

Neurosynth Research Proposal Guidelines

We owe much of what we know about the human brain to carefully designed research studies. The Neurosynth research proposal assignment will allow you to explore a research topic related to cognitive neuroscience in depth and gain experience designing a novel experiment to address an unanswered question.

Your research proposal should include a literature review, experimental methods, predicted results, and a discussion of the experiment's potential implications. Research proposals should be approximately 10-12 pages (double-spaced) in APA format and include at least 10 references from peer-reviewed journals.

Selecting a topic and establishing a reference list

First, you need to figure out a topic in cognitive neuroscience that interests you. For this assignment, you will use Neurosynth for inspiration. Go to [Neurosynth](#) and click on "Terms" under the Meta-analyses menu. Scroll through the list of terms to identify a topic that interests you, or look up a functional term of interest in the Search box. For each topic, you can see the number of associated studies that are in the Neurosynth database as well as the number of activations produced from a meta-analysis of those studies.

Once you have found a topic of interest, click on the term name, and you'll see a brain activation map from the meta-analysis of all of the studies in the database that are associated with that term. Click on "Studies" to see the list of studies included. Click on the title of a study to find out more information about the activations observed in that study as well as other associated terms. Next, click on the PubMed identification number (PMID) to view the abstract for that study. Read the abstract, and see if it seems relevant to the topic that you would like to explore in your research proposal. If it is relevant, download a pdf of the entire article (see your instructor if you need help with this) and add it to the list of studies that you are planning to include in your research proposal. Repeat this process until you have found multiple studies of interest.

You are required to include at least 10 references from peer-reviewed scientific journals in your research proposal; more is always better. You should have already found some useful references by using Neurosynth. Pay attention to the dates of the publications. Ideally, at least some of your references will be from studies that were conducted in the past 5 years. You can use PubMed and/or APA PsycNET to find additional recent references. If you have trouble finding articles, try using different search paths and keywords. Whenever you find a relevant article, add it to your reference list. I recommend writing brief summaries of the relevant articles that you find; this will help you later when you are writing the introduction to your paper.

Forming a research question and developing hypotheses

By finding and reading research articles on your topic you will learn what is still unknown about your topic and what types of experiments follow logically from the current literature. Often researchers suggest ideas for future research in their scientific journal articles. You are welcome to use one of these ideas for your research proposal, but you will need to give credit to your source. You can also use the meta-analysis brain activation maps generated by Neurosynth to help you formulate a research question about a specific brain region.

Once you have your references and your research question, you will need to formulate hypotheses. You should have adequate knowledge of the existing literature at this point and be able to use this knowledge to make an educated guess as to the outcome of your study. It is perfectly fine to have several hypotheses (in fact, some of the best research studies are those in which the outcome is not obvious beforehand), but each hypothesis needs to be grounded in the existing literature.

Writing the introduction

The introduction to your research proposal should describe relevant research studies that have already been done and explain why your proposed experiment will help address unanswered questions. In addition to summarizing previous research, you should include a statement of purpose for your experiment along with the specific hypotheses you generated. Remember to credit any work or idea that is not your own. Citations and references should be in APA format.

Deciding on the methods

Now that you have reviewed the existing literature, generated a specific research question, and formulated your hypotheses, you need to select a methodology. You should start by determining the independent and dependent variables (What will you be manipulating? What will you be measuring?). You must figure out exactly what types of materials and procedure you will use. You might choose to use standard measures, adopt similar methods to a previous study, or create your own materials. Studying the methods sections of previous studies on your topic may help you figure out the best way to test your hypotheses.

The methods section of your research proposal should contain three separate subsections: Participants (a brief description of the people who will be participating in your experiment), Stimuli (a description of the specific stimuli and tests you will be using), and Procedure (a detailed account of the experimental tasks and what participants will be doing and in what order).

Predicting the results and discussing the implications

Your research proposal also needs to include a description of your predicted results. You do not need to go into great detail, but you should make clear the general pattern of findings that you expect to obtain. Then, your discussion section should emphasize the importance, or significance, of your research. You should discuss what the implications of your expected findings would be in terms of the research question you asked and if applicable, in terms of the real world. A strong research proposal will also contemplate what you would conclude if your results do not match your expectations.