Taking Paternalism Out of Nudge

The Case of Medication Nonadherence among Patients with Chronic Conditions

Sherzod Abdukadirov,
Scott King, and David Wille

May 2016

MERCATUS WORKING PAPER

MERCATUS CENTER
George Mason University

3434 Washington Blvd., 4th Floor, Arlington, Virginia 22201
www.mercatus.org

Sherzod Abdukadirov, Scott King, and David Wille. "Taking Paternalism Out of Nudge: The Case of Medication Nonadherence among Patients with Chronic Conditions." Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, May 2016.

Abstract

Policymakers' behavioral economics toolbox contains both paternalistic and nonpaternalistic nudges. In the case of paternalistic nudges, policymakers identify the optimal choice for consumers and then push consumers toward that choice by setting default options or manipulating loss aversion. In contrast, nonpaternalistic nudges provide helpful feedback or timely reminders or simplify the decision-making process in order to make it easier for consumers to choose in their best interest; they do not require policymakers to define an optimal choice. The advantage of nonpaternalistic nudges is that they are less likely to harm consumers in cases when policymakers misdiagnose a behavioral bias (either by assuming the wrong bias or by assuming bias where none exists). In such cases, paternalistic nudges push consumers to make a suboptimal choice but nonpaternalistic nudges are simply ignored. Considering the unintended consequences of paternalistic nudges is particularly important when suboptimal choices in the target population are caused by a variety of behavioral biases and nonbehavioral causes, as in the case of medication nonadherence among patients with chronic conditions.

JEL codes: D03, I12, I18, K23

Keywords: behavioral economics, nudge, paternalism, regulations, medication adherence, health

Author Affiliation and Contact Information

Sherzod Abdukadirov
Research Fellow
Mercatus Center at George Mason University
sabdukadirov@mercatus.gmu.edu

Scott King
Program Manager of Academic Networks
Institute for Humane Studies at George Mason University

David Wille
MA Fellow
Mercatus Center at George Mason University

All studies in the Mercatus Working Paper series have followed a rigorous process of academic evaluation, including (except where otherwise noted) at least one double-blind peer review. Working Papers present an author's provisional findings, which, upon further consideration and revision, are likely to be republished in an academic journal. The opinions expressed in Mercatus Working Papers are the authors' and do not represent official positions of the Mercatus Center or George Mason University.

Taking Paternalism Out of Nudge:

The Case of Medication Nonadherence among Patients with Chronic Conditions

Sherzod Abdukadirov, Scott King, and David Wille

1. Introduction

In their seminal book *Nudge: Improving Decisions about Health, Wealth, and Happiness*, which follows up on their equally influential article "Libertarian Paternalism Is Not an Oxymoron," behavioral economists Richard Thaler and Cass Sunstein make a case for incorporating behavioral insights into public policy.[1] They point out that consumers often get sidetracked by their behavioral biases and fail to make choices that would improve their welfare. However, they also suggest that those very biases could be cleverly exploited to construct policies that counter consumers' biased decision-making and nudge them toward better choices. What makes Thaler and Sunstein's approach attractive is that consumers can still opt out of a nudge if they find it objectionable. Consequently, nudges are alternatively referred to as libertarian paternalism or soft paternalism.

Throughout their works, Thaler and Sunstein use the terms *nudge* and *libertarian paternalism* interchangeably.[2] They assume that any policy that attempts to counter consumers' behavioral biases will necessarily be paternalistic. Consequently, those who oppose paternalistic policies in general tend to oppose nudges as well.[3] Yet, as we will argue in this paper, it is possible to structure policies that counter consumers' behavioral biases without being

[1] Richard H. Thaler and Cass R. Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness* (New Haven, CT: Yale University Press, 2008); Cass R. Sunstein and Richard H. Thaler, "Libertarian Paternalism Is Not an Oxymoron," *University of Chicago Law Review* 70, no. 4 (2003): 1159–202.

[2] Thaler and Sunstein, *Nudge*; Sunstein and Thaler, "Libertarian Paternalism Is Not an Oxymoron"; Cass R. Sunstein, *Why Nudge?* (New Haven, CT: Yale University Press, 2014).

[3] See, for example, Edward L. Glaeser, "Paternalism and Psychology," *University of Chicago Law Review* 73, no. 1 (2006): 133–56; Mario J. Rizzo and Douglas Glen Whitman, "The Knowledge Problem of New Paternalism," *Brigham Young University Law Review* 2009, no. 4 (2009): 905–68; Gregory Mitchell, "Libertarian Paternalism Is an Oxymoron," *Northwestern University Law Review* 99, no. 3 (2005): 1245–77; Mark D. White, *The Manipulation of Choice: Ethics and Libertarian Paternalism* (New York: Palgrave Macmillan, 2013); Riccardo Rebonato, *Taking Liberties: A Critical Examination of Libertarian Paternalism* (New York: Palgrave Macmillan, 2012).

paternalistic. We further argue that nonpaternalistic nudges provide a better policy alternative with fewer negative consequences for consumers than paternalistic nudges.

This paper proceeds as follows. The second section provides a brief background on behavioral biases and their use in nudges. In the third section, we discuss the difficulties that policymakers face in identifying and estimating consumers' biased behavior. In the fourth section, we discuss paternalistic and nonpaternalistic tools that are available to policymakers to reduce the negative impact of consumers' biased behavior. In the fifth section, we discuss the benefits and challenges of each approach. In the sixth section, we examine the use of paternalistic and nonpaternalistic nudges in the context of improving medication adherence by patients with chronic conditions. We conclude that although paternalistic policies may be more effective, nonpaternalistic tools avoid unintended consequences and may be more appropriate in the context of heterogeneity of biases.

2. Behavioral Biases and Paternalism

Research in behavioral economics, which lies at the intersection of economics and psychology, shows that individuals often make biased decisions.[4] They procrastinate, they are influenced by irrelevant information, they misestimate risks, and they are overwhelmed by choices. The list of behavioral biases—systematic deviations from rational choice—is quite large and growing.

In some cases, the impact of these biases can be significant. Some estimates show that more than half of Americans are not saving enough for retirement.[5] Also, the Centers for Disease

[4] Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus and Giroux, 2011); Sheena Iyengar, *The Art of Choosing* (New York: Twelve, 2011); Dan Ariely, *Predictably Irrational: The Hidden Forces That Shape Our Decisions* (New York: HarperCollins, 2008).
[5] Alicia H. Munnell, Wenliang Hou, and Anthony Webb, "NRRI Update Shows Half Still Falling Short" (Issue Brief 14-20, Center for Retirement Research at Boston College, December 2014).

Control and Prevention estimate that more than two-thirds of Americans are either overweight or obese, which may lead to substantial health problems.[6] And failure of patients with chronic conditions to adhere to prescribed medications leads to an estimated $100 billion to $300 billion in additional medical expenditures each year.[7]

As a result, policymakers began to look for ways to help consumers overcome their biases, particularly in areas where mistakes tend to be costly to consumers, such as personal finance, health, and nutrition. Because traditional paternalistic policies arouse considerable popular opposition, nudges looked like a promising alternative.[8]

The distinctive characteristic of nudges is their noncoercive nature.[9] Instead of imposing on consumers what policymakers consider to be a better choice for those consumers, nudges structure consumer choice in such a way that a better choice becomes the path of least resistance. Consumers retain an option to make a different choice. Nudges thus acknowledge the possibility that policymakers may be wrong and that what looks like a biased choice to policymakers may in fact be a rational choice for consumers.

One prominent example of nudges deals with employees' failure to save for retirement. Although most employees want to save for retirement, they typically procrastinate and fail to set up contributions to employer-provided retirement plans. Thaler and Benartzi propose a simple

---

[6] National Center for Health Statistics, "Health, United States, 2014: With Special Features on Adults Aged 55–64" (Publication 2015-1232, US Department of Health and Human Services, Washington, DC, May 2015), 215.
[7] Meera Viswanathan et al., "Interventions to Improve Adherence to Self-Administered Medications for Chronic Diseases in the United States: A Systematic Review," *Annals of Internal Medicine* 157, no. 11 (2012): 785–95.
[8] Rhys Jones, Jessica Pykett, and Mark Whitehead, *Changing Behaviours: On the Rise of the Psychological State* (Cheltenham, UK: Edward Elgar, 2013); William J. Congdon, Jeffrey R. Kling, and Sendhil Mullainathan, *Policy and Choice: Public Finance through the Lens of Behavioral Economics* (Washington, DC: Brookings Institution Press, 2011).
[9] Sunstein and Thaler, "Libertarian Paternalism Is Not an Oxymoron"; Thaler and Sunstein, *Nudge*.

way to go around employees' natural tendency to procrastinate.[10] They suggest that employers set up their employees' contributions by default but allow employees to change the contribution levels. Because most people tend to stick with default choices, changing a default contribution from zero to a higher amount considerably increases employees' contributions. By changing the choice architecture, the scheme turns employees' procrastination from a liability into an advantage. And if some employees actually want to contribute less—they might have a separate retirement account—they can easily opt out of the nudge and reset their contribution to zero.

