

Experimental Design Work Sheet

Name _____

IS-WS3-092005-H-10

Hour _____

1. An investigator wished to study the influence of moderate hunger on the activity level in the white rat. He placed a group of fifty rats on a food deprivation schedule and housed each animal in a running wheel or revolving drum apparatus. In this apparatus the activity of the animal is recorded in terms of number of revolutions of the drum. Each revolution in either direction is recorded on a counter. After one week under these conditions, the experimenter noted that the average running wheel activity level for all subjects was 187 revolutions per hour. He concluded that an increase in hunger results in an increase activity level in the white rat.
 - a) What is the independent variable in this study?
 - b) What is the dependent variable in this study?
 - c) What are some problems with the design of this experiment?

2. A drug company developed a pill to prevent air sickness and asked a researcher to test its effectiveness. For this purpose, the researcher obtained 200 volunteer subjects at a large airport terminal and asked them to participate in his study, testing the pill's effectiveness under rough flying conditions. Half of the volunteers on every trip were given the pill and the other half were not. Thus, the two groups were treated alike except that the subjects in the experimental group received a pill for air sickness and the control group did not receive a pill. Since 18% of the experimental group became air sick, and 76% of the control group became air sick, the investigator concluded that the pill was generally effective.
 - a) Identify the independent variable in the study.
 - b) Identify the dependent variable in the study.
 - c) Is the investigator's conclusion warranted? Explain your decision and suggest a way the experiment could be changed or improved.

3. A high school teacher wanted to discover whether there is a relationship between muscular tension and success in learning. He asked 60 English speaking students to memorize a list of Russian words while sitting still at a desk. This was the control condition. After a rest period, he provided an experimental situation by asking the same students to memorize a similar list of Russian words while lifting weights of several pounds. Thus, the experimental subjects acted as their own controls. Then the performance of each subject under experimental (lifting weights) conditions was compared with his performance under the control procedure. In almost all cases, the number of Russian words correctly recalled was better under the experimental condition. The experimenter concluded that learning improved under conditions of moderate muscular tension.
 - a) Identify the independent variable.
 - b) Identify the dependent variable.
 - c) Cite an important defect or problem in the method of this experiment.
 - d) Suggest an improved experimental design to the above experiment.