KEY TERMS

In an **observational study** researchers observe subjects and measure variables of interest. However, the researchers do not try to influence the responses. The purpose is to *describe* groups of subjects under different situations. In an **experimental study**, researchers deliberately apply some treatment to the subjects in order to observe their responses. The purpose is to study whether the treatment *causes* a change in the response.

In a **double-blind** experiment neither the subjects nor the individuals measuring the response know which subjects are assigned to which treatment. In a **single-blind** experiment the subjects do not know which treatment they are receiving but the individuals measuring the response do know which subjects were assigned to which treatments.

A **placebo** is something that is identical in appearance to the treatment received by the treatment group but has no effect.

A **control group** is an experimental group that does not receive the treatment under study. The control group could receive a placebo to hide the fact that no treatment is being given. In an **active control group**, the subjects receive what might be considered the existing standard treatment.

The explanatory variables in either an observational study or experiment are called **factors**. A **treatment** is any specific condition applied to the subjects in an experiment. If an experiment has more than one factor, then a treatment is a combination of specific values for each factor.

Two factors (explanatory variables) are **confounded** when their effects on a response variable are intertwined and cannot be distinguished from each other.