



ACTIVITY 3

Cognitive Shortcuts

INVESTIGATION



A shortcut heading to the
right of the main road.

3 : COGNITIVE SHORTCUTS

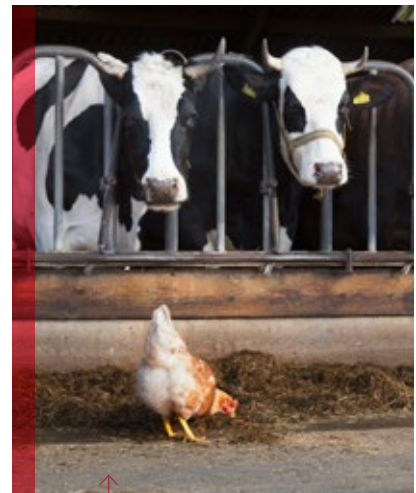
GUIDING QUESTION

How do people avoid errors from cognitive shortcuts?

INTRODUCTION

Fast thinking is sometimes called “jumping to conclusions” because it skips the steps of careful evaluation of information. While fast thinking is useful, it can lead to cognitive errors and an incorrect conclusion. Fast thinking can include several kinds of cognitive shortcuts. A **cognitive shortcut** is a specific pattern of fast thinking that can lead to errors when evaluating information. For example, observing that a person has one positive trait, such as intelligence, might lead you to assume that the person has other positive traits, such as kindness. However, this may not be true. This cognitive shortcut is called the Halo Effect, where one good trait makes people expect other good traits.

In Activity 2, you were introduced to a fictional scenario and thought about what makes something more believable or less believable in the media. In this activity, you will investigate a selection of cognitive shortcuts in the context of a real disease known as avian influenza, or bird flu. Then, you will explore some skills to slow down thinking and reduce errors due to cognitive shortcuts.



Avian flu can affect birds and other animals, both in agricultural and natural settings.

CONCEPTUAL
TOOLS



MATERIALS LIST

FOR EACH PAIR
OF STUDENTS

COMPUTER WITH
INTERNET ACCESS

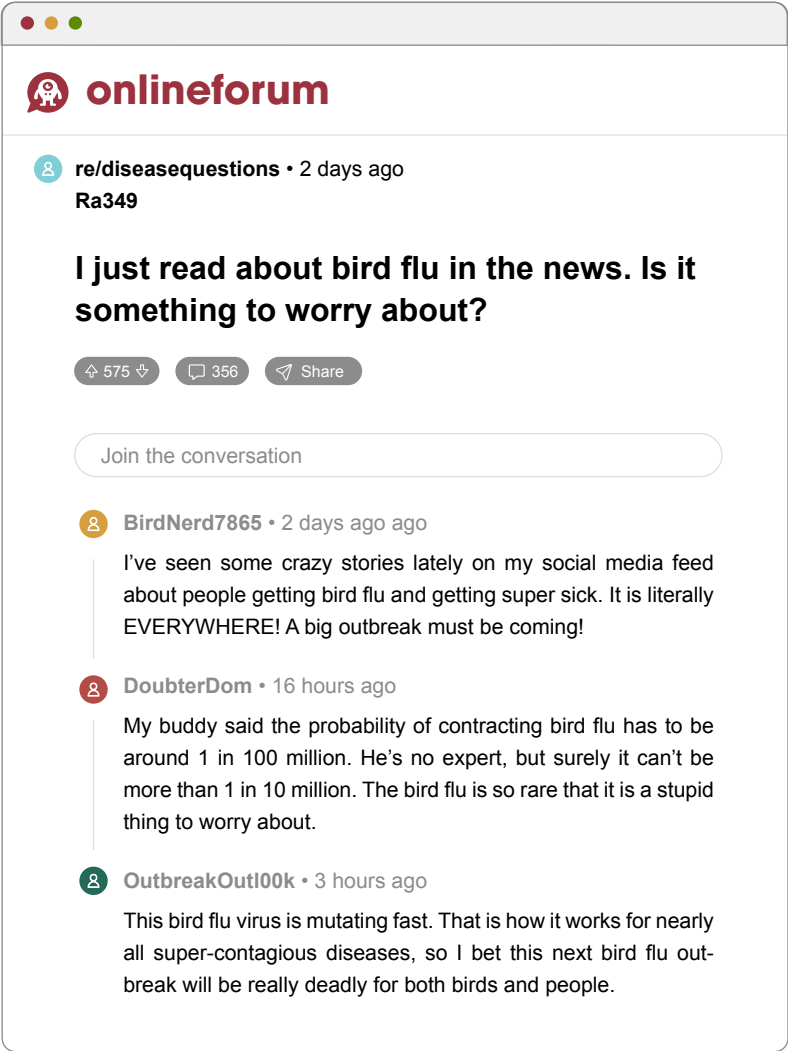
FOR EACH STUDENT

STUDENT SHEET 3.1
"Evaluating Posts for
Cognitive Shortcuts"

