Psychology Paper Tutorial

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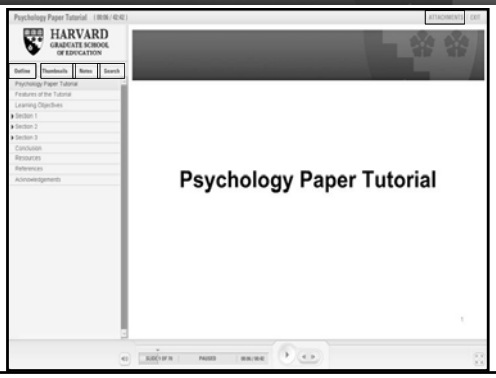
Features of the Tutorial



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Learning Objectives

By the end of the tutorial, you will be able to:

- Read a Psychology Research Article
- Write a Psychology Paper
- Design a Psychology Study

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Section 1

Reading a Psychology Research Article

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Reading a Psychology Research Article

By the time you finish this section, you will be able to do the following:

- Understand the basic structure of a psychology research article
- Read a psychology research article
- Critique the study/studies presented in the article

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General Structure of a Psychology Research Article

- Title
- Abstract
- Introduction
- Method
- Results
- Discussion
- References
- Gray & Wegner, 2008

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Title

What does the title say about the purpose of the article?

PSYCHOLOGICAL SCIENCE

Short Report

The Sting of Intentional Pain

Kurt Gray and Daniel M. Wegner

Harvard University

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Introduction

Why is the Introduction so important?

Short Report

The Sting of Intentional Pain

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Introduction

Why is the Introduction so important?

- Opens the paper

When someone steps on your toe on purpose, it seems to hurt more than when the person does the same thing unintentionally. The physical parameters of the harm may not differ—your toe is flattened in both cases—but the psychological experience of pain is changed nonetheless. Intentional harms are premeditated by another person and have the specific purpose of causing pain. In a sense, intended harms are events initiated by one mind to communicate meaning (malice) to another, and this could shape the recipient's experience. This study examined whether self-reported pain is indeed higher when the events producing the pain are understood as intentionally (as opposed to unintentionally) caused by another person.

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Introduction

Why is the Introduction so important?

- Opens the paper
- Provide context
- States the thesis

Although pain was traditionally conceived to be solely physical in nature (Aydede, 2005), its experience varies substantially with psychological context. The placebo analgesia effect, for example, is the reduction of pain without a change in physical stimulation when context, expectations, or sugar pills challenge the interpretation of a sensation as painful (e.g., Fields, 2008). The nocebo effect, in turn, is the experience of pain without any physical stimulation—as when participants report headaches when told that a (nonexistent) electric current is passing through their head (Schweiger & Parducci, 1981). These variations in pain experience seem to depend on the meaning of the stimulus: A sugar pill is meant to decrease pain, whereas electric current is meant to increase pain. In an interpersonal context, the meaning of an action is derived from the perceiver's perceptions of the actor's intention (Clark, 1996), which means that intentional harms, unlike accidental harms, are *meant* to cause pain.

The possibility that the malicious intent of other people could be translated into additional physical pain is suggested by studies demonstrating that similar areas of cortex respond to both physical pain and social harms (Eisenberger, Lieberman, & Williams, 2003). Social harms, which are presumably laden with intention, have also been shown to be more painful to relive than simple physical harms (Chen, Williams, Fitness, & Newton, 2008). So, although a broken toe (or electric shock) may hurt, an intentionally broken toe (or electric shock) should hurt more.

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Introduction

Questions to ask yourself:

- How do the authors open the study?
- How do the authors provide the context for their study?
- What is the research question of the study?
- What is the paper's thesis statement?

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Method

Why is the Method section important?

- Describes how the experiment(s) was done
- Allows others to understand and even replicate the same study (or studies)

Intentional Condition

Unintentional Condition

METHOD

Forty-eight participants (68% female, 32% male) participated in a lab study of "psychophysical perception in pain." Four participants were excluded for suspicion and one participant was excluded for failing to follow instructions, leaving a total of 43.

