What is Critical Thinking and Why is it Important?

Every day as we meander through our daily routines we are surrounded by numerous messages and people trying to get our attention. We sign into our e-mail accounts and are bombarded with sales pitches to help us get rich quick or promise to fix all of our embarrassing physical problems. We drive to school and see billboards touting tantalizing restaurants or pitching local political candidates. We converse with our friends and family about current events like the crazy car thief who tried to avoid the police by driving down train tracks right into an oncoming train.

Throughout all of these exchanges we must constantly strive to make sense of the messages and determine which are true and which are not true, which are probable and which are improbable, which are intended and which are unintended. When we do this we practice Critical Thinking.
Introduction to Critical Thinking

Critical thinking has been defined in numerous ways. At its most basic, we can think of critical thinking as active thinking in which we evaluate and analyze information in order to determine the best course of action. We will look at more expansive definitions of critical thinking and its components in the following pages. Before we get there, though, let’s consider an example of critical thinking in action:

Shonda was researching information for her upcoming persuasive speech. Her goal with the speech was to persuade her classmates to drink a glass of red wine every day. Her argument revolved around the health benefits that one can derive from the antioxidants found in red wine. While conducting research Shonda found an article reporting the results of a study conducted by Dr. Gray. According to Dr. Gray’s study, drinking four or more glasses of wine a day will help reduce the chances of heart attack, increase levels of good cholesterol, and help in reducing unwanted fat. Without conducting further research, Shonda changed her speech to persuade her classmates to drink four or more glasses of red wine per day. She used Dr. Gray’s study as the primary support for her speech. Shonda presented her speech in class to waves of applause and support from her classmates. She was shocked when, a few weeks later, she received a grade of “D”. Shonda’s teacher had also found Dr. Gray’s study and learned that it was sponsored by a multi-national distributor of wine and other alcohol. In fact, the study in question was published in a trade journal targeted to wine and alcohol retailers. If Shonda had taken a few extra minutes to critically examine the study, she may have been able to avoid the dreaded “D”.

Shonda’s story is just one of many ways that critical thinking can impact our lives. Throughout this chapter we will consider the importance of critical thinking in all areas of communication, especially public speaking. We will first take a more in depth look at what critical thinking is—and isn’t.

Is Critical Thinking the same as being critical?

Before we get too far into the specifics of what critical thinking is and how we can do it, it’s important to clear up a common confusion. Even though critical thinking uses the word “critical” it is not a negative thing. Being critical is not the same thing as criticizing. When we criticize something we point out the flaws and errors in it. We exercise a negative value judgment on it. Our goal with criticizing is less about understanding than about negatively evaluating. It’s important to remember that critical thinking is not just criticizing. While the process may involve examining flaws and errors, it is not just this.

Just what is critical thinking then? To help us understand let’s consider a common definition of critical thinking. The philosopher John Dewey is often considered the father of modern day critical thinking. He defines critical thinking as:

“Active, persistent, careful consideration of a belief or supposed form of knowledge in light of the grounds that support it and the further conclusions to which it tends.”

The first key component of Dewey’s definition is that critical thinking is active. Critical thinking must be done by choice. As we continue to delve deeper into the various facets of critical thinking, we will learn how to engage as critical thinkers.

Probably one of the most concise and easiest to understand definitions is that offered by Barry Beyer: “Critical thinking... means making reasoned judgments.” In other words we don’t just jump to a conclusion or a judgment. We rationalize and justify it. A second primary component of critical thinking involves questioning. As critical thinkers we need to question
everything that confronts us. Equally important, we need to question ourselves and ask how our own biases or assumptions influence how we judge something.

In the following sections we will explore how to do critical thinking more in depth. As you read through this material, reflect back on Dewey’s and Beyer’s definitions of critical thinking.

The “Delphi Method” of Critical Thinking

By this point, you should be starting to understand that critical thinking is more than just thinking as usual. In this section, we will examine the traits exhibited by critical thinkers. Before we do that, though, let’s turn to a more detailed explanation of critical thinking as found in the American Philosophical Association’s “Delphi Report” :

“We understand critical thinking to be purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based.”

Your first response after reading this definition may be to shake your head and ask, “Huh?” Don’t be discouraged. On first reading, this definition can appear daunting and confusing. However, if we examine the definition critically (practice critical thinking), we can see that it’s not as confusing as it originally appears. To make sense of it, we can break it down into its individual components:

• **Purposeful, self-regulatory judgment**—this is another way of expressing Dewey’s idea of critical thinking as active thinking. We purposefully examine a message to determine what is happening. Self-regulation occurs when we consciously monitor our preconceived notions about the content of the message. However, it also can refer to the fact that critically examining a message does not give us liberty to impute whatever meanings we want. Critical thinking doesn’t equal a license to rewrite messages as we see fit. We need to strive to stay as true as possible to the original intent.

• **Interpretation, Analysis, Evaluation, Inference**—this portion of the definition refers to what we do when practicing critical thinking. We gain a deeper understanding through exercising interpretation, analysis, and evaluation. Additionally we draw inferences based on things that are implied in the message.

• **Explanation of Evidential, Conceptual, Methodological, Criteriological, or Contextual considerations**—refers to the other things that we need to be aware of when critically examining a message. The outside forces that may have an impact on the content of a message and/or our understanding of it.

What are the common traits of critical thinkers?

Critical thinkers tend to exhibit certain traits that are common to them. These include:

*Open-mindedness*—critical thinkers are open and receptive to all ideas and arguments, even those with which they may disagree. Critical thinkers reserve judgment on a message until they have examined the claims, logic, reasoning, and evidence used. Critical thinkers are fair-minded and understand that a message is not inherently wrong or flawed if it differs from their own thoughts. Critical thinkers remain open to the possibility of changing their view on an issue when logic and evidence supports doing so.
Critical thinkers want to know more and take action to learn more.

Analytical Nature—critical thinkers are interested in understanding what is happening in a message. Critical thinkers ask questions of the message, breaking it into its individual components and examining each in turn. Critical thinkers dissect these components looking for sound logic and reasoning.

Systematic by Method—critical thinkers avoid jumping to conclusions. Critical thinkers take the time to systematically examine a message. Critical thinkers apply accepted criteria or conditions to their analyses.

Inquisitive—critical thinkers are curious by nature. Critical thinkers ask questions of what is going on around them and in a message. Critical thinkers want to know more and take action to learn more.

Judicious—critical thinkers are prudent in acting and making judgments. Critical thinkers are sensible in their actions. That is, they don’t just jump on the bandwagon of common thought because it looks good or everyone else is doing it.

Truth-seeking Ethos—critical thinkers exercise an ethical foundation based in searching for the truth. Critical thinkers understand that even the wisest people may be wrong at times.

Confident in Reasoning—critical thinkers have faith in the power of logic and sound reasoning. Critical thinkers understand that it is in everyone's best interest to encourage and develop sound logic. More importantly, critical thinkers value the power of letting others draw their own conclusions.

As we discuss core critical thinking skills in the next section, you should see how these traits come into play. Keep them in mind when reading through the explanations and examples.