Although many policymakers find nudges less objectionable than more typical hard paternalism, the fact that nudges still involve the paternalist making decisions for the individual raises concerns. In fact, the very effectiveness of nudges seems to indicate that opting out of them is not as easy as proponents claim.[11] Thus, some critics suspect that nudges may not be so different from hard paternalism.

To determine whether nudges are paternalistic, one must first define paternalistic policies. Although there are many different definitions,[12] in this paper we follow the definition outlined in Seana Shiffrin's influential paper.[13] Specifically, an action is considered paternalistic only if (1) it aims to influence the consumer's behavior, (2) it aims to improve the consumer's welfare, (3) it substitutes the paternalist's judgment for the consumer's, and (4) it is undertaken on the ground that the paternalist's judgment is superior to that of the consumer's.

Note that the formulation of the first condition allows us to include both hard (coercive) and soft (libertarian) paternalism, because the action does not have to be restrictive or coercive to

[10] Richard H. Thaler and Shlomo Benartzi, "Save More Tomorrow: Using Behavioral Economics to Increase Employee Saving," *Journal of Political Economy* 112, no. 1 (2004): S164–87.
[11] Glaeser, "Paternalism and Psychology"; White, *Manipulation of Choice*.
[12] Gerald Dworkin, "Defining Paternalism," in *Paternalism: Theory and Practice*, ed. Christian Coons and Michael Weber (Cambridge, UK: Cambridge University Press, 2013), 25–38.
[13] Seana Valentine Shiffrin, "Paternalism, Unconscionability Doctrine, and Accommodation," *Philosophy and Public Affairs* 29, no. 3 (2000): 205–50.

qualify as paternalistic—it need only influence the consumer's behavior. This definition would encompass the entire range of paternalistic policies, from the relatively mild (such as placing healthy foods at eye level on supermarket shelves),[14] to the more intrusive (such as New York City's failed ban on super-sized sodas, which was a nudge consumers could have bypassed by purchasing two smaller sodas),[15] to coercive policies (such as the tax on sugary drinks instituted by the city of Berkeley, California).[16]

Another important clarification is the definition of *consumer welfare*. What makes nudges different from traditional paternalism is that they do not seek to impose the paternalist's judgment as to the goals consumers ought to pursue.[17] Instead, nudges seek to improve consumer welfare the way the consumers themselves would define it.

Most disagreements over nudges tend to focus on the first two conditions. Some critics argue that there is a slippery slope in paternalism and that soft or libertarian paternalistic nudges inevitably turn into hard paternalistic shoves.[18] They fear that less controversial nudges will simply pave the way for more intrusive policies. Others question whether paternalistic government agencies have an incentive to help improve consumer welfare and not use their powers to advance a political agenda.[19] Consequently, they question the paternalist's willingness to improve consumer welfare.

---

[14] Thaler and Sunstein, *Nudge*, 6.
[15] Brian Wansink and David Just, "How Bloomberg's Soft Drink Ban Will Backfire on NYC Public Health," *Atlantic*, June 14, 2012, http://www.theatlantic.com/health/archive/2012/06/how-bloombergs-soft-drink-ban-will-backfire-on-nyc-public-health/258501/.
[16] Bo Kovitz, "Berkeley Voters Show Support for Soda Tax, Other Taxes for November Ballot," *Daily Californian*, March 17, 2014, http://www.dailycal.org/2014/03/17/berkeley-voters-show-support-soda-tax-taxes-november-ballot/.
[17] Rizzo and Whitman, "Knowledge Problem of New Paternalism."
[18] Mario J. Rizzo and Douglas Glen Whitman, "Little Brother Is Watching You: New Paternalism on the Slippery Slopes," *Arizona Law Review* 51, no. 3 (2009): 685–739.
[19] Glaeser, "Paternalism and Psychology"; W. Kip Viscusi and Ted Gayer, "Behavioral Public Choice: The Behavioral Paradox of Government Policy," *Harvard Journal of Law and Public Policy* 38, no. 3 (2015): 973–1007.

This paper focuses on the last two conditions. Specifically, we argue that nudges need not question or replace the consumer's judgment. The policymaker can use behavioral design to construct policies that (1) aid consumer decision-making by countering behavioral biases and (2) do not impose the policymaker's choice on the consumer. Consequently, the policymaker does not presume to be able to make optimal decisions better than the consumer.

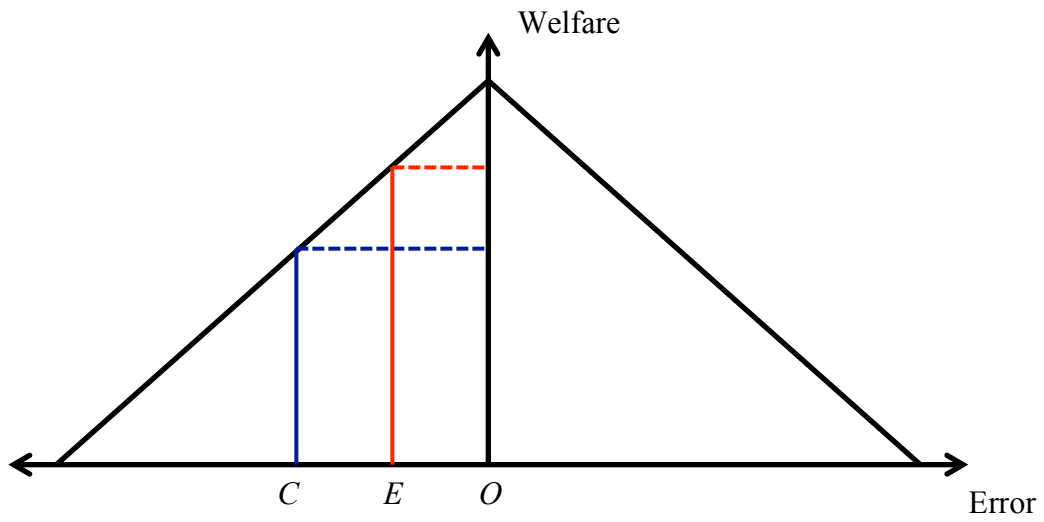
3. Estimating Bias

The extensive literature on behavioral economics and policy points to a gap between the consumer's actual choice *C* and what is perceived to be the optimal choice for the consumer *O* (see figure 1). What is less commonly discussed is that identifying the gap between the consumer's optimal and actual choices involves decision-making by two different actors: the consumer and the expert.[20] The consumer makes the choice we observe. The expert evaluates the consumer's choice to determine whether it is optimal. To do so, the expert must decide what constitutes an optimal choice for the consumer, denoted by *E*.

Note that there is a crucial assumption as to what constitutes an optimal choice. For the purposes of policymaking, the optimal choice usually involves some type of benefit-cost analysis with maximized net benefits. To identify the optimal choice, both the consumer and the expert must trade off relevant variables, such as price, quality, style, and operational costs. They must consider a range of possible alternatives with regard to these variables, weigh the benefits and costs of each alternative, and select the option that delivers the highest benefit at the lowest cost.

[20] The notable exceptions are Rizzo and Whitman, "Knowledge Problem of New Paternalism" and White, *Manipulation of Choice*.

Figure 1. Consumer and Expert Error



The difference between the consumer's actual choice and the expert's estimated optimal choice *CE* can stem from two sources: the consumer error *CO* and the expert error *EO*. It is possible, as the behavioral economics literature suggests, that consumers fail to make the optimal choice because of either cognitive limitations or lack of self-control. It is also possible, as critics of behavioral economics suggest, that experts fail to properly estimate the optimal choice for consumers owing to limited knowledge of consumer preferences and circumstances or their own biases. We will now consider these errors in more detail.

Consumer Error

Economists have been exploring the influence of psychology on human decision-making at least since Adam Smith's *The Theory of Moral Sentiments*.[21] More recently, behavioral economists

[21] Adam Smith, *The Theory of Moral Sentiments* (London: A. Millar, 1759); Colin F. Camerer and George Loewenstein, "Behavioral Economics: Past, Present, Future," in *Advances in Behavioral Economics*, ed. Colin F. Camerer, George Loewenstein, and Matthew Rabin (Princeton, NJ: Princeton University Press, 2003), 5.

have tested the rational decision-making assumptions of neoclassical economics and found that individuals violate these tenets in systematic ways.[22]

Behavioral economists Saugato Datta and Sendhil Mullainathan argue that these deviations from strict rationality often result from individuals economizing on limited cognitive resources. Mental resources are finite and using them to perform certain activities means that they are not available for others.[23] These authors identify several categories of limited mental resources: cognitive capacity, self-control, and attention.

