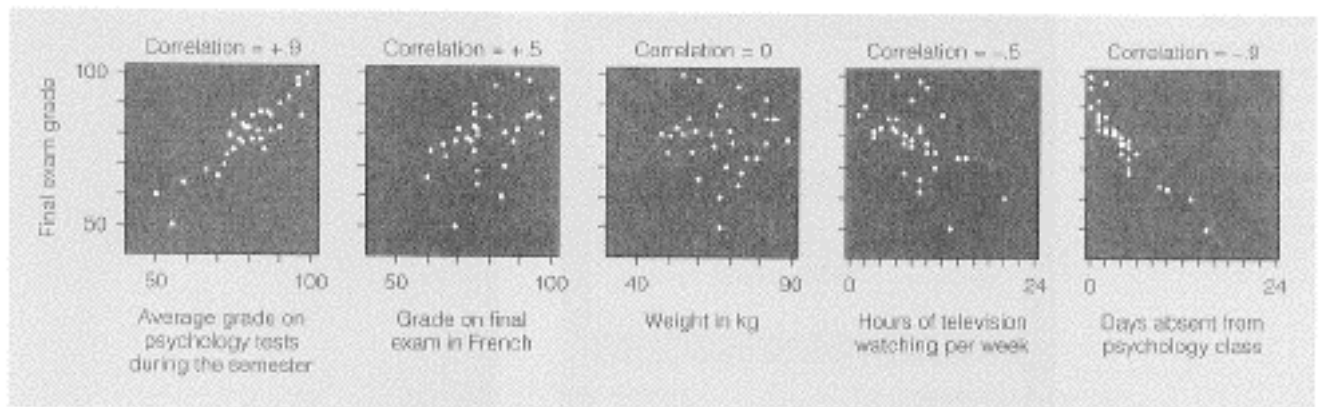


## Correlation

Correlation: The relationship between two variables.

Correlation coefficient: A measure of the magnitude and direction of the relationship (the correlation) between two variables. The closer the correlation coefficient is to +1 or -1, the stronger the relationship.

- A positive correlation indicates that as one variable increases, the other tends to increase. For example, the most crowded areas of a city are the most impoverished.
- A zero correlation indicates that there is no relation between the two variables. For example, there is no relation between a person's telephone number and their IQ score.
- A negative correlation indicates that as one variable increases, the other tends to decrease. For example, people who trust other people are the behavior of cheating other people goes down.

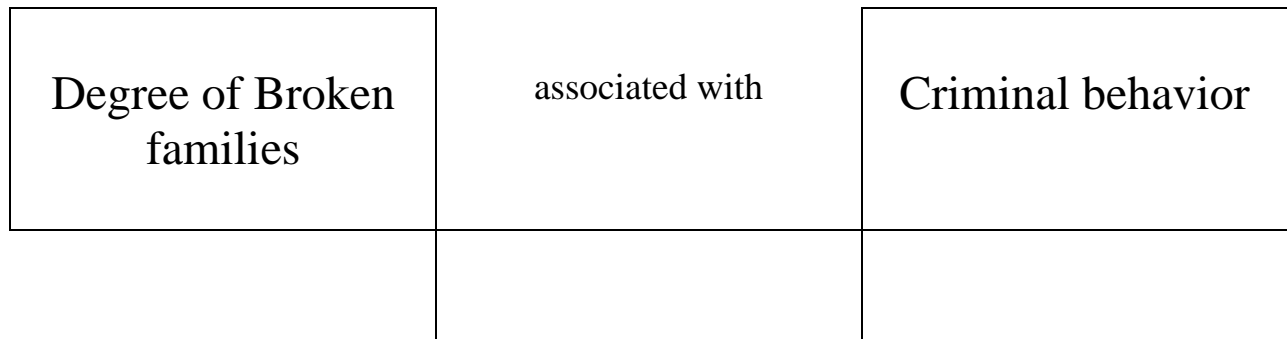


Positive correlation

Zero  
correlation

Negative correlation

One fallacy in thinking is the belief that if two things are associated or correlated, then there is a causal relation between them. For example,



