Principles of (Behavioral) Economics

American Economic Review: Papers & Proceedings 2015, 105(5): 385–390
http://dx.doi.org/10.1257/aer.p20151047

BEHAVIORAL ECONOMICS IN THE CLASSROOM

Principles of (Behavioral) Economics†

By David Laibson and John A. List*

There are many great ways to incorporate behavioral economics in a first-year undergraduate economics class—i.e., the course that is typically called "Principles of Economics." Our preferred approach integrates behavioral economics *throughout* the course (e.g., see Acemoglu, Laibson, and List 2015). With the integrated approach, behavioral content plays a role in many of the chapters of the principles of economics curriculum, including chapters on optimization, equilibrium, game theory, intertemporal choice, probability and risk, social preferences, household finance, the labor market, financial intermediation, monetary policy, economic fluctuations, and financial crises.

We prefer the integrated approach because it enables the behavioral insights to show up where they are conceptually most relevant. By illustration, it is best to combine a discussion of downward nominal wage rigidity (i.e., the idea that workers strongly resist *nominal* wage declines) with the overall discussion of the labor market.

Whether or not an instructor integrates behavioral economics throughout the principles of economics course, it makes sense to pull central materials together and dedicate a lecture (or more) to a focused discussion of behavioral economics. This note describes our approach to such a lecture, emphasizing six key principles of behavioral economics.

*Laibson: Department of Economics, Harvard University, Cambridge, MA 02138 and NBER (e-mail: dlaibson@harvard.edu); List: University of Chicago, 1126 E. 59th Street, Chicago, IL 60637 and NBER (e-mail: jlist@uchicago.edu). We thank Saurabh Bhargava, Brigitte Madrian, and Ted O'Donoghue for helpful suggestions and feedback. We are also grateful to Daron Acemoglu, who directly contributed, as our *Economics* coauthor, to many of the pedagogical approaches discussed here.

† Go to http://dx.doi.org/10.1257/aer.p20151047 to visit the article page for additional materials and author disclosure statement(s).

Our choice of content for a behavioral lecture is motivated by three factors. First, we include ideas that are conceptually important. Second, we include material that is practically important and personally relevant to our students—we have found that such content resonates long after the course ends. Third, we include content that relates to what has been (or will be) taught in the *rest* of the course, and therefore serves as a complement. We want students to see that behavioral economics is an integrated part of economics, not a freak show that is isolated from "the standard ingredients" in the rest of the economics course.

This paper summarizes our approach to such a focused behavioral lecture. In Section I, we define behavioral economics and place it in historical context. In Section II, we introduce six modular principles that can be used to teach behavioral economics. We provide PowerPoint notes on our home pages, which instructors should feel free to edit and use.

I. Behavioral Economics Defined

Behavioral economics *uses variants of traditional economic assumptions* (*often with a psychological motivation*) *to explain and predict behavior, and to provide policy prescriptions.*

When we teach our students this definition of behavioral economics, we like to emphasize that behavioral economics is a series of amendments to, not a rejection of, traditional economics. We illustrate the complementarities between traditional and behavioral economics with an example: if you want to get from Chicago to the bleachers of Fenway Park to watch the Boston Red Sox, standard economics will get you to Cambridge, or even Boston University (which is adjacent to Fenway), but you may need behavioral economics to take the final steps and find your seat in the bleachers.

In this way, behavioral economics augments standard economic analysis. Behavioral economics adopts and refines the three core principles of economics: optimization, equilibrium, and empiricism (Acemoglu, Laibson, and List 2015). Both traditional and behavioral economists believe that (i) people *try* to choose their best feasible option (optimization); (ii) people *try* to choose their best feasible option when interacting with others (equilibrium); and (iii) models need to be tested with data (empiricism). In the next section we provide some examples of how behavioral economics refines economic analysis.

From a historical perspective, the big bang for behavioral economics was a paper on preferences over gambles written by two psychologists, Daniel Kahneman and Amos Tversky, in 1979. So modern behavioral economics is a lot younger than the rest of the field of economics.

