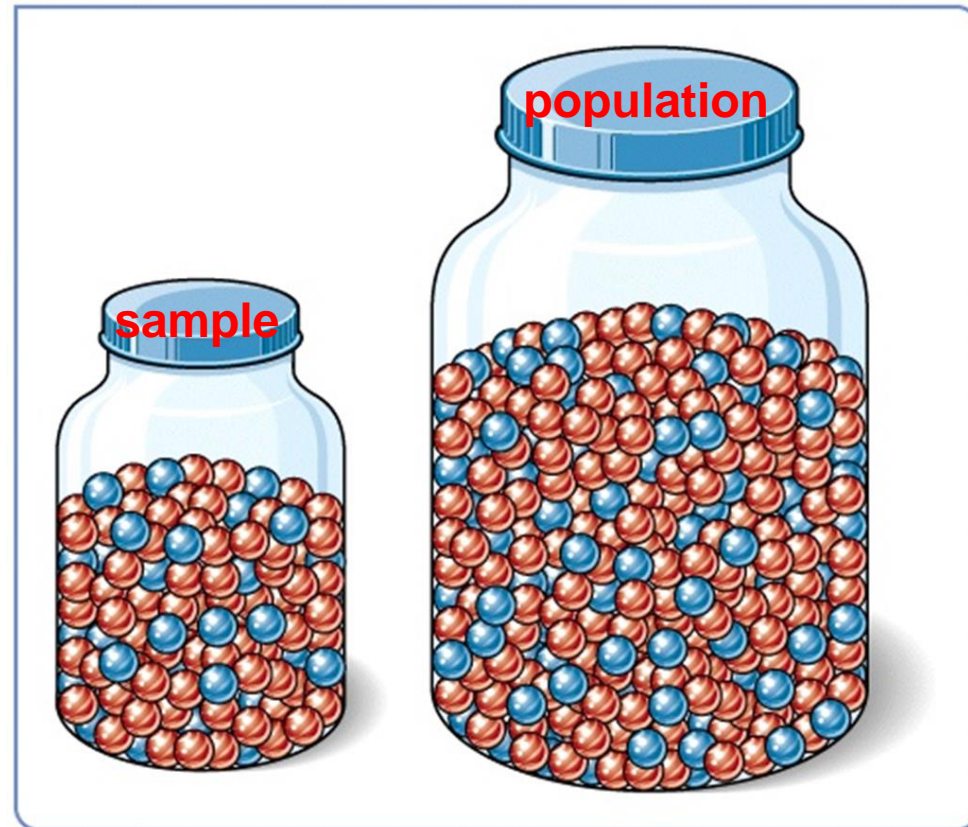
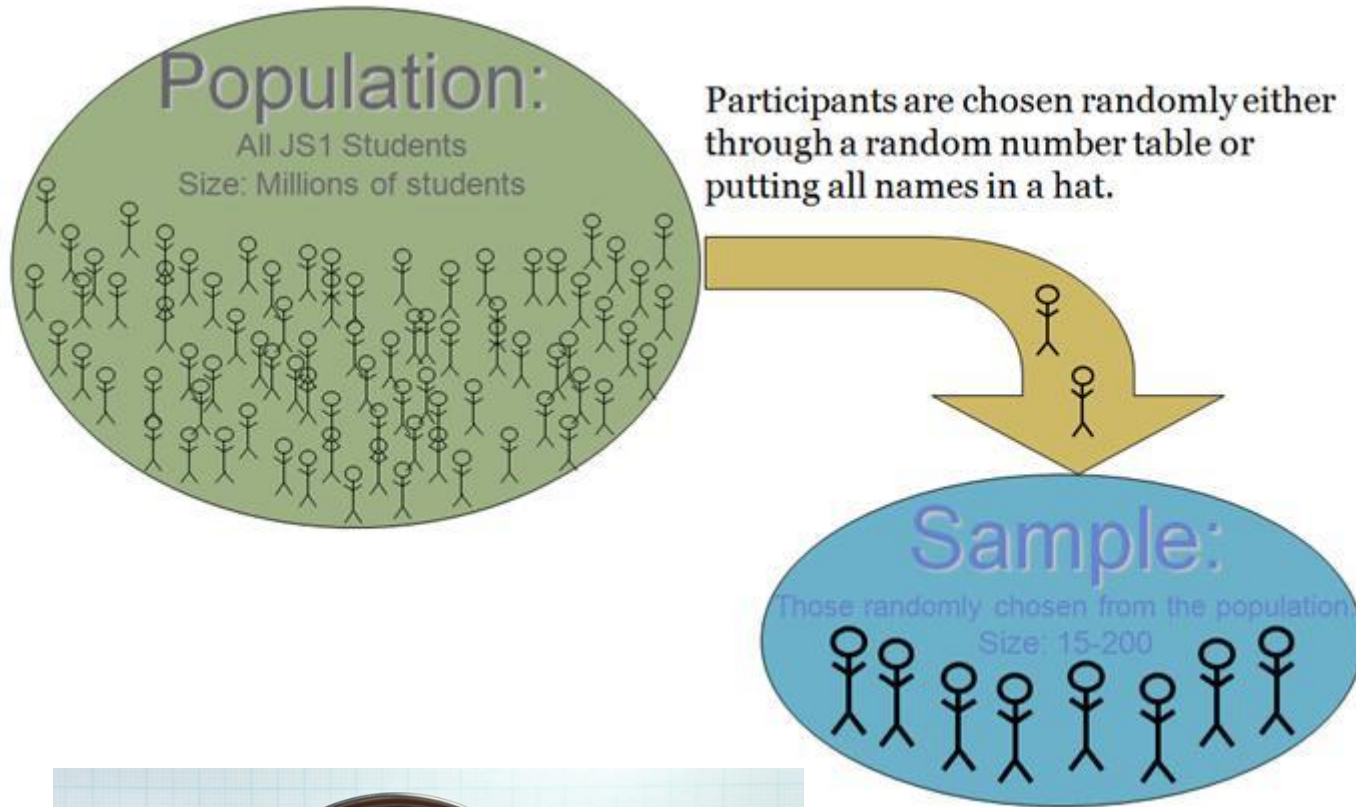


