

DIGITAL LESSON BUNDLE

Implementation Guide for Educators

#2: How We are Affected by Preference

Objectives

Students will:

- **Participate** in simple experiments that demonstrate behavioral economic theories.
- **Analyze** scenarios to determine how loss aversion and/or the endowment effect influence each one.
- **Apply** their understanding of behavioral economics to the business models and/or advertising practices of specific companies.

Overview

Experiments by behavioral economists have shown that people are often influenced by personal preferences. Specifically, people value losses more than they do gains (loss aversion) and overvalue what they already own (the endowment effect). In these lessons, students will participate in several experiments in order to gain an understanding of these concepts. Through a series of scenarios, videos, questions, and discussion, this Digital Lesson Bundle (DLB) challenges students to consider how loss aversion and the endowment effect impact the decisions of consumers and the way that some businesses operate.

CME Group Spotlight

Throughout the Econ Essentials digital curriculum, teachers and students will explore several behavioral economics concepts and relate each back to various industries and market participants. By doing so, both parties should gain an understanding of how the different industries fit into their everyday lives and the broader economy.

In “How We are Affected by Preference,” students will revisit the futures industry and the different roles of its market participants. Specifically, students will take a deeper dive into the role of the speculator (someone who takes risks in hopes of a financial gain) in comparison to the hedger (someone who aims to avoid risk by locking in a price for a commodity at a later date) whom they learned about in the “Introduction to Behavioral Economics” lesson. They will view a video about the relationship between hedgers and speculators and how they bring balance to the futures market and will also apply the endowment effect and loss aversion concepts to each. In short, hedgers and speculators are people, companies, and institutions that need to manage risk or that want to profit by accepting risk. Exchanges like the CME Group are marketplaces for these buyers and sellers to try to remove risk from their business or make money as an investor when prices fluctuate.

Content Areas

Economics; Financial Literacy

Suggested Time

4 sessions: 3 full class periods of approximately 45–50 minutes each and 1 partial class period of approximately 20 minutes

(Note: This lesson may be completed on non-consecutive days, if necessary.)

Grade Level

Grades 9–12

Essential Questions for Students

- Do people value gains and losses equally?
- What do behavioral economists gain from doing experiments?

Materials

All Sessions

- How We are Affected by Preference Implementation Guide
- Computer with projector, television, or interactive board

Sessions 1

- How We are Affected by Preference PowerPoint Slides 1–9
- **Graphing Gains and Losses**—one copy per student

Sessions 2

- How We are Affected by Preference PowerPoint Slides 10–18

Sessions 3

- How We are Affected by Preference PowerPoint Slides 19–23
- **Find the Connection**—cut into cards; one card per small group
- **Hedgers or Speculators? Quiz**—one copy per student
- **Behavioral Economics in Action Challenge Activity** (available here)—one copy per student

Sessions 4

- How We are Affected by Preference PowerPoint Slide 24

Background

Behavioral economists have discovered many ways that people make decisions based on factors other than those which are purely rational. Among these factors are the ways that people treat gains and losses and how people overvalue things they already own. These two concepts are known as loss aversion and the endowment effect. Loss aversion asserts that people frequently feel the pain of a loss twice as much as they do the satisfaction of an equal-sized gain, whereas the endowment effect causes people to place a higher value on items they already own.

To hone their understanding of the phenomenon, behavioral economists have performed many experiments that have helped them to generalize these concepts. This reliance on experiments is another way that traditional and behavioral economics differ.

Using this Guide

The goal of this guide is to prepare educators to teach the concepts within this digital lesson bundle. It provides slide-by-slide instructions to ensure educators are prepared to explain, discuss, and facilitate the hands-on content in the presentation. The presentation is designed to cover three and a half class sessions, but it can be flexible depending on the students' needs and the time available. Additional extension ideas are included at the end of the manuscript.

The accompanying presentation was created with PowerPoint so that it can be used in a variety of classrooms. If you are displaying the slides on a projector or television, simply progress through the PowerPoint by clicking to advance. All of the interactive aspects of the presentation are set to occur on click. This may include images, text boxes, and links which will appear in your web browser. If you are using an interactive whiteboard, tap on each slide with your finger or stylus to activate the interactive aspects of the presentation. In the notes for each slide, there will be information on how to proceed.

