# Mediation in SPSS

## Background

Mediation tells you the extent to which the correlation between X and Y can be explained by a third variable, M. The idea behind mediation is that X causes M, and M in turn causes Y.

## Basic Syntax

To examine whether there is a mediator in your data, you must run several analyses.

FIRST, you need to establish that X correlates with Y:

```
mixed y with x
/fixed=x
/print=solution.
```

SECOND, you need to check whether controlling for the mediator, M, reduces the correlation between X and Y:

```
mixed y with x m
/fixed=x m
/print=solution.
```

## Interpreting Results

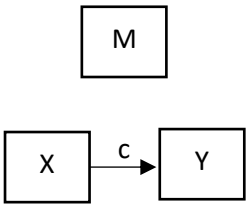
If controlling for *M* reduces the correlation between *X* and *Y*, we can conclude that *M* mediates the relationship between X and Y. In other words, X causes M, and M in turn causes Y.

## Statistically Testing Mediation

In order to statistically test whether M mediates the relationship between X and Y, you will need to perform several steps.

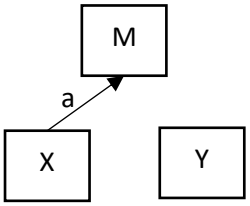
**FIRST,** compute the relationship between X and Y (c):

```
mixed y with x
/fixed=x
/print=solution.
```



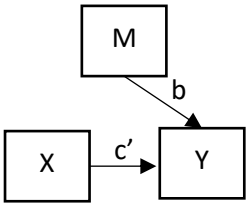
**SECOND,** compute the relationship between X and M (a):

```
mixed m with x
/fixed=x
/print=solution.
```




**THIRD,** compute the relationship between X and Y controlling M (c′) and M and Y controlling X (b).

```
mixed y with x m
/fixed=x m
/print=solution.
```




**FOURTH**, your mediation effect is c – c′ (i.e., the reduction in the correlation between X and Y when M is statistically controlled), which is mathematically identical to ab.

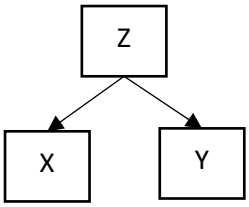
**FIFTH**, the 95% confidence interval around your mediation effect is $(ab) \pm 1.96\sqrt{b^2 s_a^2 + a^2 s_b^2 + s_a^2 s_b^2}$

If the 95% CI around your mediation effect does not include zero, you have statistically significant mediation in your data, which means that M "explains" or "accounts" for a statistically significant portion of the relationship between X and Y.

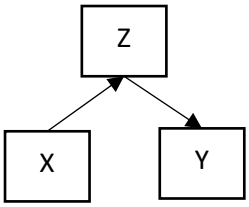
## What's the Difference between Confounds and Mediation?

Confounds and mediation are tested identically—by controlling for the third variable and seeing what happens to the relationship between X and Y.

The *only* difference between ruling out confounds and testing mediation depends on your ***theory***. If you believe that a third variable, Z, causes both X and Y, you're *ruling out a confound* by controlling for Z:




In contrast, if you believe that X causes Z, which in turn causes Y, you're *testing mediation* by controlling for Z.




***Statistics*** can never disentangle these two possibilities. Only ***theory*** can.