# Sampling

- Identify the population you want to study. (Who are you applying your findings to.)
- Get a sample that is representative of the population you want to study.
- **GET A RANDOM SAMPLE.**



# Random Sampling



Participants are chosen randomly either through a random number table or putting all names in a hat.

A sampling is used when you cannot study the entire population you want to consider.



# Random Assignment



- Once you have a random sample, randomly assigning them into two groups rules out confounding variables.
- Experimental Group v. Control Group.

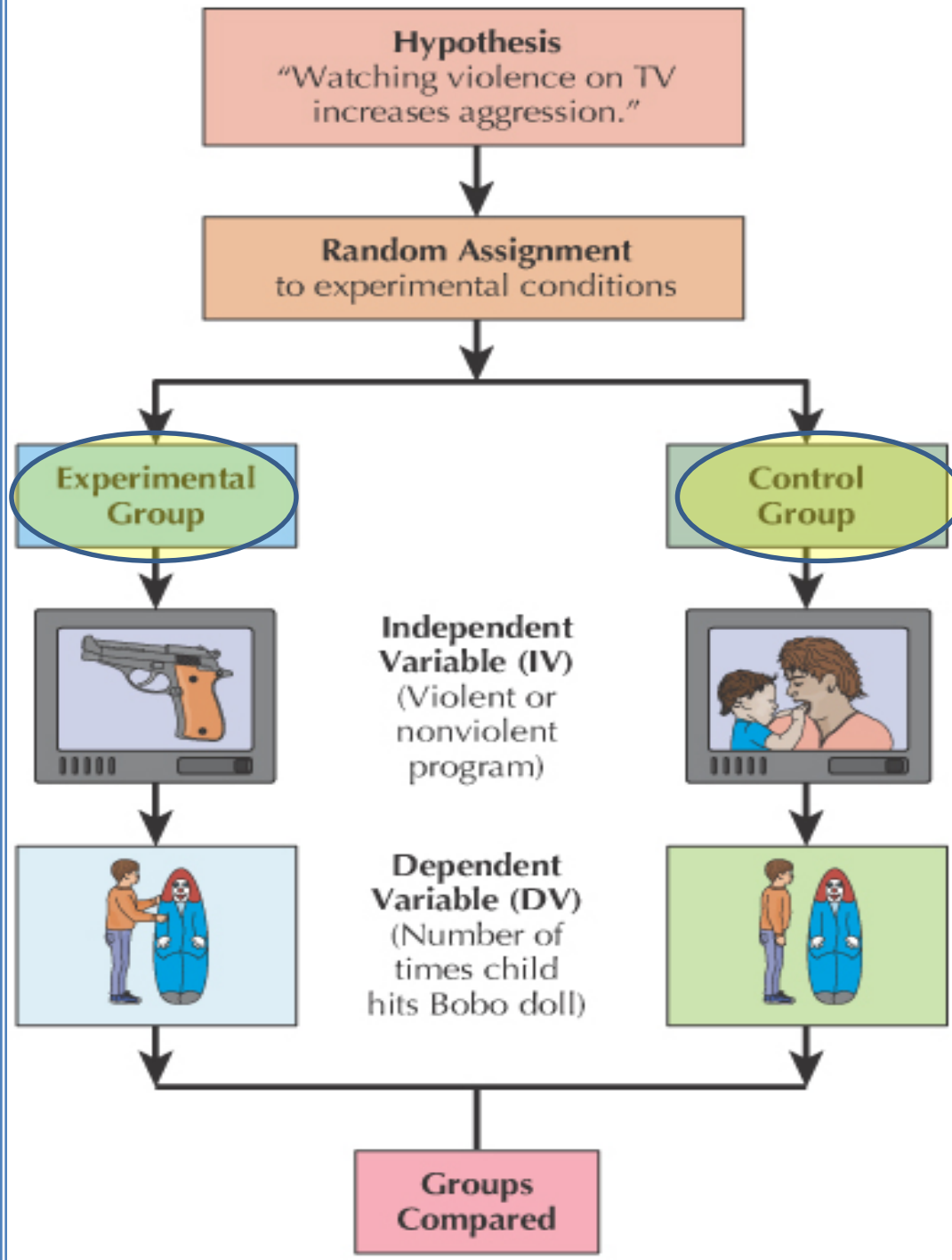
Breast milk makes children smarter!