Core Critical Thinking Skills
Recall that critical thinking is an active mode of thinking. Instead of just receiving messages and accepting them as is, we consider what they are saying. We ask if they are well-supported. We determine if their logic is sound or slightly flawed. In other words, we act on the messages before we take action based on them. When we enact critical thinking on a message, we engage a variety of skills including:

- Listening
- Analysis
- Evaluation
- Inference and Interpretation or explanation
- Self-regulation

Over the next few pages we will examine each of these skills and their role in critical thinking in greater detail. As you read through the explanation of and examples for each skill, think about how it works in conjunction with the others. It’s important to note that while our discussion of the skills is presented in a linear manner, in practice our use of each skill is not so straightforward. We may exercise different skills simultaneously or jump forward and backward.
Listening

In order to understand listening, we must first understand the difference between listening and hearing. At its most basic, hearing refers to the physiological process of receiving sounds, while listening refers to the psychological process of interpreting or making sense of those sounds. Every minute of every day we are surrounded by hundreds of different noises and sounds. If we were to try to make sense of each different sound we would pretty much spend our day just doing this. While we may hear all of the noises, we filter out many of them. That is, they pass through our lives without further notice. Certain noises, however, jump to the forefront of our consciousness. As we make sense of these sounds, we listen to them. We do this every day without necessarily thinking about the process. Like many other bodily functions, it happens without our willing it to happen.

To help clarify the process, let's consider an example:

As I am writing this section, I am sitting in my local coffee shop. I do a lot of writing here, so the noises act as background noise to my work. Before I started consciously paying attention I was vaguely aware of the Latin music playing over the sound system and the voices of the baristas taking orders and talking to each other. However, now that I am consciously aware of the noises, I also note the following:

- The beeping of the cash register
- The humming of my laptop’s cooling fan
- Two men having a conversation a few tables over
- The sounds of feet shuffling over the floors
- A soft rumbling of some sort of machine
- The clicking of pastry tongs
- Water running into a sink
- The occasional sound of traffic whenever someone enters or exits

These noises have been present the entire time I have been writing. While I may have heard them, I didn’t pay attention or listen to them until I wrote about them.

Critical thinking requires that we consciously listen to messages. We must focus on what is being said—and not said. We must strive not to be distracted by other outside noises or the internal noise of our own preconceived ideas. For the moment we need to just purely take in the message.

Listening becomes especially difficult when the message contains highly charged information. Think about what happens when you try to discuss a controversial issue such as abortion. As the other person speaks you may have every good intention of listening to the entire argument. However, what often happens is that the person will say something you feel strongly about and you will then start formulating a counter-argument in your head. The end result is that both sides end up talking past each other without ever really listening to what the other says.

Analysis

Once we have listened to a message we can begin to analyze it. In practice we often begin analyzing messages while are still listening to them. When we analyze something we consider it in greater detail. We separate out the main components of the message. In a sense, we are acting like a surgeon on the message, carving out all of the different elements and laying them out for further consideration and possible action.
Having parsed out the various elements, we are then ready to evaluate them and by extension the message as a whole.

Let's return to Shonda’s persuasion speech to see analysis in action. As part of the needs section of her speech, Shonda makes the following remarks:

Americans today are some of the unhealthiest people on Earth. It seems like not a week goes by without some news story about how we are the fattest country in the world. In addition to being fat we suffer from a number of other health problems. When I was conducting research for my speech, I read somewhere that heart attacks are the number one killer of men and the number two killer of women. Think about that. My uncle had a heart attack and he had to be rushed to the hospital. They hooked him up to a bunch of different machines to keep him alive. We all thought he was going to die. He's ok now, but he has to take a bunch of pills every day and eat a special diet. Plus he had to pay thousands of dollars in medical bills. Wouldn't you like to know how to prevent this from happening to you?

If we were to analyze this part of Shonda’s speech we could begin by looking at the claims she makes:

- Americans are unhealthy
- America is the fattest country
- Americans suffer from many health problems
- Heart attacks are the number one killer of men
- Heart attacks are the number two killer of women

We could then look at the evidence she presents in support of these claims:

- Some news stories about America as the fattest country
- Research about heart attacks
- Story of her uncle's heart attack

In this portion of her speech, Shonda has not presented any arguments. However, if she had, we would want to consider them as well.

Having parsed out the various elements, we are then ready to evaluate them and by extension the message as a whole.

**Evaluation**

When we evaluate something we continue the process of analysis by assessing the various claims and arguments for validity. One way that we evaluate a message is to ask questions about what is being said and who is saying it. Typical questions that we may ask include:

- Is the speaker credible?
- Does the statement ring true or false based on common sense?
- Does the logic employed hold up to scrutiny?
- What questions or objections are raised by the message?
- How will further information affect the message?
- Will further information strengthen or weaken the claims?
- What questions or objections are raised by the claims?

Let's return to Shonda’s speech to see how evaluation works in action:

- Is the speaker credible? Yes. While Shonda may not be an expert per se on the issue of health benefits related to wine, she has made herself a mini-expert through conducting research.
The next step in critically examining a message is to interpret or explain the conclusions that we draw from it.

- Does the statement ring true or false based on common sense? It sounds kind of fishy. Four or more glasses of wine in one sitting doesn’t seem right. In fact, it seems like it might be bordering on binge drinking.

- Does the logic employed hold up to scrutiny? Based on the little bit of Shonda’s speech that we see here, her logic does seem to be sound. As we will see later on, she actually commits a few fallacies.

- What questions or objections are raised by the message? In addition to the possibility of Shonda’s proposal being binge drinking, it also raises the possibility of creating alcoholism or causing other long term health problems.

- How will further information affect the message? More information will probably contradict her claims. In fact, most medical research in this area contradicts the claim that drinking 4 or more glasses of wine a day is a good thing.

- Will further information strengthen or weaken the claims? Most likely Shonda’s claims will be weakened.

- What questions or objections are raised by the claims? In addition to the objections we’ve already discussed, there is also the problem of the credibility of Shonda’s expert “doctor.”

Inference and Interpretation or Explanation

The next step in critically examining a message is to interpret or explain the conclusions that we draw from it. At this phase we consider the evidence and the claims together. In effect we are reassembling the components that we parsed out during analysis. We are continuing our evaluation by looking at the evidence, alternatives, and possible conclusions.

Before we draw any inferences or attempt any explanations, we should look at the evidence provided. When we consider evidence we must first determine what, if any, kind of support is provided. Of the evidence we then ask:

- Is the evidence sound?
- Does the evidence say what the speaker says it does?
- Does contradictory evidence exist?
- Is the evidence from a valid credible source?

