



## What Are Logical Fallacies?

You have heard it before. Someone makes a statement that just does not seem right — maybe the facts do not add up or the reasoning seems weak or flawed. This could be an example of a logical fallacy — a statement that, logically, is invalid — it cannot be true because it logically does not make sense. These types of statements are so common that we can categorize them into specific types. See the list below for common types of logical fallacies and what each looks like.

In a world that is rife with easily accessible information, it can be difficult to evaluate the validity of information. However, once you can identify the structure of common logical fallacies, you can very quickly evaluate the goodness, or validity, of the argument that is being made. The goal of this exercise is to introduce you to common logical fallacies.

<b>Fallacy</b>	<b>Definition</b>
<b>Appeal to fear</b>	Scare tactics, alarmist warnings, drastically over-emphasizing the probability of a terrible outcome.
<b>Personal attack, or <i>ad hominem</i></b>	Attacking the speaker rather than the argument; also expressed as “kill the messenger.”
<b>False dilemma</b>	Presents an argument with only two options, where one option is appealing and the other is false and unreasonable.
<b>False analogy</b>	A comparison between two unrelated things.
<b>Slippery slope</b>	A valid cause will lead to more and more unreasonable results, incorrectly linking events that may never exist or occur.
<b><i>Non sequitur</i></b>	“It doesn’t follow”; no logical relationship between two points.
<b>Argument from authority</b>	We should accept a claim because a respected person says it.
<b><i>Post hoc</i></b>	Argument after the fact, often (falsely) linking causation with some previous action. For example: “Since event Y followed event X, event Y must have been caused by event X.”
<b>Straw man</b>	Attacks a distorted version of the argument (one that is easy to defeat).
<b>Moving the goalpost</b>	Arbitrarily setting new standards that must be met to render a statement “true” or “valid.”
<b>Paralysis Analysis</b>	Suggests that no interpretation can be drawn if there is any missing data or information.



Here are a few examples of each logical fallacy, just to get a better sense of each structure.

<b>Fallacy</b>	<b>Example</b>
<b>Appeal to fear</b>	You should use all your money to buy gold currency, because the U.S. dollar could lose value any day now and gold is always valuable.
<b>Personal attack, or <i>ad hominem</i></b>	Sally said that the speed limit on the interstate is 75 miles per hour. She got an F on her English paper and she is ugly, so how does she know what the speed limit is?
<b>False dilemma</b>	You can either spend the rest of your life slaving away at work and never have time for friends, or you can just go out and party every night and never amount to anything.
<b>False analogy</b>	I did not need to study for my math exam because I am doing really well in my psychology class.
<b>Slippery slope</b>	If you do not do your homework, you will never graduate from college, so you will never get a job.
<b><i>Non sequitur</i></b>	John is from Baltimore, so no one should listen to what he has to say about music from New Orleans.
<b>Argument from authority</b>	The president of the KaleIsGoodForYou Coalition says that kale is the only vegetable you need to eat, so I should be completely healthy if I eat nothing but kale.
<b><i>Post hoc</i></b>	I had scrambled eggs for breakfast, and then I thought about killing my goldfish. I should have eaten cereal instead!
<b>Straw man</b>	Evolution is wrong because my grandfather was not a monkey.
<b>Moving the goalpost</b>	Even though you received an A on all your assignments throughout the semester, your instructor says you need to do three more assignments before he/she is confident that you earned an A.
<b>Paralysis Analysis</b>	Professor to student: "It appears that you are missing one assignment of out the 500 assignments from this semester. I am not sure that I can assign you a final grade."

**Now it is your turn!** Create one to two statements of your own, each following the format of a different fallacy. Identify which fallacy you use and be creative! Then, as a class, review your example fallacies.



## Identify the Logical Fallacy

Below is a list of statements, generally about climate science, and each following the structure of a logical fallacy. For each statement, identify which logical fallacy seems to fit best. In some cases, a statement could follow more than one format.

<b>Logical Fallacy</b>	<b>Example Statement</b>
	Environmentalists want us to move out of our houses, rid ourselves of electrical appliances, and live like cave people. All environmentalists want to do is end civilization as we know it.
	Senator Corker says not to worry about global warming, so I am not going to worry about it. He is a successful politician, isn't he?
	If you use that type of light bulb, more carbon will be added to the air. This carbon will raise the temperature, melt the ice caps and flood coastal cities all over the world, just because you saved 20 cents.
	Oil companies oppose scientific conclusions on global warming. Oil companies supported Senator X. Therefore Senator X increased global warming!
	People did not believe Galileo, and he turned out to be right about Earth revolving around the sun. People do not believe in climate change, but it will also turn out to be right.
	You think that humans are causing global warming? You must be a tree-hugger. I do not listen to tree-huggers.
	I may not agree with climate scientists, but I collect polar bear stuffed animals, so I do consider myself an environmentalist.
	You can either create a planet that your children can live in, or you can buy a gas-guzzling SUV.
	Hurricane Katrina was caused by global warming, but there have been no hurricanes in New Orleans since 2005, therefore global warming is no longer a problem.
	Big deal that we now have over 400 parts per million of carbon dioxide in the atmosphere. We do not need to worry until that concentration reaches 450 parts per million.
	Scientists cannot even agree on how bad climate change will be, so I am waiting to make up my mind.