Students begin this series of lessons by participating in two experiments similar to those used by behavioral economists. They graph what they believe the relationship to be between happiness and experiencing gains or losses then learn about the value function. Through a video and additional experiments, students learn that people feel the pain of a loss almost twice as much as they do the joy of a gain. Students then consider how they might set up an experiment to demonstrate the effect of loss aversion. In the third session, students explore an indifference map and consider how it varies from the value function they learned about previously. They then work in groups to consider the application of loss aversion and the endowment effect to various real-world situations. Finally, students examine the practices of businesses to see how loss aversion and/or the endowment effect impacts their business model and/or advertising strategies.

Procedure

SESSION 1

ENGAGE | Slides 1-5

Overview

You will begin this session by inviting students to participate in two short behavioral economics experiments intended to demonstrate the principle of loss aversion.

Slide 1

- Remind students that behavioral economics is different from traditional economics for several reasons. One of these is that behavioral economics doesn't assume how people will respond when given a choice. Instead, behavioral economists conduct experiments and observe how people respond in reality.
- Let students know that they will be participating in two such experiments. They will need paper and a pen or another method of taking informal notes about their responses.

Slide 2

- Tell students that the first experiment has to do with betting on a coin flip. Ask students if they agree that the odds of getting heads or tails is equal or "50/50."
- Read the scenario aloud followed by the question.
- Direct students to write down their responses on scrap paper.
- Ask for a student to volunteer to calculate the class' average response either by hand, with a calculator, or using a spreadsheet. Pass all responses to that student and allow him or her time to calculate the average. Ask the student to hang on to the answer until later in the activity.
- While the student is calculating, proceed to the second experiment.

Slide 3

- Read the scenario and question aloud to the class.
- Direct students to respond to the question using three words or less and make a note of their responses.

Slide 4

- Ask students to review the example answers shown and select the one that most closely matches what they wrote down.
- Count the number of students who gave each response and calculate the average using the table below, if desired.
- Discuss and compare student responses. Were students more likely to provide a positive response to the scenario (1-happy or 2-okay) or a negative response (3-annoyed or 4-mad)?

Column A	Column B	Column C
Response	Number of Students Giving Response	Column A x Column B
1		
2		
3		
4		
Total		
Average (Column C Total ÷ Column B Total)		

Note: If you use this lesson with multiple classes or over the course of a number of years, consider tracking the average responses for each experiment for each class with which you conduct the lesson. You may then share previous averages with students as a basis for comparison.

Slide 5

- Inform students that it is time to revisit the first experiment.
- Ask the volunteer to share the class average and compare it to the one shown on the screen, \$20.
- Explain that this is an experiment that one of the founders of behavioral economics, a professor named Daniel Kahneman, has done with many students. Even if he changes the amount (for example from \$10 to \$100 or even \$1,000), the average for X is usually twice the amount given for a loss with tails.

LEARN | Slides 6–9

Overview

You will continue the lesson by introducing students to the concept of loss aversion and asking them to relate the concept to the experiments in which they just participated. Students watch a video to learn about loss aversion and then brainstorm times they believe they may have been impacted by it personally. Students work in small groups to create graphs of the relationship they would expect between gains and losses and people’s feelings. The session concludes with students learning about the value function.

Slide 6

- Share with students that the experiments they just participated in are ones that behavioral economists use to explain the notion of loss aversion: that people try to prevent losses more than they try to make gains.

- Challenge students to explain how each of the experiments tie to the idea of loss aversion.
 - Sample answers:
 - People feel the loss of the expected \$40 from their grandmother more than they do the gain of the \$10 gift.
 - Even when the odds of gaining are equal to losing, people want the gain to be much more than the loss to offset the potential difference.

Slide 7

- Play the video.
- Invite students to give an example of a time when they might have been influenced by loss aversion.