Even tough these are set up as yes or no questions, you’ll probably find in practice that your answers are a bit more complex. For example, let’s say that you’re writing a speech on why we should wear our seatbelts at all times while driving. You’ve researched the topic and found solid, credible information setting forth the numerous reasons why wearing a seatbelt can help save your life and decrease the number of injuries experienced during a motor vehicle accident. Undoubtedly, there is contradictory evidence arguing that seat belts can cause more injuries. For example, if you’re in an accident where your car is partially submerged in water, wearing a seatbelt may impede your ability to quickly exit the vehicle. Does the fact that this evidence exists negate your claims? Probably not, but you need to be thorough in evaluating and considering how you use your evidence.
Self-regulation
The final step in critically examining a message is actually a skill that we should exercise throughout the entire process. With self-regulation, we consider our pre-existing thoughts on the subject at hand and any biases we may have. We examine how what we think on an issue may have influenced the way we understand (or think we understand) the message and any conclusions we have drawn. Just as contradictory evidence doesn’t automatically negate our claims or invalidate our arguments, our biases don’t necessarily make our conclusions wrong. The goal of practicing self-regulation is not to disavow or deny our opinions. The goal is to create distance between our opinions and the messages we are evaluating.

The Value of Critical Thinking
In public speaking the value of being a critical thinker cannot be overstressed. Critical thinking helps us to determine the truth or validity of arguments. However, it also helps us to formulate strong arguments for our speeches. Exercising critical thinking at all steps of the speech writing and delivering process can help us avoid situations like that which Shonda found herself in. Critical thinking is not a magical panacea that will make us super speakers. However, it is another tool that we can add to our speech toolbox.

As we will learn in the following pages, we construct arguments based on logic. Understanding the ways logic is used and possibly misused is a vital skill. To help stress the importance of it, the Foundation for Critical Thinking has set forth the following universal standards of reasoning:

- All reasoning has a purpose.
- All reasoning is an attempt to figure something out, to settle some question, to solve some problem.
- All reasoning is based on assumptions.
- All reasoning is done from some point of view.
- All reasoning is based on data, information, and evidence.
- All reasoning is expressed through, and shaped by, concepts and ideas.
- All reasoning contains inferences or interpretations by which we draw conclusions and give meaning to data.
- All reasoning leads somewhere or has implications and consequences.

As you delve into the intricacies of logic and the carnival world of fallacies, keep these guidelines in mind.

What is Logic and where do Arguments come into play?
We use forms of logic everyday. Even if we have never formally studied logical reasoning and fallacies, we can often tell when a person’s statement just doesn’t sound right or ring true. Think about the claims that we see in many advertisements today—Buy product X and you will be beautiful/thin/happy or have the carefree life depicted in the ad. With very little critical thought, we know intuitively that simply buying a product will not magically change our lives. Even if we can’t identify the specific fallacy at work in the argument (non causa in this case), we know that there is some flaw in the argument.
By studying logic and fallacies we can learn to formulate stronger and more cohesive arguments. With luck, we can avoid problems like the one mentioned above. The study of logic has a long history. We can trace the roots of modern logical thinking and study back to Aristotle in ancient Greece. Aristotle’s simple definition of logic as the means by which we come to know anything still provides a concise understanding of what logic is. Of the classical trivium of logic, grammar, and rhetoric, logic has developed as a fairly independent branch of philosophical studies today. We use logic everyday when we construct statements, argue for our point of view, and in myriad other ways. We are surrounded by ads that use logic to try to get us to buy their product. Understanding how logic is used will help us communicate more efficiently and effectively.

Defining Arguments
When we think and speak logically, we pull together statements that combine reasoning with evidence to support an assertion. These are called arguments. A logical argument should not be confused with the type of argument you have with your sister or brother or any other person. When you argue with your sibling you participate in a conflict in which you disagree about something. You may, however, use a logical argument in the midst of the argument with your sibling.

Consider this example:

Brother and sister, Sydney and Harrison are arguing about whose turn it is to clean their bathroom. Harrison tells Sydney that she should do it because she is a girl and girls are better at cleaning. Sydney responds that being a girl has nothing to do with whose turn it is. She then reminds Harrison that according to their work chart, they are responsible for cleaning the bathroom on alternate weeks. She tells him that she cleaned the bathroom last week; therefore, it is his turn this week. Harrison, still unconvinced, refuses to take responsibility for the chore. Sydney then points to the work chart and shows him where it specifically says that it is his turn this week. Defeated, Harrison digs out the cleaning supplies.

Throughout their bathroom argument, both Harrison and Sydney use logical arguments to advance their point. You may ask why Sydney is then successful and Harrison is not. This is a good question. Let’s critically think about each of their arguments to see why one fails and one succeeds.

Let’s start with Harrison’s argument. We can summarize it into three points:

- Girls are better at cleaning bathrooms than boys.
- Sydney is a girl.
- Therefore, Sydney should clean the bathroom.

Harrison’s argument here is a form of deductive reasoning, specifically a syllogism. We will consider syllogisms in a few minutes. For our purposes here, let’s just focus on why Harrison’s argument fails to persuade Sydney. Assuming for the moment that we agree with Harrison’s first two premises, then it would seem that his argument makes sense. We know that Sydney is a girl, so the second premise is true. This leaves the first premise that girls are better at cleaning bathrooms than boys. This is the exact point where Harrison’s argument goes astray. The only way his entire argument will work is if we agree with the assumption that girls are better at cleaning bathrooms than boys.
Let’s now look at Sydney’s argument and why it works. Her argument can be summarized as follows:

- Bathroom cleaning responsibilities are alternated weekly according to the work chart.
- Sydney cleaned the bathroom last week.
- The chart indicates that it is Harrison’s turn to clean the bathroom this week.
- Therefore, Harrison should clean the bathroom.

Sydney’s argument here is a form of **inductive reasoning**. We will look at inductive reasoning in depth below. For now, let’s look at why Sydney’s argument succeeds where Harrison’s fails. Unlike Harrison’s argument, which rests on assumption for its truth claims, Sydney’s argument rests on evidence. We can define evidence as anything that is used to support the validity of an assertion. Evidence can include things such as: testimony, scientific findings, statistics, physical objects, and many others. Sydney uses two primary pieces of evidence: the work chart and her statement that she cleaned the bathroom last week. Because Harrison has no contradictory evidence, he can’t logically refute Sydney’s assertion and is therefore stuck with scrubbing the toilet.

### Defining Deduction

**Deductive reasoning** refers to an argument in which the truth of its premises guarantees the truth of its conclusions. Think back to Harrison’s argument for Sydney cleaning the bathroom. In order for his final claim to be valid, we must accept the truth of his claims that girls are better at cleaning bathrooms than boys. The key focus in deductive arguments is that it must be impossible for the premises to be true and the conclusion to be false. The classic example is:

- All men are mortal.
- Socrates is a man.
- Therefore, Socrates is mortal.

We can look at each of these statements individually and see that each is true in its own right. It is virtually impossible for the first two propositions to be true and the conclusion to be false. Any argument which fails to meet this standard commits a logical error or fallacy. Even if we might accept that the arguments are good and the conclusion is possible, the argument fails as a form of deductive reasoning.