However, behavioral concepts have always played a part in economic analysis (though they didn't always have that headline name). As Ashraf, Camerer, and Loewenstein (2005) point out, Adam Smith frequently wrote about the psychology of decision-making, including the tension between a person's "passions" and their rational deliberations, which Smith refers to as the "impartial spectator." The impartial spectator is the source of "self-denial, of self-government, of that command of the passions which subjects all the movements of our nature to what our own dignity and honour, and the propriety of our own conduct require" (Smith 1759 [1984], I, i, v, 23). Psychological assumptions are as old as economics itself.

II. Six Principles of Behavioral Economics

These principles are modular, so instructors can pick whatever subset matches their interests and their time budget. In our experience, all six principles can be covered in a 1.5 hour lecture, but that is not what we recommend. If you wish to cover all six principles, we suggest allotting two lectures.

After each principle we present a series of examples that illustrate and explain the principle and engage first-year economics students. We've included more examples than you will probably be able to use, so we encourage you to pick among them.

PRINCIPLE 1: *People try to choose the best feasible option, but they sometimes don't succeed.*

In other words, people *try* to make the optimal choice—they are optimizers—but they sometimes make mistakes. It's important to emphasize that these mistakes are partially predictable. One of the key explanatory factors is experience and training: experienced decision-makers tend to make better choices than inexperienced decision-makers.

To illustrate these ideas, we use a range of examples. If students play the *p*-beauty contest game twice, they will see behavior converging toward the Nash equilibrium. The game is simple enough to be played in class (or on the web before class). But even if you don't actually play the game in class, you'll be able to show the students easy to understand data (e.g., Nagel 1995) that illustrates this convergence.

If you prefer to teach the first principle using field data, you could explain that credit card users pay fewer and fewer fees—for instance, late payment fees—the more experience they have with their card (Agarwal et al. 2013). Likewise, consumers switch telephone plans, moving toward the best one, as they gain experience (Miravete 2003).

These examples all illustrate that "everyone choosing optimally" is a better prediction for experienced decision-makers than for inexperienced decision-makers.

The first principle should also be used to explain why learning economics is so useful to students. Economics courses have the tangible benefit of increasing the optimality of the students' *own* decisions. We tell our students that "learning economics turns you into a decision-maker who is more likely to choose the best feasible alternative. By taking economics, you become a more skilled optimizer."

PRINCIPLE 2: *People care (in part) about how their circumstances compare to reference points.*

For example, a reference point could be the amount of money a person expected to earn during summer break, or the amount of money that she started with when she entered a casino, or the price she paid for 100 shares of Apple stock, or the price she paid for her home. It matters whether a person is losing or gaining relative to their reference point. Losses get far more weight than gains, which is called *loss aversion* (Kahneman and Tversky 1979). In practice, people suffer from a

loss about twice as much as they benefit from a gain of equal absolute magnitude.

These phenomena have implications for market transactions. Loss aversion discourages trade, since each trade generates two losses and two gains (the buyer has a loss and a gain and the seller has a loss and a gain), and the losses are weighted more than the gains. Accordingly, people are prone to hold on to their endowments (Thaler 1980).

There are many ways to illustrate this *endowment effect*. For example, give half of your students a mug and half of your students a (big) chocolate bar, randomizing this endowment by switching every other seat in the classroom. Let the students examine their own and their neighbors' endowments, and then ask the class who wants to trade with you for the good that they didn't receive. Fewer than a quarter of the students will take up this offer, but traditional economic theory predicts that half of them should (Kahneman, Knetsch, and Thaler 1990; Tversky and Kahneman 1991).

If you wish to go deeper, show your students that market experience reduces the endowment effect (e.g., List 2003). Or show them how framing manipulations that exploit loss aversion can be used to incent workers to be more productive (e.g., Hossain and List 2012). You could also show your class loss aversion in gambles: people won't take an even odds gamble unless the upside has twice the reward as the downside (Kahneman and Tversky 1979).

PRINCIPLE 3: *People have self-control problems.*

In a traditional economic model there is no gap between a person's good intentions and their actions. By contrast, in the model of *present bias*, people *plan* to work hard (or diet, or exercise, or quit smoking, or save for retirement, or stop borrowing on their credit card, etc.) and then renege at the last second (Laibson 1997; O'Donoghue and Rabin 1999).