Slide 8

- Inform students that—like traditional economists—behavioral economists have been able to take what they have learned through experiments and develop graphs that demonstrate how people typically respond when given various choices or scenarios.
- Show students the blank graph and explain each axis.
 - X-axis: Represents the amount of money a person gains or loses.
 - Y-axis: Represents how a person feels (happy or sad) about the gain or loss.
- Divide students into small groups and distribute a copy of **Graphing Gains and Losses** to each student.
- Direct each group to create a graph which they believe shows the relationship between the two variables (money and feelings). Let students know that their graph does not need to be a straight line, it may include one or more curves.
- Advise students that they should be prepared to share their graph with the class and explain how they decided on the curve they drew.
- Allow time for each group to discuss the relationship between the variables and decide on a graph.
- Invite each group to share their graphs. Compare and contrast the responses. Are any similar? Do any stand out as being very different?

Slide 9

- Let students know that the graph shown is a version of the one they just created. It was developed by behavioral economists Kahneman and Tversky and is also called the “value function.”
- Point out that the graph substitutes “more utility” for happiness and “less utility” for sadness, but otherwise the idea is the same. Through their experiments and those of others, they proposed that people feel losses much more than they do gains. As pointed out in the video, losses impact people twice as much as gains do. On the graph, this is represented by the steep slope or curve on the left side of the graph versus the more gradual slope or curve on the right side of the graph.
- Call attention to how a \$100 gain on the graph results in half as much of a change in utility as a \$100 loss.
- Invite students to consider the sentence on the graph, “People like gains...but they hate losses more.” Challenge students to put this saying into their own words and provide a real-world example of this taking place and/or influencing a person’s decision.

SESSION 2

APPLY | Slides 10–18

Overview

Through a video by behavioral economist and Duke University professor Dan Ariely, students are reminded that behavioral economics relies on experiments to make its claims. Students are asked to share whether they believe this makes behavioral economics more reliable than traditional economics. Students then learn about two experiments which help to explain the endowment effect and then compare a graph of one experiment's outcome to the value function. The session concludes with students developing their own experiment to test for the endowment effect.

Slide 10

- Remind students that in the first session they learned about loss aversion and participated in short experiments to demonstrate its effect.
- Play the video.

Slide 11

- Read the statement on the slide.
- Tell students to stand up and move to one side of the room if they agree with the statement and another side if they disagree with the statement.
- Call on students from each side to explain their position. If no students stand on one side, move to that side and argue for that position yourself.
- Let students know that the behavioral economist shown on the right in the video is Professor Ariely. The book in his hand is one that he wrote, *Predictably Irrational*. He has written several books on behavioral economics.
- Ask if anyone wishes to reconsider and move based on what they heard from classmates or the knowledge that the person in the video had a vested interest in making the case for behavioral economics. If students move, ask them why they repositioned themselves. What specifically changed their minds?

Slide 12

- Inform students that you are going to consider additional experiments from behavioral economics and see if their opinions are reinforced or changed as a result.
- Read the scenario.
- Ask students how a traditional economist would expect people to respond.
 - Answer: Since you can make \$1,800 in profit by selling the ticket, a traditional economist would expect you to sell it and forgo the experience which has no economic or financial value.
- Challenge students to brainstorm a list of factors that people might consider when making the decision. Examples might include the ability to experience the concert in person, the stories they will be able to tell, the photos they will have to remember the event, how else they could use the \$1,800 if they sell the tickets, the potential to disappoint friends if they don't go with them, etc.

Slide 13

- Tell students that an experiment was done by behavioral economists that was similar to the one they are considering.
- Ask if any students follow college basketball. In particular, are any familiar with “March Madness”—when the NCAA’s best men’s basketball teams compete in a bracket-style tournament to decide the “best” team in the country? Call on a student to briefly describe how the tournament works. It is a single elimination tournament which narrows from 64 to 32 to 16 (“sweet sixteen”) to 8 (“elite eight”) to 4 (“final four”) to 2 (championship game) to 1 (champion).
- Let students know that the behavioral economist in the video they just saw is a professor named Dan Ariely at Duke University whose men’s basketball team plays in the tournament almost every year and has won it numerous times.

