

- Differences between observational studies and experiments
In observational studies, no manipulation of factors has been employed. In an experiment, the experimenter actively manipulates the factors to control the details of the possible treatments and assigns the subjects to those treatments at random.

Eg. Chapter 10 Pg382

16. HEART ATTACKS AND HEIGHT Researchers who examined the health records of thousands of males found that men who died of myocardial infarction (heart attack) tended to be shorter than men who did not.

a. Is this an experiment? If not, what kind of study is it?

- Terminology Week 7 Slide 7

Terminology

- ▶ **Response variable:** output of interest. At least one response variable measured.
- ▶ **Explanatory variables:** inputs, variables that the experimenter think might help to explain the value of the response variable. The experimenter manipulates the explanatory variables.
- ▶ **Factor:** categorical explanatory variable.
- ▶ **Levels:** specific values of a factor.
- ▶ **Treatment:** particular combination of values for the factors.
- ▶ **Experimental units/subjects:** smallest unit to which a treatment is applied and the response is measured, such as, for example, people or animals participating in the experiment.

Identify the above terminology.

35. Scientists examined the glycogen content of rats' brains at the rats' normal bedtimes and after they had been kept awake for an extra 6, 12, or 24 hours. The scientists found that glycogen was 38% lower among rats that had been sleep-deprived for 12 hours or more, and that the levels recovered during subsequent sleep. These researchers speculate that we may need to sleep in order to restore the brain's energy fuel.²¹