Cognitive capacity. Because mental resources are finite and can be depleted through daily activities, people rely on two kinds of strategies to economize on those resources and reduce cognitive effort. The first strategy is the use of fast, intuitive thinking when making decisions. These rough rules of thumb, or heuristics, can be effective and cognitively efficient, but in some situations, their use gives rise to systematic errors or biases. For example, patients are more likely to opt for a surgery if the outcome probability is framed in terms of success rate rather than failure.[24] Similarly, people tend to assign higher probability to risks that they can easily recall, perhaps owing to recent media coverage.[25]

The second, and similar, cognitive strategy allows people to reduce mental effort by developing mental models that are based on how they understand causal relationships and predict outcomes. But although people implicitly assume these underlying theories are broadly correct,

[22] See, for example, Kahneman, *Thinking, Fast and Slow*, and Iyengar, *Art of Choosing*.
[23] Saugato Datta and Sendhil Mullainathan, "Behavioral Design: A New Approach to Development Policy," *Review of Income and Wealth* 60, no. 1 (2014): 7–35.
[24] Amos Tversky and Daniel Kahneman, "The Framing of Decisions and the Psychology of Choice," *Science* 211, no. 4481 (1981): 453–58.
[25] Kahneman, *Thinking, Fast and Slow*.

not all causal relationships are correctly or accurately understood.[26] For example, farmers in India often apply too much fertilizer to their fields under a mistaken belief that the green leafy growth promoted by the fertilizer signals the crop's greater health.[27]

Self-control. Similar to cognitive capacity, self-control is a finite resource and gets depleted over the course of the day.[28] Self-control challenges can be seen most readily in issues of intertemporal choice. In standard economic theory, individuals are assumed to value a certain payoff in the present more than the same payoff in the future.[29] Thus, individuals should "discount" a future payoff relative to the present in predictable ways. But experimental research shows that this model does not accurately describe how individuals generally make intertemporal choices.

In contrast to exponential discounting used in standard economic models, behavioral economists found that individuals use time-inconsistent or "hyperbolic" discounting.[30] Their valuations of payoff differ depending on the time horizon: they show a low discount rate over long time horizons but a high rate over short horizons. The discount rate is especially dramatic when it delays consumption that would otherwise be immediate.[31]

The scarcity of self-control manifests itself in various biased choices. For example, Sunstein and Thaler argue that inertia, or status quo bias, prevents many employees from enrolling

[26] Don Norman, *The Design of Everyday Things*, rev. ed. (New York: Basic Books, 2013).
[27] Datta and Mullainathan, "Behavioral Design."
[28] Maryam Kouchaki and Isaac H. Smith, "The Morning Morality Effect: The Influence of Time of Day on Unethical Behavior," *Psychological Science* 25, no. 1 (2014): 95–102.
[29] Gregory S. Berns, David Laibson, and George Loewenstein, "Intertemporal Choice—toward an Integrative Framework," *Trends in Cognitive Sciences* 11, no. 11 (2007): 482–88.
[30] David Laibson, "Golden Eggs and Hyperbolic Discounting," *Quarterly Journal of Economics* 112, no. 2 (1997): 443–78.
[31] Drazen Prelec and George Loewenstein, "Decision Making over Time and under Uncertainty: A Common Approach," *Management Science* 37, no. 7 (1991): 770–86.

in employer-provided retirement programs.[32] Similarly, inconsistent intertemporal discounting results in a strong preference for consumption in the present even if delaying gratification would increase consumer welfare. Datta and Mullainathan argue that this present bias causes many people to undersave, because it requires self-control not to spend money when it is available.[33]

Attention. Simple forgetfulness may be responsible for some suboptimal consumer choices. For example, many patients with chronic conditions fail to take their prescribed medications simply because they forget.[34]

In addition, complex decisions may lead to information overload. Individuals may have a hard time knowing which pieces of information are important and which can be ignored. As a result, people often pay attention to seemingly irrelevant information and fail to notice other factors that actually matter. For example, one study, which examined the impact of disclosing mortgage brokers' compensation on consumers' ability to select a lower-cost mortgage, found that a quarter of homebuyers opted for the mortgage with the lowest broker fee, even if the mortgage itself was more expensive.[35] Instead of focusing on the total cost of a mortgage, consumers focused on the one-time broker fee.

Expert Error

Policymakers attempting to improve consumer choices need to determine whether consumers' actions are biased and what would constitute a better choice for consumers. In doing so, such

[32] Sunstein and Thaler, "Libertarian Paternalism Is Not an Oxymoron."
[33] Datta and Mullainathan, "Behavioral Design."
[34] Viswanathan et al., "Interventions to Improve Adherence to Self-Administered Medications for Chronic Diseases in the United States."
[35] James M. Lacko and Janis K. Pappalardo, "The Effect of Mortgage Broker Compensation Disclosures on Consumers and Competition: A Controlled Experiment," Federal Trade Commission, Washington, DC, 2004.

policymakers face substantial challenges. First, they often lack the information necessary to craft an optimal intervention. Second, they suffer from many of the same cognitive biases that they seek to combat in individuals. Third, they face political and institutional incentives that may conflict with those of consumers.

Insufficient knowledge. The information necessary to correctly identify consumer bias can be very difficult for policymakers to acquire. In a comprehensive critique, Rizzo and Whitman point out that policymakers trying to construct nudges face considerable problems related to information.[36] The most obvious challenge is identifying consumer preferences: if consumers' choices are biased, the true preferences may not be readily elicited through observation. The picture is further clouded by ill-formed and sometimes conflicting preferences among consumers. In addition, to design an optimal intervention, policymakers must know the extent of any given bias. But measuring any given bias is difficult; each bias will differ in time, place, and situation. And measuring bias is imprecise, even in situations when there is a single measure.

Acquiring the necessary information is difficult primarily due to its nature. To determine the optimal choice for a consumer in a given situation, policymakers must know the specific circumstances in which the consumer is making the decision. Yet much of the information that influences a consumer's decision is local and tacit, which means it cannot be communicated easily.[37] Furthermore, the number of environmental variables that may impact the consumer's decision is so large that it would be impractical for policymakers to take all of them into account. Yet, in choosing which variables are important, policymakers may overlook

[36] Rizzo and Whitman, "Knowledge Problem of New Paternalism."
[37] Eric von Hippel, *The Sources of Innovation* (Oxford, UK: Oxford University Press, 1988).

the variables that impact consumer behavior or, conversely, ascribe importance to variables that do not.[38]

Policymakers' task is further complicated by the fact that biases may be interdependent.[39] Outside the laboratory, individuals experience multiple biases simultaneously that may all operate in the same direction or in different directions, thus making it difficult for policymakers to know the direction or extent of the suboptimal behavior. In addition, policymakers must take into account heterogeneity: The incidence of biases is not uniform across individuals, and applying the same policy to all consumers risks over- and underinclusion.

Behavioral biases. Similar to consumer judgment, policymakers' judgment may be subject to cognitive biases. For example, policymakers may be subject to action bias, the cognitive mechanism that pushes people to take action when faced with risk and uncertainty.[40] In addition, they may be subject to confirmation bias, which is the tendency to interpret information in a way that confirms one's preconceptions.[41]

In a survey of senior economists working at regulatory agencies, Richard Williams finds some support for biases influencing regulatory decision-making.[42] The surveyed economists reported that decision makers in their agencies faced an incentive to "do something," which points to action bias among policymakers. The regulatory process was also characterized as being dominated by "group think," specifically a legalistic approach to regulation that relies on precedents to guide decisions.

---

[38] Ibid.
[39] Rizzo and Whitman, "Knowledge Problem of New Paternalism."
[40] Slavisa Tasic, "Are Regulators Rational?," *Journal des Économistes et des Études Humaines* 17, no. 1 (2011): 1–21.
[41] Ibid.
[42] Richard Williams, "The Influence of Regulatory Economists in Federal Health and Safety Agencies" (Working Paper 08-15, Mercatus Center at George Mason University, Arlington, VA, July 2008).

In addition, regulators' decisions may be influenced by what Ted Gayer and W. Kip Viscusi call agency myopia.[43] Agency officials are given a specific mission and tend to focus on the mission's concerns to the exclusion of all others. Enthusiasm for action may also be enhanced by the policymaker's hindsight bias—the belief after an adverse event that the event could have been easily anticipated.[44]

Interestingly, Sunstein, who in addition to his scholarly work on behavioral economics served as administrator of the White House Office of Regulatory Analysis and Information, suggests that formal benefit-cost analysis could play an important role as a nudge to counter regulator bias.[45] However, the regulatory economists in Williams's survey note that benefit-cost analysis often comes after political decisions have been made, thus undermining the debiasing impact of the analysis.[46] Similarly, Jerry Ellig and Patrick McLaughlin note that regulatory analyses were frequently treated as a compliance exercise and did not influence the ultimate policy.[47]

Incentives. Policymakers may not have sufficient incentive to search for the optimal choice for consumers. As Edward Glaeser points out, consumers have better-aligned incentives to correct their own errors than do public officials.[48] This is simply because policymakers cannot care as much about consumer well-being as do consumers themselves.