Instructors can show how the present-biased discount function $\{1, ½, ½, ½, \dots\}$ leads to preference reversals if studying has an immediate effort cost of 6 and a delayed benefit of 8. In this case, studying tomorrow looks good in the eyes of the student because $½ \times [-6 + 8] = 1 > 0$, but immediate studying does not (because $-6 + ½ \times 8 = -2 < 0$). In this simple example, studying never takes place.

Fun evidence-based examples include postponing planned work tasks (Augenblick, Niederle, and Sprenger 2014), placing savings in a lockbox (Ashraf, Karlan, and Yin 2006; Beshears et al. 2013), workplace productivity commitments (Kaur, Kremer, and Mullainathan forthcoming), and committing to not smoke cigarettes or drink alcohol (Giné, Karlan, and Zinman 2010; Schilbach 2015). Controlling for time of day, Read and van Leeuwen (1998) show that snacks chosen in advance are overwhelmingly healthy, but snacks chosen for immediate consumption are not.

PRINCIPLE 4: *Although we mostly care about our own material payoffs, we also care about the actions, intentions, and payoffs of others, even people outside our family.*

These "social preferences" come in many systematic forms, especially negative reciprocity, behindness aversion, and social pressure.

One way to teach these ideas is to play the ultimatum game (Güth, Schmittberger, and Schwarze 1982). An anonymous sender and an anonymous recipient are paired. The sender divides an endowment of \$10 (any division is allowed, rounded off to the nearest penny). The recipient either accepts or rejects the division. In the event of rejection, *both* players go home empty-handed. Most senders propose a division in which the recipient receives at least \$2.00, because the senders correctly anticipate that half of the recipients will retaliate against an offer that is less generous than this (even though the retaliation hurts the recipient).

Such social preferences respond to incentives, just like all other economic decisions. As the stakes get large, the recipient becomes more and more willing to accept unfair offers. For example, Andersen et al. (2011) find that when the pot to be divided is nearly a *year's* wages, almost no recipients reject a 20 percent offer from the sender. Showing students that prices matter in the domain of social preferences helps them develop a deeper understanding of both social preferences and the traditional model.

PRINCIPLE 5: *Sometimes market exchange makes psychological factors cease to matter, but many psychological factors matter even in markets.*

If investors with behavioral biases are a small part of the total stock market, their beliefs will

not drive stock prices because perfectly rational traders will sell the stocks that the biased investors are buying, keeping stock prices near their "rational level." However, if biased investors compose a large portion of the total asset market (and marginal traders), their beliefs will matter.

The dot-com bubble, which peaked in 2000, illustrates this point. Dot-com fever swept the stock market and investors scooped up shares in companies that had anything to do with technology and especially the Internet. Near the peak of the bubble, some subsidiaries with a technology focus had market capitalizations that greatly exceeded the market capitalizations of their parent companies, a violation of basic arbitrage (Lamont and Thaler 2003). For example, in early 2000, Palm, a manufacturer of personal organizers, was 95 percent owned by 3Com, but Palm was worth much more than 3Com based on the stock prices of the two companies.

The US housing bubble, which peaked in 2006, is another example of a behavioral phenomenon that had a profound impact on markets. When this housing bubble burst, the world economy sustained a long and deep recession and many of the world's biggest banks failed.

PRINCIPLE 6: *In theory*, *limiting people's choices could partially protect them from their behavioral biases*, *but in practice*, *heavy-handed paternalism has a mixed track record and is often unpopular.*

Behavioral insights imply that *if* the government is well intentioned and sophisticated, paternalistic policies might be helpful. However, heavy-handed paternalism raises new problems. First, some government actors are self-serving, so giving them expanded powers of paternalism may not make life better for the rest of us. Second, government actors are prone to the same kinds of mistakes that everyone else makes—for example, overconfidence. With considerations like these in mind, behavioral economists are interested in carefully expanding the scope of paternalistic policies, but skeptical about opening the floodgates.

To illustrate the tendency for governments to make mistakes, consider the extremely optimistic forecasts held by both the Allies and the Central Powers at the beginning of WWI (Johnson 2004). Both sides confidently believed that they would win in a few months, but the war actually took more than four years. Governments are often surprised because their forecasts prove to be overly optimistic (in war and peace), and their preferred policies work less well than anticipated.

