you should also think about topics surrounding language, perception, memory, social interactions, animal behavior, and other topics you may have been exposed to in *Introduction to Psychology* or other psychology classes you may have taken.

Resources: Researching Your Topic

The following resources can help you learn more about your research proposal topic and focus it, if necessary. You will also need to use these resources to develop the literature review portion of your proposal and lend credibility to your research.

The Library Catalog (http://library.uh.edu)
The UH Library Catalog includes holdings from the M.D Anderson Library (the main library on campus), the UH branch libraries, as well as the UH-Downtown and UH-Clear Lake Libraries. It is a good resource to use when searching for

- Books and eBooks related to your research proposal topic
- Journals in print (specifically when you have an article citation)
- DVDs / Videos

You'll notice that there are several different ways to search the library catalog.

Keyword – this is your best option when searching for books, dvds, or videos related to your research proposal topic. Think of it as a Google search. You should enter different keywords related to your research topic.

Journal Title – use this search option if you have a citation for a research article that you are trying to locate

Example: Zalta, A., & Keel, P. (2006). Peer influence on bulimic symptoms in college students. Journal of Abnormal Psychology, 115, 185-189.

You would conduct a search for Journal of Abnormal Psychology to find out if the library owns the volume/issue of the journal that contains the article.

During your search of the catalog, if you encounter a useful book located at another UH campus, you can always submit a request to have the item delivered to the main library. Books and articles located at another, non-UH university can also be requested using Interlibrary Loan Services (see below for more information).

Handbooks & Encyclopedias

Browsing through the table of contents, subject list, or index of these reference books will give you an idea of the major topics explored by psychology researchers. Some good print sources include the following handbooks and encyclopedias, all available in the reference section of the library (or online if eBook).

Online Data Bases

You know about the vast resources of information (and misinformation) available on the World Wide Web. One can get a small indication of that vastness by strolling through the stacks of the main library on campus. Just doing that, even without stopping and reading a thing, still takes a while. Unless the library had a systematic way of storing materials, and a computer-based search function, finding something in it would be nearly impossible. Even if we restrict ourselves just to articles published in the technical literature of psychology the numbers are still enormous. Given that, finding the ones relevant to your interest could be highly challenging.

Lucky for us, though, professional people long ago started to look at, categorize, and catalog nearly every article published in the professional journals of psychology. Each entry in that catalog is equivalent to the Abstract from a particular published article. Since you can learn a lot about an article from its Abstract, looking at the entry in the database gives you a good idea about what's in the article itself. For a long time such catalogs were produced in book form, but of course they now exist electronically.

The most comprehensive electronic database for psychology is called the PsycINFO database. Its records cover published work starting back well over 100 years ago, and it's updated every week. Over time, the number of articles cataloged in PsycINFO has added up. At this point there are nearly five million (5,000,000) records in that database! If you were to skim each record for just one minute, and do so for eight hours a day, it would take you about 40 years to get through the list—and by that time the list would be much longer so you'd still be years behind.

Lucky for us again, we can search it with key words (and important other search 'tricks') more-or-less like you search the web using Google or some other search engine. But a PsycINFO database search is in many ways better than a general Google search, so learning

how to use it is a valuable skill to have. Articles that you find via PsycINFO and other databases will give you an idea of the hypothesis, variables, and methods used to conduct research studies in your topic area. You can also use these articles to help flesh out the literature review component of your research proposal by giving background information on your research question. You can also use these articles to find methodological approaches you can adapt or extend to tackle your own research questions. Finally, the articles you find will be important when you write your Discussion section, which will need to relate the (potential) outcomes of your study to what is already known about your research topic. The two psychology databases you will use more than any others are the following:

PsycINFO—Contains nearly five million citations and summaries of scholarly journal articles, book chapters, books, and dissertations in psychology and related disciplines from 1887 to the present. NOTE: You will receive instruction at the library on the use of the PsycINFO database.

PsycARTICLES—Provides access to full-text articles in psychology from 1985 to the present (this is a subset of PsycINFO containing only the full-text articles).

Other databases that you might find useful as you conduct your research are:

Academic Search Premier—a general academic database that includes journal articles from a variety of disciplines from 1865 to the present. Business Source Complete—includes articles and abstracts from journals in all disciplines of business from 1886 to the present. This database is useful for topics in industrial-organizational psychology and organizational behavior.

ERIC—contains articles from 1966 to the present on topics related to education. This database is useful for topics in educational psychology or topics related to children and teenagers.

MEDLINE—contains articles from 1963 to the present on medicine, nursing, dentistry, veterinary medicine, the health care system, pre-clinical sciences. This database is useful for topics related to medicine or healthcare.

SocINDEX with Full Text—abstracts and full text articles in sociology from 1895 to the present. This database is useful for topics in social psychology. You can access all of the library's online databases both in the library and from home. To access the databases from home, you will need to login using your last name and your PeopleSoft ID number.

Google Scholar—a freely accessible web search engine that indexes the full text or abstracts of literature including most peer-reviewed academic journals and books, conference papers, theses and dissertations, preprints, abstracts, technical reports, and other scholarly literature. Google Scholar has a "cited by" feature, which lists abstracts of articles that have cited the article being viewed. Another useful feature of Google scholar is "Related articles" feature, which presents a list of closely related articles, ranked primarily by how similar these articles are to the original result, but also taking into account the relevance of each paper.

Web of Science—an abstract and citation index which curates a collection of over 21,000 peer-reviewed, high-quality scholarly journals, 90,000 scholarly books and over 170,000 conference titles in over 250 science, social sciences, and humanities disciplines. Each paper includes all the authors, author affiliations, the abstract and keywords, funding acknowledgements, including agency and grant numbers (if provided), and all the cited references. Web of Science provides a retrospective coverage in the sciences, social sciences, arts, and humanities, dating back to 1900. Web of Science allows to perform a key article search, which neither PsycINFO nor PubMed allows.

PubMed—a free resource that provides access to more than 30 million records via MEDLINE, the National Library of Medicine database of citations and abstracts in the fields of medicine, nursing, dentistry, veterinary medicine, health care systems, and preclinical sciences. The National Library of Medicine has been indexing the biomedical literature since 1879, to help provide health professionals access to information necessary for research, health care, and education. MEDLINE, once printed index to articles, the Index Medicus, contains journal citations and abstracts for biomedical literature from around the world. PubMed provides free access to MEDLINE since 1996. PubMed does not contain full-text articles.