On arrival, participants met their study partner—a confederate—and were escorted to an individual room. They were then introduced to the psychophysical tasks of color matching, number estimation, pitch judgment, and discomfort assessment, each of which they completed. Discomfort assessment involved being administered an electric shock and evaluating it on a 7-point scale ranging from *not at all uncomfortable* to *extremely uncomfortable*. Shocks of 1-ms duration were delivered to the wrist of the dominant hand through a stimulator (Biopac Systems, Goleta, CA), with voltage precalibrated for each participant to be "very uncomfortable." Voltages ranged from 40 to 75 V between subjects. Participants evaluated two blocks of computer-administered electric shocks initially in an individual practice session as a baseline pain measure.

On each experimental trial, participants saw a computer screen with two potential tasks before completing one of them. When discomfort assessment was a potential task, the alternate task was evaluating the relative pitches of tones. On this and other trials, participants were told that the participant in the next room (the confederate) would select which task the participant would complete.

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Method

Questions to ask yourself:

- What kinds of participants were recruited?
- What did the participants do in the study?
- What were the key elements of the study?
- Can you visualize the study in your mind?
- What more information might you want to make the Method clearer?

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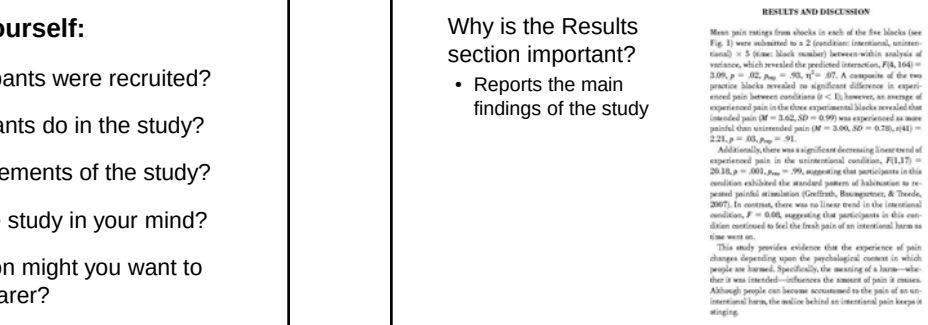
Results

Why is the Results section important?

- Reports the main findings of the study



RESULTS AND DISCUSSION

Mean pain ratings from blocks in each of the five blocks (see Fig. 1) were submitted to a 2 (condition: intentional, unintentional) × 5 (time: block number) between-within analysis of variance, which revealed the predicted interaction, $F(4, 164) = 3.09$, $p = .02$, $p_{rep} = .93$, $\eta^2 = .07$. A composite of the two practice blocks revealed no significant difference in experienced pain between conditions ($t < 1$); however, an average of experienced pain in the three experimental blocks revealed that intended pain ($M = 3.62$, $SD = 0.99$) was experienced as more painful than unintended pain ($M = 3.00$, $SD = 0.78$), $t(41) = 2.21$, $p = .03$, $p_{rep} = .91$.

Additionally, there was a significant decreasing linear trend of experienced pain in the unintentional condition, $F(1,17) = 20.18$, $p = .001$, $p_{rep} = .99$, suggesting that participants in this condition exhibited the standard pattern of habituation to repeated painful stimulation (Greffrath, Baumgartner, & Treede, 2007). In contrast, there was no linear trend in the intentional condition, $F = 0.00$, suggesting that participants in this condition continued to feel the fresh pain of an intentional harm as time went on.

This study provides evidence that the experience of pain changes depending upon the psychological context in which people are harmed. Specifically, the meaning of a harm—whether it was intended—influences the amount of pain it causes. Although people can become accustomed to the pain of an unintentional harm, the malice behind an intentional pain keeps it stinging.

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Results

Why is the Results section important?

- Reports the main findings of the study
- Provides actual statistics, tables, figures, and graphs to help the reader understand the findings

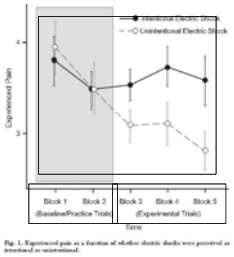

Fig. 1. Experienced pain as a function of whether electric shocks were perceived as intentional or unintentional.

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Results

Questions to ask yourself:

- What was the main result?
- Do you think the results address the research question and the thesis statement fully?
- Were there other results that were found?