Random assignment  
(controlling for other variables such as parental intelligence and environment)



Assigning participants to experimental (Breast-fed) and control (formula-fed) conditions by random assignment minimizes pre-existing differences between the two groups.

Condition	Independent variable	Dependent variable
Experimental	Breast milk	Intelligence score, age 8
Control	Formula	Intelligence score, age 8



*Random assignment is needed to accurately infer cause and effect relationships.*



# What is a quasi-experiment?

- ❑ When the investigator has no control over the independent variable but has power over how the dependent variable is measured.
- ❑ Membership in the treatment level is determined by conditions beyond the control of the experimenter.
- ❑ Used extensively in the social sciences and psychology.
- ❑ If the subjects have NOT been randomly assigned to the treatment condition, the experiment is a quasi- experiment.

**If comparing males v. females  
- it is a quasi-experiment**

An example of a quasi-experimental design would be a study in which you examine the effects of smoking on respiratory functioning.

You might have people who smoke 1 pack a day and 2 pack a day smokers, but you can't really assign them into these groups (is it ethical to make people who smoke 1 pack a day now smoke 2?)

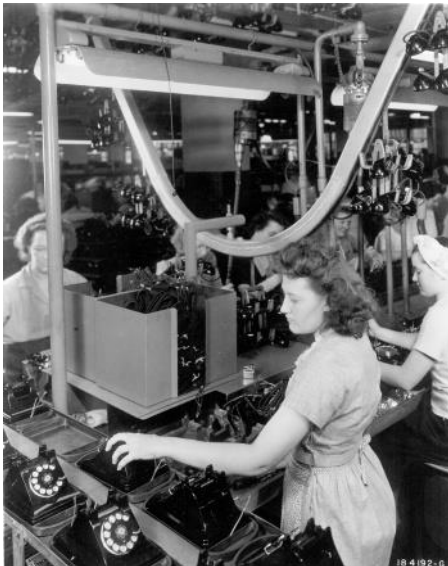
You would then run your study, but when you make conclusions, you can't make any cause and effect conclusions.



# Hawthorne Effect



- But even the control group may experience changes.
- Just the fact that you know you are in an experiment can cause change.



Whether the lights were brighter or dimmer, production went up in the Hawthorne electric plant.