PsychTESTS—a professionally indexed tests database from the APA, which indexes an extensive collection of items associated with psychological measures, scales, surveys, and other instruments essential to the research needs of professionals, students, and educators across the behavioral and social sciences. It is a convenient tool for researcher as it helps researchers avoid "reinventing the wheel" by providing thousands of research instruments and their psychometric properties.

Library Services

Library research training sessions

Your instructor may invite a professional librarian to present during one of the class meetings—don't miss that one; it is extraordinarily helpful because it will tutor you on the use of online databases. In particular, you will get a hands-on lesson on how to be a PsycINFO whiz, so bring an electronic device (preferably a laptop or tablet) to class. Some short videos and other refreshers for later in the semester may also be found at https://guides.lib.uh.edu/psyc2301 and https://libraries.uh.edu/guides/.

Remote Access to Library Materials

 The vast majority of library databases and journals are available anywhere that has an internet connection. You will be prompted to log in via Cougarnet if off-campus.

Access UH Library's resources via Google Scholar – If you use Google Scholar, set up Library Links or route your search through the library so that you have access to UH Libraries' resources while off-campus: https://libraries.uh.edu/find/google-scholar/

Interlibrary Loan – If the library does not have an item you need, use interlibrary loan (ILL) to get it. ILL is used for borrowing materials not available from UH Libraries, scanning and delivering articles to faculty and graduate students, delivering library materials to distance education students, and lending UH materials to other libraries. All UH students, faculty, staff, and alumni are eligible for ILL services. Log in to ILLiad to place requests, request renewals, and manage accounts. For most people, your ILL account is the same as your CougarNet. https://libraries.uh.edu/services/interlibrary-loan/

Introduction to Methods in Psychology Online Library Resources

This online resource was created specifically for students in the Introduction to Research Methods Lab course. It includes helpful information, tutorials, tools, and tips (e.g., searching for articles, deciding if a source is considered "scholarly," APA style citations and references, and much more).

Check it out at:
http://guides.lib.uh.edu/psyc2301

Sections of the *Research Methods* Lab Research Proposal

These are the sections that must be included in **your** final research proposal:

- Title Page
- Abstract
- Introduction
- Method
- Discussion
- References

Note that this list is shorter than the list in the *Summary and Guide to APA Style* near the beginning of this lab manual. This is because you will not actually be carrying out a study, just designing one and exploring what possible outcomes would mean. For details of what you need to include in each section of the Research Proposal assignment, please consult the APA Style section of this manual. Please also carefully read the notes below, where you will find information on what differs between your research *proposal* and the full APA style noted on pp. 5 – 15. Finally, an example student research proposal that has been only lightly edited is included at the end of this lab manual, and you can turn to it for an example of each required section.

Title Page

You are writing a student paper. This means that you do not need to include a running head on your title page, or anywhere else in your paper. Similarly, you do not need to include an author note on your title page. You will need to include a page number at the top right of each page of your paper, including the title page. You can automatically number the pages of your document in Microsoft Word using the Insert>Page Number menu, and you can edit the header in general by using the Insert>Header>Edit Header menu.

Abstract

See the instructions in the *Summary and Guide to APA Style* near the beginning of this lab manual. You do not need to include keywords on your abstract page in this student paper.

Introduction

For detailed information on writing the introduction, see the Summary and Guide to APA Style in the first section of this lab manual. You should also consult the literature review prompt in the *Assignments and Exercises* section.

Many students tend to focus too much on the individual articles that they have selected, so they just end up summarizing one article after another with no integration whatsoever. Oftentimes, the main ideas of the articles are unrelated, so the literature review ends up very disorganized and disconnected. Rather than focusing your attention on the articles, think about your topic and the arguments that can be used to support your claims. Then find articles and research findings that support those arguments. Research support for each argument can come from a single article or several different articles.

For example, let's say that you are doing your research proposal on sleep and test performance, and you think that the more sleep a person gets the night before an exam, the better he/she will perform on that exam the next day. You think this because (1) the person gets rest not only physically but mentally as well, so he/she is better able to think through the exam, leading to better performance, and (2) the person is well-rested, leading to less anxiety, which leads to increased performance. These two reasons as to why having a full night's sleep leads to better test performance would be your arguments. After you have come up with these arguments, you would then find past research that supports each one of these. If you organize your paper around these ideas, citing support for each one from multiple studies, your paper will be much more clear than if you simply review one past study at a time. Make sure that the research you cite in support of your ideas comes from the peer-reviewed scholarly literature and includes empirical primary sources, not just review articles.

For further guidance on organization of your paper, see the literature review prompt in the *Assignments and Exercises* section of this manual. In particular, see **Option B** in that prompt's organizational outline.

After reviewing the past literature in support of your study, you will need to go beyond your original literature review in order to complete the introduction to your research proposal. You will need to include the following information:

Unique contribution
- What is the unique contribution that your study would be adding to the research area in which you are interested?
- How will your study be different compared to the others conducted on the same (or similar) topic?

Conceptual definitions of independent/predictor and dependent/criterion variables
- Be sure you clearly state what your variables will be and give definitions for each of them (i.e., state how are these variables are being defined in your study because as you know, the definition of the same variable can be different from one study to the next)

Hypothesis/hypotheses
- What are you predicting in your study or how will the variables be related?
- Example --> It is hypothesized that the more sleep a person gets the night before an exam, the better he/she will perform on that exam the next day.

Expected results
- State the results that you expect to obtain after conducting the proposed study
- Example --> It is expected that participants who get at least 8 hours of sleep the night before an exam will get the highest scores on the test, while participants who get no sleep the night before will score the lowest on the exam.
- In this research proposal, you should be explicit about not only your expected results, but also the other possible outcomes of your study

Reasons why these results are expected

- It's not sufficient that you simply give the expected results, but you should also include a brief explanation as to why you expect those particular results to occur
- Try integrating some of the past research you discussed in your literature review to give support to your justification for your expected results

Method

The purpose of the Method section is to give a detailed description of your proposed study, including who will be in your study, what you will do in your study, what you will use in your study, etc. Within the Method section are several important subsections that you must include in your proposal. These subsections are described in detail in the *Summary and Guide to APA Style* near the beginning of this lab manual. While this description is adequate to guide your writing of most of the Method section, more information on writing the Measures sub-section is included here.

