

Lesson 1.5: Understanding Cognitive Biases



Adapted from Introduction to Behavioral Economics: [EconEdLink - Introduction to Behavioral Economics](#)

Lesson Author

Rebecca G. Chambers, Federal Reserve Bank of Philadelphia

Standards and Benchmarks

See page 6.

Lesson Description

In this lesson, students learn about cognitive biases and how they can affect decision-making. Students participate in a series of behavioral economics experiments to understand the anchoring effect, the conjunction fallacy, and the relativity trap. Then, students have a discussion of how cognitive biases affect personal finance decisions. The lesson culminates in students creating public service announcement (PSA) posters explaining other cognitive biases and how they affect personal finance decisions.

Concepts

Anchoring Effect
Cognitive Biases
Conjunction Fallacy
Decision-Making
Relativity Trap

Objectives

Students will be able to:

- define cognitive biases.
- describe different cognitive biases and how they affect personal finance decisions.

Compelling Question

How do cognitive biases affect financial decisions?

Time Required

60 minutes

Materials

- Understanding Cognitive Bias Lesson 1.5 Slides

- Handout 1.5.1: Experiments, one copy for each student, printed one-sided and in color
- Handout 1.5.2: Experiment Administration and Recording Sheet, enough copies for ¼ of students
- Handout 1.5.3: Cognitive Bias Poster – Assessment Rubric, one copy for each student, as well as copies for teacher for grading
- Stickers (any kind, enough for about ¼ of students)

Procedure

1. Show Slide 2 and ask students: “Why do people make irrational decisions?” Explain to students that irrational decisions reflect choices that go against reasoning, logic, or personal benefit. *(Student answers will vary but may include procrastination on a long homework assignment, making decisions based on emotion only, being overly confident in making stock purchases only to lose a lot of money, etc.)*
2. Ask students to elaborate by asking “Why do you think people make irrational financial decisions?” *(Student answers will vary.)*
3. Explain to students that people can make irrational decisions in all aspects of life - including in financial decisions - due to cognitive biases.
4. Display Slide 3 and explain to students that a **cognitive bias** is a systematic error in thinking that affects people’s judgement and decision making.
5. Ask students to define cognitive bias in their own words. *(Answers will vary but might explain what they think systematic means or types of judgement and decision making.)*
6. Explain to students that they will be working in groups to discover some cognitive biases through a series of short experiments.
7. Divide students into groups of five members. Have the group choose two members who will be the administrators of the experiments. Tell the other students that they will be the subjects who will be given the experiments.
8. Each administrator should receive:
 - a. A sticker to wear to indicate that they are administrators
 - b. Three copies of Handout 1.5.1: Experiments
 - c. Two copies of Handout 1.5.2: Experiment Administration and Recording Sheet
9. Have the administrators read the directions on Handout 1.5.2. Answer any questions they may have. Tell the students that the administrators will give each subject the three experiments, one subject at a time.

10. Have the subjects (the other students) choose the order in which they will be given the experiments. Tell the subjects to move to a corner of the room and turn their backs so they cannot see or easily overhear the experiments.

NOTE: You could have students leave the room, depending on the maturity of the students and rules of your school.

11. Have the administrators call the first subject over and start the experiments.
12. Give students around 10 minutes to administer the experiments and record the results.
13. After the 10 minutes is up, ask a representative from each group to report the results of the experiment. Record the results on Slide 4. Ask the group representative to also report what they believe the experiments show.
14. Debrief Experiment #1 by telling students that most people take more time and won't be as accurate with the second set of words. The mind reads the word and wants to report the word, not the color.

NOTE: This is known as the Stroop effect. Colors and shapes can influence emotion and purchasing decisions. If you would like to explain this further, you can find information here: <https://nicolesteffen.com/2025/08/27/the-stroop-effect/>.

15. Show Slide 5 and explain Experiment #1.
16. Debrief Experiment #2 by explaining the correct answer to Experiment #2 is A. To demonstrate this to the class, ask them to assume that there are 100 Lisas. Ask them to give an estimate of the number of Lisas that are bankers. (*Any number less than 100 is fine.*) Ask students to then give the number of Lisas that are bankers AND active in the women's movement. (*This number should be smaller. If it is not, point out that the total number of bankers is less than the total number of women's movement bankers.*) Tell students that human minds jump to conclusions by trying to link pieces of information together, often without logically thinking it through.
17. Display Slide 6 and explain the **conjunction fallacy**, or people thinking a more specific event is more likely to occur than a more general event. Explain to students that Experiment #2 is an example of the conjunction fallacy.
18. Debrief Experiment #3 by telling students that the answer is 5 cents, but many students will answer 10 cents.
19. Display Slide 7 and explain the **anchoring effect**. The anchoring effect is the tendency for a person to rely heavily on the first piece of information they receive when making decisions.
20. Explain to the students that retailers have many ways they can anchor consumers on paying a certain price or buying a certain quantity. Ask the students for some examples (*Answers may include buy-one-get-one-free, 50% off, three for the price of one, four for a dollar, etc.*)