Another way to think of deductive reasoning is to think of it as moving from a general premise to a specific premise. The basic line of reasoning looks like this:

- Major premise
- Minor premise
- Conclusion

This form of deductive reasoning is called a syllogism. A syllogism need not have only three components to its argument, but it must have at least three. We have Aristotle to thank for identifying the syllogism and making the study of logic much easier. The focus on syllogisms dominated the field of philosophy for thousands of years. In fact, it wasn’t until the early nineteenth century that we began to see the discussion of other types of logic and other forms of logical reasoning. It can be easy to fall prey to missteps in reasoning when we focus on syllogisms and deductive reasoning.

Let’s return to Harrison’s argument and see what happens:

- Major premise—girls are better at cleaning bathrooms.
- Minor premise—Sydney is a girl.
- Conclusion—Sydney should clean the bathroom.
Considered in this manner, it should be clear how the strength of the conclusion depends upon us accepting as true the first two statements. This need for truth, sets up deductive reasoning as a very rigid form of reasoning. If either one of the first two premises isn’t true, then the entire argument fails.

Let’s turn to recent world events for another example:

- The United States should invade any countries holding weapons of mass destruction.
- According to our experts, Iraq has weapons of mass destruction.
- Therefore we should invade Iraq.

In the debates over whether the United States should take military action in Iraq, this was the basic line of reasoning used to justify an invasion. And as we all know, this logic was sufficient for the United States to invade Iraq. However, as we have since learned, this line of reasoning also shows how quickly logic can go bad. We subsequently learned that the “experts” weren’t quite so confident and their “evidence” wasn’t quite as concrete as originally represented.

**Defining Induction**

Inductive reasoning is often thought of as the opposite of deductive reasoning; however, this approach is not wholly accurate. Inductive reasoning does move from the specific to the general. However, this fact alone does not make it the opposite of deductive reasoning. An argument which fails in its deductive reasoning, may still stand inductively.

Unlike deductive reasoning, there is no standard format that inductive arguments must take. Therefore, inductive reasoning is more flexible. We can define an inductive argument as one in which the truth of its propositions lends support to the conclusion. The difference here is that in deduction, the truth of the propositions establishes with absolute certainty the truth of the conclusion. When we analyze an inductive argument, we therefore do not focus on the truth of its claims. Instead we analyze inductive arguments for their strength or soundness.

Another significant difference between deduction and induction is that inductive arguments do not have a standard format. Let’s return to Sydney’s argument to see how induction develops in action:

- Bathroom cleaning responsibilities are alternated weekly according to the work chart.
- Sydney cleaned the bathroom last week.
- The chart indicates that it is Harrison’s turn to clean the bathroom this week.
- Therefore, Harrison should clean the bathroom.

What Sydney does here is build to her conclusion that Harrison should clean the bathroom. She begins by stating the general house rule of alternate weeks for cleaning. She then adds in evidence before concluding her argument. While her argument is strong, we don’t know if it is true. There could be other factors that Sydney has left out. For example, Sydney may have agreed to take Harrison’s week of bathroom cleaning in exchange for him doing another one of her chores. Or there may be some extenuating circumstances that would prevent Harrison from bathroom cleaning this week.

Let’s return to the world stage for another example. After the 9/11 attacks on the World Trade Center, we heard variations of the following arguments:

- The terrorists were Muslim (or Arab or Middle Eastern).
- The terrorists hated America.
- Therefore, all Muslims (or Arabs or Middle Easterns) hate America.
Clearly, we can see the problem in this line of reasoning. Beyond being a scary example of hyperbolic rhetoric, we can all probably think of at least one counter example that would disprove the conclusion. However, individual passions and biases caused many otherwise rational people to say these things in the weeks and months following the attacks. This example also clearly illustrates how easy it is to get tripped up in your use of logic and the importance of practicing self-regulation.

What is a Fallacy?
When we form our own arguments or examine other’s arguments, we need to be cognizant of possible fallacies. A fallacy can be defined as a flaw or error in reasoning. At its most basic, a logical fallacy refers to a defect in the reasoning of an argument that causes the conclusion(s) to be invalid, unsound, or weak. The existence of a fallacy in a deductive argument makes the entire argument invalid. The existence of a fallacy in an inductive argument weakens the argument but does not invalidate it.

It is important to study fallacies so that you can avoid them in the arguments and claims you make. Studying fallacies will also provide you with a foundation for evaluating and critiquing other’s arguments as well. Once you start studying and thinking about fallacies, you’ll find rather quickly that they are everywhere. You could say that we live in a fallacious world!

The study of fallacies has been around for as long as the study of logic. In ancient Greece, Aristotle classified fallacies into two categories—linguistic and non-linguistic. Within these two categories, he identified 13 individual fallacies. Through time we have reclassified fallacies using various typologies and criteria. For our purposes, we will focus on formal and informal fallacies.

Formal or Psychological Fallacies
A formal or psychological fallacy exists because of an error in the structure of the argument. In other words, the conclusion doesn’t follow from the premises. Formal fallacies are identified by critically examining the structure of the argument exclusive of the individual statements. As you read through and think about the following types of formal fallacies and examples, this definition will become more clear.

Bad Reasons Fallacy
In this fallacy, the conclusion is assumed to be bad because the arguments are bad. In practice, a premise of the argument is bad and therefore it is assumed that the conclusion is bad or invalid. This fallacy is seen often in debate or argumentation. We summarize the fallacy as: he gave bad reasons for his argument; therefore, his argument is bad. Consider the following claim:

The new faculty member is ugly and has no sense of style. Therefore, we should fire him.

The problem here should be obvious. To be a professor does not require a certain look or the ability to put together interesting outfits. (Just look around your campus and you’ll probably see just how true this is.) As such, the reasons for concluding that the new faculty member should be fired are bad. We commit a fallacy if we therefore assume that the conclusion to fire him is also bad or wrong. While the given reasons don’t necessarily support the conclusion, there may be others that do.
**Fallacy of Modal Logic**

Modals are the ways that propositions can be true or false. Modals can also be thought of as qualifiers that put some sort of limitation on the truth of a statement. Common modalities include the concepts of possibility, existence, and necessity. Therefore, in the fallacy of modal logic there exists some disjuncture between the modality and conclusion. We can’t determine the truth of the conclusion based solely on the truth statement or proposition in the argument. Just because the premise may be true, doesn’t necessarily mean that it is true. Modal fallacies can get confusing, so take your time when reading through the following discussion. We will look at four different types of modalities in our discussion: alethic, deontic, epistemic, and temporal.

- **Alethic modalities** refer to the possible or necessary ways that a proposition can or must be true. They deal with logical, physical, and metaphysical possibilities.

  Logical possibilities present the weakest conclusion since, arguably, anything can be a logical possibility. Lawyers make a living by finding logical possibilities and convincing others of these possibilities. For example, in inheritance law (specifically the Rule against Perpetuities), there exists the concept of the fertile octogenarian, which says that it is logically possible for an 80 year old woman to conceive and birth a child. It’s not a definite impossibility; therefore, logically it could happen. Another example of a logical possibility is: It is may be possible that Elvis is still alive and working in a Burger King in Kalamazoo. We can’t prove that he isn’t, so like the fertile octogenarian it remains a distinct possibility. The fallacy occurs when we accept the conclusion as true and not just possible.