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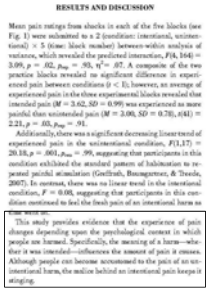
Discussion

Why is the Discussion important?

- Summarizes and interprets the results of the study
- Discusses the implications and the limitations of the study
- Discusses future directions for the research field



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Discussion

Questions to ask:

- What were the main results of the study? Did the authors answer their own research question?
- Did the authors point out any limitations or potential criticisms to their study? Can you think of any other concerns?
- What are some of the implications of the study, either for the real world or for the particular field the authors are in?
- What future studies did the authors propose? What other future work would you like to see?

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References

Why are the References important?

- Credits the research on which the present study is based
- Enables the reader to locate research articles on the same topic or on similar topics

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Summary of Section 1

Before moving on to Section 2, make sure you understand what each part of a Psychology research article does:

- Title
- Abstract
- Introduction
- Method
- Results
- Discussion
- References

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Section 2

Writing a Psychology Paper

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Writing a Psychology Paper

You will be able to do the following:

- Understand the general structure of a psychology paper
- Construct a research question
- Construct a thesis statement
- Build a supporting argument
- Consider alternatives to your thesis
- Make inferences about your research
- Create an outline

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General Structure of a Psychology Paper

A Psychology paper should have the following sections:

- Title
- Introduction
- Research Question
- Thesis Statement
- Supporting Argument
- Alternatives
- Discussion

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Research Question

- The research question poses the question that the paper aims to answer.
- There are two kinds of research questions:
  - o Broad research question
  - o Narrow research question

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Research Question

- Let's say we were interested in understanding individual differences among students in their quantitative performance in the classroom.
- What would be a broad question to ask?
- What would be a narrow question to ask?

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Research Question

- Broad Research Question:
  - Why do some children perform consistently worse than others on math in class?
- Narrow Research Question:
  - Do adolescent girls score lower on standardized math tests than their male counterparts after being exposed to stereotype threat*?

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Research Question

* stereotype threat: the negative impact a stereotype about an individual's group can have on that individual's performance when such a stereotype is made salient to the individual (Steele & Aronson, 1995)

* stereotype: a commonly held belief about a certain social group

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Thesis Statement

- A thesis statement alerts the reader to the contents of the paper and states your stance on the research question you posted.
- Think back to our research topic – understanding individual differences among students in their quantitative performance in the classroom.
- What would be a good thesis statement?

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Thesis Statement

- Thesis Statement:

  "When exposed to stereotype threat, adolescent girls tend to score lower on standardized math tests compared to their male counterparts."
- Why is this thesis statement a good one?
- What kinds of thesis statements should we avoid?

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Thesis Statement: What to Avoid

There are several kinds of thesis statements to avoid:

- The 'So What' Thesis
- The '2-in-1' Thesis
- The 'End of the Paper' Thesis

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Thesis Statement: What to Avoid

- What is a "So What?" thesis?
  - Does not have a particular stance, usually by stating a fact that doesn't seem to require research support or is so vague that the argument is unclear to the reader
  - "So what? Why does this research topic matter?"
- "When exposed to stereotype threat, adolescent girls may score differently or similarly on math tests compared to their male counterparts."

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Thesis Statement: What to Avoid

- What is a "2-in-1" thesis?
  - Embeds more than one thesis statement in one sentence
  - Indicates that the research question is too broad and complex to be addressed appropriately in one paper
- "When exposed to stereotype threat, adolescent girls may score lower on math tests compared to their male counterparts; when extra teacher support is provided, adolescent girls often outperform their male peers."

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Thesis Statement: What to Avoid

- What is an "End of the Paper" thesis?
  - Does not appear at the beginning of the paper
  - Indicates that the paper was not planned out properly
- The thesis statement should always appear in the Introduction, preferably within the first or second page of your paper.

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Supporting Argument

The argument in your paper should be…

- Coherent
- Logical
- Persuasive
- Makes good use of the available evidence
- Reaches a convincing conclusion

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Supporting Argument

When researching papers to support your thesis, ask yourself:

- In reading through these papers, what are the main supporting points for my thesis?
- What are the thesis statements of the papers?
- Do the authors of the papers reference other research in their literature review that supports the same position I am taking? How so?
- Did the authors of the papers conduct a study or a series of studies that support my thesis? How so?

