

COGSCI 1: FALL 2020

MIDTERM PAPER: RESEARCH PROPOSAL (30%)

DUE: Due Monday, October 19th, 2020 (11:59PM - PST)

GRADING RUBRIC

Paper must be submitted by each student and worked on independently

Title Page: Research Proposal Title, Student Name, Student ID#

Paper: 4-pages, single-spaced, 12-point font (Arial, Times, Calibri)

References in APA format on a separate page

Attention to Writing Mechanics: grammar, punctuation, spelling

Total Points = 55 converted into 30% of final grade

***IMPORTANT: DATA COLLECTION IS NOT REQUIRED**

RESEARCH PROPOSAL

Introduction & Literature Review (20 Points)

1. Select a research topic that involves an issue important to Cognitive Science.
2. Explain why this issue is important based on the current state of science. Ensure that this issue is novel and has not been considered before. It is acceptable to take a well-known experiment and extend it with a unique/new/novel research question such as a new contribution to Baddeley's working memory experiment. What is the proposed research intended to accomplish in terms of its potential for innovation? Convince us that the research is impactful. **(5 points)**
3. Application of Course Content: when applicable, incorporate lecture material, studies reviewed, readings, and assessments (neuropsychological testing) covered in class. **(5 points)**
4. Problem Statement: State clearly and explain the problem or need for your study **(1 point)**

5. Hypothesis Statement: State clearly your idea or explanation that you will test through experimentation. **(1 point)**
6. Operationalize Terms: Define important terms (e.g. jargon) **(1 point)**
7. Literature Review: Discuss prior research relevant to your topic and state clearly why your study is the needed future direction (minimum of 4 references). Include constructive critique of this previous work and how to address their limitations. Be sure to be concise and clear about how this relates to your proposed study. **(5 points)**
8. Discuss the possible ethical implications or concerns around this study and how you would ensure participant safety. **(2 points)**

METHODS SECTION (20 Points)

9. Sample: describe your participants (inclusion/exclusion): humans, animals, machines. Provide information about age, gender, ethnicity, education, and other information you think is important for readers to know. For example, in a study with patient participants, we would want to know if they are taking any medication(s). Provide information about participants who will not be included (screened out of your study). Explain why they are being excluded. Are you comparing 2 or 3 different groups or 1 group of participants at different time points? Be sure to carefully describe which participants are in the experimental group (e.g. receiving treatment) vs. the control group (e.g. not receiving treatment). **(8 points)**
10. Materials: describe what is needed to carry out your experiment. This can include specific software, psychological tests, cognitive tests **(2 points)**
11. Technology Use: Will you be using a neuroimaging tool, AI, specific data science approaches **(1 point)**
12. Design: are participants coming in for 1 day of testing, at two time points, over a year? Ensure that your study design is reasonable and feasible. Discuss any potential strengths and weaknesses of the design and methods chosen. **(5 points)**
13. Procedures: describe step by step what participants will be asked to do in your experiment or what algorithm you are using in detail if for instance, it is an AI/ML experiment. **(4 points)**

DATA PLAN (10 Points)

14. Data: describe the data that would be needed to support your hypothesis (assume your data supports your hypothesis). Describe both the independent and dependent variables. Discuss possible confounding variables. **(4 points)**

15. Data Analysis Plan: How would you use your data to show there is evidence for your hypothesis? Describe your dependent measures and predictions about how you expect that they will be affected by your independent variable. **(4 points)**

16. Data Interpretation: Assuming your data supports your hypothesis, what is a critical interpretation of what the data is showing and why. **(2 points)**

CONCLUSIONS (5 Points)

17. Conclusions: Discuss the hypothetical major findings from your study restating the problem and hypothesis statements. Assume you have gathered the data and the data supports your hypothesis. Major findings, the conclusion, and their implications in the context must be discussed in the framework of Cognitive Science. **(3 points)**

Discuss the conclusions in the context of recent literature.

18. Limitations: Discuss the limitations of your study **(1 point)**

19. Future Direction: What is the next step in this area of cognitive science **(1 point)**