  Modals dealing with the physical are stronger since they are based on the laws of nature. For example: it is not possible for water to stay in liquid form if the temperature stays below freezing. We know that this is true because freezing water is how we make ice. The liquid changes to a solid as we all learn in basic elementary science.

  Falling between logical and physical modalities are those dealing with the metaphysical. Metaphysical modalities deal with existential possibilities. For example: We know that Descartes asserted, “I think; therefore I am”. Is it necessarily possible to think in order to be, though? We could have a fascinating discussion on the connection between thinking and being. However, at the end of the day we have no way of truly knowing if thinking is a necessary prerequisite to being.

- **Deontic modalities** refer to obligation and permissibility. That is, some propositions ought to be true or false while others are permissible. The focus in deontic modals is the difference between asserting that you must do something versus you may do something.

  Let’s consider an example: According to the constitution you must be at least 35 years old to be president of the United States. The rule here is watertight—you must be 35 or older to be president. Can we then assume that everyone who runs for president is at least 35 years old? Of course not. The rule says nothing about the age you must be to run for the office. It would create an interesting proposition if a candidate who was 34 ran and was elected to the position. If the candidate turned 35 before her term began, would she be in violation of the rule?
Epistemic modalities refer to the knowledge and belief of propositions. Some are known to be true or false while others are merely believed to be so. Just because a proposition is true or false doesn’t mean that it is necessarily true or false. Epistemic modalities deal with the certainty of an issue. We can see how his fallacy develops by returning to the rule that you must be at least 35 years old to be president of the United States. Based solely on the rule we can’t knowingly infer that every president of the United States was or will be at least 35 years old. Now, at this point you might want to say, “Of course we can. He (or she) wouldn’t be able to run for office if he (or she) didn’t meet the requirements.” While your objection is a good one, think about this possibility: what if a highly talented 30 year old person falsified his (or her) birth certificate and made it look like he (or she) was 36 years old? And what if the general public never found out? Remember, that just because a rule mandates something must happen doesn’t mean in practice that it will happen.

Temporal modalities refers to the historical and future truth or falsity of a proposition. These fallacies occur in many different forms but are especially prevalent when people discuss things that are tradition. The argument usually looks like this: Traditionally, we have always done X. Therefore, we always will do X. Times change and people change so how can we know that we will always do X. Let’s look at a specific historical example:

Traditionally, the United States has always allowed slavery. In fact, slavery is the foundation of farming in this country. Therefore, we will always allow slavery.

We could debate the value and merits of this statement; however, for our purposes we need only look at the fact that slavery is no longer legal to see the fallacy in the reasoning.

**Masked Man Fallacy**

The masked man fallacy involves a substitution of parties. If the two things that we substitute are identical, then the argument is valid:

Rosamond Smith wrote the book *Nemesis*.
Rosamond Smith is an alias for Joyce Carol Oates.
Therefore, Joyce Carol Oates wrote the book *Nemesis*.

This argument is valid because of the premises of two. Rosamond Smith is in fact an alias for Joyce Carol Oates, so there is no flaw in the structure of the argument.

Consider the following example:

Gerry told police that a red haired woman stole her car.
Ginny is a red haired woman.
Therefore, Gerry told police that Ginny stole her car.

The fallacy in this example occurs between the second premise and the conclusion. Looking at each premise individually, we can see that each is true. However, simply because each premise is true doesn’t mean that the conclusion is necessarily true. Even if Ginny did steal Gerry’s car, this fact doesn’t make the conclusion true. The existence of this fact cannot be presumed to change what Gerry told the police.
Fallacy of Propositional Logic

Fallacies of propositional logic consider propositions taken as a whole. The focus is on compound propositions that are construed from simpler ones connected with functional connectives. The type of connective used determines the truth value of the proposition. The focus in this type of fallacy is on the grammatical construction of the proposition and on the function of the connective. The type of propositional fallacy that occurs depends upon the specific connective:

- **Disjunction**—occurs with the use of “or.” When we use “or” as a connective, it functions in one of two ways. It can work inclusively, meaning that one or both of the options is true—it’s sunny or raining. It can also work exclusively, meaning that only one option is true—it’s sunny or raining. The problem comes in the ambiguous nature engendered by the use of “or.” When we see “or” in use, we don’t know if it’s meant to be inclusive or exclusive.

- **Negation**—occurs with the use of “not.” When we use “not” in a premise the assumption is that at least one of the options is false. However, there always exists the possibility that both are false. If we know one is true, we may infer that the other is false. Like the use of “or,” the problem arises from the ambiguous nature of the premise. Let’s look at an example:

  It is not raining and snowing.
  It isn’t raining.
  Therefore, it’s snowing.

  While it may be true that it is snowing, it could also be true that it’s a perfectly sunny day. We cannot clearly draw the conclusion that it’s snowing from the premises.

- **Conditional**—occurs with the use of “if” as follows: If premise P, then Q. Q, therefore P. Again the problem comes from ambiguity. Consider this:

  If he’s a professor, he’s a Ph.D.
  He’s a professor; therefore, he’s a Ph.D.

  Even though many professors are Ph.D’s, not all are. There are other terminal degrees that they may have. Or they may have stopped their education at the Master’s level.

Fallacy of Quantitative Logic

Fallacies of quantitative logic also revolve around the grammatical structure of the proposition. Whereas fallacies of propositional logic focus on complex propositions, this fallacy focuses on simple, non-compound premises. The focus is on the use of some sort of quantifying word such as “all” or “some.” Consider this example:

All philosophers are wise.

We can show the flaw in this statement by simply finding a counter-example. And since the fact of being wise is abstract, how do we truly know if one is wise or not? Consider how the statement changes with the use of a different quantifier:

Some philosophers are wise.
This statement is stronger because it allows for the possibility that there are counter-examples. However, the error arises from the fact that it is not a known quantity. We must infer from the statement that some philosophers are not wise.

Let’s look at another example:

All conservatives are republicans.
Therefore, all republicans are conservatives.

Without thinking too hard you can probably think of one counter-example. Let’s try one more:

Some doctors are not MDs.
Therefore, some MDs are not doctors.

While the first premise is true, (there are other types of doctors) the second is clearly not true.

**Syllogistic Fallacy**

As we discussed previously, a syllogism is a structured form of deductive logic. The rules for syllogism use and formation are rigid. Therefore, a syllogistic fallacy occurs when these rules are violated in some form. For purposes of our discussion here, we will consider just a few possible ways that a syllogistic fallacy may occur.

- Four terms—recall that a syllogism uses three terms. Introducing an extra term into the mix will lead to problems. The way that we generally see this fallacy occur is when there are three terms, but one of them is used in two slightly different ways. Consider this example:

  Nothing is better than world peace.
  An old used car is better than nothing.
  An old used car is better than world peace.

  The problem term here is “nothing”. In the major premise, nothing is used exclusively, meaning that we all want world peace. In the minor premise, though, it is used as more of a qualifying term than an exclusionary term.