Slide 14

- Let students know that Professor Ariely often used students from the university as test subjects for his experiments.
- Explain that one such experiment involved tickets to Duke basketball games. One year when students could only receive tickets to a very important end-of-season game through a lottery, Professor Ariely and his team asked students that won tickets how much they would be willing to sell them for and asked students who didn’t win tickets how much they would be willing to pay to get a ticket.
- Ask students to guess what the average response was for each group.
- Click to show the average responses.
- Let students know that when Professor Ariely and his team asked people to explain their answers these were some of the reasons people gave:
 - Lottery winners/sellers: The game was going to be a defining moment in their college career. They were so excited to go that it was almost “priceless.” The amount someone would have to pay them would have to be very high to offset the disappointment of not being able to go.
 - Lottery losers/buyers: They had already resigned themselves to the fact they weren’t going to the game. They could watch the game on tv with other students and fans. They had other things they wanted to do with their money.

Slide 15

- Explain that this phenomenon is what behavioral economists call the endowment effect, which says that people overvalue things they own.
- Click once. Share that one of the most famous experiments related to the endowment effect has to do with a coffee mug.
- Click again. Explain that students at a university were recruited to participate in an experiment. Half were given a mug and asked how much they would be willing to sell the mug for. The other half were asked how much they would pay to get a mug.

Slide 16

- Let students know that versions of this experiment have been done over and over again with many different people and with different variables. Nonetheless, the outcome is almost always the same. People who are given the mug and asked to sell it almost always value it twice as much as the people who are asked to buy it.

Slide 17

- Revisit the value function graph. Direct students to explain how the graph can be used to explain the endowment effect.
 - Sample answer: The previous bar graph showed that people who were selling the mug would value it twice as much as those who didn't have one. This is similar to the value function because the pain of losing it or selling it is twice as much as the buyer's happiness would be if they purchased it.

Slide 18

- Challenge students to create their own experiment which could be used to determine if people think rationally or are influenced by ownership of an item. Students may work in pairs, small groups, or independently.
- Ask students to share their ideas.
- Discuss the importance of conducting experiments that are fair and unbiased. Ask students if they can make connections to what they have learned in science or math classes about setting up experiments and/or collecting and analyzing the data.

Session 3

CONNECT | Slides 21–22

Overview

Students learn how traditional economists model indifference and why behavioral economists believe this model is incomplete due to the influences of loss aversion and the endowment effect. Students then work in groups to consider how each theory impacts a variety of real-world situations and share their findings with the rest of the class.

Slide 19

- Tell students that a graph such as the one shown appears in almost all traditional economic textbooks. It is what is called an “indifference map” with each curve called an “indifference curve.”
- Point out that the graph plots income (measured in dollars per year) against leisure (measured in days per year). Another way to think about leisure is that it is time spent not working.
- Explain that traditional economics supports the idea that people will find all points on one of the curves to be equally desirable.
- Click to show the label for point A. Let students know that this represents a combination of income and leisure that people are content to have. Not just that, they would be equally content with any other point or combination of income and leisure time along the blue curve. In other words, they would be indifferent—hence the name of the curves, indifference curves.
- Tell students that the orange and green curves are indifference curves for the same person. Ask students what they think the orange and green curves represent.
- Click again to show the smiley faces. Explain that the blue curve represents combinations that would make a person somewhat happy, combinations on the orange curve would make a person happier, and the green would make the person even happier.
- Click a third time to show points B, C, D, and E. Check for understanding by asking the following:
 - If a person had a combination of income and leisure at point B, would you expect them to be more or less happy with the combination at point C?
 - Answer: Neither. You would expect them to be equally content or indifferent.
 - If a person went from point A to point B, what would you expect?
 - Answer: They would be happier.
 - If a person went from point D to point C, what would you expect?
 - Answer: They would be less happy.
- Let students know that behavioral economists find fault with indifference curves and maps because of loss aversion and the endowment effect. Ask students to explain why they think that is.

Slide 20

- Direct students to focus on just two points, B and C. Tell them that Brady's income and leisure time are represented by point B and Carly's by point C.
- Click to show specific amounts for income and leisure.
- Ask students to imagine that Brady was offered the opportunity to switch places with Carly. What factors might he consider? What if Carly was offered the opportunity to switch places with Brady?
- Challenge students to consider how behavioral economists might approach this issue knowing what they do about loss aversion and the endowment effect.
 - Sample Answers: Brady feels ownership of the money or income he has. Loss aversion tells us that he will feel twice as bad about losing it as he would about gaining leisure time or days off. Similarly, Carly would feel half as happy to gain income as she would to lose days off.

