Psychology Research Methods: Terms to Know for Vocabulary Quiz

Variable – A factor that can vary or change in ways that can be observed, measured, and verified.

Independent variable – The variable that is applied or manipulated by the researcher – believed to produce change in the dependent variable.

Dependent variable – the variable that is measured or observed by the researcher – thought to be influenced by the independent variable.

Confounding variable - A factor other than the independent variable that might produce an effect.

Experimental group – The group in an experiment that is exposed to the treatment (the independent variable is applied or manipulated).

Control group – The group in an experiment that receives no treatment or a placebo (the independent variable is ***not*** applied or manipulated)

Placebo – A phony treatment given to a control group that allows the researcher to separate the real effects of a treatment from the expectancy or placebo effects (e.g. a fake, independent variable).

Placebo effect – False effects reported by subjects who believe they are receiving a treatment of some type.

Single-blind study – An experiment where the subjects don't know whether or not they are receiving a real or fake treatment – used to eliminate subject bias/placebo effects.

Double-blind study – An experiment where neither the researcher nor the subject knows which subjects are in the control or experimental groups (i.e. which subjects are being exposed to the independent variable). This is used to eliminate researcher bias.

Hawthorne effect – A change in the behavior of the subjects in a study caused by their awareness of being studied.

Cause and effect – A relationship in which change in the independent variable causes change in the dependent variable.

Correlation – a relationship in which two or more variables change together (***** correlation is not the same as causation – *two variables may be related without one causing the other)*.

Positive correlation – When two variables increase or decrease together (vary in the same direction)

Negative correlation – When two variables vary in opposite directions.

Spurious correlation – An apparent but false relationship between two or more variables that is really caused by another variable (**Example:** *A researcher finds that length of marriage correlates to baldness. However, he shouldn't infer that being bald causes longer marriages. A third factor explains the correlation – both balding and long marriages are associated with old age).*

Reliability – A measure is reliable only if it produces the same results time after time.

Validity – A measure is valid only if it is actually measuring what you intended to measure.

Operational definition - a precise description of how a variable will be manipulated or measured.

Scientific control - The ability to neutralize the effect of one variable in order to assess relationships among other variables.

How to Recognize/Produce Good Scientific Research:

It must be:

- **Replicable** - It must be able to be repeated by others.
- **Falsifiable** - A hypothesis or theory must be stated in such a way that it can be proven wrong.
- **Precise -** The variables need to have operational definitions that define them and exactly how they will be measured or manipulated.
- **Parsimonious** - Researchers should apply the simplest explanation possible and avoid inventing outlandish theories (also known as *Occam's razor* -- the more assumptions you have to make, the more unlikely an explanation is).

A Simple Example of a Research Study:

John and Sarah want to know if ginkgo biloba pills can help improve memory for college students. They administer a memory test to 100 volunteer student participants. Using a lottery system, the researchers randomly assign the student volunteers to one of two conditions – those who will receive the ginkgo biloba (the experimental group) and those who will receive a placebo (the control group). The student volunteers take pills once a day for six weeks. The volunteers are then given an alternate version of the memory test and the scores are compared to the first set of scores.

This is an example of a true experiment. The researchers control who gets the treatment and who does not (who gets the ginkgo biloba and who gets a placebo). Thus, there is a real independent variable in this study (the ginkgo biloba). The dependent variable is memory as measured by the test that the researchers administer at the beginning and end of the study.