In the Measures sub-section, you will need to include a detailed description of each measure you plan to use in your study to give the reader a good understanding of how you plan to measure or assess your variables. For each measure, be sure to include the following information:

- Name of the measure and appropriate abbreviation
- Citation for the measure
  - If you are using an established measure (meaning that someone else already created and developed it), you will need to include the original citation for that measure
  - Be sure that you get the original author(s) of the measure correct
  - Be sure to cite the peer-reviewed publication associated with authorship of the measure—*not* another empirical study that happened to use the measure, and *not* the measure's entry in the PsycTESTS database.
- What does the measure assess?
- How many items are in this measure?

- Are there any subscales, and if so, what are they? Are you using the entire measure, or just specific subscales?
- What is the scale response of the measure?
  - An open-ended response means that participants can answer the item however they like. There is no set of answer choices. Think of open-ended as short answer or essay responses.
  - Other measures use Likert-type response set, meaning that participants select the most appropriate choice (kind of like multiple choice). Likert scales usually have anchor points and scales descriptors

    Example --> To what extent to do agree with the statement?

1	2	3	4	5	6	7
Strongly Disagree			Neutral			Strongly Agree
- Include sample items, if possible
- Do not include "Likert scale" as a measure – the Likert scale is a general-purpose way of asking participants for responses, not a measure in and of itself
- Do not include "ANOVA" or any other statistical test as a measure – these are ways of *analyzing* (making sense of, or making decisions about) data, whereas measures are ways to *collect* data

Example of a measure in the measures subsection (notice the format of the name and citation):

Hong Psychological Reactance Scale (HPRS; Hong & Page, 1989). The HPRS looks at reactance on four different factors (freedom of choice, conformity reactance, behavioral freedom, and reactance to advice and recommendations). There are 14 items total, with answer choices ranging from one (disagree completely) to five (agree completely). Sample items include "Regulations trigger a sense of resistance in me" and "When someone forces me to do something, I feel like doing the opposite." Higher scores indicate stronger feelings of reactance.

Discussion

The purpose of the Discussion section is to interpret the results and discuss the implications of the study. Because you are not actually conducting this proposed study, you will not have results to interpret (also note that you will not have a Results section in this research proposal). Therefore, you will NOT make up detailed results as if you conducted the study. However, you will still need to include a Discussion section in your proposal.

Since you don't have real results (so you don't know if your hypothesis is supported or not supported), you will need to discuss interpretations and implications in terms of if your hypothesis is supported and then discuss interpretations and implications in terms of if your hypothesis is not supported.

For further guidance on the necessary components of the Discussion section, see the *Summary and Guide to APA Style* near the beginning of this lab manual.

References

The last part that you need to include in your research proposal is the reference section. This section gives the references for all of the articles, books, and other resources cited in the text of your proposal. Be sure that for every citation you give in the text, you have a corresponding reference in the reference section and vice versa (for every reference in your references section, you have a corresponding citation somewhere in the body of your proposal). See the *Guide to Citations and References* as well as the *Summary and Guide to APA Style* (both near the beginning of this lab manual) when writing this section.

Appendix: Sample Research Proposals

The sample research papers in this section are actual Introduction to Methods in Psychology research proposal papers. They have been lightly edited and brought into compliance with current (7th edition) APA style. We thank Krissy Nguyen and Lynh Vu for generously allowing their papers to be reprinted here.

Relationship between Frequency of Photo Manipulation and Body Dissatisfaction

Krissy Nguyen

University of Houston

PSYC 2301: Introduction to Methods in Psychology

Instructor: Dr. Tamber-Rosenau

Paper due May 4, 2019

Abstract

An increased investment in image-based social media has led to the common practice of photo manipulation. This practice may worsen body image concerns, and consequently put one at higher risk for physiologic and psychological distress. In this study, 273 undergraduate students indicated their frequency of photo manipulation and how often they experienced body dissatisfaction in an online survey. It was predicted that those who more frequently participated in photo manipulation would also have greater levels of body dissatisfaction. Results from this study can guide mental health counseling and education, and to develop an approach for alleviating body dissatisfaction and its consequences.

Relationship Between Frequency of Photo Manipulation and Body Dissatisfaction

Social media provides its users the ability to share images, information and messages while also providing opportunities for feedback and interaction. Though it takes place on a screen, social media can also have lasting effects offline. Previous research has shown body dissatisfaction to be a risk factor for eating disorders as well as physiologic and psychological distress (Griffiths et al., 2016). Time spent on social media may not be intrinsically detrimental to one's emotional well-being, but engagement in specific behaviors on social media platforms may have an effect on a user's body image. There is also the potential that those prone to body dissatisfaction may be more likely to invest in social media activities, such as photo manipulation, that can further affect their body dissatisfaction; research is needed in order to increase the understanding of this relationship. Research by McLean et al. (2015) supports the hypothesis that photo manipulation may be correlated with body dissatisfaction. Comprehensive information on this topic can be used as a resource for counseling and education to provide guidance on what preventive measures can be taken to lessen the negative effects of social media on mental health.

When considering how social media affects one's perception of their appearance, it is also useful to consider other aspects surrounding their self-esteem and subjective experiences. Choukas-Bradley et al. (2019) explored the construct of appearance-related social media consciousness (ASMC) and its correlations with body image dissatisfaction as well as with depressive symptoms in young women. They expected that there would be a positive correlation between the two variables. ASMC examines how a woman's consciousness of how she is physically perceived by an online following may influence her emotional processes and behaviors in her daily life. In a survey, participants provided an estimated number of hours spent

on social media daily and a rating of their experience on body surveillance, body comparison, body esteem and depressive symptoms on a scale of 1-7, in which higher numbers indicated stronger body image concerns. The vast majority (99.7%) of the participants disclosed varying levels of ASMC and over half of the sample indicated that these experiences took place "almost always" (Choukas-Bradley et al., 2019). Higher ASMC reports were associated with higher self-objectification and depressive symptoms. Although a correlation was found, a causal relationship cannot be confirmed due to the design of the study and because the measures were taken at only one point in time. External validity was also limited because the participants did not include men. Despite its limitations, this study provides unique insight into the offline experience of young women and from there other studies can explain the behaviors that may play a role in this experience.