- Affirming a disjunct—this occurs when we assume that one premise must be true because the other is false. Or we assume that one premise must be false because the other is true. The problem here is that we violate the first rule of deductive reasoning. Consider this example:

  It will either rain or snow tomorrow.
  It will not rain tomorrow.
  Therefore, it will snow tomorrow.

  The flaw in this argument should be obvious. For one thing, it could neither rain nor snow tomorrow. There are a whole other range of possible weather patterns. Additionally, it could both rain and snow as sometimes is prone to happen.
Informal or Material Fallacies

An informal fallacy occurs because of a mistake or error in reasoning. Unlike formal fallacies which are identified through examining the structure of the argument, informal fallacies, are identified through analysis of the content of the premises. An informal fallacy usually has something to do with issues of rational inference. That is, the premises fail to provide an adequate reason for believing the truth of the conclusion. There are numerous different types of informal fallacies. In the following, we consider some of the more common types.

**Accident**

A fallacy by accident occurs when a statement that is generally true is applied to a specific case that is somehow unusual. The fallacy looks like this:

\[
\text{Xs are normally Ys.} \\
\text{Z is an (abnormal) X.} \\
\text{Therefore, A is an Y.}
\]

Let’s look at a specific example to see how this fallacy can easily occur:

Dogs are good pets.
Coyotes are dogs.
Therefore, coyotes are good pets.

The fallacy here should be clear. I love dogs and coyotes, but I don’t know that I would want a coyote for a pet. The fallacy in this case could be easily fixed with the use of a simple qualifier such as the word “some.” If we changed the first premise to read “Some dogs make good pets,” then we can see how even if the second premise is true it doesn’t automatically lead to the stated conclusion. The basic problem here is that a sometimes true statement is assumed to be universally true.

**Ad Hominem**

The ad hominem fallacy occurs when we shift our focus from the premises and conclusions of the argument and focus instead on the individual making the argument. I have found that an easy way to remember this fallacy is to think of it as the name calling fallacy. It is the weak form of arguing that many of us employed on our elementary school playgrounds such as this exchange:

Jim: I think that we should go back to class now.
Jon: I don’t think we need to worry about it.
Jim: Well, the bell rang a few minutes ago, and we’re going to be late.
Jon: Well, you’re a big poopy head and don’t know anything, so we don’t have to go back to class.

If we examine this exchange we can see that Jim’s arguments are sound and supported by what appears to be good evidence. However, Jon ignores these and focuses on Jim’s supposed character—he’s a stupid poopy head. The fallacy happens when we connect the truth of a proposition to the person asserting it.

Let’s consider a more serious example that we see in various forms throughout political campaigns. We can map out the fallacy as follows:

My opponent has trait X.
Therefore, she is not qualified to do the job.
The focus here is on the individual’s trait, even when the trait in question has nothing to do with the job. We see this fallacy in play in the early days of the 2008 U.S. presidential campaign:

We will never get out of Iraq if we elect a Democrat as president in 2008.

The focus here has nothing to do with any individual candidate’s skills, experience, or abilities. The focus is solely on their political affiliation. The interesting thing about this argument is that it ignores the common sense fact that it was under Republican leadership that the United States entered and has stayed in Iraq.

_Ambiguity_

Fallacies caused by ambiguity occur, not surprisingly, when some ambiguous term is used in the argument. An ambiguous term is one that has more than one meaning. The structure of the argument may be clear. In fact there may be solid evidence supporting the propositions. The problem arises from having nothing solid on which to base our conclusion. We saw this fallacy in play during the Clinton/Lewinsky investigations. If you recall, when questioned about his relationship with Monica Lewinsky, President Clinton responded that he never had “sexual relations” with that woman. The phrase “sexual relations” can include a whole range of sexual behaviors.

Let’s look at a more recent example:

We won’t be safe until we win the war on terrorism.

Can you spot the ambiguity? Actually there are two: safe and terrorism. What is safe to one person is much less so to another. Likewise, behaviors that appear terrorist-like to one person are simply impassioned acts to another.

_Appeals to X_

This fallacy is actually a group of fallacies. At its most basic, the truth of the argument rests on reference to some outside source or force. We will consider four of the most popular appeal fallacies—appeals to authority, emotion, ignorance, and pity.

- **Appeal to Authority**—when we appeal to authority we claim that the truth of a proposition is guaranteed because of the opinion of a famous and/or accomplished other. Appeals to authority look like this:

  Authority figure X says Y.
  Therefore, Y is true.

We see this fallacy in play regularly in commercials or other advertisements featuring a doctor, lawyer, or other professional. Think about, for example, ads for the latest weight loss supplement. A doctor will discuss the science of the supplement. At times she will mention that she used the supplement and successfully lost weight. Even though we do learn something about the specifics of the supplement, the focus is on the doctor and her implied authoritative knowledge. We are to infer that the supplement will work because the doctor says it will work.

The fallacy in this type of reasoning occurs when we conflate the truth of the proposition with the person stating it. Instead of considering the strength of the argument and any evidence associated with it, we focus solely on the individual.
It can be easy to fall into the trap of this fallacy. For many of your speeches, you will be asked to research the issue at hand and present supporting evidence. This is a prime place for the fallacy to occur. While it is important to support your arguments with outside research, it is also important to critically evaluate all aspects of the information. Remember the example of Shonda’s speech that opened this chapter? Her blind reliance on the research of Dr. Gray is an example of the appeal to authority fallacy.

• Appeal to Emotion—occurs with the use of highly emotive or charged language. The force of the fallacy lies in its ability to motivate the audience to accept the truth of the proposition based solely on their visceral response to the words used to structure the argument. In a sense, the audience is manipulated or forced into accepting the truth of the stated conclusions. Consider the following example:

> Any campus member who thinks clearly should agree that Dr. Lenick is a flaming, radical, feminist, liberal. Dr. Lenick has made it clear that she believes that equal rights should be granted to everyone without regard to the traditions and history of this campus or this country. Therefore, Dr. Lenick is a bad teacher and should be fired immediately.

The thrust of this argument revolves around two interrelated components—Dr. Lenick’s advocacy of equal rights for all and her alleged disregard for tradition and history. The emotional appeal rests in the phrase “flaming, radical, feminist, liberal”—words that indicate ideological beliefs, usually beliefs that are strongly held by both sides. Additionally, hot button words like these tend to evoke a visceral response rather than a logical, reasoned response.

• Appeal to Ignorance—when we appeal to ignorance, we argue that the proposition must be accepted unless someone can prove otherwise. The argument rests not on any evidence but on a lack of evidence. We are to believe the truth of the argument because no one has disproven it. Let’s look at an example to see how appeals to ignorance can develop:

> People have been seeing ghosts for hundreds of years. No one has been able to prove definitively that ghosts don’t exist. Therefore, ghosts are real.

Though rather simplistic, this example makes clear the thrust of this fallacy. The focus is not on supporting evidence, but on a blatant lack of evidence. While ghosts may exist, we don’t know for sure that they do—or don’t for that matter.

