Chapter Eight: Cause and Effect Reasoning

What is Causality?

When examining events, people naturally seek to explain why things happened. This search often results in cause and effect reasoning, which asserts or denies that one thing causes another, or that one thing is caused by another. On the LSAT, cause and effect reasoning appears in many Logical Reasoning problems, often in the conclusion where the author mistakenly claims that one event causes another. For example:

Last week IBM announced a quarterly deficit and the stock market dropped 10 points. Thus, IBM’s announcement must have caused the drop.

Like the above conclusion, most causal conclusions are flawed because there can be alternate explanations for the stated relationship: another cause could account for the effect; a third event could have caused both the stated cause and effect; the situation may in fact be reversed; the events may be related but not causally; or the entire occurrence could be the result of chance.

In short, causality occurs when one event is said to make another occur. The cause is the event that makes the other occur; the effect is the event that follows from the cause. By definition, the cause must occur before the effect, and the cause is the “activator” or “ignitor” in the relationship. The effect always happens at some point in time after the cause.

How to Recognize Causality

A cause and effect relationship has a signature characteristic—the cause makes the effect happen. Thus, there is an identifiable type of expression used to indicate that a causal relationship is present. The list on the following page contains a number of the phrases used by the makers of the LSAT to introduce causality, and you should be on the lookout for those when reading Logical Reasoning stimuli.
The following terms often introduce a cause and effect relationship:

caused by
because of
responsible for
reason for
leads to
induced by
promoted by
determined by
produced by
product of
played a role in
was a factor in
is an effect of

Because of the variety of the English language, there are many alternate phrases that can introduce causality. However, those phrases would all have the similar characteristic of suggesting that one event made another occur.

The Difference Between Causality and Conditionality

Many people confuse causal reasoning with conditional reasoning, but the two are entirely separate! Here are several key differences:

1. The chronology of the two events can differ.

In cause and effect statements there is an implied temporal relationship: the cause must happen first and the effect must happen at some point in time after the cause.

In sufficient and necessary statements there is no implied temporal relationship: the sufficient condition can happen before, at the same time, or after the necessary condition.

2. The connection between the events is different.

In cause and effect statements the events are related in a direct way: “She swerved to avoid hitting the dog and that caused her to hit the tree.” The cause physically makes the effect happen.

In conditional statements the sufficient and necessary conditions are often related directly, but they do not have to be: “Before the war can end, I must eat this ice cream cone.” The sufficient condition does not make the necessary condition happen, it just indicates that it must occur.

3. The language used to introduce the statements is different.

Be sure to memorize this list! Knowing the difference between conditionality and causality can help you determine which one is present when none of the usual indicator words appear.
Because of item 2, the words that introduce each type of relationship are very different. Causal indicators are active, almost powerful words, whereas most conditional indicators do not possess those traits.

### Causality in the Conclusion versus Causality in the Premises

Causal statements can be found in the premise or conclusion of an argument. If the causal statement is the conclusion, then the reasoning is flawed. If the causal statement is the premise, then the argument may be flawed, but not because of the causal statement. Because of this difference, one of the critical issues in determining whether flawed causal reasoning is present is identifying where in the argument the causal assertion is made. The classic mistaken cause and effect reasoning we will refer to throughout this book occurs when a causal assertion is made in the conclusion, or the conclusion presumes a causal relationship. Let us examine the difference between an argument with a causal premise and one with a casual conclusion.

This is an argument with a causal conclusion:

- **Premise:** In North America, people drink a lot of milk.
- **Premise:** There is a high frequency of cancer in North America.
- **Conclusion:** Therefore, drinking milk causes cancer.

In this case, the author takes two events that occur together and concludes that one causes the other. This conclusion is in error for the reasons discussed on the first page of this chapter.

If a causal claim is made in the premises, however, then no causal reasoning error exists in the argument (of course, the argument may be flawed in other ways). As mentioned previously, the makers of the LSAT tend to allow premises to go unchallenged (they are more concerned with the reasoning that follows from a premise) and it is considered acceptable for an author to begin his argument by stating a causal relationship and then continuing from there:

- **Premise:** Drinking milk causes cancer.
- **Premise:** The residents of North America drink a lot of milk.
- **Conclusion:** Therefore, in North America there is a high frequency of cancer among the residents.

The second example is considered valid reasoning because the author takes a causal principle and follows it to its logical conclusion. Generally, causal reasoning occurs in a format similar to the first example, but there are LSAT problems similar to the second example.
Situations That Can Lead to Errors of Causality

There are two scenarios that tend to lead to causal conclusions in Logical Reasoning questions:

1. One event occurs before another

   When one event occurs before another event, many people fall into the trap of assuming that the first event caused the second event. This does not have to be the case, as shown by the following famous example:

   Every morning the rooster crows before the sun rises. Hence, the rooster must cause the sun to rise.

   The example contains a ludicrous conclusion, and shows why it is dangerous to simply assume that the first event must have caused the second event.

2. Two (or more) events occur at the same time

   When two events occur simultaneously, many people assume that one event caused the other. While one event could have caused the other, the two events could be the result of a third event, or the two events could simply be correlated but one does not cause the other.