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Alternatives

- It is important to consider the alternative answers to your research question.
- How are the alternatives weaker answers to the research question?
- Why is your thesis statement the best argument of all the possible responses to your research question?

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Alternatives

- Thesis statement: "When exposed to stereotype threat, adolescent girls tend to score lower on standardized math tests compared to their male counterparts."
- Alternative #1: "When exposed to stereotype threat, adolescent girls continue to score equally on standardized math tests compared to their male counterparts."
- Alternative #2: "When exposed to stereotype threat, adolescent girls score higher on standardized math tests compared to their male counterparts."

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Discussion

- The Discussion summarizes the results of your findings and discusses the implications of those results.
- You should consider the limitations of your research, potential criticisms other scholars may have about your research and future directions you think research in this field should take.

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Discussion

- Let's say we found that adolescent girls do score lower on standardized math tests after being exposed to stereotype threat.
- Things to consider:
  - Were the female and male participants well-matched in terms of other factors?
  - How were the female participants exposed to the negative stereotype?
  - In the future, would it be useful to replicate our study with other female groups?

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Creating an Outline

Your outline should have the following:

- Broad research question
- Narrow research question
- Thesis statement
- Supporting argument
- Alternatives to your thesis statement
- Identification of any limitations, critiques and future directions

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Summary of Section 2

Before moving on to Section 3, make sure you understand how to read and write a Psychology paper. You should be able to craft the following:

- Research Question
- Thesis Statement
- Supporting Argument
- Alternatives
- Discussion

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Section 3

Designing a Psychology Study

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Designing a Study

By the time you finish Section 3, you will learn the following:

- The basics of an observational study
- The differences between correlation and causation
- The importance of statistical control
- The basics of an experimental study
- Alternative explanations and ruling out alternative explanations

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Designing a Study

- Writing a paper:
  - o Use available evidence from previous studies
  - o Produce evidence from your own studies
- Designing a good study:
  - o Ask a good research question

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Designing a Study

- Observational study
  - o Correlational relationship between variables
  - o Is variable X related to variable Y?
- Experimental study
  - o Causal relationship between variables
  - o Is variable X causing variable Y?

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Observational Studies

What does it mean for two variables to be related?

- Systematic relationship
  - o Positive relationship = High on X, High on Y
  - o Negative relationship = High on X, Low on Y

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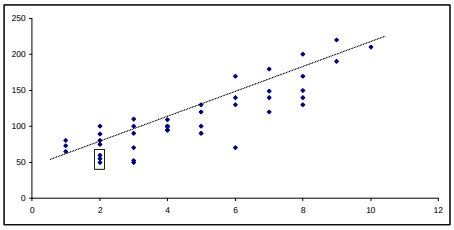
Observational Studies

Positive Correlation



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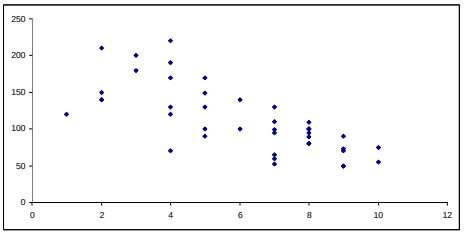
Observational Studies

Negative Correlation



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Correlation and Causality

Why can't we draw any conclusions about causal relationships from such correlations?

- If A is correlated with B, then

A → B

or

B → A

or

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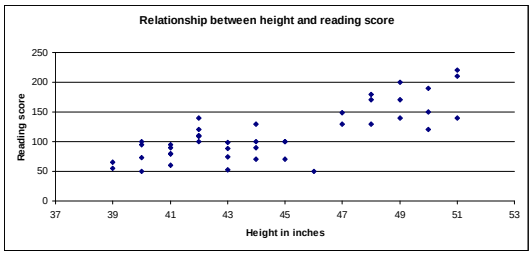
Correlation and Causality



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Statistical Control

Statistical control = removing the effect of other variables

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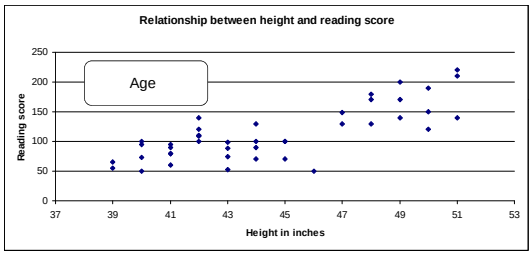
Statistical Control