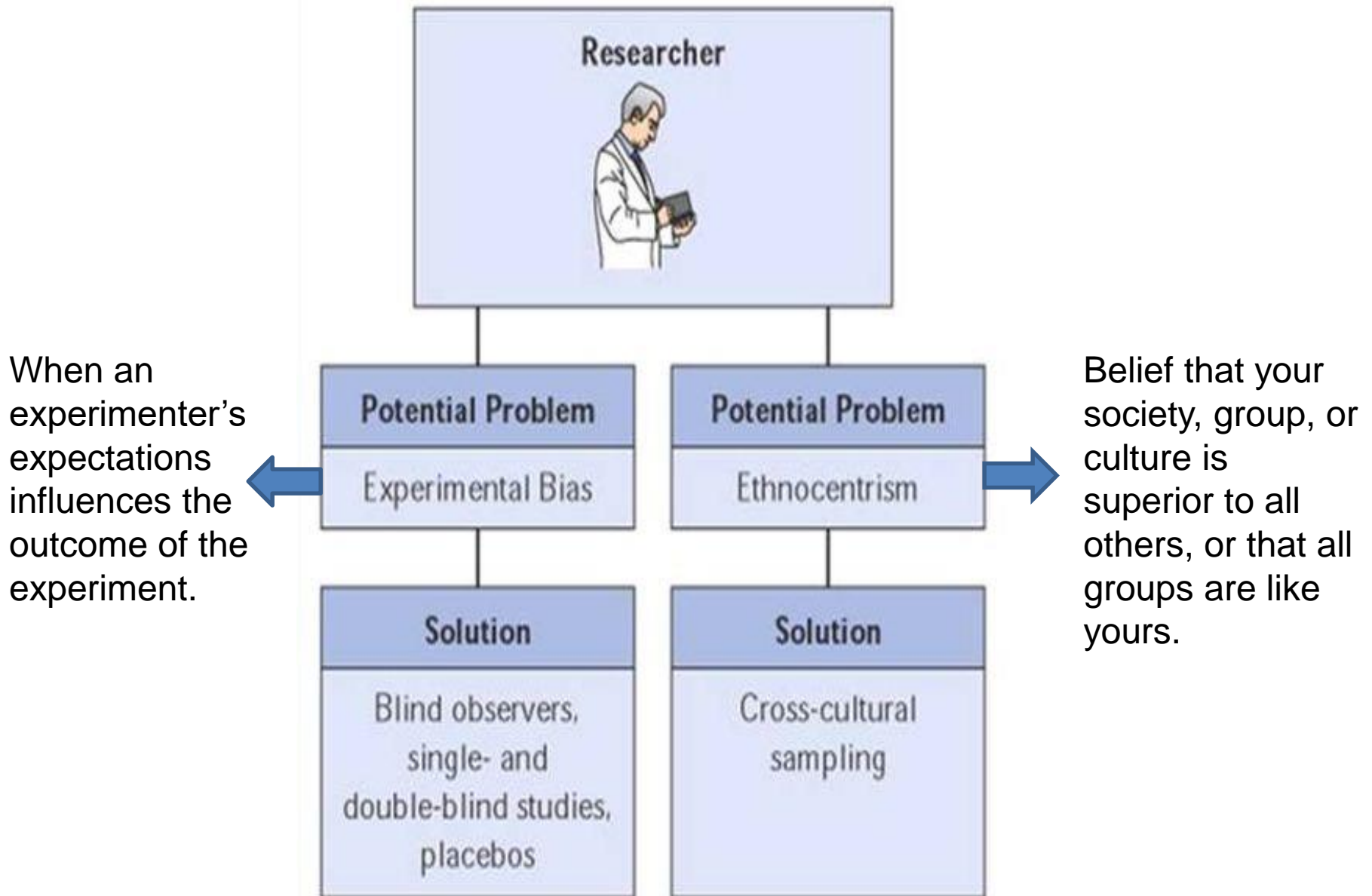
# Hawthorne Effect

FOR EXAMPLE, if a school principal observes a classroom of students working effectively and behaving well in the room of a new teacher, can she be sure that the students are behaving appropriately because *the teacher is excellent?*



Does the effectiveness of the teacher cause the students to be well-behaved and focused?

# Potential Researcher Problems:





# Potential Researcher Problem Solutions:



**BLIND OBSERVERS:** Neutral people other than the researcher

**SINGLE-BLIND STUDY:**

Either the researcher or the subject do not know which group received the experimental treatment.

**DOUBLE-BLIND STUDY:**

The researchers and the subject do not know which group received the experimental treatment.

**PLACEBO:** Inactive substance or fake treatment used as a control.



# The Placebo Effect

Refers to an improvement in symptoms as a result of medical treatment with an inactive substance or staged medical procedure.

