

Chapter 1-Introduction

1.1 A good example is the development of tolerance to caffeine. People who do not normally drink caffeinated coffee are often startled by the effect of one or two cups of regular coffee, whereas those who normally drink regular coffee see no such effect. To test for a context effect of caffeine, you would first need to develop a dependent variable measuring the alerting effect of caffeine, which could be a vigilance task. You could test for a context effect by serving a group of users of decaffeinated coffee two cups of regular coffee every morning in their office for a month, but have them drink decaf the rest of the time. The vigilance test would be given shortly after the coffee, and tolerance would be seen by an increase in errors over days as the vigilance-enhancing effects of real coffee become less effective. At the end of the month, they would be tested after drinking caffeinated coffee in the same and in a different setting.

The important points to cover here are:

1. Tolerance is shown by an increase in errors on the vigilance task.
2. To see the effect of context, subjects need to be presented with caffeine in two different contexts.
3. There needs to be a difference between the vigilance performance in the two contexts.

1.3 Contexts affects people's response to alcohol, to off-color jokes, or to observed aggressive behavior.

1.5 The sample would be the addicts that we observe.

1.7 Not all people in the city are listed in the phone book. In particular, women and children are underrepresented. A phone book is particularly out of date as a random selection device with the increase in the use of cell phones. (I no longer have a land line, for example.)

A discussion of this question might involve pointing out that many telephone surveys really miss the general population, and instead focus on a restricted population, dominated by male adults.

1.9 In the tolerance study discussed in the text, we really do not care what the mean length of paw-lick latency is. No one would be excited to know that a mouse can stand on a surface at 105 degrees for 3.2 seconds without licking its paws. But we do very much care that the population mean of paw-lick latencies for morphine-tolerant mice is longer in one context than in another.

1.11 I would expect that your mother would continue to wander around in a daze, wondering what happened.

1.13 Three examples of measurement data: performance on a vigilance task; typing speed, blood alcohol level.

1.15 Relationship: The relationship between stress and susceptibility to disease; the relationship between driving speed and accident rate.

1.17 You could have one group of mice trained and tested in the same condition, one group trained in one condition and tested in the other, and a third group given a placebo in the training context but given morphine in the testing condition.

It might be useful to assign the Siegel paper to students and then bring up each important concept in a class discussion. These concepts include things like population and sample, as well as basic elements of experimental design.

1.19 This is an Internet search exercise without a fixed answer.
<http://onlinestatbook.com/2/index.html> is an excellent online statistics text put together primarily by David Lane at Rice. Various departments offer data sets, computing advice, and clarifying examples.