[43] Ted Gayer and W. Kip Viscusi, "Overriding Consumer Preferences with Energy Regulations," *Journal of Regulatory Economics* 43, no. 3 (2013): 248–64.
[44] F. H. Buckley, *Fair Governance: Paternalism and Perfectionism* (Oxford, UK: Oxford University Press, 2009).
[45] Cass R. Sunstein, *Simpler: The Future of Government* (New York: Simon & Schuster, 2013), 151–56.
[46] Williams, "Influence of Regulatory Economists in Federal Health and Safety Agencies."
[47] Jerry Ellig and Patrick A. McLaughlin, "The Quality and Use of Regulatory Analysis in 2008," *Risk Analysis* 32, no. 5 (2012): 855–80.
[48] Glaeser, "Paternalism and Psychology."

In addition, policymakers frequently face mixed incentives with regard to the end goals of their policies. In his seminal work, William Niskanen argues that bureaucracies typically act to maximize their budgets and power.[49] In contrast to profit-maximizing private firms, bureaucracies seek to maximize their output, which generally leads to greater budgets. Thus, regulatory agencies have an incentive to perpetuate the demand for their services and propagate more regulation.[50] With regard to nudges, policymakers' budget-maximizing incentive may lead them to overestimate the impacts of consumer biases so that they can justify regulatory interventions.[51]

4. The Policymaker's Toolbox

Policymakers have two strategies to improve consumer choice: paternalistic and nonpaternalistic. Both seek to reduce the negative impacts of consumers' biased choices. The main difference between the two strategies is the outcome they seek to achieve. Paternalistic policies replace consumers' decision-making with that of policymakers. They aim to push consumers away from their biased choices toward the optimal choice identified by policymakers. Nonpaternalistic policies seek to identify the sources of biased behavior and to counter those biases through behavioral design. Importantly, they do not rely on identifying a specific optimal choice. In our discussion of various nudging techniques, we draw on the behavioral intervention tools outlined in a report by the Office of Planning, Research and Evaluation of the US Department of Health and Human Services (summarized in table 1).

[49] William A. Niskanen Jr., *Bureaucracy and Representative Government* (Piscataway, NJ: Transaction, 1974).
[50] Gordon Tullock, *The Politics of Bureaucracy* (Washington, DC: Public Affairs Press, 1965).
[51] Viscusi and Gayer, "Behavioral Public Choice."

Table 1. Paternalistic and Nonpaternalistic Interventions

Paternalistic	Nonpaternalistic
Default rules and automation	Channel and hassle factors
Anchoring	Feedback
Loss aversion	Reminder
Physical environment cues	Social influence or social proof
Microincentives	

Sources: Lashawn Richburg-Hayes et al., "Behavioral Economics and Social Policy: Designing Innovative Solutions for Programs Supported by the Administration for Children and Families" (Report 2014-16a, Office of Planning, Research and Evaluation, US Department of Health and Human Services, Washington, DC, April 2014); Lashawn Richburg-Hayes et al., "Behavioral Economics and Social Policy: Designing Innovative Solutions for Programs Supported by the Administration for Children and Families—Technical Supplement: Commonly Applied Behavioral Interventions" (Report 2014-16b, Office of Planning, Research and Evaluation, US Department of Health and Human Services, Washington, DC, April 2014).

Paternalistic Nudges

In the paternalistic option, policymakers first identify the optimal choice for consumers. Second, the policymakers construct policies that would push consumers to change their behavior and choose the expert-identified optimal option instead of the option they would choose on their own. In general, paternalistic policies revolve around manipulating choice architecture in a way that makes policymakers' preferred choice the path of least resistance.

Policymakers can use a number of paternalistic tools to influence consumer choice. Defaults serve as the most common type of nudge used by policymakers to change the choice architecture faced by individuals.[52] This nudge is premised on the fact that, when faced with a choice, most consumers tend to stay with the preselected default option.

One prominent example of using defaults is overdraft protection regulation.[53] Overdraft protection is a service provided by banks that allows consumers to take out cash from ATMs or pay with their debit cards even if they do not have sufficient funds in their accounts. Banks

[52] See, for example, Thaler and Benartzi, "Save More Tomorrow"
[53] Consumer Financial Protection Bureau, "CFPB Study of Overdraft Programs: A White Paper of Initial Findings," Washington, DC, June 2013.

charge hefty fees for this convenience. Although there may be times when consumers genuinely want the convenience, in many cases consumers report overdrawing their accounts by mistake.[54] In fact, most consumers claim they would rather have a transaction declined than incur the fee. Yet, though most consumers had the choice to opt out of the overdraft protection service, few actually did.

To remedy the situation, the Federal Reserve Board issued a new regulation in 2009 that changed the default.[55] The regulation requires account holders to actively choose overdraft coverage. By default, consumers would have any overdraft transactions declined. The regulation has had mixed success: while many consumers have stuck with the default, quite a few heavy overdraft users have chosen overdraft coverage.[56]

Similar to defaults, policymakers can manipulate a physical environment to change consumer behavior. For example, policymakers can manipulate the placement of food in cafeterias to nudge consumers toward healthier choices.[57] Specifically, healthier foods can be displayed prominently at a cafeteria's entrance, with less healthy options in the back of the cafeteria.

In a related technique, policymakers can use reference points to anchor consumer expectations and nudge consumers toward a preferred choice. For example, in 2009, credit card systems in New York City taxis began suggesting a tip of between 20 and 30 percent.[58] By

---

[54] PEW Center on the States, "Overdraft America: Confusion and Concerns about Bank Practices," Washington, DC, 2012.
[55] Board of Governors of the Federal Reserve System, "Electronic Fund Transfers," *Federal Register* 74, no. 220 (2009): 59033–56.
[56] Lauren E. Willis, "When Nudges Fail: Slippery Defaults," *University of Chicago Law Review* 80, no. 3 (2013): 1155–229.
[57] Andrew S. Hanks, David R. Just, Laura E. Smith, and Brian Wansink, "Healthy Convenience: Nudging Students toward Healthier Choices in the Lunchroom," *Journal of Public Health* 34, no. 3 (2012): 370–76.
[58] Lashawn Richburg-Hayes et al., "Behavioral Economics and Social Policy: Designing Innovative Solutions for Programs Supported by the Administration for Children and Families—Technical Supplement: Commonly Applied Behavioral Interventions" (Report 2014-16b, Office of Planning, Research and Evaluation, US Department of Health and Human Services, Washington, DC, April 2014), 5.

anchoring consumer expectations of a reasonable tip at 20 percent, the system increased the average tip amount from 10 to 22 percent.

Policymakers can use choice architecture to change consumer behavior by exploiting loss aversion—the tendency to be more motivated by the prospect of losing an object they already possess than gaining an object of an equal value.[59] In one experiment, teachers were selected to participate in a program that paid them depending on their performance.[60] Some of the teachers received a payment at the end of the year. Others were given a lump sum at the beginning of the year and then notified that they would have to return the bonus if they did not meet the performance standards. At the end of the year, the second group saw larger increases in their students' math test scores at the end of the year, showing that the teachers had worked harder to retain their bonuses.

Finally, policymakers can use microincentives to influence consumers. Because small rewards or punishments can have disproportionately large effects, policymakers can increase the likelihood that an individual will take desired actions by attaching small monetary rewards to these actions. For example, the Washington Health Care Authority gives out small cash rewards to Medicaid patients for periodic checkups in an effort to incentivize healthier behaviors.[61]

Nonpaternalistic Nudges

Instead of relying on paternalistic nudges, policymakers can substitute nonpaternalistic nudges, which still draw on behavioral insights without substituting a regulator's preference for the

[59] Daniel Kahneman and Amos Tversky, "Choices, Values, and Frames," *American Psychologist* 39, no. 4 (1984): 341–50.
[60] Roland G. Fryer et al., "Enhancing the Efficacy of Teacher Incentives through Loss Aversion: A Field Experiment" (NBER Working Paper 18237, National Bureau of Economic Research, Cambridge, MA, July 2012), http://www.nber.org/papers/w18237.
[61] Washington State Health Care Authority, "Wellness Incentives," Washington State Health Care Authority, Olympia, 2014.

consumer's. The distinctive characteristic of nonpaternalistic nudges is that they attempt to counter consumer bias but do not suggest a specific choice for consumers. Although these tools still require policymakers to make an assumption regarding the type of bias that affects consumers, they do not require policymakers to identify what the nonbiased choice would be. The tools fall into three broad categories, each addressing a specific cognitive scarcity.