Placebos have helped alleviate pain, depression, anxiety, Parkinson's disease, inflammatory disorders and even cancer.

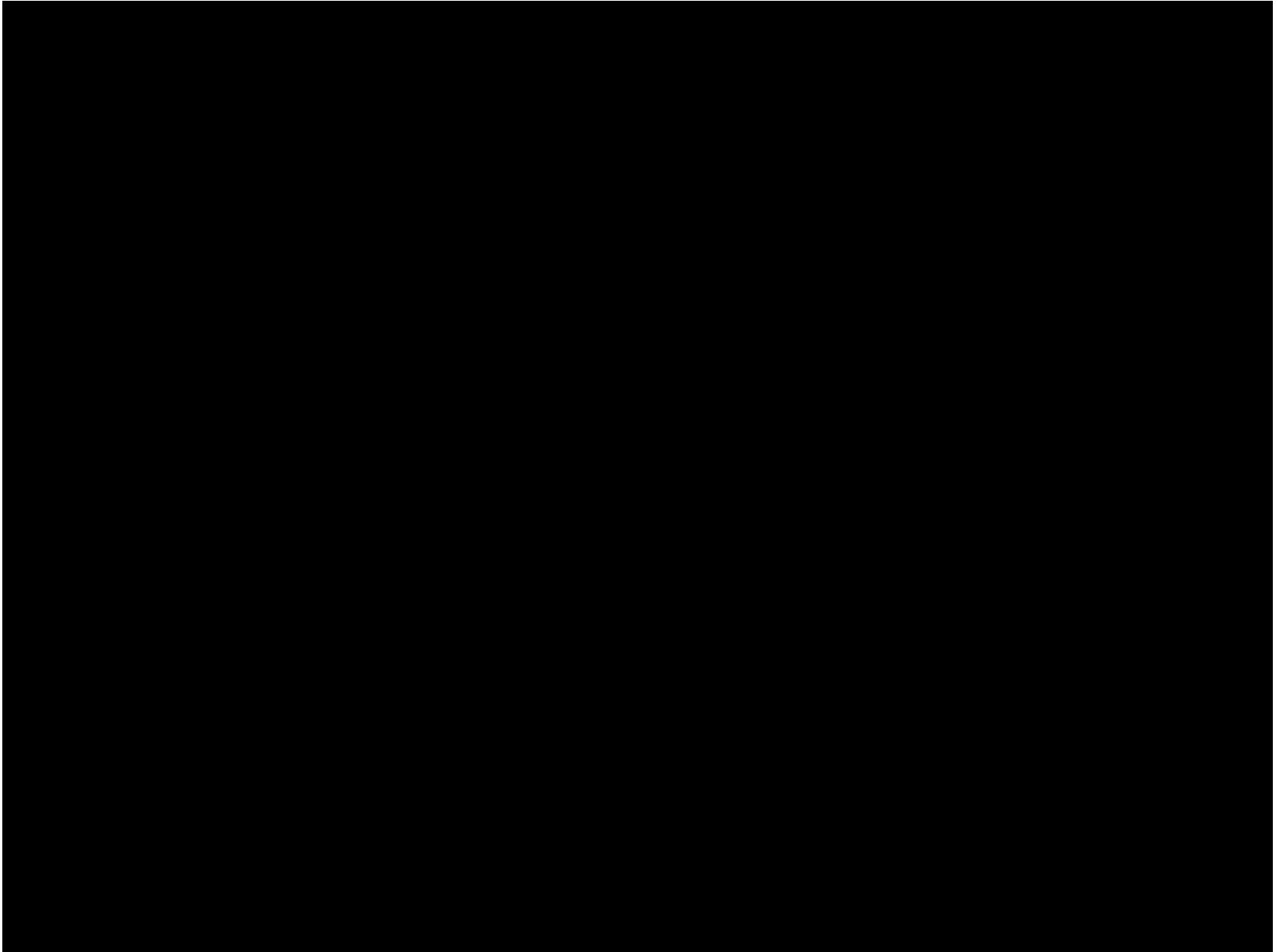
Conscious Belief +  
subconscious associations  
= relief from symptoms



- Up to 58% of US physicians prescribe placebos, according to a study by the NIH.
- 62% believe prescribing placebos is ethical.

Penn and Teller - [alternative medicine](#)

# **The Placebo Effect – sham surgery**



# Potential Participant Problems:

