5.8: Logical Fallacies in Common Language

In a previous section, we saw that logical arguments can be invalid when the premises are not true, when the premises are not sufficient to guarantee the conclusion, or when there are invalid chains in logic. There are a number of other ways in which arguments can be invalid, a sampling of which are given here.

Ad hominem

An ad hominem argument attacks the person making the argument, ignoring the argument itself.

Example 5.8.1

"Jane says that whales aren't fish, but she's only in the second grade, so she can't be right."

Here the argument is attacking Jane, not the validity of her claim, so this is an ad hominem argument.

Example 5.8.2

"Jane says that whales aren't fish, but everyone knows that they're really mammals. She's so stupid."

This certainly isn't very nice, but it is *not* ad hominem since a valid counterargument is made along with the personal insult.

Appeal to ignorance

This type of argument assumes something it true because it hasn't been proven false.

Example 5.8.3

"Nobody has proven that photo isn't of Bigfoot, so it must be Bigfoot."

Appeal to authority

These arguments attempt to use the authority of a person to prove a claim. While often authority can provide strength to an argument, problems can occur when the person's opinion is not shared by other experts, or when the authority is irrelevant to the claim.

Example 5.8.4

"A diet high in bacon can be healthy; Doctor Atkins said so."

Here, an appeal to the authority of a doctor is used for the argument. This generally would provide strength to the argument, except that the opinion that eating a diet high in saturated fat runs counter to general medical opinion. More supporting evidence would be needed to justify this claim.

Example 5.8.5

"Jennifer Hudson lost weight with Weight Watchers, so their program must work."

Here, there is an appeal to the authority of a celebrity. While her experience does provide evidence, it provides no more than any other person's experience would.

Appeal to consequence

An appeal to consequence concludes that a premise is true or false based on whether the consequences are desirable or not.

Example 5.8.6

"Humans will travel faster than light: faster-than-light travel would be beneficial for space travel."

False dilemma

A false dilemma argument falsely frames an argument as an "either or" choice, without allowing for additional options.

Example 5.8.7

"Either those lights in the sky were an airplane or aliens. There are no airplanes scheduled for tonight, so it must be aliens."

This argument ignores the possibility that the lights could be something other than an airplane or aliens.

Circular reasoning

Circular reasoning is an argument that relies on the conclusion being true for the premise to be true.

Example 5.8.8

"I shouldn't have gotten a C in that class; I'm an A student!"

In this argument, the student is claiming that because they're an A student, though shouldn't have gotten a C. But because they got a C, they're not an A student.

Post hoc (post hoc ergo propter hoc)

A post hoc argument claims that because two things happened sequentially, then the first must have caused the second.

Example 5.8.9

"Today I wore a red shirt, and my football team won! I need to wear a red shirt every time they play to make sure they keep winning."

Straw man

A straw man argument involves misrepresenting the argument in a less favorable way to make it easier to attack.

Example 5.8.10

"Senator Jones has proposed reducing military funding by 10%. Apparently he wants to leave us defenseless against attacks by terrorists."

Here the arguer has represented a 10% funding cut as equivalent to leaving us defenseless, making it easier to attack Senator Jones' position.

Correlation implies causation

Similar to post hoc, but without the requirement of sequence, this fallacy assumes that just because two things are related one must have caused the other. Often there is a third variable not considered.

Example 5.8.11

"Months with high ice cream sales also have a high rate of deaths by drowning. Therefore, ice cream must be causing people to drown."

This argument is implying a causal relation, when really both are more likely dependent on the weather; that ice cream and drowning are both more likely during warm summer months.

Try It 5.8.1

Identify the logical fallacy in each of the arguments

a. Only an untrustworthy person would run for office. The fact that politicians are untrustworthy is proof of this.
b. Since the 1950s, both the atmospheric carbon dioxide level and obesity levels have increased sharply. Hence, atmospheric carbon dioxide causes obesity.
c. The oven was working fine until you started using it, so you must have broken it.
d. You can't give me a D in the class because I can't afford to retake it.
e. The senator wants to increase support for food stamps. He wants to take the taxpayers' hard-earned money and give it away to lazy people. This isn't fair, so we shouldn't do it.

Answer

a. Circular
b. Correlation does not imply causation
c. Post hoc
d. Appeal to consequence
e. Straw man

It may be difficult to identify one particular fallacy for an argument. Consider this argument: "Emma Watson says she's a feminist, but she posed for these racy pictures. I'm a feminist, and no self-respecting feminist would do that." Could this be ad hominem, saying that Emma Watson has no self-respect? Could it be appealing to authority because the person making the argument claims to be a feminist? Could it be a false dilemma because the argument assumes that a woman is either a feminist or not, with no gray area in between?

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