Simplifying the process. Complex decisions tax consumers' mental resources in variety of ways. First, decisions that require considerable knowledge or complex calculations may exceed consumers' cognitive resources.[62] Second, consumers can suffer from choice overload when presented with too many variables to which they need to pay attention.[63] Choice overload can be paralyzing and taxing, sometimes resulting in no action being taken. Finally, an overly bureaucratic process may exhaust consumers' scarce self-control.[64] The various steps associated with a program may not seem like stumbling blocks by themselves, but when viewed in totality, they can be too onerous for individuals to undertake. Such programs suffer from a cognitive "death by a thousand cuts."

Consequently, one of the most effective tools for helping consumers make better choices is to simplify the process by reducing or eliminating the "hassle" factors. Depending on the context, eliminating hassles may involve reducing the number of steps required to complete a process or making the necessary information readily available when a consumer makes a decision.

---

[62] Lashawn Richburg-Hayes et al., "Behavioral Economics and Social Policy: Designing Innovative Solutions for Programs Supported by the Administration for Children and Families" (Report 2014-16a, Office of Planning, Research and Evaluation, US Department of Health and Human Services, Washington, DC, April 2014), 2.
[63] Sheena S. Iyengar and Mark R. Lepper, "When Choice Is Demotivating: Can One Desire Too Much of a Good Thing?," *Journal of Personality and Social Psychology* 79, no. 6 (2000): 995–1006.
[64] Richburg-Hayes et al., "Behavioral Economics and Social Policy," 4.

For example, the Free Application for Federal Student Aid (FAFSA) is a notoriously complex and important application that can influence whether a student attends college. Despite the benefit that students and their families could gain by completing the FAFSA, some 850,000 students eligible for aid in 2000 failed to complete the form.[65] Yet in one experiment, when potentially eligible candidates received help with the form (about two-thirds of the application questions were prefilled using tax return data), the simplified process increased college enrollment by 8 percent among high school seniors.[66]

Feedback can also be crucial when designing more efficient processes.[67] Given that some processes can be complex and may be performed intermittently by consumers, providing consumers with adequate feedback about consequences can make those decisions easier. For example, the Federal Trade Commission's Energy Guide label provides consumers with an estimated annual energy cost for many new appliances.[68] This label relieves consumers of the need to collect energy price and usage data and to perform complex calculations to estimate energy costs. Consumers can simply use the Energy Guide estimates to compare the energy efficiency of different appliance models and thus incorporate future energy costs into their purchasing decisions, along with an appliance's price and features. Similarly, the Environmental Protection Agency (EPA) Energy Star logo labels let consumers quickly identify and choose among energy-efficient appliances.[69]

---

[65] Jacqueline E. King, "Missed Opportunities: Students Who Do Not Apply for Financial Aid" (ACE Issue Brief, American Council on Education, Washington, DC, October 2004).
[66] Eric P. Bettinger et al., "The Role of Application Assistance and Information in College Decisions: Results from the H&R Block FAFSA Experiment," *Quarterly Journal of Economics* 127, no. 3 (2012): 1205–42.
[67] Norman, *Design of Everyday Things*.
[68] Lucas W. Davis and Gilbert E. Metcalf, "Does Better Information Lead to Better Choices? Evidence from Energy-Efficiency Labels" (NBER Working Paper 20720, National Bureau of Economic Research, Cambridge, MA, November 2014); Richard G. Newell and Juha V. Siikamäki, "Nudging Energy Efficiency Behavior: The Role of Information Labels" (NBER Working Paper 19224, National Bureau of Economic Research, Cambridge, MA, July 2013).
[69] Rich Brown, Carrie Webber, and Jon G. Koomey, "Status and Future Directions of the Energy Star Program," *Energy* 27, no. 5 (2002): 505–20.

Importantly, the principles of simplifying the process also apply to the feedback mechanism in what Sunstein calls "smart disclosure" principles.[70] Policymakers must ensure that information they disclose to consumers is both salient and easy to use. For example, many consumers misinterpreted the old fuel economy label (issued jointly by the EPA and the Department of Transportation), which expressed a vehicle's fuel consumption in miles per gallon (MPG). Consumers assumed a linear relationship between the MPG rating and fuel efficiency.[71] Thus, they assumed that upgrading from a 10 MPG vehicle to a 15 MPG vehicle would save as much fuel as upgrading from a 20 MPG vehicle to a 25 MPG vehicle. In reality, the relationship is curvilinear, providing the most fuel savings at lower MPG ratings. To address this concern, the new fuel economy label shows fuel efficiency in terms of gallons per hundred miles, which is a more intuitive measure of fuel efficiency.[72]

Action prompts. Reminders are simple nudges that can help individuals remember everything from medical appointments to tax-filing deadlines. Reminders can also counter the tendency to procrastinate by reminding consumers of their goals. Furthermore, they can alert consumers to relevant information.

One area where action prompts have been successfully used is in medication adherence by patients with chronic conditions. Patients undergoing lengthy medication regimens often fail to complete the prescribed treatment, leading to higher hospitalization rates and more costly

[70] Sunstein, *Simpler*, 98–99; Cass R. Sunstein, "Informing Consumers through Smart Disclosure," memorandum for the heads of executive departments and agencies, Washington, DC, September 8, 2011, http://www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/informing-consumers-through-smart-disclosure.pdf.
[71] Richard P. Larrick and Jack B. Soll, "The MPG Illusion," *Science* 320, no. 5883 (2008): 1593–94.
[72] Environmental Protection Agency and Department of Transportation, "Revisions and Additions to Motor Vehicle Fuel Economy Label," *Federal Register* 76, no. 129 (2011): 39478–587.

treatments in the future.[73] To combat this problem, private firms have used targeted reminders to increase patient adherence. For example, Vitality, a firm that specializes in selling smart pill bottles, created the GlowCap bottle, which glows and emits a sound if a patient misses a dose.[74] In addition, the bottles allow patients to request a prescription refill with the push of a button.

Feedback can also be a type of action prompt. For example, the EPA's Energy Star logo label for appliances and the fuel economy label for vehicles both prompt consumers to take energy costs into account when making purchases.

Salience-raising mechanisms. Another way to counter consumer bias resulting from scarce self-control is to raise the salience of a desired action. Policymakers can use the power of social norms or social influence to help consumers take action while letting consumers decide exactly what action to take. Research shows that social comparisons are effective in incentivizing consumers to take action.[75] For example, the energy analytics company Opower uses social norms to help consumers reduce their energy usage and save money through lower energy costs.[76] Opower's Home Energy Report, which is included in each customer's utility bill, shows not only the customer's own energy use but also how it compares to the average use of the customer's neighbors. By appealing to social norms, Opower has nudged consumers to reduce

[73] Viswanathan et al., "Interventions to Improve Adherence to Self-Administered Medications for Chronic Diseases in the United States: A Systematic Review."
[74] Arundhati Parmar, "Start-up Developing Smart Pill Bottle Targets HIV, Cancer, Transplant Meds and Speciality Pharmacies," *MedCity News*, January 2, 2013, http://medcitynews.com/2013/01/start-up-developing-smart-pill-bottle-targets-hiv-cancer-transplant-drugs-and-speciality-pharmacies/.
[75] P. Wesley Schultz et al., "The Constructive, Destructive, and Reconstructive Power of Social Norms," *Psychological Science* 18, no. 5 (2007): 429–34; Noah J. Goldstein, Robert B. Cialdini, and Vladas Griskevicius, "A Room with a Viewpoint: Using Social Norms to Motivate Environmental Conservation in Hotels," *Journal of Consumer Research* 35, no. 3 (2008): 472–82; Robert B. Cialdini et al., "Managing Social Norms for Persuasive Impact," *Social Influence* 1, no. 1 (2006): 3–15.
[76] Hunt Allcott, "Social Norms and Energy Conservation," *Journal of Public Economics* 95, nos. 9–10 (2011): 1082–95.

their energy consumption by 2 percent.[77] Other examples of social comparison include the Energy Star logo label, which conveys the EPA's stamp of approval of an appliance's energy efficiency and environmental characteristics. Similarly, the new fuel economy label grades each vehicle on fuel efficiency and greenhouse gas emissions compared to similar vehicles in the same class.

In addition to social norms, policymakers can use priming to raise the salience of future outcomes in intertemporal choices. For example, consumers can be encouraged to think of their older selves when making decisions about their financial future. By making the outcomes of their retirement decisions more salient to consumers, priming increases consumers' total savings.[78] Energy efficiency labels may have a similar effect by drawing consumers' attention to energy usage at the time of purchase.