There have been many studies as to what behaviors on social media are likely to contribute to body dissatisfaction. Using a cross-sectional design, McLean et al. (2015) examined how photo investment and selfie taking and sharing may be related to body dissatisfaction and internalization of the thin ideal. They hypothesized that participants who had a higher level of selfie activity, a greater amount of manipulation of photos, and posted photos more frequently were more likely to have experiences with self-objectification and dissatisfaction with their appearance. Participants were asked to provide the amount of time spent on digital media and also to indicate how frequently they engaged in selfie taking, selfie sharing, and photo manipulation and investment. Participants who reported greater involvement in selfies and photo sharing and manipulation were shown to have higher mean scores for body image concerns than those with lesser involvement. Photo manipulation had the strongest correlation with body-related concerns. There is a possibility that the correlation is bi-directional, as those with body

image concerns may also be more likely to engage in activities that emphasize appearance, and in turn, the engagement may further add to the concerns of appearance. McLean et al. (2015) introduce several social media activities that may influence one's body dissatisfaction, but further research should be done in order to interpret the trends in an individual over time.

Appearance-focused social media would be expected to have greater effects on one's body image concerns than a less image-focused platform. Instagram is one of the most popular social media platforms and is also the most image based. In Baker et al. (2019)'s exploratory study, how young women use Instagram and how it affects their perception of their bodies was investigated. Female undergraduate students were divided into focus groups where they discussed effortful posting, seeking engagement, and promotion of self. Many participants related to the experience of investing a generous amount of time and energy into creating an image that they hope others will consider attractive and that will generate the most likes on their post. They also reviewed themes such as comparing self with others, responding to beauty ideals and display of self, and concerns with Instagram's effects on body image. Participants reported a feeling of inadequacy in their appearance, especially when comparing themselves to peers and to standard beauty ideals. These accounts can provide insight into what motivates a user to manipulate their photos. The open-ended nature of this study allowed for various themes to be discussed; however, the correlations between the social media-related experiences and body image were not analyzed.

As seen in previous research, photo manipulation is one of the primary activities that has a strong correlation with body-related concerns (McLean et al., 2015). In a cross-sectional study, photo manipulation was hypothesized to have a positive correlation with body dissatisfaction (Lonergan et al., 2019). The frequency of manipulation was evaluated among 184 Australian

men and women using Likert-type items, with higher scores indicating more frequent manipulation (Lonergan et al., 2019). The Body Shape Satisfaction Scale was used to measure dissatisfaction (Slade et al., 1990). As hypothesized, increased frequency of photo manipulation was associated with higher body dissatisfaction for both men and women. The study did not specify to participants whether selfies were defined to include the body or face, and like other studies, could not analyze the trends in an individual because the measurements were only taken at a single point in time.

There have been a few studies which support a positive correlation between body image concerns and photo manipulation but so far none have explored these two variables over time (McLean et al.,2015; Lonergan et al., 2019). Despite evidence suggesting that men and women can experience similar repercussions as a result of body dissatisfaction, men appear to be understudied with regard to body image concerns and social media (Griffiths, et al., 2016). To combat this issue, investigators should study more genders to increase the understanding of how various groups are affected. For the majority of research done on body image concerns and social media activities, data were only collected once and investigators were unable to track changes over time. A more prospective approach may help to confirm a correlation. If both frequency of photo manipulation and body dissatisfaction increase over an extended period of time, then there can be an increased certainty that the hypothesized relationship exists.

Method

Participants

Two hundred seventy-three college students (150 women and 123 men) enrolled in psychology courses at the University of Houston were recruited through email. Participants were 18 to 24 years old. Partial course credit and a Target gift certificate were allocated for taking part

in this study. All participants gave informed consent to take part in the study and all procedures were approved by the University of Houston Institutional Review Board.

Design

In this longitudinal study, an online survey was distributed to participants in order to determine the correlation between the frequency of photo manipulation and body dissatisfaction. Participants received an initial survey and two subsequent surveys over the course of two years. To assess the level of photo manipulation, ten Likert-type items were used to measure the frequency of photo manipulation. Participants responded to the items which ranged from 1 (never) to 5 (always) and the sum of the scores was used to determine the frequency of manipulation (e.g., "Use apps to remove appearance of blemishes"). Total scores ranged from 10 to 50, where a higher number indicated a greater amount of photo editing or manipulation. (McLean et al., 2015). To determine the amount of body dissatisfaction, modified versions of the Body Esteem Scale for Adolescents and Adults (BESAA) were used (Mendelson et al., 2001). Participants reported how frequently they agreed with a total of 20 appearance-related items on a scale of 1 (never) to 5 (always). A higher score revealed a greater level of positive body esteem.

Procedure

The purpose of this study was to examine the correlation between frequency of photo manipulation and body dissatisfaction. To understand how the relationship may change in an individual over time, each participant was sent an initial online survey, a follow-up survey in one year, and a final survey two years after the initial survey. The same questions were used for the initial and follow-up surveys. Responses remained anonymous and identifying information was not used in the data. Participants were debriefed on this information and were emailed the survey after consent was given.

Surveys were allowed to be completed on any available device at a time that it was convenient for the participant. The survey was expected to take 30 minutes. At the start of the survey, participants answered relevant background information. Then, items for the frequency of photo manipulation were presented followed by the items for the BESAA (Mendelson et al., 2001).

Partial course credit and a $10.00 Target gift certificate were administered at the conclusion of the initial survey and for each completed follow-up survey.

Measures

Frequency of Photo Manipulation. A 5-point Likert type scale was used to measure the frequency of photo manipulation. Participants answered ten items which included statements regarding facial and body appearance such as "Use apps to make yourself look skinnier" (McLean et al., 2015). The range of scores for each item was from 1 (never) to 5 (always) and a higher number indicated a greater frequency of photo manipulation. This scale had good internal consistency and Cronbach's alpha was found to be 0.85 (McLean et al., 2015).

Body Esteem Scale for Adolescents and Adults (BESAA). To measure body dissatisfaction, a 5 point Likert type scale was used as well. The test-retest correlations indicated that this scale was a reliable measure (Mendelson et al., 2001). Twenty items on a scale of 1 (never) to 5 (always) were presented to participants, and they indicated how often they experienced appearance-related thoughts (e.g., "I like how I look in photos"). Negative items were reverse scored (Mendelson et al., 2001).

Discussion

This study was designed to examine the association between photo manipulation and body dissatisfaction. It was expected that a higher frequency of photo manipulation would

correlate with greater body dissatisfaction.

If the hypothesis is supported, then an increase in frequency of photo manipulation would correspond to an increase in body dissatisfaction and similarly, a decrease in either would correspond to a decrease in the other. While previous research has studied this correlation before, a cross-sectional design was used and therefore certainty of the relationship was limited (Lonergan et al., 2019). However, the longitudinal design of this research may help to establish a more certain relationship. Although it is unclear whether it is unidirectional or bidirectional, a positive correlation may suggest that photo manipulation is a potential risk factor for body dissatisfaction or that they could be maintaining factors for each other. Body dissatisfaction is harmful to the mental health of those experiencing it because it has been shown to be a maintaining factor for eating disorders (Shafran et al., 2003). Significant findings can be used for counseling to help make lifestyle changes that may lessen body dissatisfaction and its effects on mental health.

If the hypothesis is not supported, then body dissatisfaction and photo manipulation may have no correlation. In this case, it may be more useful to study other potential behaviors that contribute to body dissatisfaction. Further exploration can be done to find intervention strategies that can be implemented to mitigate the effects of those behaviors.

There are some limitations to the study which can be remedied in future research. Since the study is correlational, a cause cannot be established. There may also be covariates, such as exposure to photo manipulation from other media sources, that may influence one's behavior and were not explored in this specific study. Due to the longitudinal design, attrition may have affected the results of the study. External validity is also limited due to the focus on the young adult population of college students.

This research can be extended further by investigating whether photo manipulation of the face or body would have a greater effect on overall body dissatisfaction. Previous research suggesting that social media activities are a predictor for body image concerns reinforces the need for a more experimental approach that can establish a causal relationship (Vries et al., 2015). As social media use continues to grow across populations, it would be valuable to study the effects on older adult populations as well.

References

Choukas-Bradley, Nesi, J., Widman, L., & Higgins, M. K. (2019). Camera-ready: Young

women's appearance-related social media consciousness. *Psychology of Popular*

Media Culture, 8(4), 473-481. https://doi.org/10.1037/ppm0000196

Ferszt, G., Breines, J. G., & Baker, N. (2019). A qualitative study exploring female college

students' instagram use and body image. *Cyberpsychology, Behavior, and Social*

Networking, 22(4), 277-282. https://doi.org/10.1089/cyber.2018.0420

Griffiths, S., Hay, P., Mitchison, D., Mond, J. M., Mclean, S. A., Rodgers, B., Massey, R.,

& Paxton, S. J. (2016). Sex differences in the relationships between body

dissatisfaction, quality of life and psychological distress. *Australian and New*

Zealand Journal of Public Health, *40*(6), 518–522. https://doi.org/10.1111/1753-

6405.12538

Lonergan, A. R., Bussey, K., Mond, J., Brown, O., Griffiths, S., Murray, S. B., &

Mitchison, D. (2019). Me, my selfie, and I: The relationship between editing and

posting selfies and body dissatisfaction in men and women. *Body Image*, *28*, 39–43.

https://doi.org/10.1016/j.bodyim.2018.12.001

Mclean, S. A., Paxton, S. J., Wertheim, E. H., & Masters, J. (2015). Photoshopping the

selfie: Self photo editing and photo investment are associated with body

dissatisfaction in adolescent girls. *International Journal of Eating Disorders*, *48*(8),

1132–1140. https://doi.org/10.1002/eat.22449

Mendelson, B. K., Mendelson, M. J., & White, D. R. (2001). Body-esteem scale for

adolescents and adults. *Journal of Personality Assessment*, *76*(1), 90–106.

https://doi.org/10.1207/S15327752JPA7601_6

Shafran, R., Fairburn, C. G., Robinson, P., & Lask, B. (2003). Body checking and its
        avoidance in eating disorders. *International Journal of Eating Disorders*, *35*(1), 93–
        101. https://doi.org/10.1002/eat.10228

Slade, P. D., Dewey, M. E., Newton, T., Brodie, D., & Kiemle, G. (1990). Development and
        preliminary validation of the body satisfaction scale (BSS). *Psychology & Health*,
        4(3), 213–220. https://doi.org/10.1080/08870449008400391

Vries, D. A. D., Peter, J., Graaf, H. D., & Nikken, P. (2015). Adolescents' social network
        site use, peer appearance-related feedback, and body dissatisfaction: Testing a
        mediation model. *Journal of Youth and Adolescence*, *45*(1), 211–224.
        https://doi.org/10.1007/s10964-015-0266-4

Lucid Dreaming and Nightmares
Lynh Vu

University of Houston

PSYC 2301: Introduction to Methods in Psychology

Instructor: Dr. Tamber-Rosenau

Paper due May 4, 2019

Abstract

When a person is lucid dreaming (LD), they are consciously aware of their surroundings within the dream, and at times are able to control the contents and possibly awaken. The practice of LD is intended to manage one's emotions and control of content during a nightmare and to reduce the frequency of nightmares. This study aims to manipulate the likelihood of LD as a method to reduce nightmares and their consequences. That is, LD may promote the reduction of recurring nightmares if exercised correctly, especially if coupled with the addition of altering one's surroundings before bedtime. Two hundred participants with self-reported frequent nightmares were recruited. This experimental study compared sleep before and after manipulation of sleep environmental factors for all participants, and before and after introduction of the use of LD to half of the participants. Nightmare frequency (NMF), quality of sleep, and distress levels were measured several times throughout the 3-month study using questionnaires and self-reports. Results were expected to show a small decrease in NMF and distress levels in the group with only changed environmental factors, and a larger decrease in NMF and distress levels in the group receiving both treatments (LD and environmental manipulations), with an increase in sleep quality in both groups. If the hypothesis is accepted, the LD as an addition to manipulation of environmental factors is supported as a method to relieve nightmare suffering. Alternatively, both treatments could have no effect on the dependent variables, suggesting that other treatments for nightmares should be pursued.