Slide 21

- Let students know that they will be considering how loss aversion and the endowment effect can impact real people's finances by discussing one of several scenarios.
- Divide students into small groups. Give each group a scenario to consider from **Find the Connection**.
- Let students know how much time they will have to discuss their scenario and how you expect them to share their situation and findings with the rest of the class when they are done.

Slide 22—CME Group Spotlight

- Direct students to return to their seats.
- Remind students that they learned about hedgers in the previous lesson (people who avoid risk, such as farmers and ranchers, by locking in the price of a commodity at a later date).
- Ask students if a marketplace could exist if everyone in it was a hedger. Guide students to understand that hedgers need someone to buy the commodity and absorb the price risk they are looking to avoid. These individuals are called speculators. The two go hand-in-hand and bring balance to the market.
- Click once to reveal the definition of a speculator and read it to the class.
- Click again to reveal the video link, and play the video, [Hedging and Speculating](#).
- Distribute the **Hedger or Speculator? Quiz**. Challenge students to differentiate between hedgers and speculators by answering each question. Review answers with students.
- Facilitate a discussion in which you encourage students to apply their understanding of loss aversion and the endowment effect to the role speculators and hedgers play in futures markets.
 - *Note:* If needed to enforce understanding, provide students with the "Who is a Speculator" handout found [here](#) for additional examples of speculators.

EXTEND | Slide 23–24

Overview

Students are challenged to identify businesses that use loss aversion to affect their customers' choices and discuss their conclusions.

Slide 23

- Distribute a copy of the **Behavioral Economics in Action Challenge Activity** to each student.
- Inform students that they will be considering businesses with which they are already familiar. When doing so, they should consider whether or not the businesses already use loss aversion and/or the endowment effect to impact customers or sales. Then, students will need to consider how the businesses could improve profits by using the theory of loss aversion and/or the endowment effect.
- Encourage students to consider multiple types of businesses to have the opportunity to discover how loss aversion and/or the endowment effect influence a variety of industries.
- Let students know when they will be expected to complete the assignment and discuss their results.

