

# Confounding Variable / Third Variable

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Confounding variables (aka third variables) are variables that the researcher failed to control, or eliminate, damaging the [internal validity](#) of an experiment.

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A confounding variable, also known as a third variable or a mediator variable, can adversely affect the relation between the [independent variable](#) and [dependent variable](#). This may cause the researcher to analyze the [results](#) incorrectly. The results may show a [false correlation](#) between the dependent and independent variables, leading to an [incorrect rejection](#) of the [null hypothesis](#).

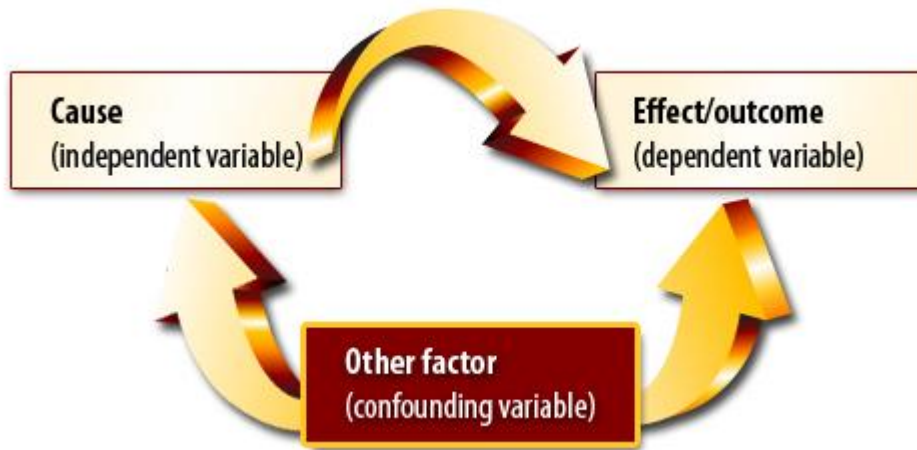
## The Damage Caused By Confounding Variables

For example, a research group might [design](#) a study to determine if heavy drinkers die at a younger age.

They proceed to design a study, and set about gathering data. Their results, and a battery of [statistical tests](#), indeed show that people who drink excessively are likely to die younger.

Unfortunately, when the researchers do a crosscheck with their peers, the results are ripped apart, because their peers live just as long - maybe there is another factor, not [measured](#), that influences both drinking and living age?

The weakness in the [experimental design](#) was that they failed to take into account the [confounding variables](#), and did not try to eliminate or [control](#) any other factors.



For example, it is quite possible that the heaviest drinkers hailed from a different background or social group. Heavy drinkers may be more likely to smoke, or eat junk food, all of which could be factors in reducing longevity. A third variable may have adversely influenced the results.

## Minimizing the Effects of Confounding Variables

In many fields of science, it is difficult to remove entirely all of the variables, especially outside the controlled conditions of a lab.

A well-planned [experimental design](#), and constant checks, will filter out the worst confounding variables.

For example, randomizing groups, utilizing strict controls, and sound [operationalization](#) practice all contribute to eliminating potential third variables.

After a research, when the results are discussed and assessed, by a group of peers, this is the area that stimulates the most heated debate. When you read stories of different foods making you die young, or hear claims about the next super-food, assess these findings carefully.

Many media outlets jump upon sensational results, but never pay any regard to the possibility of confounding variables.