   The following example shows how a third event can cause both events:

   The consumption of ice cream has been found to correlate with the murder rate. Therefore, consuming ice cream must cause one to be more likely to commit murder.

   As you might imagine, the conclusion of the example does not have to be true (yes, go ahead and eat that Ben and Jerry’s!), and the two events can be explained as the effects of a single cause: hot weather. When the weather is warmer, ice cream consumption and the murder rate tend to rise (this example is actually true, especially for large cities).
The Central Assumption of Causal Conclusions

Understanding the assumption that is at the heart of a causal conclusion is essential to knowing why certain answers will be correct or incorrect. Most students assume that the LSAT makes basic assumptions that are similar to the real world; this is untrue and is a dangerous mistake to make.

When we discuss causality in the real world, there is an inherent understanding that a given cause is just one possible cause of the effect, and that there are other causes that could also produce the same effect. This is reasonable because we have the ability to observe a variety of cause and effect scenarios, and experience shows us that different actions can have the same result. The makers of the LSAT do not think this way. When an LSAT speaker concludes that one occurrence caused another, that speaker also assumes that the stated cause is the only possible cause of the effect and that consequently the stated cause will always produce the effect. This assumption is incredibly extreme and far-reaching, and often leads to surprising answer choices that would appear incorrect unless you understand this assumption. Consider the following example:

Premise: Average temperatures are higher at the equator than in any other area.

Premise: Individuals living at or near the equator tend to have lower per-capita incomes than individuals living elsewhere.

Conclusion: Therefore, higher average temperatures cause lower per-capita incomes.

This argument is a classic flawed causal argument wherein two premises with a basic connection (living at the equator) are used as the basis of a conclusion that states that the connection is such that one of the elements actually makes the other occur. The conclusion is flawed because it is not necessary that the one element caused the other to occur: the two could simply be correlated in some way or the connection could be random.

In the real world, we would tend to look at an argument like the one above and think that while the conclusion is possible, there are also other things that could cause the lower per-capita income of individuals residing at or near the equator, such as a lack of natural resources. This is not how speakers on the LSAT view the relationship. When an LSAT speaker makes an argument like the one above, he or she believes that the only cause is the one stated in the conclusion and that there are no other causes that can create that particular effect. Why is this the case? Because for an LSAT speaker to come to that conclusion, he or she must have weighed and considered every possible alternative and then...
rejected each one. Otherwise, why would the speaker draw the given conclusion? In the final analysis, to say that higher average temperatures cause lower per-capita incomes the speaker must also believe that nothing else could be the cause of lower per-capita incomes.

Thus, in every argument with a causal conclusion that appears on the LSAT, the speaker believes that the stated cause is in fact the only cause and all other theoretically possible causes are not, in fact, actual causes. This is an incredibly powerful assumption, and the results of this assumption are most evident in Weaken, Strengthen, and Assumption questions. We will discuss this effect on Strengthen and Assumption questions in a later chapter. Following is a brief analysis of the effect of this assumption on Weaken questions.

**How to Attack a Causal Conclusion**

Whenever you identify a causal relationship in the conclusion of an LSAT problem, immediately prepare to either weaken or strengthen the argument. Attacking a cause and effect relationship in Weaken questions almost always consists of performing one of the following tasks:

A. Find an alternate cause for the stated effect

   Because the author believes there is only one cause, identifying another cause weakens the conclusion.

B. Show that even when the cause occurs, the effect does not occur

   This type of answer often appears in the form of a counterexample. Because the author believes that the cause always produces the effect, any scenario where the cause occurs and the effect does not weakens the conclusion.

C. Show that although the effect occurs, the cause did not occur

   This type of answer often appears in the form of a counterexample. Because the author believes that the effect is always produced by the same cause, any scenario where the effect occurs and the cause does not weakens the conclusion.

D. Show that the stated relationship is reversed

   Because the author believes that the cause and effect relationship is correctly stated, showing that the relationship is backwards (the claimed effect is actually the cause of the claimed cause) undermines the conclusion.
E. Show that a statistical problem exists with the data used to make the causal statement

If the data used to make a causal statement is in error, then the validity of the causal claim is in question.

Diagramming Causality

Like conditional statements, causal statements can be quickly and easily represented by an arrow diagram. However, because causal and conditional diagrams represent entirely different relationships, we use designators (“C” for cause and “E” for effect) above the terms when diagramming (and, in corresponding fashion, we use “S” for sufficient and “N” for necessary above the terms when diagramming conditional statements). We use these designators in the book to make the meaning of the diagram clear. During the LSAT, students should not use the designators (they just use the arrow diagram) because they want to go as fast as possible and they can remember if they have a conditional or causal argument while completing the problem.

Here is an example of a causal diagram:

Statement: “Smoking causes cancer.”

\[
\begin{align*}
S &= \text{smoking} \\
C &= \text{cancer} \\
S &\rightarrow C
\end{align*}
\]

Although the diagram looks the same as a conditional diagram, the two are different for the reasons described in “The Difference Between Causality and Conditionality” section earlier in this chapter.