Session 4

Slide 24

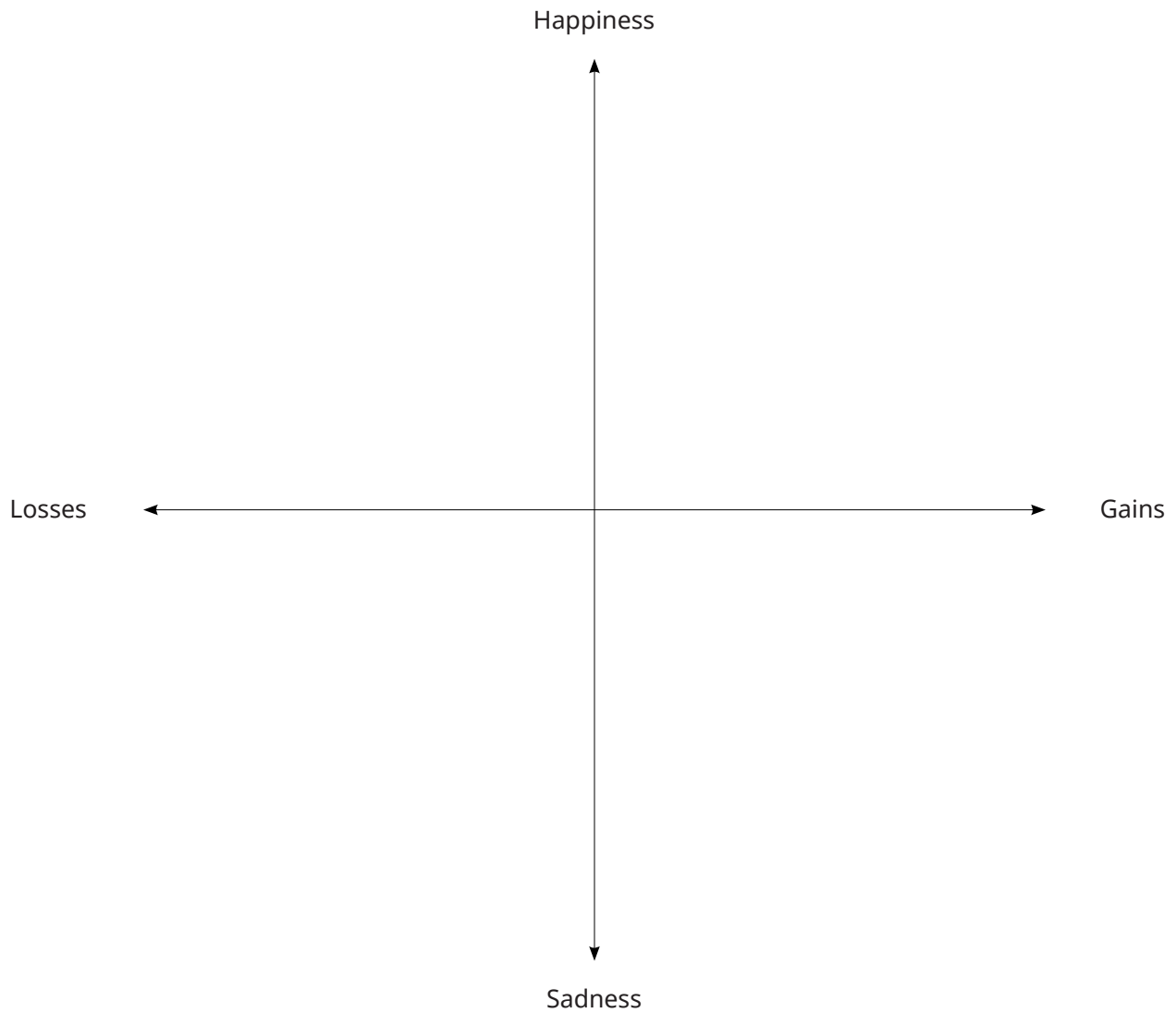
- Invite students to form small groups and share the conclusions they reached and recorded on the **Behavioral Economics in Action** capture sheet.
- Lead a class discussion about how understanding loss aversion and the endowment effect can help students make informed financial decisions in the future.

National Content Standards

- [Voluntary National Content Standards in Economics](#) from the Council for Economic Education
 - Standard 2—Decision Making (Grade 12 Benchmark 5): People sometimes fail to treat gains and losses equally, placing extra emphasis on losses.
- [The College, Career, and Civic Life \(C3\) Framework for Social Studies State Standards](#) from the National Council for the Social Studies
 - Economic Decision Making (D2.Eco.1.6-8): Explain how economic decisions affect the well-being of individuals, businesses, and society.
 - Psychology (D2.Psy.2.9-12.): Investigate human behavior from biological, cognitive, behavioral, and sociocultural perspectives.

Graphing Gains and Losses

Directions: Based on what you have learned so far about loss aversion and the endowment effect, create a graph showing the relationship you would expect between gains and losses and a person's feelings.





Home Sellers

A retired couple has decided to sell the house they have lived in for almost 40 years. They have many fond memories of the house but know they should get something smaller now that their children are grown and have moved out.

How would you expect loss aversion and/or the endowment effect to impact this situation?

Monthly Subscription Box

There are a number of subscription services which ask people about their fashion preferences and current clothing needs. Each month a stylist selects items that the customer is likely to want and sends them in a box. The customer tries them on and is given the option to keep what is wanted or package what they don't want and mail it back. The customer pays for the items he or she keeps.

How would you expect loss aversion and/or the endowment effect to impact this situation?

Trial Offers

When people buy a new car, they are often given the chance to try subscription services such as satellite radio. Usually the satellite radio company calls the customer and lets them know they can use the service for free for several months. They must provide a credit card number, but it won't be charged until after the free trial period is done. They can also cancel before the trial period ends and never be charged at all.

How would you expect loss aversion and/or the endowment effect to impact this situation?

Health-Care Decisions

When a person is ill or injured, medical professionals often cite statistics about medication or procedures that could help the patient. Consider the two ways the same procedure could be explained:

- There is a 20% success rate.
- It doesn't result in the desired outcome 80% of the time.