Lucid Dreaming and Nightmares

Traumatic events leading to post-traumatic stress disorder (PTSD) can affect the quality of a person's life, including behavioral changes, psychological fear and mental disorders, mood and emotion decrease, or lack of sleep quality. Unfortunately, a full and permanent cure for PTSD remains elusive. However, many types of therapy aim to lessen the symptoms as much as possible. One such commonly experienced symptom is frequent nightmares (American Psychiatric Association, 2000). Improving one's sleep may bring benefits to quality of life, such as reducing stress and increasing productivity, memory, and alertness. These help to counter the negative effects of PTSD. One tested way to alleviate nightmares is lucid dreaming (LD), where "one is aware that one is dreaming during the dream. Thus, it is possible to wake up deliberately, or to influence the action of the dream actively, or to observe the course of the dream passively" (Stumbrys & Erlacher, 2017, p. 42). By integrating LD practice into nightmares, the idea is to warp the nightmare, so the dream becomes less intimidating. Past research has coupled other therapies to LD and measured the effects of nightmare factors, such as nightmare frequency (NMF).

Possibly the most universal cognitive behavioral therapy relating to LD is imagery rehearsal therapy (IR). Harb et al. (2016) hypothesized that IR would intensify the awareness of LD and content memorization, bringing a decrease in nightmare symptoms. Thirty-three participants were randomly assigned among two experimental treatments: components of Cognitive-Behavioral Therapy for Insomnia (cCBT-I) and IR with cCBT-I. The purpose was to measure (1) awareness, (2) dream content control, and (3) purposeful waking. Questionnaires about each component were given to participants after treatment sessions. Only dream content control was differently impacted by the two treatment protocols; this measure correlated to a

decrease in nightmares, distress, and general sleep disturbance. This may be because participants achieved a level of mastery with dream scripts from IR therapy. The researchers explained that overall, there was no statistically significant difference between the two treatment groups in terms of changes in LD constructs. Limitations of this study include the small sample size from veterans that displayed a high level of PTSD and recurring nightmares. Moreover, the data do not support the assumption that changes in dream content correlate with lucid awareness. Improved analysis and measurement of LD could have been done; for example, the Lucid Dreaming subscale of the Iowa Sleep Experiences Survey (Watson, 2001) may be a suboptimal measure of nightmare count. However, Harb et al.'s study was able to distinguish among constructs of LD and compare general cCBT-I therapy to additional IR therapy.

Gestalt therapy, similar to IR, was investigated by Holzinger et al. (2015) in order to understand whether LD adds benefit over Gestalt therapy alone. Gestalt therapy targets specific dream images with role play to desensitize fear. Researchers gathered 32 participants with frequent nightmares and randomly assigned them into two groups: Gestalt only treatment and Gestalt with LD, both for a nine-week period. The Pittsburgh Sleep Quality Index (Buysse et al., 1989), nightmare frequency (Holzinger et al., 2015), and Self-Assessment Scale on Sleep and Awakening Quality (Saletu et al., 1987) were used as measurements in questionnaire form. In the LD group, most participants successfully achieved LD. Dream frequency increased in both groups while NMF decreased, independently from each other. Compared to the Gestalt group, LD may have little to no added effect on decreased NMF, possibly making Gestalt therapy more effective. However, LD was able to modulate Gestalt therapy in that it provided faster results in dream frequency and dream recall. The extra hour difference in the amount of therapy in the LD group compared to the Gestalt group could unintentionally bring confounding variables, such as

a higher level of motivation and more practice with their nightmares, potentially increasing the rate of change in some measures. A higher number of participants may clarify the effects of LD in nightmares. More efficient debriefing during treatments may improve participants' involvement and the accuracy of the measures. This study supports LD as an add-on method to increase the efficiency of existing therapies, like Gestalt therapy.

Other types of LD-related constructs were introduced by Spoormaker et al. (2003). They hypothesized that LD would reduce trait anxiety and increase the quality of sleep. Eight participants were measured with self-rating scales on NMF and sleep quality by using the Dutch version of Spielberger State and Trait Anxiety Inventory questionnaire (van der Ploeg, 2000). Exercises to change their nightmares and to become aware of their situation were done at home, and a follow-up came two months later. Results show NMF decreased due to a change of dream content, making nightmares less frightening. Sleep improvement was also a result of not having as many nightmares. Yet, there was no effects on anxiety levels; the researchers concluded that this was because LD is too specific to decrease this construct. The sample size in this study was very small, and thus, effects may be harder to detect. The researchers simply experimented with direct LD without any other types of treatment on the effect on nightmares and, unlike other studies, the additional constructs of anxiety and sleep quality were tested.

Stumbrys & Erlacher (2017) differed from other studies by separately assessing distinct categories of LD with friendly, neutral, or threatening content. Questionnaires were given to 528 participants about their LD frequency and NMF. Participants were then asked to estimate the proportions of their LD among these categories, and how they responded to threatening characters. Results showed half of the lucid dreams were friendly, one-third were neutral, and one-fifth were threatening. As for their reactions, most dreamers fought back, some found other

solutions and fewer admitted defeat. More specifically, frequent lucid dreamers gave constructive behavior, and frequent nightmare dreamers avoided the problem. As in Tholey's study in 1988, Stumbrys & Erlacher hypothesized that lucid dreamers have fewer encounters with nightmares because they have more experience with LD and can confront threatening roles, while nightmare sufferers continuously experience a cycle because they are more likely to have a flight response than a fight response. This study was conducted solely in Germany, limiting the population to one place, and may not generalize to other cultures. Since an experiment was not conducted, data is based on participants' past memories and it is possible that those memories could be biased towards threatening dreams. Participant bias and the online questionnaire method could thus skew the results. By recording responses in lucid dreamers and nightmare sufferers, patterns of behaviors can be distinguished between the groups, informing the understanding of how LD plays a role in nightmares.

The reviewed studies show that LD is an effective way to reduce aspects of nightmares, especially when paired with other forms of therapy. While control/awareness of dreams, sleep quality, dream recall frequency, and others increased, NMF decreased. Different therapies and exercises to promote LD were tested, which all related to cognitive behaviors. Critically, no study investigated the role of participants' physical environments in the effectiveness of LD. A person's surroundings may greatly affect their mental state, particularly right before going to bed. Various amounts of lighting, sounds, smell, and feel could contribute to enhancing sleep; thus, when paired with LD exercises, nightmares may be suppressed. Therefore, it is hypothesized that adjusting the sleep sensory environment, paired with therapy to promote LD, may reduce the number of nightmares. The present study will measure the effects of modified sleep environment and LD on nightmare frequency, nightmare distress, lucid dreaming

frequency, and sleep quality.