Ambiguous Nudges

In some cases, the distinction between paternalistic and nonpaternalistic nudges blurs. This is especially true in cases where the choices are binary. If one choice is a potentially biased option, the other choice will be the optimal choice by default. Consequently, policies that attempt to counter biases and those that impose the policymaker's idea of the optimal choice will look effectively the same. In such cases, a nonpaternalistic policy may be essentially impossible, and any policy will necessarily impose an expert-identified optimal choice.

For example, in the case of medication adherence, patients have only two possible choices—to take their medication as prescribed or not to do so. Because there is little benefit

[77] Ibid.
[78] Hal E. Hershfield et al., "Increasing Saving Behavior through Age-Progressed Renderings of the Future Self," *Journal of Marketing Research* 48 (2011): S23–37.

to "partial" adherence, it is effectively equivalent to nonadherence. One commonly used nudge to improve medication adherence is to ask pharmacies to stress to consumers the importance of continuous adherence.[79] Yet a pharmacist consultation—a salience-raising mechanism—will necessarily advocate for a specific "correct" outcome: to continue taking the medication as prescribed.

5. Comparing Approaches

With any public policy, regulators must minimize the potential for harm. Given the ample opportunity for error on the part of regulators with regard to nudges, we must examine the potential for harm to consumers from either approach if regulators get the nudges wrong. A policy's effectiveness is equally important. The goal of nudges is to produce behavioral change. Less effective nudges would be less useful to policymakers.

Another major concern for public policy is accountability. Policymakers must be able to determine whether a particular policy is working and whether it should be modified or abolished. However, the same knowledge problems that hamper policymakers' ability to correctly identify consumers' optimal choice make it difficult to evaluate the effect of nudges. Policymakers can certainly measure changes in consumer behavior in response to nudges and check whether a nudge produced the expected change. But this is not the same as measuring improvement in consumer welfare. A nudge would improve consumer welfare if it moved consumers closer to their optimal choice. Yet without knowing what constitutes the optimal choice for consumers, policymakers cannot tell with certainty if the nudge actually improved consumer welfare.

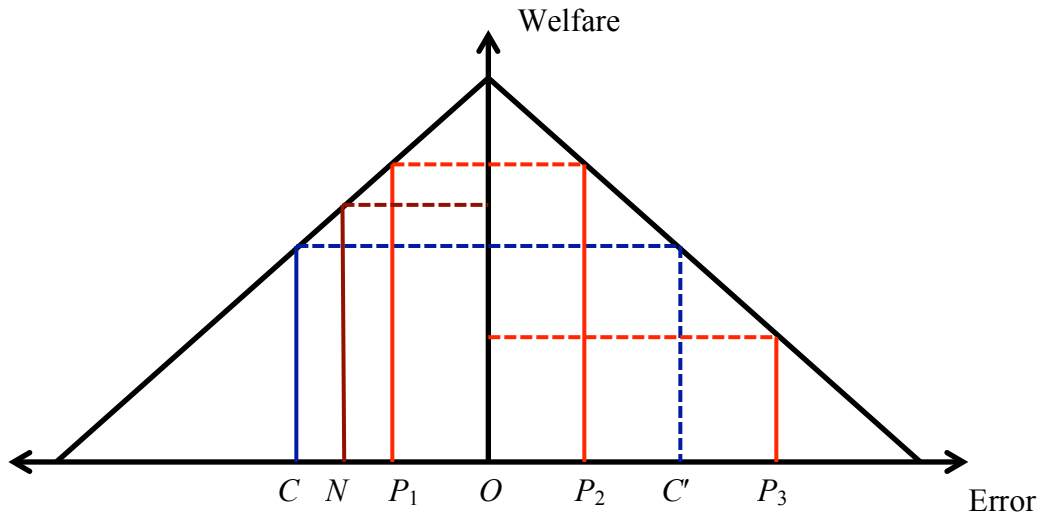
[79] Hayden B. Bosworth et al., "Medication Adherence: A Call for Action," *American Heart Journal* 162, no. 3 (2011): 412–24.

Impact of Error

There are four potential choices that consumers can make either voluntarily or under the influence of nudges: the optimal, nonbiased choice *O* that maximizes consumer welfare; the consumer's biased voluntary choice *C*; the consumer's choice under paternalistic nudges *P*; and the consumer's choice under nonpaternalistic nudges *N*. With these choices, there are three possible scenarios in which expert error can affect the benefit of nudges.

Scenario 1: Regulators correctly estimate bias but misestimate the magnitude. In the case of paternalistic nudges, if regulators underestimate the magnitude of bias, they will push consumers to a choice P_1 that is less biased than the consumer's actual choice *C* but still not at the optimal choice *O* (see figure 2). If regulators misestimate the direction of bias, their imposed option P_2 may still be closer to the optimal choice than the consumer's actual choice. Only if they misestimate consumer bias by more than its magnitude *C*′ will consumers be worse off at the imposed option P_3.

Figure 2. Regulators Correctly Identify Bias and Misestimate Magnitude



Consider the example of fuel efficiency standards that seek to counter consumer bias. Consumers may fail to purchase fuel-efficient vehicles because they do not fully consider the estimated savings in fuel costs. However, if the standard is not sufficiently stringent, consumers may not maximize long-term savings. If it is too stringent, the fuel cost savings may not compensate for the higher purchase price of a more efficient vehicle.

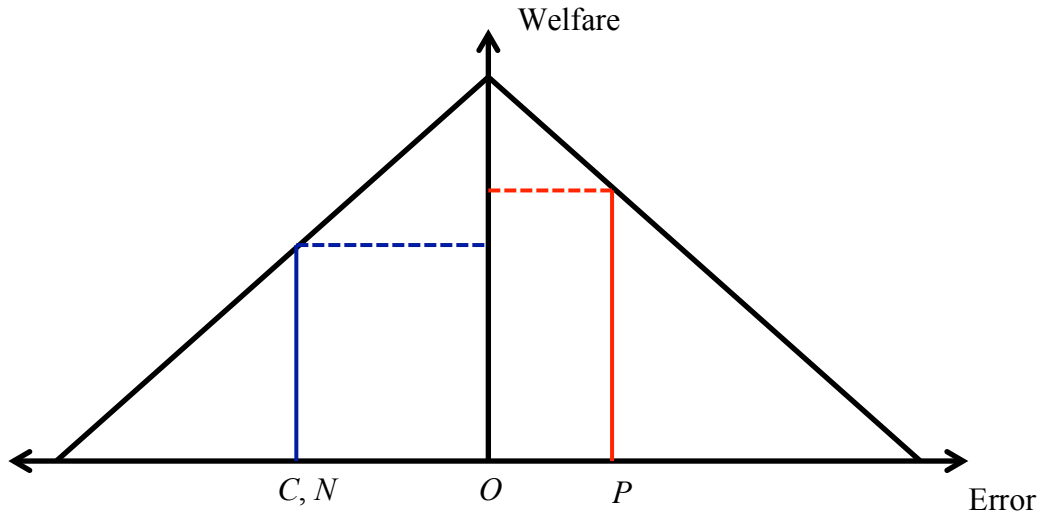
In case of nonpaternalistic nudges, regulators' estimates of the magnitude of bias are less relevant. Nonpaternalistic nudges do not vary on the basis of the underlying magnitude of consumer biases; for example, it would be difficult to overremind someone to take a medication, or make a college application *too* streamlined and straightforward. To the degree they are effective, consumer choice *N* under nonpaternalistic nudges will likely get closer to the consumer's optimal choice *O* than the consumer's actual choice *C*.

Scenario 2: Regulators assume the wrong bias. If regulators misidentify consumer bias, paternalistic nudges not only will fail to correct the underlying bias but also may impose a different suboptimal behavior on consumers (see figure 3). For example, the regulation to decline overdraft protection by default assumes that consumers simply procrastinate and fail to opt out of overdraft protection on their own. But if consumers fail to understand that they have alternatives to overdraft protection, they will not enroll in one of those options. Failure to enroll may leave them unable to cover emergency expenses, because they no longer have overdraft protection or any other arrangement to cover unforeseen expenses.

Nonpaternalistic nudges that are applied to a wrong bias are likely to be ignored. For example, if students fail to complete their college applications because they have a hard time understanding the process and its requirements, reminding them to finish will likely have little

effect. In such cases, a nudge will fail to address the bias and thus not change consumer behavior. A student's choice *N* under nonpaternalistic nudges will be the same as the prenudge choice *C*.