21. Explain how the anchors help establish the selling price as a great “discount.” The discounts can entice consumers to make purchases that do not stay within their budget simply because the discount is considered too good to pass up.
22. Display Slide 8. Explain how a special type of cognitive bias occurs when consumers place excessive importance placed on the original higher price and then evaluate a lower sales price relative to the “original” price. This form of anchoring is known as the **relativity trap**.
23. Display Slide 9 and ask students how do they think cognitive biases affect personal finance decisions? Tell students that you will give an example using the relativity trap.
24. Show Slide 10. Explain to the students that this brand new, white sedan car is selling for about \$20,000. Ask the students if this car is a good price. (*Accept any answer.*)
25. Show Slide 11. Explain to the students that now the MSRP, or Manufacturer's Suggested Retail Price, has been posted on the ad. Ask the students if they believe this car looks like a good deal now. (*The students may agree that the deal seems better with the reference price.*)
26. Show Slide 12. Ask the students to explain what the ad has done now to make the price seem even better than before. (*The added features may entice the students further.*)
27. Ask the students how these slides illustrate anchoring and the relativity trap. (*The MSRP is given in the second slide and provides an anchor. The MSRP suggests the current sale price is relatively low. The third slide reinforces this notion with words like “crazy” and illustrations of a punching dog.*)
28. Show Slide 13 and ask students how they can avoid being anchored. (*Answers will vary but may include the following points that you can explain to your students:*
 - *When you go shopping, know the value (benefit) to you of any good you would consider purchasing. Research prices before shopping.*
 - *Be aware that you can be influenced by anchors provided by retailers. You can make the first offer or walk away from negotiations.*
 - *Try to avoid impulsive purchases.*

Closure

29. Review the important points of the lesson by asking students:
 - a. What is cognitive bias? (*A systematic error in thinking that affects people’s judgement and decision-making.*)
 - b. What is the anchoring effect? (*The tendency for a person to rely heavily on the first piece of information they receive when making decisions.*)

- c. What is the conjunction fallacy? (*When people think of a more specific event is more likely to occur than a more general event.*)
- d. What is the relativity trap? (*When consumers place lots of importance on the original higher price then evaluate a lower price relative to the “original price”. It is an example of the anchoring effect.*)
- e. How do cognitive biases affect financial decisions? (*Cognitive biases affect people’s financial decision-making by influencing their judgment. As a result, people may spend more than aligns with their true preferences or values.*)
- f. What are some ways to avoid being anchored when making financial decisions? (*Answers will vary by may include researching prices before shopping; being aware of anchors provided by retailers; avoiding impulse purchases, etc.*)

Assessment

- 30. To assess student knowledge of cognitive biases, and to expose them to more types of cognitive biases, explain to students that they will be choosing different examples of cognitive biases and creating a poster public service announcement (PSA) to explain what the cognitive bias is and how it could affect financial decisions.
- 31. Show students The Decision Lab’s Cognitive Biases found here: <https://thedecisionlab.com/biases>. Tell students to choose one bias from the list that they will create a PSA about.
- 32. Give each student one copy of [Handout 1.5.3: PSA Rubric](#) so that students know how they will be graded.
- 33. *Optional:* Once the posters are complete, consider having students give short presentations or engage in a gallery walk to explore their peers’ work.

Extension

- 34. For an additional example of a cognitive bias, assign students read and answer questions about mental accounting (another cognitive bias example) using the Page One Economics article found here: <https://www.federalreserveeducation.org/teaching-resources/personal-finance/spending-budgeting/how-mental-accounting-shapes-our-financial-choices>

Standards and Benchmarks

National Content Standards in K-12 Economics

Standard 2: Decision Making

People usually respond predictably to positive and negative incentives. Effective decision making requires comparing the additional costs of alternatives with the additional benefits.

Benchmarks: High School

10. Individuals tend to rely heavily on the first piece of information offered (anchoring) when making subsequent decisions.

National Standards for Personal Financial Education

Standard 2: Spending

A budget is a plan for allocating a person's spendable income to necessary and desired goods and services. When there is sufficient money in their budget, people may decide to give money to others, save, or invest to achieve future goals. People can often improve their financial well-being by making well-informed spending decisions, which includes critical evaluation of price, quality, product information, and method of payment. Individual spending decisions may be influenced by financial constraints, personal preferences, unique needs, peers, and advertising.

Benchmarks: Grade 4

5. Price, spending choices of others, peer pressure, and advertising about a product or service can influence purchase decisions.

Benchmarks: Grade 8

4. Consumers weigh the costs and benefits of different payment methods to determine the best option for purchasing goods and services.

