Moore SCC 8e Chapter 6

1. Forty people were randomly chosen to participate in an experiment to determine if a new drug reduces cholesterol. Twenty people received the new drug treatment, while the remaining twenty received a placebo. Neither the patients nor the doctors administering the treatment knew if the patient was receiving the placebo or the drug treatment. This is an example of:

A. Placebo effect

B. Blindness

*C. Double-blindness

D. Blocking

A. Incorrect. The placebo effect is improvement in health not due to medical treatment. This is an example of double-blindness.

B. Incorrect. Though neither the treatment nor the control group knew which they were receiving, the doctors administering the drug were also unaware of which patients received what treatment.

C. Correct. It is a double-blind experiment because none of the patients as well as doctors administering the treatment knew which treatment the patients were receiving.

D. Incorrect. This is a form of experimentation. This situation is an example of double-blindness.

Text Reference: Section 6.2: Double-blind experiments

2. True or False: The placebo effect must operate equally on all subjects as part of equal treatment.

*A. True. If the placebo effect does not operate equally on all subjects, then it could lead to bias and confounding.

B. False. The placebo effect only has to operate on the groups taking the placebo drug.

C. True. In order to reduce the placebo effect, give one group the treatment and give the other group no treatment of any kind.

D. False. The placebo effect is not a part of equal treatment.

A. Correct. The placebo effect must operate equally on all subjects. Otherwise, it could lead to bias or confounding.

B. Incorrect. The placebo effect must operate equally on all subjects. Otherwise, it could lead to bias or confounding.

C. Incorrect. The placebo effect must operate equally on all subjects. Otherwise, it could lead to bias or confounding.

D. Incorrect. The placebo effect must operate equally on all subjects. Otherwise, it could lead to bias or confounding.

Text Reference: Section 6.2: Double-blind experiments

3. In a double-blind experiment:

A. The subjects are unaware of the experiment and the treatments they are taking part in.

B. The people who are running the experiments are unaware of which group the subjects are in.

C. The subjects do not know whether they are receiving the placebo or the treatment.

*D. Neither the subjects nor the people who are working with them know which treatment each subject is receiving.

A. Incorrect. Neither the subjects nor the people who are working with them know which treatments the subjects are receiving. They are, however, aware of the experiment that is taking place.

B. Incorrect. Neither the subjects nor the people who are working with them know which treatment each subject is receiving.

C. Incorrect. Neither the subjects nor the people who are working with them know which treatment each subject is receiving.

D. Correct. Some outside source manages the data of who is receiving the treatment or the placebo.

Text Reference: Section 6.2: Double-blind experiments

4. The simplest statistical design for an experiment is a(n):

A. Matched pairs experiment

B. Block design experiment

*C. Completely randomized experimental design

D. Observational study

A. Incorrect. A matched pairs design is a more complex version of a randomized experiment where subjects are matched to form pairs or each subject receives both treatments.

B. Incorrect. A block design experiment is a more complex version of a randomized experiment where subjects are grouped by similarities that are expected to affect the response to treatments.

C. Correct. In a completely randomized experimental design, subjects are assigned to groups at random and then responses to treatments are compared.

D. Incorrect. An observational study is not an experiment.

Text Reference: Section 6.5: Experimental design in the real world

5. A completely randomized design can have:

A. Only one single explanatory variable

B. Two explanatory variables

c. At most four explanatory variables

*D. Any number of explanatory variables

A. Incorrect. An experiment can have many variables.

B. Incorrect. An experiment can have many variables.

C. Incorrect. An experiment can have many variables.

D. Correct. A completely randomized design can have many variables.

Text Reference: Section 6.5: Experimental design in the real world

6. We are designing an experiment to compare the amount of usage of single serve coffee machines to the usage of regular brew coffee machines. We will want to look separately at the usage patterns of men and women coffee drinkers. We randomly assign the men to two groups, one to use single serve coffee machines, the other to use a regular brew coffee machine. The women are assigned in the same fashion. Ultimately, we will compare the usage of coffee machines for men and women separately. This is an example of:

A. Completely randomized experimental design

B. Matched pairs experimental design

*C. Block experimental design

D. An observational study

A. Incorrect. Although randomized, this is an example of block experimental design. Subjects were first divided into groups based on gender.

B. Incorrect. This is an example of block experimental design because subjects were first divided into groups based on gender.

C. Correct. Subjects were divided into groups of males and females before assignment to treatments.

D. Incorrect. Observational study is passive. This is an experiment which is actively imposing a treatment to measure response.

Text Reference: Section 6.6: Matched pairs and block designs

7. The key(s) to a convincing experiment is/are:

A. Randomization

B. Control

C. Adequate number of subjects

*D. All of the choices are correct.

A. Incorrect. Although randomization is one component to a convincing experiment, control and adequate number of subjects are as well.

B. Incorrect. Although control is one component to a convincing experiment, randomization and adequate number of subjects are as well.

C. Incorrect. Although an adequate number of subjects is one component of a convincing experiment, randomization and control are as well.

D. Correct. Randomization, control, and an adequate number of subjects are all keys to a convincing experiment.

Text Reference: Section 6.4: Can we generalize?

8. The Coke versus Pepsi experiment—where Coke drinkers tasted both Coke and Pepsi from glasses without brand markings and said which they liked better—is an example of:

A. Blocking

*B. Matched pairs

C. Randomization

D. Observational studies

A. Incorrect. This is an example of matched pairs design.

B. Correct. Matched pairs design was used for the Coke Pepsi experiment

C. Incorrect. Matched pairs design was used for the Coke Pepsi experiment.

D. Incorrect. Matched pairs *experimental* design was used for the Coke Pepsi experiment.

Text Reference: Section 6.6: Matched pairs and block designs

9. Because the placebo effect is strong, clinical trials should be:

A. Observational studies

B. Randomized

*C. Double-blinded

D. Biased

A. Incorrect. Clinical trials are best done through experimentation and double-blindness.

B. Incorrect. Although randomization is necessary, clinical trials are best done through double-blindness because neither the subjects nor those administering treatments know which treatment is being given. This is beneficial for clinical trials.

C. Correct. Neither the subjects nor those administering treatments know which treatment is being given. This is beneficial for clinical trials.

D. Incorrect. We want to avoid bias. Clinical trials should be double-blinded. Neither the subjects nor those administering treatments know which treatment is being given. This is beneficial for clinical trials.

Text Reference: Section 6.2: Double-blind experiments

10. One common problem with experiments is:

A. They are not observational studies.

B. They do not account for the placebo effect.

C. They can't be repeated.

*D. They can't produce results that can be generalized.

A. Incorrect. When experiments are not fully realistic, statistical analysis of the experimental data cannot tell how far the results will generalize.

B. Incorrect. When experiments are not fully realistic, statistical analysis of the experimental data cannot tell how far the results will generalize.

C. Incorrect. When experiments are not fully realistic, statistical analysis of the experimental data cannot tell how far the results will generalize.

D. Correct. When experiments are not fully realistic, statistical analysis of the experimental data cannot tell how far the results will generalize.

Text Reference: Section 6.4: Can we generalize?