

Association / Correlation does Not Imply Causation

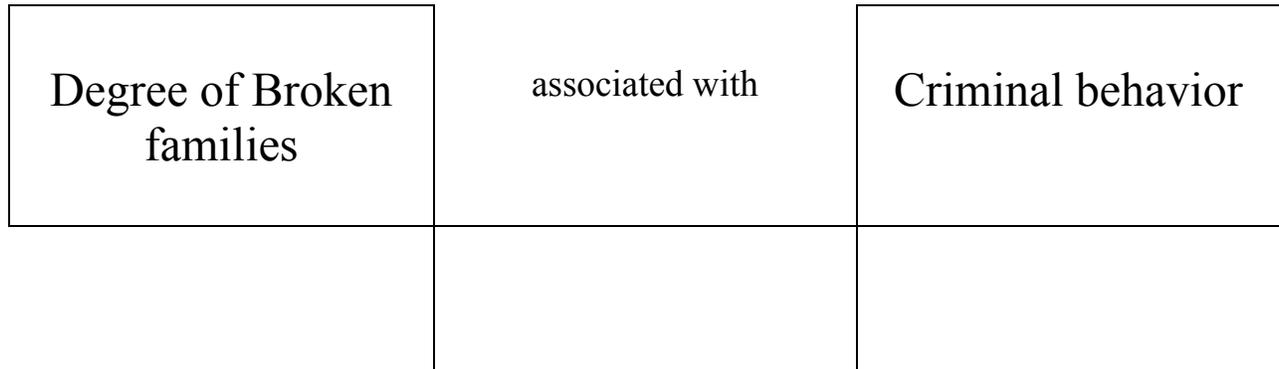
One fallacy in thinking is the belief that if two things are associated or correlated, then there is a causal relation between them. For example,

People who live near power lines	Associated with	Living shorter lives

It is known that people who live near power lines live shorter lives. It cannot be concluded that the power lines cause people to live shorter lives. It is generally believed to be another factor that causes people who live under power lines to live shorter lives.

People who listen to pop music	Associated with	Depressed

Association / Correlation does Not Imply Causation



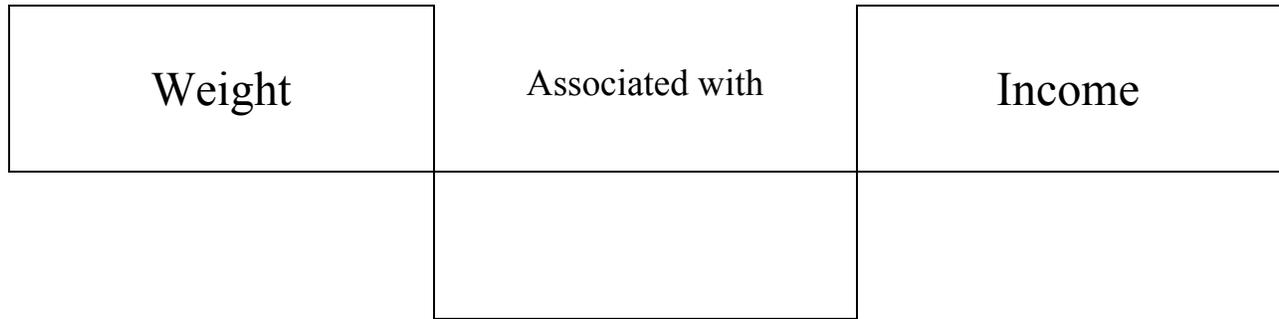
Social scientists know that there is an association between crime and broken families. As criminal behavior goes up, so does the incidence of broken families. Likewise, as crime goes down, the incidence of broken homes goes families. This does not mean:

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

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

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-
-

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:

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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:

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

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?

Psy 203, Spring 2003 Chapter 11: Personality
 Date: April 15/17, 2003

Name: _____
 Instructor: Eric Kim

Part A: Multiple Choice (30 questions, 3 points each for 90 points)

Please select the best answer for each question. There should only be one answer. If you are uncertain about your selection, you may want to write down the reasons for answer.

Part B: Short Answer (2 questions, 5 points each for 10 points)

Answer 2 of the 4 short answer questions. The questions refer to the material in the current chapter, Chapter 11 (Personality). Use complete sentences, read the question carefully, and use an example to help illustrate your point. The answer should clearly demonstrate you know the material.

Restrictions:

- No study aids of any form.
- Record your multiple choice answer on the Scantron.
- 50 minutes is allowed. Students in the testing center may begin at any time.
- Do your own work.
- Do not share your responses with other students.

Cautions:

There are some questions that ask you to select the answer that is “FALSE”, “NOT CORRECT, etc.

Only students taking the exam at the scheduled time in class may attempt any of the following for bonus points to be added to the exam. The maximum score for this test is 100 points. The maximum amount of bonus points you can get is 9.

Non-Exam Points: Estimate your score exam on Part A plus Part B: 2 points

Based on the two sections above (the sum of Part A and Part B), estimate your score out of 100 points. Your points will be based on how accurate your estimate is compared with your actual score before any bonus points are added (the two blanks marked with an * are compared). If your estimate matches what you got correct, (within 4 points) you will receive 2 point to be added to your non-exam points.

Bonus points	0	2 pt	2 pt	2 pt	2 pt	2 pt	0
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Accuracy of estimate	6	4	2	your	2	4	6
	under	under	under	estimate	over	over	over

Estimate the score you will get on the exam from the two sections above _____ * / 100 points

Bonus Points: (to be done only during the scheduled exam time in class): -3 to 9 points

There will be 12 addition questions from a previous chapter (with the exception of the first exam and final exam). You will be graded with the following equation (bonus = #correct - 3). This means you can get 7 to -3 points added (or subtracted) from your exam score. YOU CAN LOSE POINTS, or add points to your exam score.

Total Score = _____ * (Part A + Part B (100 pts)) + _____ (bonus (10 pts)) = / 100