Experimental Group vs. Control Group

In scientific experiments, there are often experimental groups which are exposed to the conditions of the experiment, and control groups which are not. There can be 1 or more experimental groups. Each experimental group is given one treatment of an independent variable. If the variable is the amount of cheese given to a mouse, one experimental group may be given 1 piece of cheese, while the other is given 2 pieces of cheese. This would be an example of different treatments for each experimental group. Experimental groups are observed for changes to see if the independent variable has any effect on the dependent variable.

The other type of group is the control group, which is isolated from the independent variable treatments. The control group should be given a "normal" treatment, so that the results from the experimental groups can be compared. Finally, all scientific experiments must have constant variables (control variables) in each group. This allows the scientist to measure the effect of the independent variable on the dependent variable directly. If other variables were changed, the scientist would not know which variable made the difference in the experiment.

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Experimental Group 1 is given a treatment of independent variable

Mouse Treated with Orange I-Water

The first experimental group is given one treatment of an independent variable. In this case, it's orange water instead of green or blue water.

it could also be a varying amount of something. If cheese was the independent variable, group 1 could be 1 piece of cheese, while group 2 would be 2 pieces of cheese.

Experimental Group 2 is given a different treatment of Independent Variable

Mouse Treated with Green I-Water

Experimental group 2 is given a different treatment of independent variable. In this experiment, the mouse is given green water instead of orange or blue water.

If the independent variable was the amount of cheese, experimental group 2 could get 2 pieces of cheese while group 1 would get 1 piece of cheese. The point is to give each experimental group a different treatment.

Both experimental groups are observed for changes

Scientist observing the experiment mice

Experimental groups must be observed closely to see the effects of the independent variable on the experiment. In this case, the hand and foot of the different mice are changing colors.

The control group is isolated from the independent variable treatments

Controlled mouse is Ice-olated from the treatment water

The control group is not given any independent variable treatments, and is instead given a "normal" treatment. That means it gets whatever the normal or non-experimental thing is. In this case, it's normal blue water. It could also be a normal amount of cheese, or a normal amount of exercise.

Control (Constant) Variables are in each group

Constant C-Cheese and C-Bed in Each Group

Constant variables must be held constant in each group, the experimental groups and the control group. This allows the scientist to just measure the effect of ONLY the independent variable. Without constant variables, so many things would be changing in each experiment! The experiment would not be helpful then in testing the hypothesis.