

Words and Music II

Task

A student interested in comparing the effect of different types of music on short-term memory conducted the following study: 80 volunteers were randomly assigned to one of two groups. The first group was given five minutes to memorize a list of words while listening to rap music. The second group was given the same task while listening to classical music. The number of words correctly recalled by each individual was then measured, and the results for the two groups were compared.

- a. Is this an experiment or an observational study? Justify your answer.
- b. In the context of this study, explain why it is important that the subjects were randomly assigned to the two experimental groups (rap music and classical music).



Commentary

The purpose of this task is to assess (1) ability to distinguish between an observational study and an experiment and (2) understanding of the role of random assignment to experimental groups in an experiment. For a brief, helpful description and example of why random assignment is important, see *Guidelines for Assessment and Instruction in Statistics Education (GAISE) Report*, ASA, 2007, pp 54.

Solution

- a. This is an experiment, because a treatment (type of music) was imposed on the subjects.
- b. We randomly assign subjects to groups in order to create two groups that are as similar as possible with respect to any variables that might influence the subjects' capacity for recalling words. That way, any differences we see in the mean number of words recalled can be attributed to either the type of music or to variation arising from random assignment. For example, if subjects were not assigned at random and were allowed to choose which music group they wanted to participate in, people who are easily distracted and may have more difficulty memorizing a list of words may tend to choose the classical music group because there are usually no lyrics that might distract in classical music.