• Appeal to Pity—appeals to pity are another form of pulling on the emotions of the audience. In the appeal to pity, the argument attempts to win acceptance by pointing out the unfortunate consequences that will fall upon the speaker. In effect, the goal is to make us feel sorry for the speaker and ignore contradictory evidence. This form of fallacy is used often by students. Consider this message a professor recently received at the end of the semester:

> I know that I have not done all the work for the semester and have been absent a lot. However, I am the key point guard for the basketball team. If I get any grade lower than a C, I will not be able to play basketball next semester. If I don’t play, the team will lose. Therefore, will you please make sure that you give me at least a C for my final grade?
The student here acknowledges that he does not deserve a grade of C or higher. He has missed assignments, failed the midterm, and accrued a number of absences. His argument asks the professor to ignore these facts, though, and focus on the fact that without him the team would lose. In other words, he hopes the professor will feel sorry for him and ignore the evidence.

**Begging the Question**

Also called circular reasoning, a begging the question fallacy occurs when the conclusion of the argument is used as one of the premises of the argument. Arguments composed in this way will only be considered sound or strong by those who already accept their conclusion.

To see how Begging the Question develops as a fallacy, let’s turn to standard arguments in the abortion debate. One of the common arguments made by those who oppose legalized abortion is the following:

- Murder is morally wrong.
- Abortion is murder.
- Therefore, abortion is morally wrong.

Most people would agree with the first premise that murder is morally wrong. The problem, then rests in the second premise. Not all individuals would agree that abortion is murder. However, as presented, the premise creates a presumption that it is valid in all cases.

Those who advocate for legalized abortion are not immune from this fallacy. One of their standard arguments is:

- The constitution guarantees Americans the right to control their bodies.
- Abortion is a choice affecting women’s bodies.
- Therefore, abortion is a constitutional right.

Like the previous example, the second premise generates a potential stopping point. While the choice to have or not have an abortion does clearly impact a woman’s body, many individuals would argue that this impact is not a deciding issue. If this example or the previous were really as straightforward as presented, abortion most likely would not be such a highly contested issue.

**Black-or-White Fallacy**

This fallacy is also known as an Either/or fallacy, False Dilemma, or False Dichotomy. The thrust of the fallacy occurs when we are only given the choice between two possible alternatives, when in fact more than two exist.

Returning to the abortion debates we can see a form of this fallacy in play by simply looking at the way each side refers to itself. Those who oppose legalized abortion are Pro-Life. The implication here is that if you are for abortion then you are against life. The fallacy in this case is pretty easy to figure out—there are many facets of life, not just abortion. Those who favor legalized abortion are Pro-Choice. The implication here is that if you are against abortion, then you are against choices. Again, the fallacy is clear.

Let’s look at another hot button topic to see how this fallacy develops in action. In recent years many family advocacy groups have argued that, what they call, the “liberal media” has caused the rapid moral decline of America. They usually ask questions like this: Do you support families or moral depravity? This question ignores the whole range of choices between the two extremes.
**Composition**
This fallacy occurs when we assume that if all the parts have a given quality, then the whole of the parts will have it as well. We jump to a conclusion without concrete evidence. We see this fallacy at work in the following example:

All of the basketball team's players are fast runners, high jumpers, and winners. Therefore, the team is a winner.

The problem here is that the individuals must work together to make the team a winner. This might very well happen, but it might not.

To make this fallacy more clear, let's look at a humorous, though not so appetizing example:

I like smoothies for breakfast because I can drink them on the run. My favorite breakfast foods are: scrambled eggs, fresh fruit, bagels with cream cheese, soy sausage links, cottage cheese, oatmeal, cold pizza, and triple espressos. Therefore, I would like a breakfast smoothie made of scrambled eggs, fresh fruit, bagels with cream cheese, soy sausage links, cottage cheese, oatmeal, cold pizza, and triple espressos.

If you're not feeling too nauseated to keep reading, you should be able to see the composition fallacy here. While each of these breakfast items may be appetizing individually, they become much less so when dropped into a blender and mashed together.

**Division**
The opposite of the composition fallacy, a division fallacy occurs when we infer that the parts of the whole contain the same quality as the whole. Let's turn to another food based example to see how this fallacy occurs:

Blueberry muffins taste good. Therefore, the individual ingredients comprising blueberry muffins also taste good.

On the surface, this argument may not appear to be problematic. However, think about the individual ingredients: blueberries, raw eggs, flour, sugar, salt, baking soda, oil, and vanilla. Of these, blueberries are the only items that generally taste good on their own. I don’t know about you, but sitting down to a bowl of baking soda doesn’t sound too appetizing.

Here's one more example to make the fallacy clear:

Women in general make less money than men. Therefore, Brenda Barnes, CEO of the Sara Lee company, makes less money than the male delivery drivers who work for the company.

Common sense will tell you that the CEO of a company makes more money than the hourly delivery drivers. Additionally, a few quick minutes of research will confirm this inference.
Gambler's Fallacy
The gambler's fallacy occurs when we believe that the likelihood of a random event can be affected or predicted by other events. Let's turn to a typical argument made by a gambler to see how this fallacy develops:

Liz has been playing black jack for the last hour. During that time she has lost over $500 and has won only three hands. Liz pulls out another $1000 to purchase more chips. She sighs to the dealer, "My luck has got to change now. I've used up my allotment of bad luck for the week."

The flaw here is that Liz assumes that the mystical power of "luck" somehow impacts the cards she is dealt. She is acting under the presumption that black jack hands are logically controlled or that there is a mathematical limit to the number of times any one individual can lose. Of course if this were true, gambling wouldn't be the multi-billion dollar industry it is.

Non Causa, Pro Causa
Sometimes called a Questionable Cause fallacy, this occurs when there exists a flawed causal connection between events. The fallacy is not just a bad inference about connection between cause and effect, but one that violates the cannons of reasoning about causation. We see two primary types of this fallacy:

• Accidental or coincidental connection occurs when we assume a connection where one might or might not exist. We say that event C caused event E when we have no clear proof. Here's an example:

  Yesterday Jen went out in the rain and got soaked. The next day she was in bed with the flu. Therefore, the rain caused her to get sick.

  Most of us probably grew up hearing statements like this without ever realizing that we were being exposed to a logical fallacy in action. Flu is caused by exposure to a virus, not to bad weather.

• The other type of causal fallacy occurs with a general causation between types of events. For example, we know that drinking excessive amounts of alcohol leads to alcoholism and cirrhosis of the liver. However, not every individual who drinks excessively develops both or either of these diseases. In other words, there is a possibility that the disease will occur as a result of excessive drinking, but it is not an absolute.

One-sidedness
A one-sidedness fallacy presents evidence that only supports its conclusion or somehow downplays contradictory evidence. The problem is in not presenting the full story. It is an exercise in incompleteness. Political campaign ads do this all the time. They’ll list all the reasons why you should vote, all the accomplishments and goals of the candidate, yet neglect to mention any negatives.