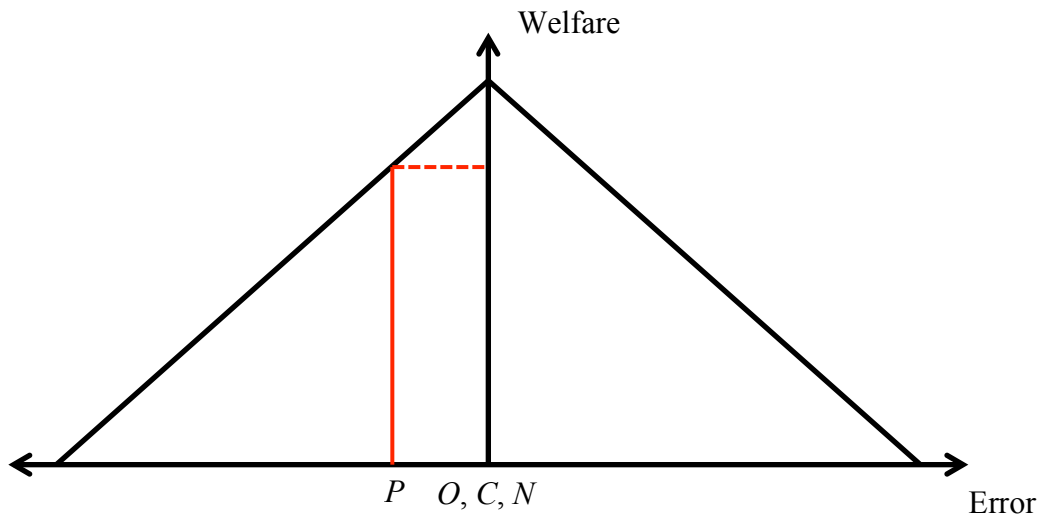
Figure 3. Regulators Assume Wrong Bias



Scenario 3: Regulators wrongly assume bias. If regulators see bias when consumer behavior is rational, paternalistic nudges will impose bad choices on consumers (see figure 4). Because consumers are already at their optimal choice, paternalistic nudges will only push them away from the optimal choice. The distance between consumer optimal choice *O* and the choice imposed by paternalistic nudges *P* will equal expert error. For example, if employees are already saving optimally for retirement through an external plan, signing them up by default may cause them to save too much.

Similar to the second scenario, nonpaternalistic nudges are likely to be ignored and will not push consumers away from their optimal choice. Consumer choice under nonpaternalistic nudges *N* will be the same as the actual choice *C* and optimal choice *O*.

Figure 4. Regulators Wrongly Assume Bias



As seen from these scenarios, when regulators correctly identify consumer bias, both paternalistic and nonpaternalistic nudges can reduce consumer bias and improve consumer welfare. However, paternalistic nudges can still push too far and harm consumers instead of helping them. When regulators are wrong about underlying consumer bias, paternalistic nudges push consumers away from the optimal choice and leave them worse off than they would be in the absence of nudges. Nonpaternalistic nudges leave consumer choices intact.

Consequently, paternalistic nudges have the potential to either help or harm consumers depending on the type and severity of expert error. Nonpaternalistic nudges help consumers when regulators are correct but do no harm when regulators are wrong.

Effectiveness

The impact of nudges can be tempered by their effectiveness and consumer opt outs. Many paternalistic nudges (e.g., defaults, cues, automation) are structured such that consumers can either follow the nudge and choose the regulator's preferred option or opt out of the nudge

completely. If regulators are correct, paternalistic nudges eliminate bias completely; if they are wrong, they may steer consumers in the wrong direction. For example, if an employer sets up a default contribution rate to a retirement plan, most employees will likely stick with the default. If the employer chooses the correct contribution rate, it eliminates the bias completely. If the employer makes the wrong choice, most employees will be stuck with suboptimal contributions.

In contrast, nonpaternalistic nudges may have less-than-full effect. For example, a streamlined FAFSA may increase completion rates but is unlikely to be 100 percent effective. If regulators are correct, nonpaternalistic nudges may be less effective in reducing consumer bias; if regulators are wrong, the nudges will simply be ignored.

Note that some paternalistic nudges may also have less-than-full effect. For example, the Metropolitan Museum of Art in New York City does not charge for admission; instead, it recommends a $25 donation, with the ultimate donation amount left up to visitors.[80] By recommending a specific amount, the museum anchors visitors' expectations of an appropriate donation amount. As a result of this nudge, many visitors do pay the recommended donation amount, but quite a few do not. The average donation amount of $11, while more than zero, is considerably less than the recommended $25.

Another factor that influences nudge effectiveness is the rate of consumer opt outs. In the case of paternalistic nudges that have full effect, consumer opt outs will result in a bifurcated outcome. Some consumers will choose the regulator-imposed choice *P*, while others will opt out of the nudge and remain with their original choice *C*. In the case of paternalistic nudges with less-than-full effect, such as the anchoring example above, consumer opt outs will result in a continuum of choices between the original choice *C* and the regulator-imposed choice *P*.

[80] Sarah Lyall, "Seeking Clarity on Fees at the Metropolitan Museum," *New York Times*, October 7, 2013, http://www.nytimes.com/2013/10/08/arts/design/seeking-clarity-on-fees-at-the-metropolitan-museum.html.

For nonpaternalistic nudges, the varying degree of nudge effectiveness for different consumers will produce a continuum of consumer choices between the opt-out choice *C* and the optimal choice *O*. Note that this continuum applies only in the first scenario, when regulators correctly identify consumer bias. In the other two scenarios, consumers ignore nonpaternalistic nudges and stay with their original choice *C*.

Case Study: Medication Adherence

To examine how paternalistic and nonpaternalistic interventions stack up, one can compare them in a specific policy context. One area where behavioral interventions are common and can have substantial positive impact is that of long-term medication adherence for patients with chronic conditions. Medication adherence presents a classic behavioral problem because it pits future benefits against immediate costs. Patients with chronic conditions such as high cholesterol, hypertension, or diabetes are often prescribed a long course (six months or longer) of preventive medication to reduce the chances of future medical complications that may require more aggressive treatment and hospitalization.[81] The benefits to patients are clear: (1) a lower chance of worsening health and (2) medication costs that are lower than the avoided costs of more aggressive treatments and hospitalization.[82] Yet many patients fail to either start or complete the prescribed course of treatment.

From the nudging perspective, the issue of medication adherence is interesting for several reasons. First, it is a major health issue; by some estimates the cost of medication nonadherence

[81] Bosworth et al., "Medication Adherence"; Lars Osterberg and Terrence Blaschke, "Adherence to Medication," *New England Journal of Medicine* 353, no. 5 (2005): 487–97.
[82] Viswanathan et al., "Interventions to Improve Adherence to Self-Administered Medications for Chronic Diseases in the United States: A Systematic Review."

falls between $100 billion and $300 billion.[83] Second, it presents a clear intertemporal tradeoff between the present costs and future benefits of a patient's actions. Third, the reasons that patients fail to take prescribed medications vary and can be rational or involve behavioral biases.[84] Effective interventions require accurate diagnosis of the underlying reason for nonadherence. Yet given the range of possible causes, policymakers may get it wrong. Consequently, we can examine the advantages and disadvantages of paternalistic and nonpaternalistic interventions under the scenarios described in the previous section.

Table 2. Causes of and Interventions for Medication Nonadherence

Causes	Potential Interventions
Behavioral	
Low health literacy	Simplified instructions Provide instructions to a family member
Flawed mental model	Consultation with doctor or pharmacist Follow-up call from doctor or pharmacist
Forgetfulness	Smart pill bottles "Calendarized" packaging Reminder apps
Procrastination	Smart pill bottles (that renew prescriptions automatically) Phone call from pharmacist Automated delivery
Nonbehavioral	
Cost prohibitive	Switch to generic Lower copay
Language barriers	Provide instructions to a family member Provide instructions in native language

Sources: American College of Preventive Medicine, "Medication Adherence: Improving Health Outcomes," 2011, http://www.acpm.org/?Adherence; Hayden B. Bosworth et al., "Medication Adherence: A Call for Action," *American Heart Journal* 162, no. 3 (2011); P. Michael Ho, Chris L. Bryson, and John S. Rumsfeld, "Medication Adherence: Its Importance in Cardiovascular Outcomes," *Circulation* 119, no. 23 (2009); Lars Osterberg and Terrence Blaschke, "Adherence to Medication," *New England Journal of Medicine* 353, no. 5 (2005).

[83] Ibid.
[84] Osterberg and Blaschke, "Adherence to Medication"; P. Michael Ho, Chris L. Bryson, and John S. Rumsfeld, "Medication Adherence: Its Importance in Cardiovascular Outcomes," *Circulation* 119, no. 23 (2009): 3028–35.