Benchmarks: Grade 12

4. Consumers may be influenced by how prices of goods and services are advertised, and whether prices are fixed or negotiable .

Handout 1.5.1: Experiments (page 1 of 4)

Experiment #1: Part 1

Directions: Go down the list from top to bottom, calling out the color of each word.

RED

orange

yellow

GREEN

PURPLE

blue

BLACK

pink

Adapted from Introduction to Behavioral Economics: [EconEdLink - Introduction to Behavioral Economics](#)

Handout 1.5.1: Experiments (page 2 of 4)

Experiment #1: Part 2

Directions: Go down the list from top to bottom, calling out the color of each word.

BLACK

blue

GREEN

red

YELLOW

purple

ORANGE

pink

Adapted from Introduction to Behavioral Economics: [EconEdLink - Introduction to Behavioral Economics](#)

Handout 1.5.1: Experiments (page 3 of 4)

Experiment #2

Directions: Read the paragraph below and answer the multiple-choice question.

Lisa is 33 years old, single, outspoken, and very smart. She majored in anthropology. As a student, she was very concerned with issues of discrimination and social justice and also participated in anti-nuclear demonstrations.

Which is more likely?

- A. Lisa is a bank teller.
- B. Lisa is a bank teller and is active in the women's rights movement.

Adapted from Introduction to Behavioral Economics: [EconEdLink - Introduction to Behavioral Economics](#)

Handout 1.5.1: Experiments (page 4 of 4)

Experiment #3

Directions: Read the statements below and answer the question in a complete sentence.

A bat and a ball cost \$1.10.

The bat costs one dollar more than the ball.

How much does the ball cost?

Adapted from Introduction to Behavioral Economics: [EconEdLink - Introduction to Behavioral Economics](#)

Handout 1.5.2: Experiment Administration and Recording Sheet (page 1 of 2)

Directions: Read the experiment instructions below.

Experiment #1

Use a watch to keep the time it takes the subject to do each task correctly. If the subject makes an error, have them start from the beginning with the time continuing to run.

Show the sheet for Experiment #1 part 1 to the subject. Instruct the subject: “Go down the list from top to bottom, calling out the color of each word.” Record the amount of time it takes the subject to complete the task.

The answer: red, orange, yellow, green, purple, blue, black, pink. (Accept reasonably close color descriptions.)

Show the sheet for Experiment #1 part 2 to the subject. Instruct the subject: “Go down the list from top to bottom, calling out the color of each word. (If ‘red’ is printed in blue, call out ‘blue’).” Record the amount of time it takes the subject to complete the task.

The answer: pink, green, purple, yellow, blue, orange, black, red. (Accept reasonably close color descriptions.)

Record which part, 1 or 2, was completed more quickly.

Experiment #2

Tell the subject to read the question and give their answer as either A or B. Record either A or B in the recording sheet.

Experiment #3

Tell the subject to read the question and give their answer in cents. Record the answer in cents.

Adapted from Introduction to Behavioral Economics: [EconEdLink - Introduction to Behavioral Economics](#)

Handout 1.5.2: Experiment Administration and Recording Sheet (page 2 of 2)

Directions: Complete the table using the experiment instructions above.

Recording Sheet:

	Subject A	Subject B	Subject C
Experiment #1: Quicker on part 1 or part 2?			
Experiment #2: A or B			
Experiment #1: Number given in cents			

Handout 1.5.3: Cognitive Bias Poster - Assessment Rubric

NOTE: This is a generic rubric. Feel free to alter to meet your grading needs.

	Exceeds Expectations	Meets Expectations	Satisfactory	Does Not Meet Expectations
Explanation of Cognitive Bias	Explanation of cognitive bias is clear and thorough.	Explanation of cognitive bias is clear.	Explanation of cognitive bias is somewhat clear.	Explanation of cognitive bias is lacking or missing.
Explanation of how cognitive bias affects financial decisions	Explanation is clear, accurate, and relevant. Thoroughly explains how the bias affects financial decisions.	Explanation is mostly accurate and relevant. Adequately addresses how the bias affects financial decisions.	Explanation is somewhat inaccurate or lacks relevance. How the bias affects financial decisions is only partially addresses.	Explanation is significantly inaccurate or irrelevant. Does not adequately answer how the bias affects financial decisions.
Visual presentation	Poster design is visually appealing with a balance of text, visuals, etc. High-quality images, graphics, charts, etc. are used effectively.	Poster is visually appealing, though some areas could improve in balance or visual quality. Visuals support the content adequately.	Poster is somewhat visually appealing but may have clutter, poor balance, or low-quality visuals.	Poster lacks visual appeal or is cluttered and poorly decisions. Visuals are minimal or irrelevant.
Mechanics	No grammatical, spelling, or punctuation errors.	Almost no grammatical, spelling, or punctuation errors.	A few grammatical, spelling, or punctuation errors.	Many grammatical, spelling, or punctuation errors.