

## Project Hypothesis Worksheet

Each project must test a minimum of 4 hypotheses. To develop hypotheses, groups will work together to complete this worksheet which will help groups identify independent and dependent variables, operational definitions, and the appropriate statistical analyses needed to analyze the data.

As you decide which aspect of psychology you would like to explore and what kind of research project you will conduct, consider the following:

- The study must be experimental with at least one clearly defined manipulated independent variable.
- The study must be able to be conducted in an online setting.
- Each project should have at least two independent variables and three dependent variables of interest.
- A minimum of four unique hypotheses must be included in the project.
- Each independent and dependent variable should be included in at least one hypothesis.
- At least two dependent variables should be measured using established measurements that have been proven reliable and valid (e.g., Big-Five Inventory).

Group Members (maximum five):

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1. Provide a brief description of the overall research question your group is interested in exploring include information about the specific psychological constructs and effects your group wants to test.
  - Our group is interested in the implicit biases in healthcare based on age and gender demographics. Implicit bias is considered a negative attitude that is not consciously held by a person, generally toward a specific group of people or demographics. It is widely understood there is implicit bias in every person, and we were curious to learn about whether there is implicit bias in potential patients when choosing a doctor for their own care. This implicit bias may not always be negative but could still cause concern for the quality of care that patients are receiving. This research could also explore ingroup bias, and whether or not patients would be more likely to choose a doctor that matches their demographics. Ingroup bias is the concept that we tend to favor individuals who are a member of our "ingroup" and consider other nonmembers to be "outsiders". While the dynamic is slightly different between the patient-doctor relationship, we were hoping to see if that ingroup dynamic could be reflected in our research.
2. Each project should have at least two independent variables and three dependent variables of interest. With this in mind, complete the following:
  - a. Your first independent variable must be manipulated, meaning participants are randomly assigned to one of the levels. What is your first independent variable, how is it operationally defined, and what is its scale of measurement (nominal, ordinal, interval, or ratio)? How many levels does it have? Provide any relevant descriptions and/or illustrations of the different levels.

- Our first independent variable is the **gender** of the doctor (Woman vs. Man). We will operationalize it by presenting participants with different images of both female and male doctors with their names and job titles listed below. The participants will be randomly assigned to view either male or female doctors. The scale of measurement is nominal as the gender here is in category without any order or ranking, consisting of two levels (Woman vs. Man).
- b. Your second independent variable can either be a manipulated or participant/subject variable. What is your second independent variable, how is it operationally defined, and what is its scale of measurement (nominal, ordinal, interval, or ratio)? How many levels does it have? Provide any relevant descriptions and/or illustrations of the different levels.
- **Age: having a young vs an older doctor** is the second independent variable. It can be operationally defined as separating the physicians into different groups such as 50+ and the other group being younger than 50. Then the participants will be exposed to images of the doctors that have been categorized by those age groups. The scale of measurement would be nominal as the attributes are named and just examines the two age categories used. Looking at two different age groups will mean that there are 2 levels, giving us younger and older doctor groups. By analyzing these categories, it can give us information on whether age has any effect on some dependent variables.
- c. What is your first dependent variable, how is it operationally defined, and what is its scale of measurement (nominal, ordinal, interval, or ratio)? Provide any relevant descriptions and/or illustrations. Provide the proper citation for this psychological measurement.
- Our first dependent variable is patient comfortability with a certain doctor. It will be operationally defined by having participants surveyed with an adjusted version of the PEECE questionnaire where they are given a definition of comfortability initially and then asked about how comfortable and safe they feel in the presence of a certain doctor with yes or no answers. The scale of measurement is interval.  
Source: <https://pmc.ncbi.nlm.nih.gov/articles/PMC5278251/#s2>
- d. What is your second dependent variable, how is it operationally defined, and what is its scale of measurement (nominal, ordinal, interval, or ratio)? Provide any relevant descriptions and/or illustrations. Provide the proper citation for this psychological measurement.
- Our second dependent variable is the perceived medical competence participants infer they will receive from a particular doctor. It will be operationally defined by participants rating which doctor(s) they believe are more likely to show higher competence by using a 4-item scale representing medical competence and having patients indicate their level of agreement from 1-7 (from strongly disagree to strongly agree). In other words, it is a numerical estimate regarding how knowledgeable primary care physicians look. The scale of measurement is interval.  
  
- Source: <https://www.sciencedirect.com/science/article/pii/S0738399104001235>
- e. What is your third dependent variable, how is it operationally defined, and what is its scale of measurement (nominal, ordinal, interval, or ratio)? Provide any relevant descriptions and/or illustrations.

- Our third dependent variable is the likelihood of choosing a particular doctor. It will be operationally defined by asking participants how likely they are to choose a certain primary care physician for medical purposes, which will be answered on a scale from 1-10 (1 being extremely unlikely, 10 being extremely likely). The scale of measurement is interval. ✓

3. A minimum of four unique hypotheses must be included in the project. Each independent and dependent variable should be included in at least one hypothesis. With this in mind, complete the following:

- Hypothesis 1: What is the research hypothesis? What is the independent variable(s) and the dependent variable? Be specific; make a prediction. What type of claim are you making: frequency, association, or causal? What is the appropriate statistical analysis for this hypothesis?
  - **Female healthcare providers are more likely of being chosen for care compared to males.** The independent variable is the gender of the provider. The dependent variable here would be the likelihood of choosing a certain gender (male or female). The type of claim being made here is a causal claim as there is influence on the likelihood based on patient preference. The appropriate statistical analysis would be an independent samples t-test. Since there are only two groups, a t-test can be used to see if there is a comparison between genders.
- Hypothesis 2: What is the research hypothesis? What is the independent variable(s) and the dependent variable? Be specific; make a prediction. What type of claim are you making: frequency, association, or causal? What is the appropriate statistical analysis for this hypothesis?
  - **Younger doctors will be rated higher in patient comfortability compared to older ones.** The independent variable here would be age, and the dependent variable would be the comfortability ratings for each age group of doctors. This claim could be considered a causal claim. The hypothesis refers to younger doctors understanding patients more due to generational similarities. The appropriate statistical analysis for this hypothesis would be an independent samples t-test as the hypothesis is looking at younger and older doctors.
- Hypothesis 3: What is the research hypothesis? What is the independent variable(s) and the dependent variable? Be specific; make a prediction. What type of claim are you making: frequency, association, or causal? What is the appropriate statistical analysis for this hypothesis?
  - **Participants will feel more comfortable with female healthcare providers regardless of their age.** The independent variable is the gender of the healthcare providers, and the dependent variable would be the comfort level expressed by participants. This is an association claim. The empathy female doctors provide may help patient be more expressive of their symptoms and feel comfort. The appropriate statistical analysis for this hypothesis is independent samples t-test as it compares females vs. male physicians.
- Hypothesis 4: What is the research hypothesis? What is the independent variable(s) and the dependent variable? Be specific; make a prediction. What type of claim are you making: frequency, association, or causal? What is the appropriate statistical analysis for this hypothesis?
  - **Older doctors will be rated higher in medical competence compared to younger ones due to experience and expertise.** The independent variable would be the age of the doctors. The dependent variable would be the competence level rated. Since this hypothesis is comparing the doctor's ages

with the level of experience, it would be a causal claim. The independent samples t-test analysis for this hypothesis could be an appropriate statistical analysis for this hypothesis since it would compare the mean competence level between the two age groups to measure if they are statistically significant.