

1.3: The Scientific Method

I can hear you now, “What? You just convinced me that I will need to know something about statistics to be good in my future career, but, seriously, the scientific method?”

Yup. It turns out that the social sciences are a science. And each step of the scientific method is related to what you’ll learn in this course.

Steps of the Scientific Method

1. Generate research question.
2. Formulate a Research Hypothesis.
3. Collect data to test the Research Hypothesis.
4. Analyze data.
5. Publicize the results.

The following example of using the scientific method (Table 1.3.2) is based off of [Part 2 \(What Students Should Know about How People Learn\)](#) and [Part 3 \(Cognitive Principles for Optimizing Learning\)](#) of Dr. Chew's five-part video series on the best way to learn material and pass your classes. Dr. Chew is a cognitive psychologist, so his career is to learn how people think, process material, and learn.

Table 1.3.2: Scientific Method

Steps of the Scientific Method	Description of the Step of the Scientific Method	Example of the Step of the Scientific Method
1. Generate research question.	This might be pretty broad	"What should I do to pass this class?"
2. Formulate a Research Hypothesis	This is a sentence that states a predicted relationship between two or more groups. This should not be a question, and it should not include the word “because” or else you actually have two hypotheses (the predicted relationship, and the reason why the relationship is that way).	"Students who re-organize their notes will earn more points on their first paper than students who re-read their notes."
3. Collect data to test your Research Hypothesis.	We’ll learn more about this step later, but the important part now is to <u>count</u> or <u>measure</u> the variables in your Research Hypothesis.	"At the end of each class session, half of the class will spend 20 minutes rewriting and organizing their notes, while the other half of the class will spend 20 minutes reviewing (re-reading) their notes. We will then compare their points earned on the first paper between these two groups."
4. Analyze data.	Remember the second reason that you have to take this class? That’s this part of the Scientific Method. You would describe what you found, and state whether the Research Hypothesis was supported or not supported. (We don’t say that a Research Hypothesis is “proven;” we’ll discuss why not when we talk about Null Hypothesis Significant Testing).	That's what the rest of this book will be about!

Steps of the Scientific Method	Description of the Step of the Scientific Method	Example of the Step of the Scientific Method
5. Publicize the results.	Let people know what you found!	Typically, researchers present at a conference or publish a research article. In this example, we could also share our findings with the student newspaper or the tutors.

To the surprise of many students, research and statistics is a fairly significant part of the social sciences. To the surprise of no one, statistics is very rarely the favorite part of one's education. After all, if you really loved the idea of doing statistics, you'd probably be enrolled in a statistics class right now, not a *behavioral* statistics class. So, not surprisingly, there's a pretty large proportion of the student base that isn't happy about the fact that their major has so much research and statistics in it. By the end of this chapter, if not this textbook, hopefully you'll understand why research and statistics are so important!

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