

Observational Study or Experiment? - Answers

For each situation, determine whether the research conducted is an *observational study* or an *experiment*. Explain your reasoning.

1. In an attempt to study the health effects of air pollution, a group of researchers selected 6 cities in very different environments; some from an urban setting (e.g. greater Boston), some from a heavy industrial setting (e.g. eastern Ohio), some from a rural setting (e.g. Wisconsin). Altogether they selected 8000 subjects from the 6 cities, and followed their health for the next 20 years. At this time their health prognoses were compared with measurements of air pollution in the 6 cities. **observational study**
2. Among a group of women aged 65 and older who were tracked for several years, those who had a vitamin B₁₂ deficiency were twice as likely to suffer severe depression as those who did not. **observational study**
3. Forty volunteers suffering from insomnia were divided into two groups. The first group was assigned to a special no-desserts diet while the other continued desserts as usual. Half of the people in these groups were randomly assigned to an exercise program, while the others did not exercise. Those who ate no desserts and engaged in exercise showed the most improvement. **experiment**
4. A study in California showed that students who study a musical instrument have higher GPAs than students who do not, 3.59 to 2.91. Of the music students, 16% had all A's, compared with only 5% among the students who did not study a musical instrument. **observational study**
5. Scientists at a major pharmaceutical firm investigated the effectiveness of an herbal compound to treat the common cold. They exposed each subject to a cold virus, and then gave him or her either the herbal compound or a sugar solution known to have no effect. Several days later, they assessed the patient's condition, using a cold severity scale of 0 to 5. **experiment**
6. In 2001, a report in the *Journal of the American Cancer Institute* indicated that women who work nights have a 60% greater risk of developing breast cancer. Researchers based these findings on the work histories of 763 women with breast cancer and 741 women without the disease. **observational study**
7. To research the effects of dietary patterns on blood pressure in 459 subjects, subjects were randomly assigned to three groups and had their meals prepared by dietitians. Those who were fed a diet low in fat and cholesterol lowered their systolic blood pressure by an average of 6.7 points when compared with subjects fed a control diet. **experiment**
8. Some people who race greyhounds give the dogs large doses of vitamin C in the belief that the dogs will run faster. Investigators at the University of Florida tried three different diets in random order on each of five racing greyhounds. They were surprised to find that when the dogs ate high amounts of vitamin C, they ran more slowly. **experiment**