In our classes, we show students examples of paternalism that are generally thought of as successful (e.g., Social Security and Medicare) as well as paternalism that has been unpopular (e.g., soda bans, soda taxes, taxes on fatty foods) or disastrous (e.g., alcohol prohibition).

We also challenge students with a policy question, such as the socially optimal level of cigarette taxes. *State* taxes for cigarettes range from a low of \$0.17/pack (Missouri) to a high of \$4.35/pack (New York), reflecting widely disparate public views on their merits. Traditional economic theory implies that cigarette smoking be lightly taxed or even, subsidized, since early mortality leads to some cost savings for the government (i.e., smokers tend to die at the end of their working lives and miss a long, socially expensive retirement, which partially offsets other negative externalities). If cigarettes generate only modest negative net externalities, why are they taxed so heavily? In New York City, the combination of federal, state, and local cigarette taxes sum to \$6.86 per pack. Behavioral economists explain these taxes as a way of helping people quit smoking (Gruber and Kőszegi 2001). Critics say that these taxes are regressive and unfair. Who is right? Students love to debate this issue.

In the last decade, behavioral policy recommendations have tilted toward nudges, which recommend or facilitate certain behaviors without removing options or the freedom to choose (Thaler and Sunstein 2008). The leading example is automatic enrollment in 401(k) savings plans (Madrian and Shea 2001). Behavioral economists like such interventions because they are scalable, inexpensive, highly successful in changing behavior, and also freedom-preserving.

Ask your students to consider other policy questions. For example, is obesity a problem that the government should try to "solve" with nudges or other types of paternalism (like sugar taxes), or is obesity a reflection of personal preferences over diet and exercise with little or no role for government intervention?

III. Conclusions

Since the publication of "Prospect Theory" in 1979, behavioral economics has become an

important and *integrated* component of modern economic thought. In our view, behavioral ideas are not a fifth column, but rather a key contributor to the arsenal of modern economics. Behavioral economists embrace the core principles of modern economics—*optimization* and *equilibrium*—and wish to develop and refine those ideas to make them more *empirically* accurate. Behavioral economists study how people *try* to pick the best feasible option, including the cases in which people, despite their best efforts, make mistakes. We believe that behavioral ideas should be integrated throughout the first-year undergraduate sequence.

It also makes sense to pull some key materials together and commit a lecture (or more) to a focused discussion of behavioral concepts. This note explains how we would give this lecture, emphasizing six key modular principles.

If you want to boil behavioral economics down for a classroom summary you might say that most people are located somewhere between Mr. Spock and Mr. Simpson (aka Homer). Like Mr. Spock, Mr. Simpson is also an optimizer—he *tries* to choose the best feasible option. He's just not good at it. We need to study and model all optimizers: the good, the bad, and those in between.

REFERENCES

Acemoglu, Daron, David Laibson, and John A. List. 2015. *Economics*. Upper Saddle River, NJ: Prentice Hall.

Agarwal, Sumit, John C. Driscoll, Xavier Gabaix, and David Laibson. 2013. "Learning in the Credit Card Market." http://scholar.harvard.edu/files/laibson/files/learning_credit_042413.pdf (accessed November 5, 2014).

Andersen, Steffen, Seda Ertaç, Uri Gneezy, Moshe Hoffman, and John A. List. 2011. "Stakes Matter in Ultimatum Games." *American Economic Review* 101 (7): 3427–39.

Ashraf, Nava, Colin F. Camerer, and George Loewenstein. 2005. "Adam Smith, Behavioral Economist." *Journal of Economic Perspectives* 19 (3): 131–45.

Ashraf, Nava, Dean Karlan, and Wesley Yin. 2006. "Tying Odysseus to the Mast: Evidence from a Commitment Savings Product in the Philippines." *Quarterly Journal of Economics* 121 (2): 635–72.

Augenblick, Ned, Muriel Niederle, and Charles Sprenger. 2014. "Working Over Time: Dynamic Inconsistency in Real Effort Tasks." http://web.stanford.edu/~niederle/ANS.Paper.pdf (accessed October 27, 2014).