PROCEDURE

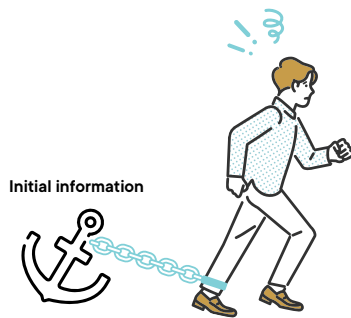
PART A: COGNITIVE SHORTCUTS

- 1 Read the following fictional social media posts that were written in response to news reports about the real disease of bird flu.



- 2 With your group, discuss what each person is claiming about the bird flu. A **claim** is a statement that asserts something is true. Record the claims in the first row of Table 1 on Student Sheet 3.1, "Evaluating Posts for Cognitive Shortcuts." Discuss if you agree, disagree, or are not sure about the reasoning they provided for their claims. Record your responses in the second row of Table 1.

- 3 Read the following descriptions of three common cognitive shortcuts: the anchoring shortcut, the availability shortcut, and the representativeness shortcut.

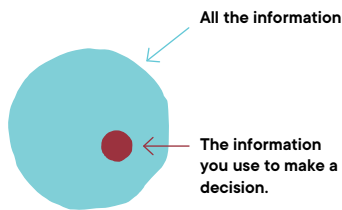


Anchoring

The **anchoring shortcut** is a cognitive shortcut where a person relies too much on an initial piece of quantitative information to make a conclusion.

EXAMPLE

When shopping for a pair of sneakers, if the cost is marked up but then discounted, it seems like it is a good deal, even if it isn't. This is because the buyer's thoughts are anchored at the higher price.

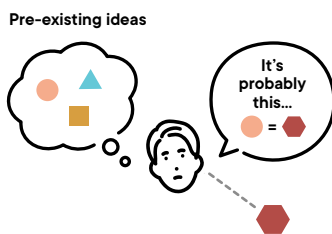


Availability

The **availability shortcut** is a cognitive shortcut where a person depends on easily recalled or recent information to make a conclusion.

EXAMPLE

Many more people are afraid of flying than of driving. Airplanes seem more dangerous due to the extensive media coverage of crashes. However, car fatalities are much more common, but they are rarely publicized.



Representativeness

The **representativeness shortcut** is a cognitive shortcut where a person depends on a pre-existing idea or category to make a conclusion.

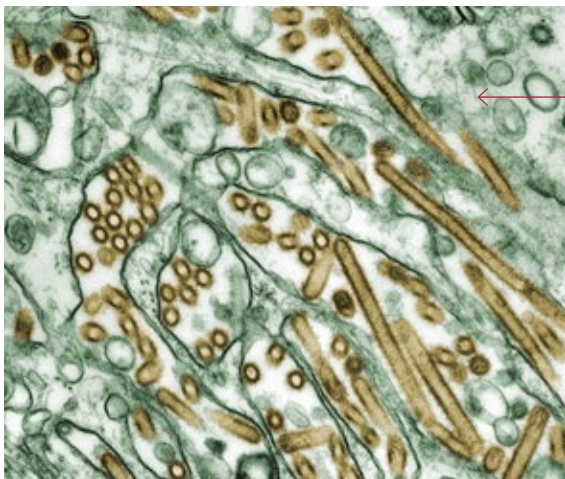
EXAMPLE

Someone you met really likes books, so you assume he is a librarian. In fact, he is more likely to be a salesperson because there are a lot more salespeople in the general population than librarians.

- 4 Compare the three common cognitive shortcuts to the posts in Step 1. Each post uses a different type of fast-thinking shortcut to reach its conclusion. Identify the type of cognitive shortcut used to make each claim and record your responses in the third row of Table 1 on the student sheet.
- 5 As a class, discuss how the cognitive shortcut may be influencing the conclusion made in each post.