Method

Participants

Two hundred nightmare-suffering participants were recruited in the Houston area by placing advertisements in public areas and social media. Participants ranged from ages 18 to 60, with the mean age of 25.0 years. The gender distribution was 71% women and 29% men. To be included in the study, participants must have reported having at least one month in the preceding year with recurring nightmares, i.e., twice or more per month. The mean number of months with scuh recurring nightmares was 6.2. There was with no requirement for previous experience with LD. Participants were compensated monetarily for their participation ($50). All participants gave informed consent to participate in the study according to a protocol approved by the University of Houston Institutional Review Board.

Design

The study was a between-subjects experimental, longitudinal design lasting three months. The independent variables consisted of bedroom conditions and the administration of LD therapy. Dependent variables include nightmare frequency, quality of sleep, and levels of anxiety. Nightmare frequency was operationally defined as the amount of "anxiety provoking dreams" (Spoormaker et al., 2003, p. 182) and was measured with the Nightmare Frequency Questionnaire (Krakow et al., 2000) along with anxiety in the Nightmare Distress Questionnaire (Belicki, 1992). Quality of sleep was measured by the Pittsburgh Sleep Quality Index (Buysse et al., 1989). LD frequency was measured by the Lucid Dream Frequency Self-Report.

Procedure

Participants (N = 200) were recruited from advertisements and randomly assigned to two

groups: one group adjusting only bedroom factors, and one group adjusting bedroom factors coupled with LD practice. Each group included 100 participants. In an initial session, informed consent was obtained either electronically or in person. Participants were familiarized with the manipulations and the importance of completing questionnaire measures accurately. To obtain baseline measures of each dependent variable, each participant completed the Nightmare Frequency Questionnaire (Krakow et al., 2000), Nightmare Distress Questionnaire (Belicki, 1992), Lucid Dream Frequency Self-Report, and the Pittsburgh Sleep Quality Index (Buysse et al., 1989).

Each participant was required to change their bedroom environment based on the following criteria: (1) no exposure to light before/while sleeping (e.g., use of sleep mask or blackout curtains), (2) reduction in outside noises (if possible), (3) lavender oil used in an aromatherapy diffuser, and (4) the use of silk sheets/pillow covers. To ensure consistency, necessary items (linens, aromatherapy supplies) were provided to each participant. These environmental manipulations were selected as favorable conditions to induce sleep and relaxation, and favoring the possibility of LD.

For the LD treatment group, LD practice was given in 90-minute sessions with a professional therapist twice a week using the protocol of Holzinger et al. (2015). Briefly, the sessions included a variety of exercises to promote LD: (1) defining LD and its purpose; (2) education about the physiology of dreams, nightmares, and sleep, including altering attitudes towards such concepts; (3) understanding dream content to promote lucidity; (4) actively using a dream journal; (5) listening to relaxing exercises geared towards LD; (6) creating alternative happy endings for nightmares; (7) discussing progress in a group setting; and (8) additional learning techniques such as concentration, relaxation, mediation, and hypnosis (Holzinger et al,

2015, p. 368).

Measures were taken each month and at the end of the three-month period, using the same measures as taken during the baseline session. The questionnaires and self-reports were completed electronically. All participants were invited for a debriefing to explain that the purpose of the study was to investigate the roles of manipulation of the sleeping environment, and manipulation of the sleeping environment coupled with lucid dreaming, to measure the effects of nightmare frequency, sleep quality, and distress. Contact information was given for any further questions. Participants were thanked for their participation and compensation was paid.

Measures

Nightmare Frequency Questionnaire. The Nightmare Frequency questionnaire (Krakow et al., 2000) assesses nightmare frequency by recording two measures: how many nights in the preceding week one or more nightmares occurred, and how many nightmares there were in total during that period.

Nightmare Distress Questionnaire. The Nightmare Distress Questionnaire (Belicki, 1992) assesses how much distress is experienced while having a nightmare. The questionnaire includes 13 questions based on a 5-point Likert scale.

Lucid Dream Frequency Self-Report. The Lucid Dream Frequency Self-Report asks participants to rate the frequency with which they engage in LD based on an 8-point scale (0 = never to 7 = several times a week).

Pittsburgh Sleep Quality Index. The Pittsburgh Sleep Quality Index (Buysse, 1989) asks participants to fill out a report relating to their sleep habits from the past month. The test instrument contains 19 items, each using a 3-point scale (0 = very good to 3 = very bad).

Discussion

It was hypothesized that all participants would have an overall decrease in NMF, thus decreasing distress levels and improving sleep quality. It was further predicted that participants who practiced LD would experience larger effects than those who experienced sleep environment changes alone. Since participants in the LD treatment were able to directly face their nightmares and actively work on how to overcome them, NMF and similar measures were expected to decrease at dramatically faster rates than for participants in the environmental modification group. LD frequency was also expected to increase over time in the LD treatment group. Participants with only changed bedroom environmental conditions were expected to experience a lesser amount of NMF reduction.

The effect of LD in decreasing nightmares is supported by many previous studies, some of them including other factors or therapies to compare with LD. These results are to be expected since LD directly tampers with the experience of and coping with nightmares. Interestingly, LD actually reduced sleep quality in a past study (Holzinger & Saletus, 2015), presumably because of frustration, but a change of the sleeping environment should be able to counter such effects. Moreover, Spoormaker et al. (2003) studied distress levels and state and trait anxiety after an LD treatment and reported no significant changes in these measures. They concluded that the lack of an effect stemmed from the narrow scope of LD, which does not specifically target these variables. The coupling of environmental factors with LD may be able to produce different results.

If the hypothesis is supported, then the bedroom environment plays some role in decreasing nightmare frequency and distress, with the incremental addition of LD leading to yet greater effects. Since there is no definitive cure for nightmares, these findings can be applied to

those suffering from frequent nightmares and give insight to researchers investigating similar

techniques. Bedroom factors are easy to manipulate and may be preferred as a suitable method to

relieve nightmare symptoms in comparison to using more extreme treatments, such as

medication. LD can also be practiced by oneself without a therapist. A decrease in nightmare

distress and well as improved sleep quality will follow when the threat of nightmares is

diminished, yielding the benefits of a satisfactory sleep such as a boost to one's day to day

quality of life.

