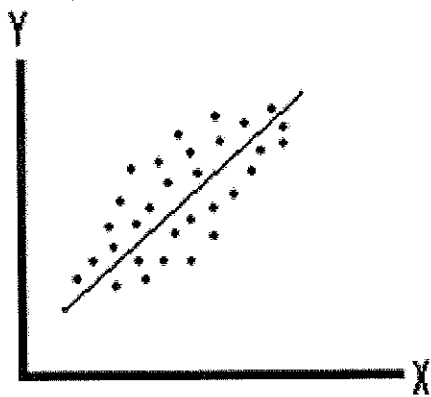


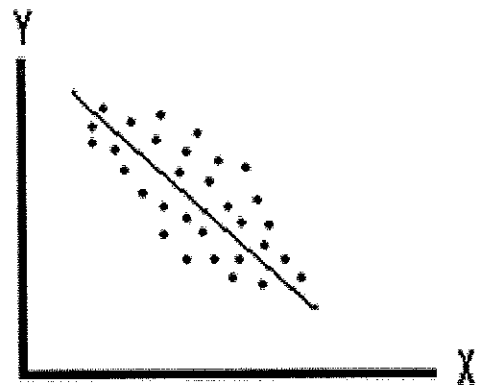
**MODULE 6: CORRELATION AND EXPERIMENTATION**

**CORRELATION**

- In such cases, two variables will show CORRELATION using a CORRELATION COEFFICIENT, which is a statistical measure that shows the relationship between the two variables. Relationship does not, however, show causation. For example, during final exam week at a local college, the ordering of pizza rises during studying hours. One is not dependent on the other, therefore, there is a relationship known as correlation.
- SCATTERPLOTS are how we show a visual for such correlations. A graphed cluster of dots, each of which represents the values of two variables. The slope of the points suggests the direction of the relationship between the two variables. The amount of scatter suggests the strength of the correlation (the less scattered, the higher in correlation).
- A positive correlation is two variables that rise together or fall together (pizza/finals studying example above) while a negative correlation is two variables that oppose one another (as one falls, the other rises).



*Positive Correlation*



*Negative Correlation*

- Correlations can then become a correlation coefficient (range from -1.0 to 1.0). The closer the score to plus/minus 1 the stronger the correlation. \*\*Tip: positive and negative only determine type of correlation, highest number itself has the strongest correlation, no correlation is shown above the 1.0/-1.0

**CORRELATION AND CAUSATION**

- CORRELATION IS NOT CAUSATION. The association between two variables are only said to be the cause when one variable determines another or is dependent upon another.

**ILLUSORY CORRELATIONS**

- **ILLUSORY CORRELATION** is the perception of a relationship where none exists.

**EXPERIMENTATION**

- **EXPERIMENTAL RESEARCH** is a research method in which an investigator manipulates one or more factors (independent variables) to observe the effect on some behavior or mental process (dependent variable). This is used to find the cause and effect or significant evidence that the two variables are dependent on each other in some way.
- An **EXPERIMENTAL GROUP** is an experiment, where the group exposed to the treatment, that is, to one version of the independent variable.
- A **CONTROL GROUP** is an experiment where the group is not exposed to the treatment; serves as a comparison to the experimental group.
- **RANDOM ASSIGNMENT** is assigning participants to experimental control groups by chance, thus minimizing preexisting differences between the different groups.
- Unlike correlational studies, which uncover naturally occurring relationships, an experiment manipulates a variable to determine its effect.
- Example would be drug treatments where both groups receive “treatment” that of which is actual treatment or a **PLACEBO EFFECT**, or false idea of receiving treatment, in order to compare the results to both groups.
- A **DOUBLE-BLIND PROCEDURE** is an experiment where neither the participants nor the research assistants who administer the drug and collect the data will know which group is receiving the treatment. (Think of Grey’s Anatomy.. When Grey knew about who received the Alzheimer’s treatment and who didn’t... Could have saved the treatment program from breaking any guidelines if only Sheppard knew.)

**INDEPENDENT AND DEPENDENT VARIABLES**

- The experimental factor in an experiment is known as the **INDEPENDENT VARIABLE** while what is being measured is known as the **DEPENDENT VARIABLE**. Any outside reason as to why the Dependent Variable could have the results it does is known as **CONFOUNDING VARIABLES**. These CV’s researchers try to minimize as much as possible during experimental research/naturalistic observations. Random Assignment helps to decrease the possibility of confounding variables altering results in a study.
- In order for an experiment to be worth wild, **VALIDITY**, which means the experiment will test what it is supposed to test, and **RELIABILITY**, which means the experiment shows consistent results after multiple trials. (Think of a test- must be valid and reliable)

**BE ABLE TO ANSWER:** Why, when testing a new drug to control blood pressure, would we learn more about its effectiveness from giving it to half of the participants in a group of 1000 than to all 1000 participants?

**PRACTICE FRQ'S:** Students with higher scores on anxiety scales were found to have lower scores on standardized tests. What research method would show this relationship? Why can no cause-effect conclusion be drawn from the results?