If we return to Shonda’s speech, we can see this fallacy in action. In presenting her argument that we should all drink four or more glasses of red wine daily, she fails to mention any of the problems that can occur with too much drinking.
Red Herring

This fallacy occurs when we introduce an irrelevant issue into the argument. The phrase “red herring” comes from the fox hunting practice of dragging a dried smoke herring across the trail so as to throw off the hound from the scent. In logical reasoning, the red herring fallacy works in much the same way. No, this doesn’t mean that you fail to shower or make the argument while smelling like an old fish. What it does mean is that we attempt to distract the audience by introducing some irrelevant point, such as this:

Each year thousands of people die in car accidents across the country. Why should we worry about endangered animals?

This argument is trying to get us to focus on dead people instead of animals. While car accidents and the deaths that result from them are a serious issue, this fact does not lessen the importance of worry about endangered animals. The two issues are not equated with each other.

Political campaigns are a fertile ground for growing red herring fallacies. If you think back to the 2004 presidential campaign you will likely remember a number of red herrings. For example, at one point we were inundated with ads reminding us that John Kerry’s wife was heir to the Heinz ketchup fortune. The implication was that by extension John Kerry was a rich elitist incapable of understanding the plight of working class and middle class individuals.

Slippery Slope

This fallacy occurs when we assume that one action will initiate a chain of events culminating in an undesirable event later. It makes it seem like the final event, the bottom of the slope, is an inevitability. Arguments falling prey to the slippery slope fallacy ignore the fact that there are probably a number of other things that can happen between the initial event and the bottom of the slope.

We hear examples of the slippery slope fallacy all around us:

If we teach sex education in school then students will have more sex. If students have more sex we will have a rash of unplanned pregnancies and sexually transmitted diseases. Students will then be forced to drop out of school and will never have the chance to succeed in life.

Clearly, just learning about sex doesn’t automatically mean that you will engage in sex. Even more unlikely is the fact that merely learning about sex will force you to drop out of school. Another common example of the slippery slope fallacy occurs in the debates surround legalizing same sex marriage. One of the more interesting examples reads like this:

If we allow men to marry other men and women to marry other women, then how long will it be before we’re allowing people to marry animals or their cars.

When I first heard this argument I laughed out loud. I stopped laughing, though, when I realized that there were many people who believed that people/car marriages were a distinct and very real possibility of legalizing same sex marriage.
Unrepresentative Sample
When a biased or otherwise statistically flawed sample of a population is used, we see this fallacy. The sample could be too small, have an underrepresentation of one group, or an overrepresentation of a group.

We see this fallacy quite often in political and other types of polls. A number of people will be called up and asked if they approve of the president’s performance. Or a website will ask individuals to respond to a similar question. In both of these cases, the sample is unrepresentative of the population at large. Only those individuals who own phones and are at home will be included in the first. In the second, only those who own computers and visit the webpage in question will be included. Many more different groups and types of people are likely to be excluded from these groups rather than included.

Another way that we see this fallacy occur is when the polling sample appears to be the same as others in the group. For example, a few years ago, a large study was conducted investigating binge drinking on college campuses. The majority of the study was done on large campuses around the country with the results then extrapolated to the college population in general. There are numerous ways that this sample is flawed. A large campus has a different campus culture than a small campus. Not all campuses allow drinking. If you think about your own campus and compare it with others with which you might be familiar, you can probably come up with a few more differences.

Vagueness
Fallacies of vagueness occur where there is some vagueness in the argument. Vagueness fallacies differ from fallacies of ambiguity in that a vague term is one that generally has a single or agreed upon meaning. The vagueness arises from some borderline cases of the word. The fallacy occurs when the soundness of the argument depends upon the vagueness of the terms.

If we return to the same sex marriage debates, we can see an example of the vagueness fallacy:

Marriage is a sacred institution that should be kept sacred. Traditionally men and women have been allowed to marry. Therefore, only men and women should be allowed to marry each other.

On the surface, you might think that this argument is sound. However, the vagueness arises from the concept of men and women. While we generally think we know who is a man and who is a woman, do we really? Think about how we determine who is a man and who is a woman. We base these determinations on the genetic make-up of individuals. However, gender status is assigned at birth when a physician looks at a baby’s genitals and declares it to be either a boy or a girl. What happens when the genitals are not clearly defined? Or what happens when an individual has a sex change? Does the pre-operation or post-operation gender determine their ability to marry? And how does a court clerk assure that the man and woman registering for a marriage license are truly male and female? If either one wanted to lie about his or her sex, would anyone know any different? With these questions in mind, does the argument look quite as sound?
A fallacy of weak analogy occurs, therefore, when there exists a poor connection between examples.
Another point to keep in mind is the frame of reference or perspective by which your logic and reasoning will be evaluated. In the Western world, we like things clear and straightforward. If they are based in some body of law or rules, that makes them even better. We tend to dismiss beliefs in things like numerology or astrology as mere superstition. However, other cultures place a high value in various forms of magic, witchcraft, or other things that the west dismisses as superstition.

Chapter Exercises
1. Throughout this chapter we have turned to the abortion debates for examples. In order to practice critical thinking in action, spend some time researching the major arguments each side uses. Because the debates in this area are so complex, you might want to narrow your focus just a bit. For example, you could focus on the issue of minors consenting to abortion or abortion in the case of rape or other sexual assault. Compile a list of the most common arguments used by each side. Your list should include: any evidence used to support claims, a list of the major claims, any conclusions. Return to the core critical thinking skills and critically evaluate how each side forms arguments and uses evidence. How do your on biases and thoughts on the issue of abortion influence your evaluation? If you were an advisor, what advise would you give to each side to make their arguments stronger and more logically sound?

2. Your local newspaper’s Letters to the Editor section is a prime spot to find logical fallacies in action. For several days, read the Letters to the Editor and identify all of the fallacies you find therein. Keep a log of the specific fallacies you find, dividing them by type. Once you have compiled a variety of example, take a step back and evaluate them. Questions that you might want to ask include: what fallacy or fallacies seem to be most popular? Why do you think this is? Pick a few of the most egregious fallacies and rewrite them correcting for the flaw in reasoning.

Glossary
Analysis: the process of asking what is happening in a message through breaking it into its individual components and asking questions of each section.

Argument: statements that combine reasoning with evidence to support an assertion.

Critical Thinking: active thinking in which we evaluate and analyze information in order to determine the best course of action.

Deduction: an argument in which the truth of the premises of the argument guarantee the truth of its conclusion.

Evaluation: the process of assessing the various claims and premises of an argument to determine their validity.

Evidence: research, claims, or anything else that is used to support the validity of an assertion.

Fallacy: a flaw or error in reasoning.

Hearing: the physiological process of receiving noise and sounds.

Imply: to suggest or convey an idea.

Induction: an argument in which the truth of its propositions lend support to the conclusion.

Infer: to draw a conclusion that rests outside the message.
Interpretation: explaining and extrapolating the conclusions that we draw from a statement.

Listening: the psychological process of attaching meaning to the sounds and noises we hear.

Self-regulation: the process of reflecting on our pre-existing thoughts and biases and how they may influence what we think about an assertion.

Syllogism: a form of deductive argument in which the conclusion is inferred from the premises. Most syllogisms contain a major premise, a minor premise, and a conclusion.

References


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