If the hypothesis is not supported, then changing the bedroom environment and/or LD has

no significant effect on the number of nightmares and their impact on distress and sleep. This

would support the notion that physical conditions before sleep and the practice of LD are not

useful therapies for people suffering from nightmares. Altering various sensory elements of the

sleep environment could satisfy personal preference yet have no association with nightmares.

Because LD therapy relates closely to imagery rehearsal therapy, these results might also suggest

that image rehearsal therapy is unlikely to be effective. Similarly, other therapies that are similar

to LD need to be researched further to be able to discover if any of them are effective in

nightmare reduction.

A limitation of this study may include the sample of participants. Since participants were

recruited voluntarily, there was no control over the gender distribution. The study included a

larger set of females than males, which may confound the results. Some external validity could

be present due to the sampling being distributed across the city instead of a specific suburb or

institution, but the voluntary nature of participation could still limit external validity, particularly

to clinical populations who are prone to high NMF (e.g., PTSD). In the experimental design, a

pretest/baseline was measured before treatments, so a control group was concluded to not be

necessary. However, having an extra treatment-as-usual control group may have helped to clarify the effects. Regarding the sleep environmental manipulations, there was no effort to customize the manipulations to individual comfort preferences; such customization could lead to improved results. Furthermore, the introduction of LD is meant to give participants greater control of their dream content and to lead to awareness. These components are meant to invoke positive emotions in the dreamer, but lucid nightmares are a possible occurrence and leave participants more vulnerable to threatening experiences, as reported by Stumbrys (2018). Thus, LD might not have been as effective in treating nightmares as expected, for some participants.

Some other factors to be investigated in future studies include differences in the effectiveness of sleep environment and LD manipulations as functions of gender and age. In addition, environmental conditions by themselves should be investigated in more detail, such as which combinations of environmental manipulations would best support relaxation before bedtime. Additional variables (e.g., diet, exercise) that promote the wellbeing of a person should also be studied for their potential ability to decrease negative, threatening views associated with nightmares. Alternatively, if the hypothesis is rejected, investigation of why physical factors and LD do not regulate nightmares should be conducted, including further questioning of what factors induce nightmares.

Suffering from nightmares is common to people of all ages, and is especially common among those suffering from disorders like PTSD. To reduce the ongoing problem of continuous nightmares, adjusting bedroom conditions before sleep and the practice of LD were manipulated. Results were expected to support the hypothesis that these manipulations would reduce NMF, in turn leading to decreased distress and increased quality and comfort of sleep. LD could strengthen the effects of environmental factors if incorporated into therapies for nightmares. The

importance of one's physical and mental comfort is emphasized to help the treatment of traumatic sentiments towards nightmares. The sample size and population could be expanded, and the possibility of developing lucid nightmares must be considered further. Future studies could modify these components to increase external validity, and test additional variables to find a relationship between what causes nightmares and which factors diminish them.

References

American Psychiatric Association (2000). *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV-TR*. American Psychiatric Association.

Belicki, K. (1992). The relationship of nightmare frequency to nightmare suffering with implications for treatment and research. *Dreaming, 2,* 143–148. http://dx.doi.org/10.1037/h0094355

Buysse, D. J., Reynolds III, C. F., Monk, T. H., Berman, S.R., Kupfer, D. J. (1989). The Pittsburgh sleep quality index: a new instrument for psychiatric practice and research. *Psychiatry Res*, *28(2)*, 193–213. https://doi.org/10.1016/0165-1781(89)90047-4

Harb, G. C., Brownlow, J. A., & Ross, R. J. (2016). Posttraumatic nightmares and imagery rehearsal: The possible role of lucid dreaming. *Dreaming, 26*(3), 238–249. https://doi-org.ezproxy.lib.uh.edu/10.1037/drm0000030

Holzinger, B., Klösch, G., & Saletu, B. (2015). Studies with lucid dreaming as add-on therapy to Gestalt therapy. *Acta Neurologica Scandinavica, 131*(6), 355–363. https://doi-org.ezproxy.lib.uh.edu/10.1111/ane.12362

Krakow, B., Hollifield, M., Johnston, L., Koss, M., Schrader, R., Warner, T. D., Tandberg, D., Lauriello, J., McBride, L., Cutchen, L., Cheng, D., Emmons, S., Germain, A., Melendrez, D., Sandoval, D., & Prince, H. (2000). Imagery rehearsal therapy for chronic nightmares in sexual assault survivors with posttraumatic stress disorder: A randomized controlled trial. *Journal of the American Medical Association, 286*(5), 537–545. https://10.1001/jama.286.5.537

Saletu B., Wessely P., Gruenberger J., & Schulte M. (1987). Erste klinische Erfahrungen mit einem neuen schlafanstoßen- den Benzodiazepin, Clomazepam, mittels eines Sel-

bstbeurteilungsbogens fu€r Schlaf- und Aufwachqualit€at (SSA). *Neuropsychiatrie, 1*, 169–76.

Spoormaker, V. I., Jan van den Bout, J., & Meijer, E. J. G. (2003). Lucid dreaming treatment for nightmares: A series of cases. *Dreaming, 13*(3), 181–186. https://doi-org.ezproxy.lib.uh.edu/10.1023/A:1025325529560

Stumbrys, T. (2018). Lucid nightmares: A survey of their frequency, features, and factors in lucid dreamers. *Dreaming, 28*(3), 193–204. https://doi.org/10.1037/drm0000090

Stumbrys, T., & Erlacher, D. (2017). Inner ghosts: Encounters with threatening dream characters in lucid dreams. *Dreaming, 27*(1), 40–48. https://doi-org.ezproxy.lib.uh.edu/10.1037/drm0000043

Tholey, P. (1989). Consciousness and abilities of dream characters observed during lucid dreaming. *Perceptual and Motor Skills, 68,* 567–578. http://dx.doi.org/10.2466/pms.1989.68.2.567

van der Ploeg, H.M. (2000). *Handleiding bij de ZeIJ Beoordelings Vragenlijst, ZBV* (2nd ed.). Swets & Zeitlinger.

Watson, D. (2001). Dissociations of the night: Individual differences in sleep-related experiences and their relation to dissociation and schizotypy. *Journal of Abnormal Psychology, 110*(4)*,* 526–535. https://doi.org/10.1037/0021-843X.110.4.526