How would you expect loss aversion and/or the endowment effect to impact this situation?

Retirement Savings

Many employers offer to match the amount of money that employees contribute to their retirement savings. For example, if an employee saves \$1,000 for retirement, the company will also put \$1,000 into the account. Even though many companies offer this benefit, a substantial number of employees still save nothing in these accounts.

How would you expect loss aversion and/or the endowment effect to impact this situation?

Investing in the Market

The prices of stocks rise and fall all the time based on a variety of factors. When potential investors are shown the long-term rates of return on investments, they tend to invest more than when they are shown information for a short period of time. People also tend to sell stocks as soon as they begin to make a profit rather than continuing to hold onto them for a greater potential profit down the road.

How would you expect loss aversion and/or the endowment effect to impact this situation?

Watching the Next Episode

Have you ever watched a show on TV and not bothered to change the channel? Instead, you just watch what comes on after the show you were watching. Or, maybe you were streaming a show in a series. The streaming service might automatically start the next episode in the series for you unless you press a button to exit or switch to something else.

How would you expect loss aversion and/or the endowment effect to impact this situation?

Penalty or Reward

An environmentally friendly business wants to decrease the number of plastic bags people are using when they do their shopping. They are considering two options:

- Charge people 10 cents for each bag they use.
- Discount the total people have to pay by 10 cents each time they bring their own bag.

How would you expect loss aversion and/or the endowment effect to impact this situation?

Hedger or Speculator? Quiz

Directions: Based on your understanding of the futures industry and the role of hedgers and speculators, take the following quiz to test your knowledge and see what each practice looks like in the real world.

1. A homeowner buys a home with the hopes to sell it when the market value exceeds the original price.
 - a. Hedger
 - b. Speculator
2. A retirement fund manager contributes to a shared pool of investments in hopes of adding value to the client's portfolio.
 - a. Hedger
 - b. Speculator
3. A chocolate maker locks in next year's cocoa supplies in case extreme weather decreases the cocoa crop.
 - a. Hedger
 - b. Speculator
4. A chain store sets up shops in new places so that increased profits will exceed operating costs.
 - a. Hedger
 - b. Speculator
5. A steel distributor orders large inventories of hot rolled coil so that they're paid for and ready when production spikes.
 - a. Hedger
 - b. Speculator
6. A stock trader buys a piece of a company with the intent to sell it when the company's stock price increases.
 - a. Hedger
 - b. Speculator
7. A car collector purchases insurance on his collection to protect himself from damage or theft.
 - a. Hedger
 - b. Speculator

Directions: Based on your understanding of the futures industry and the role of hedgers and speculators, take the following quiz to test your knowledge and see what each practice looks like in the real world.

1. A homeowner buys a home with the hopes to sell it when the market value exceeds the original price.
 - a. Hedger
 - b. **Speculator**—The home buyer is accepting real estate market risk in hopes of making a profit.
2. A retirement fund manager contributes to a shared pool of investments in hopes of adding value to the client's portfolio.
 - a. Hedger
 - b. **Speculator**—The manager is interacting with the market in a way that is trying to maximize his client's profits.
3. A chocolate maker locks in next year's cocoa supplies in case extreme weather decreases the cocoa crop.
 - a. **Hedger**—The chocolate maker has locked in stable supply at a predictable price.
 - b. Speculator
4. A chain store sets up shops in new places so that increased profits will exceed operating costs.
 - a. Hedger
 - b. **Speculator**—The company is putting in time and money in the hopes of making profits.
5. A steel distributor orders large inventories of hot rolled coil so that they're paid for and ready when production spikes.
 - a. **Hedger**—The distributor locked in profits by making sure they have a stable supply when needed.
 - b. Speculator
6. A stock trader buys a piece of a company with the intent to sell it when the company's stock price increases.
 - a. Hedger
 - b. **Speculator**—The trader is willing to take a risk in order to exceed his/her initial investment.
7. A car collector purchases insurance on his collection to protect himself from damage or theft.
 - a. **Hedger**—The collector is protecting his investment by transferring risk to the insurance company.
 - b. Speculator