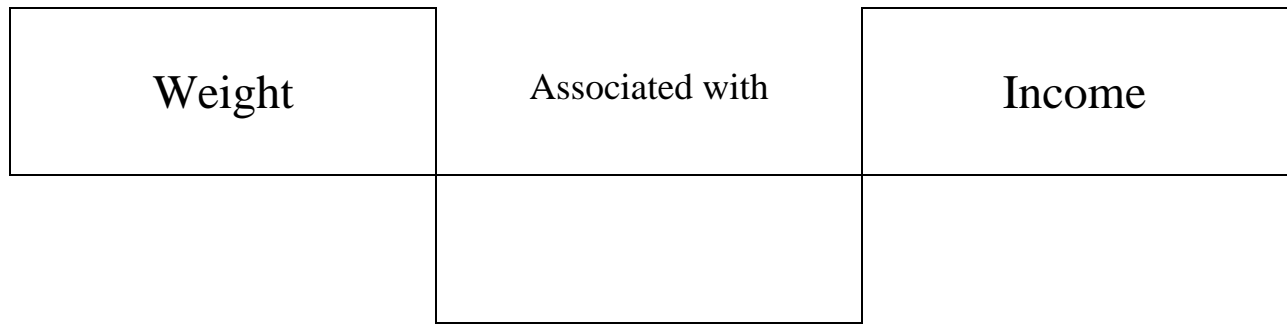
Social scientists know that there is an association between crime and broken families. As criminal behavior goes up, so does the incidence of broken families. Likewise, as crime goes down, the incidence of broken homes goes families. This does not mean:

- Crime causes broken families or
- Broken families cause crimes.

There is probably a third factor that causes both such as the following:

- 
- 
- 

An association between two things says nothing about causality. Only our prior beliefs about the world make us think that two things that are associated are causal.



Likewise, when social scientists measure people's weight and income, the data shows that there is an association between weight and income. This means that as weight goes up, so does income, and as weight goes down so does income. This does not mean:

- Changes in weight cause an increase in income, or
- Changes in income cause a weight increase.

There is probably a third factor that causes both such as the following:

- 
-

**Summary of a commentary by Andrew Holtz, a Portland Health Educator, Sept 7, 2001.**

<http://www2.opb.org/nwnews/oc2001/090701.asp>

The ringing of alarm clocks and rising of the sun usually seem to go together. However, just because they go together, does not mean that one causes the other. It would seem silly to say that the

- alarm clock causes the sun to rise, or
- the sun causes the alarm clock to ring.

There is probably a third variable. Although this is a silly example to illustrate that just because two things are associated, does not necessarily mean that they are causally related. We understand this because we understand alarm clocks and the rising sun. However, there are a lot of popular notions out there about two things that are associated, and make incorrect inferences about causality by suggesting one causes the other.

For example, there was a survey of drug use, including alcohol by Oregon Health. Students who were more likely to have substance abuse problems were more likely to be in trouble and more likely to have lower grades.

Officials were alarmed by the serious consequences of substance abuse by kids. No doubt, this is a problem, but does substance abuse cause these crime and poor grades? Does these poor grades and crime cause substance abuse? Do these studies show cause and effect? These studies only show what cluster together. Not which is the cause and which is the effect?

What are other factor such as:

What are other factor such as:

Would these problems push kids to self medicate with drugs and cause low grades and crime?

So what? Why should you care?

If parents, schools, voters, legislators [incorrectly] conclude that drug use is causal of low grades and crime, then all of these other issues will be ignored and neglected.

- Kids who are depressed, but pass a urine test will be ignored.
- Kids who skip class because they are bullied by their peers or parents will be missed unless they get busted for possession of drugs.
- Kids who don't master reading or writing will be passed along as they don't get busted.

Why would politicians want to suggest that to do poor in school, they should address the drug problem first?

Your beliefs can affect how you interpret “reality”. Once you interpret “reality” through your beliefs, it is difficult to see alternative “realities”.

What are examples where your beliefs about the world affect your interpretation of it?

- Why is it important to realize this, especially for the scientist?

How does the scientist reduce the problem associated with his or her personal beliefs affecting their work?

## Paradigms and Treatment

Beliefs about the relationship between cause and effect influence subsequent behavior. For example, there are different perspectives on the cause of psychological disorders. The beliefs you have about psychological disorders affects the type of treatments that will be employed.

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<b>Paradigm (system of beliefs)</b>	<b>Theories for Cause</b>	<b>Treatment</b>
Supernatural view	Demonic possession	Exorcism, Trephining
Organic view (medical or biological model)	Physiological malfunction	Physiological intervention (drugs, surgery, etc.)
Psychological view	Experiences affect the person	Confront the experience producing the painful reaction
A. Psychoanalytical	Repression of unconscious childhood conflict	Lift repression
B. Behavioral	Faulty learning experiences	Replace with new ones.

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