

Today's post comes from Antony Ritz, a Veritas Prep GMAT instructor in [Washington, D.C.](#) Before you read this post, be sure to read [Part I](#) from last week!

In our last post on the topic, we discussed how to define correlation and causation in contrast to each other. Now, let's take a look at how to pick the right answer on a GMAT question dealing with these concepts.

### How Can Correlation be Explained?

Any correlation on the GMAT can be explained in the following five ways:

1. **A causes B.** Given that two events A and B are correlated, it could be the case that A does, in fact, cause B. If smoking and lung cancer are correlated, maybe it's because smoking really does cause lung cancer.
2. **B causes A.** Another possibility is that causation exists between A and B but runs in the opposite direction. It's unlikely for practical reasons that lung cancer causes smoking, but it is important to bear in mind that causation can run in either direction.
3. **C causes A and B.** If some third factor actually caused both A and B, then a correlation could be observed between A and B. If drug use and teen pregnancy are correlated, maybe neither actually causes the other, but instead, poverty causes both. Any number of possible third factors could throw a wrench into straightforward A-to-B causation.
4. **A Mix of the Above.** More than one factor could have a role in creating a correlation. Perhaps A promotes B, which promotes A, which promotes B, and so forth. However, such complex relationships are unlikely to show up on the GMAT.
5. **Coincidence.** Sometimes an observed correlation is a result of random chance. This is unlikely to show up on the test.

### How Can We Determine the Right Explanation for a Correlation?

One aspect of causation is time ordering. Causes happen before effects. If a given causal or reverse causal relationship is out of time order, it can be rejected. It is unlikely that lung cancer causes smoking because the smoking usually happens first.

To analyze possible third factors, we can use a tool called "control." The third factor can be fixed to see if A-and-B correlation persists. If so, then we can conclude that the third factor is not the only cause producing A-and-B correlation. For example, in order to determine whether the connection between teen pregnancy and drug use is caused by a third factor like poverty, one could study only impoverished individuals. In those cases, does the drug use/teen pregnancy correlation persist? If not, then poverty may have been the cause. If so, then something else is going on. However, there could still be another third factor.

The possibility that a correlation is a coincidence cannot be ruled out, but the use of multiple trials can mean coincidence is unlikely. On the GMAT, mention of a scientific study effectively rules out explaining a correlation as mere coincidence.

### How Are These Ideas Used on the Test?

Solving a correlation/causation question comes down to evaluating the various possible explanations for a given correlation. These questions often establish correlation and proceed to conclude that causation is present. Answer choices that don't speak to any of the five possible explanations of correlation should generally be eliminated or ignored.