

## Classifying Statements as to Association, Causation or Between

ASSOCIATION	"BETWEEN"	CAUSATION
<b>EXPLICIT COMPARISON</b> Subjects have more Y after X than before X1 has more Y than X2 X1 is <comparative> than X2 * * 'is-more' comparatives: is more reliable, etc.	<b>EXPLICIT COMPARISON</b> X leads or predicts Y; Y follows X X ups or increases (cuts or decreases) Y As X increases, Y increases The more X, the more Y	<i>Those who do X [will] have more Y than they would if they hadn't done X **</i>  ** A contra-factual claim (unobservable)
<b>IMPLICIT COMPARISON</b> X is associated (correlated) with Y X is related to Y	<b>IMPLICIT COMPARISON</b> X is linked or tied to Y Y exists from, due to or because of X X is a [causal] factor in Y X is causally-connected to Y	X causes Y. X may help cause Y X stops or prevents Y X protects against Y; X is a Y-protector X results in or produces Y Y is an effect or consequence of X

The language of necessary or sufficient is not generally useful in describing causation.

Take this claim: Lightning causes thunder for any observer

Visual lightning is not sufficient. The observer must be close enough to hear it.