Beshears, John, James J. Choi, Christopher Harris, David Laibson, Brigitte C. Madrian, and Jung Sakong. 2013. "Self-Control and Liquidity: How to Design a Commitment Contract." http://faculty.som.yale.edu/jameschoi/commitment.pdf (accessed November 19, 2014).

Giné, Xavier, Dean Karlan, and Jonathan Zinman. 2010. "Put Your Money Where Your Butt Is: A Commitment Contract for Smoking Cessation." *American Economic Journal: Applied Economics* 2 (4): 213–35.

Gruber, Jonathan, and Botond Kőszegi. 2001. "Is Addiction 'Rational'? Theory and Evidence." *Quarterly Journal of Economics* 116 (4): 1261–1303.

Güth, Werner, Rolf Schmittberger, and Bernd Schwarze. 1982. "An Experimental Analysis of Ultimatum Bargaining." *Journal of Economic Behavior and Organization* 3 (4): 367–88.

Hossain, Tanjim, and John A. List. 2012. "The Behavioralist Visits the Factory: Increasing Productivity Using Simple Framing Manipulations." *Management Science* 58 (12): 2151–67.

Johnson, Dominic D. P. 2004. *Overconfidence and War: The Havoc and Glory of Positive Illusions.* Cambridge: Harvard University Press.

Kahneman, Daniel, Jack L. Knetsch, and Richard H. Thaler. 1990. "Experimental Tests of the Endowment Effect and the Coase Theorem." *Journal of Political Economy* 98 (6): 1325–48.

Kahneman, Daniel, and Amos Tversky. 1979. "Prospect Theory: An Analysis of Decision under Risk." *Econometrica* 47 (2): 263–91.

Kaur, Supreet, Michael Kremer, and Sendhil Mullainathan. Forthcoming. "Self-Control at Work." *Journal of Political Economy.*

Laibson, David. 1997. "Golden Eggs and Hyperbolic Discounting." *Quarterly Journal of Economics* 112 (2): 443–77.

Lamont, Owen, and Richard H. Thaler. 2003. "Can the Market Add and Subtract? Mispricing in Tech Stock Carve-outs." *Journal of Political Economy* 111 (2): 227–68.

List, John A. 2003. "Does Market Experience Eliminate Market Anomalies?" *Quarterly Journal of Economics* 118 (1): 41–71.

Madrian, Brigitte C., and Dennis F. Shea. 2001. "The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior." *Quarterly Journal of Economics* 116 (4): 1149–87.

Miravete, Eugenio J. 2003. "Choosing the Wrong Calling Plan? Ignorance and Learning." *American Economic Review* 93 (1): 297–310.

Nagel, Rosemarie. 1995. "Unraveling in Guessing Games: An Experimental Study." *American Economic Review* 85 (5): 1313–26.

O'Donoghue, Ted, and Matthew Rabin. 1999. "Doing It Now or Later." *American Economic Review* 89 (1): 103–24.

Read, Daniel, and Barbara van Leeuwen. 1998. "Predicting Hunger: The Effects of Appetite and Delay on Choice." *Organizational Behavior and Human Decision Processes* 76 (2): 189–205.

Schilbach, Frank. 2015. "Alcohol and Self-Control: A Field Experiment in India." http://scholar.harvard.edu/files/schilbach/files/jmp_frank_schilbach.pdf (accessed December 1, 2014).

Smith, Adam. 1759. *The Theory of Moral Sentiments*. Edited by D. D. Raphael and A. L. Macfie. Indianapolis: Liberty Fund, 1984.

Thaler, Richard H. 1980. "Toward a Positive Theory of Consumer Choice." *Journal of Economic Behavior and Organization* 1 (1): 39–60.

Thaler, Richard H., and Cass R. Sunstein. 2008. *Nudge: Improving Decisions About Health, Wealth, and Happiness*. New Haven: Yale University Press.

Tversky, Amos, and Daniel Kahneman. 1991. "Loss Aversion in Riskless Choice: A Reference-Dependent Model." *Quarterly Journal of Economics* 106 (4): 1039–61.