PART B: EVIDENCE FOR CLAIMS

- 6 Cognitive shortcuts often happen in situations where a lack of information leads to fast thinking. With a partner, revisit the posts from Part A. For each post, come up with two pieces of evidence that could help to evaluate the claim. **Evidence** is information that can support or refute a claim. Record your responses in the first row of Table 2 on the student sheet.
- 7 You will look for evidence from credible sources for one of the claims. A **credible source** is a source with relevant expertise that provides accurate information that is free from bias. Your teacher will provide some online sources for avian influenza. Evaluate the credibility of each source by considering whether the author has
 - relevant training or experience,
 - listed references to other trustworthy sources, and
 - a perspective that is balanced or neutral.Record the credible sources for one of the claims in the second row of Table 2.
- 8 Discuss with the class which sources are most credible and least credible and why.
- 9 With a partner, use credible sources to look for evidence to support or refute one claim made in Part A. Record your findings in the third and fourth row of Table 2.
- 10 Decide if you agree or disagree with the claims in the posts based on the evidence you found. Explain your reasoning.
- 11 As a class, discuss your findings from Step 10.
- 12 Describe how your own thinking process in Part B differed from the thinking process shown by the social media posters in Part A. Make a recommendation to the social media posters on how they could slow down their thinking in the future.



← An artificially colored electron microscope image shows virus particles of the H5N1 avian flu (gold) surrounded by infected cells (green).

BUILD UNDERSTANDING

- ① Review the following headline and beginning of a fictional post from Activity 2. What type of cognitive shortcut is the person posting using? Explain your reasoning.

 **re/southsandchat** • 2 days ago
CarlWatts

“Don’t breathe on me!”

Local Man Demands Masks After Roommate Contracts Southsand Fever

I found this post from a neighbor. Should I be worried?

My roommate came home from an ER visit last Monday after having a high temperature and trouble breathing; doctors diagnosed it as Southsand fever. I’m not going to get sick like all those people, so now I am making my roommate wear a mask, and I’m wearing one even inside our apartment. I can feel the germs in the air every time he walks by!

 77  12  Share

- ② Large Language Models (LLMs), such as ChatGPT or Gemini, use artificial intelligence (AI) technology to answer questions by gathering information available on the Internet to construct a response to a search or a question. Most LLMs do not identify the source of the information or list the evidence used to construct the answer. Would you consider an LLM to be a credible source? Why or why not?

- ③ Many social media posts focus on personal anecdotes, which are single stories or one-time events, usually involving one person. How could using an anecdote lead to one or more cognitive shortcuts?
- ④ In the Southsand fever scenario, Trevor reads an article that states: *Adults are most at risk of this disease*. Trevor suspected that the claim involved a cognitive shortcut, so he went to the Southsand fever public health website to get more information. He found the following data from the local hospital, a credible source. Based on analysis of the data, which age group (children, adults, or seniors) do you think is most at risk from the disease? In your response:
- a make a claim about which age group is most at risk.
 - b support your claim, using at least 2 pieces of evidence from the data in Table 3.1. Use reasoning to explain how each piece of evidence supports your claim.

TABLE 3.1
Southsand Fever Hospital Data

	CHILDREN (0-14 years)	ADULTS (15-59 years)	SENIORS (60+ years)	TOTAL
Number of cases	13	68	19	100
Number hospitalized	2	27	10	39
Number who died	1	2	4	7
Average length of hospital stay (days)	10	5	14	

CONNECTIONS TO EVERYDAY LIFE

- ⑤ Imagine that the very first piece of information Sam receives about a severe weather event is a social media post. The post claims the storm will be a Category 5 hurricane that will hit the town. The storm turned out to be strong, but was rated a Category 3. Sam's home had expensive damage but it wasn't structural, and he was still safe. Sam felt like he was lucky. Which cognitive shortcut could have affected his interpretation of the situation? Explain.



FIGURE 3.1
Hurricane Categories

- ⑥ Imagine you have a friend who complains about a stomachache. He says, "I had a stomachache a few months ago when I had the flu. I must have the same illness again." Which cognitive shortcut could have affected his interpretation of the situation? Identify the cognitive bias and explain how you would advise him.

KEY SCIENTIFIC TERMS

anchoring shortcut
availability shortcut
claim
cognitive shortcut
credible source
evidence
representativeness shortcut