

For #1-5 below, identify:

a) Whether it was an observational study or experiment

*If it was an observational study, identify (if possible):*

b) whether it was retrospective or prospective

c) the subjects studied and how they were selected

*If it was an experiment:*

b) the subjects studied

c) the factors and treatments

d) the response variable

e) what can be concluded, if anything

1. In a test of roughly 200 men and women, those with moderately high blood pressure (averaging 164/89 mm Hg) did worse on tests of memory and reaction time than those with normal blood pressure.

2. Is diet or exercise more effective in combating insomnia? Some believe that cutting out desserts can help alleviate the problem, while others recommend exercise. Forty volunteers suffering from insomnia agreed to participate in a month-long test. Half were randomly assigned to a special no-desserts diet; the rest continued desserts as usual. Half the people in each of 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.

3. Researchers have linked an increase in the incidence of breast cancer in Italy to dioxin released by an industrial accident in 1976. The study identified 981 women who lived near the site of the accident and were under age 40 at the time. Fifteen of the women had developed breast cancer at an unusually young average age of 45. Medical records showed that they had heightened concentrations of dioxin in their blood and that each tenfold increase in dioxin level was associated with a doubling of the risk of breast cancer.

4. The May 4, 2000 issue of *Science News* reported that, contrary to popular belief, depressed individuals cry no more often in response to sad situations than nondepressed people. Researchers studied 23 men and 48 women with major depression and 9 men and 24 women with no depression. They showed the subjects a sad film about a boy whose father has died, noting whether or not the subjects cried. Women cried more often than men, but there were no significant differences between the depressed and nondepressed groups.

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, then gave him or her either the herbal compound or a sugar solution known to have no effect on colds. Several days later they assessed the patient's condition, using a cold severity scale ranging from 0-5. They found no evidence of benefits associated with the compound.

6. It's a common belief that people behave strangely when there's a full moon and that as a result police and emergency rooms are busier than usual. Design a way you could find out whether there is any merit to this belief. Will you use an observational study or experiment? Why?

7. Some schools teach reading using phonics (the sounds made by letters) and others using whole language (word recognition). Suppose a school district wants to determine which method works better. Suggest a design for an appropriate experiment.

8. A research doctor has discovered a new ointment that she believes will be more effective than the current medication in the treatment of shingles (a painful skin rash). Eight patients have volunteered to participate in the initial trials of this ointment. Design an appropriate experiment.