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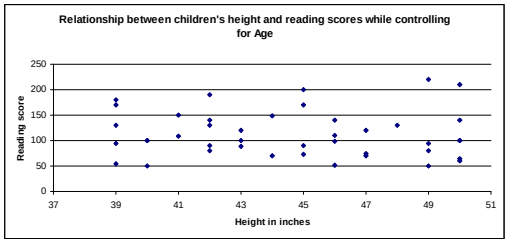
Statistical Control



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Statistical Control

The relationship between two variables might disappear, remain the same, become stronger or weaker after controlling for another variable

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Statistical Control

Can statistical control help us draw conclusions about causal relationships?

No! Correlation does not equal causation.

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Experimental Studies

- An experimental study is an intervention study
- Independent variable: the variable manipulated by the experimenter
- Dependent variable: the variable of interest
- Does a change in the independent variable affect the dependent variable?

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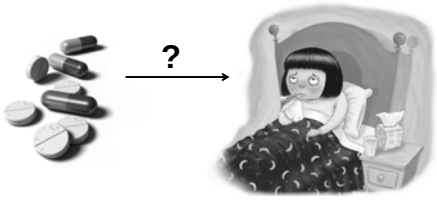
Experimental Studies

Research question: Does a new drug work for alleviating the effects of a particular disease?



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Experimental Studies

- What is your independent variable?
  - Administration of the new drug
- What is your dependent variable?
  - Patients' health after the administration of the new drug

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Experimental Studies

- **Step 1**: Select your population sample
- **Step 2**: Measure the initial state of the participants before the experiment (pretest)
- **Step 3**: Conduct the experiment
- **Step 4**: Measure the subsequent state of the participants after the experiment (posttest)

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Experimental Studies

How do we really know whether our manipulation worked?

Divide the participants into two (or more) groups (conditions).

- Condition 1: Administer no manipulation to one group of participants (control)
- Condition 2: Administer the target manipulation to one group of participants (experimental)

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Alternative Explanations

What is an alternative explanation?

An alternative explanation is any explanation that can explain the pattern of results without involving the independent variable.

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Alternatives vs. Alternative Explanations

- Alternatives = other possible answers to a research question
- Alternative explanations = other explanations to post-experiment results

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Alternatives

- Research question: Does a new drug work for alleviating the effects of a particular disease?
- Thesis: Patients who receive the new drug will show overall improvement in their health compared to those who do not.
- Alternatives:
  - Patients who receive the new drug will not show any improvement.
  - Patients who receive the new drug will show a decline in their health.

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Alternative Explanations

- Result: Patients who received the new drug showed an improvement in their health compared to those who did not receive the drug.
- But how do we know that the patients' health improved because of the administration of the new drug? What are some alternative explanations?
- How would you change the design of the experiment in order to rule out each alternative explanation?

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Alternative Explanations

1. Participants may have improved regardless of the manipulation
   - Divide participants into a **control group** and an **experimental group**
2. Participants may have believed the new drug would help
   - Give control group participants a **placebo** drug
3. Participants in the experimental condition, on average, may be different from participants in the control condition (age, gender, degree of illness)
   - **Randomly assign** the patients to one group or the other
4. Researchers and participants may know about the manipulation and unknowingly influence the results.
   - Conduct a **double-blind** study

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Summary of Section 3

This concludes Section 3. You should now be able to understand the following:

- The differences between an observational study and an experimental study
- Why correlation does not equal causation
- Why statistical control is important
- What alternative explanations are and how we can rule out alternative explanations

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Conclusion

If you have any other questions, please do not hesitate to meet with your Instructor or Teaching Fellow. Good luck!

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Resources

- HGSE Academic Writing Services:
  http://isites.harvard.edu/icb/icb.do?keyword=awrs
- "APA Exposed" Tutorial:
  http://isites.harvard.edu/icb/icb.do?keyword=apa_exposed
- "Analytic Writing" Tutorial:
  http://gseacademic.harvard.edu/~instruct/articulate/a127/analytic_writing_tutorial/player.html
- Sixth Edition Publication Manual of the American Psychological Association

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