The medical literature identifies a number of potential reasons for patients' failure to complete a course of treatment (summarized in table 2). For example, patients may not understand the instructions they are given or may be overwhelmed by complex information. This problem may be caused by patients' low literacy levels or by doctors' use of medical jargon and poor communication skills. Alternatively, some patients may have flawed mental models and may believe that completing an entire course of medication is unnecessary. Some patients have every intention of taking their medications regularly, and even fill their prescriptions, but then forget. Other patients procrastinate and fail to fill their prescriptions regularly.

Crucially, the reasons for medication nonadherence are not always behavioral. In some cases, real barriers prevent patients from following through with a full course of treatment. The most obvious barrier is the cost of medication. Low-income individuals may not be able to afford a long course of treatment, especially with expensive drugs. Another potential barrier is language. Patients with limited English proficiency may not understand a doctor's instructions if they are delivered exclusively in English.

Each cause may be addressed by a different set of interventions. In case of low healthcare literacy, a doctor may attempt to simplify instructions by using pictures, limiting the amount of information, and avoiding medical jargon.[85] Alternatively, the doctor may provide instructions to a family member who has a higher literacy level. Both interventions attempt to simplify the process and thus fall under the nonpaternalistic nudge column.

In the case of a flawed mental model, a patient's doctor or pharmacist may consult with the patient (during an office visit or a follow-up phone call) to stress the importance of taking the medication and of following through with the entire course of treatment. Patients generally

[85] American College of Preventive Medicine, "Medication Adherence: Improving Health Outcomes," 2011, http://www.acpm.org/?Adherence.

feel compelled to follow their doctors' advice in what is known as the "white coat" effect.[86] This intervention uses social influence to change the patient's behavior and thus is a nonpaternalistic nudge.

Healthcare providers can counter patients' forgetfulness through a variety of reminder technologies. They can dispense medication in smart pill bottles, which begin to glow and emit a sound if a dose is missed.[87] A low-tech version of this idea is to use "calendarized" packaging, so that patients can easily identify whether they missed a dose.[88] Alternatively, patients can use one of many reminder apps that alert them to take their medication. These interventions use reminders and thus are nonpaternalistic nudges as well.

Healthcare providers can address patients' procrastination through either paternalistic or nonpaternalistic nudges. For example, a provider can set up a service that would automatically mail a new supply of medication to their patients each month unless patients chose to opt out of the automatic delivery service. This would be a classic paternalistic nudge. Note that current automatic refill and delivery programs still require the patient to sign up for the service.[89] To our knowledge, no provider offers a service that requires the patient to opt out.

Nonpaternalistic alternatives include simplifying the refill process or using social influence to encourage patients to refill prescriptions. In the first case, healthcare providers can use smart pill bottles that enable patients to order a refill by pushing a button located on the

[86] Joyce A. Cramer et al., "Medication Compliance and Persistence: Terminology and Definitions," *Value in Health* 11, no. 1 (2008): 44–47; Alvan Feinstein, "On White-Coat Effects and the Electronic Monitoring of Compliance," *Archives of Internal Medicine* 150, no. 7 (1990): 1377–78.
[87] Parmar, "Start-up Developing Smart Pill Bottle."
[88] Bosworth et al., "Medication Adherence."
[89] See, for example, Costco Pharmacy, "Prescription Auto Refill Program," http://www.costco.com/pharmacy/prescription-auto-refill-program.html.

bottle's cap.[90] Similarly, they can provide the opt-in version of the automatic refill and delivery programs described previously. In the second case, patients falling behind on their prescription refills would receive a reminder call from their pharmacy.

When cost is the root of the problem, healthcare providers have several options. Doctors can prescribe cheaper generic versions instead of brand prescriptions.[91] In addition, health insurance companies could lower copay amounts or offer assistance to low-income patients. Because insurance companies often end up paying for the higher cost of hospitalization and more aggressive treatment when a chronic condition goes untreated, they have an incentive to encourage medication adherence.

Finally, healthcare providers can address language barriers by providing instructions to a patient's English-speaking family member. Alternatively, they may hire multilingual personnel.

Because patients fail to take their prescribed medications for different reasons (sometimes more than one), there is substantial room for misidentifying the cause and applying the wrong intervention. Let's examine the potential downsides of such errors under the scenarios outlined in the previous section. Note that policymakers can choose between paternalistic or nonpaternalistic nudges only in the case of procrastination. Consequently, we assume that policymakers diagnose the underlying bias as procrastination in each scenario below.

Baseline scenario: Regulators correctly estimate bias. The one scenario the previous section did not discuss is that of policymakers correctly identifying the behavioral bias and its magnitude ($P = O$). This scenario is important to understanding the tradeoffs. Consider the case in which a

[90] Adrianne Jeffries, "Smart Pill Bottle Measures Meds Using Touchscreen Technology," *Verge*, October 8, 2012, http://www.theverge.com/2012/10/8/3473218/smart-pill-bottle-adheretech-capacitance.
[91] Bosworth et al., "Medication Adherence."

patient fails to take medication owing to procrastination and the policymaker correctly identifies the bias. Because the policymaker's diagnosis is correct, the impact of error criteria is not relevant. The nudges differ primarily in their effectiveness.

If the policymaker chooses a paternalistic nudge and by default enrolls the patient in an automatic delivery service, the intervention eliminates the hassle of ordering and picking up the prescription. If procrastination is the patient's only bias, the patient will then complete the entire course of treatment. The intervention is effective and completely offsets the consequences of the behavioral bias.

If the policymaker chooses a nonpaternalistic nudge, results may vary. Simplifying the process through automatic refill orders on a smart pill bottle will likely have an effect similar to that of automatic delivery as it, too, reduces the hassle of ordering and picking up a prescription. It is likely to be somewhat less effective than automatic delivery because it does not eliminate the hassle entirely. However, attempts to influence the patient with a pharmacy call may not be as effective. The social influence approach gives the patient an extra push to fill out the prescription but does nothing to reduce the hassle related to the process. For many patients, this push may not be enough.

Scenario 1: Regulators correctly estimate bias but misestimate the magnitude. In contrast to other examples given here, medication adherence happens to be a case for which there is little doubt as to what constitutes the best target outcome for the patient: the patient needs to complete the entire course of medication (with an obvious exception for cases when the medication causes major negative side effects). Thus, to examine the impact of error under the first scenario, one

must assume that information on the proper length of treatment is not readily available to the policymaker designing the nudge.

Consider a case in which the policymaker correctly identifies the underlying bias as procrastination but does not know for how long the patient must take the medication. With a paternalistic nudge, the policymaker must guess the correct duration for an automatic delivery service. If the guess is too low, the patient will not complete the full course of treatment. If the guess is too high, the patient will complete the full course of treatment and receive the desired health benefits, but the patient will also end up paying for extra medication. Depending on the cost, the extra expense could be substantial, although unlikely to offset the health benefits of the treatment. (We assume the patient knows the prescribed length of treatment and will discontinue medication once the treatment is complete.)

If the policymaker opts for a nonpaternalistic nudge, the results may vary depending on the intervention's effectiveness. Crucially, it is the patient who determines the length of treatment by ordering refills. Thus, the patient may not complete the full course of treatment but will not order any extra medication. The patient avoids the potentially high wasted cost of medication, but these savings may not offset the potential harms of not completing the prescribed course of treatment.

Scenario 2: Regulators assume the wrong bias. Consider the case in which the policymaker wrongly assumes that procrastination is the reason for medication nonadherence. If the policymaker chooses a paternalistic nudge and enrolls the patient in automatic delivery, the patient will receive the medication and pay for it but will not actually take it. If the patient does not understand the need to take the medication, simply making the medication readily available

will not change the patient's behavior. Similarly, if the patient forgets to regularly take the medication, having more pill bottles lying around will not alter the outcome. Thus, the paternalistic nudge imposes the costs of medication but does not deliver the health benefits.

If the policymaker opts for a nonpaternalistic nudge, at worst it will be ignored. For example, with low health literacy or a flawed mental model, the patient given a smart pill bottle with an easy-refill button will fail to request a refill. Because the smart pill bottle addresses both forgetfulness and procrastination, it may actually be effective in reminding the patient to take the medication. In contrast, a phone call from the patient's pharmacy will likely have no impact on a forgetful patient, but such a call may actually help the patient with low health literacy or a flawed mental model. Thus, nonpaternalistic nudges may not deliver the desired health benefits, but such nudges do not impose additional costs.

Scenario 3: Regulators wrongly assume bias. Finally, consider the case in which the policymaker wrongly assumes that medication nonadherence is caused by procrastination when, in fact, it is driven by prohibitive medication cost. In the case of a paternalistic nudge, the patient will receive and take the medication and therefore receive the health benefits. At the same time, the patient will be forced to pay for the medication even if it breaks the patient's budget. Consequently, the patient may not have sufficient funds to cover other necessary expenses, such as rent, food, or even other medication. In that case, the cost of the paternalistic nudge goes beyond the cost of the medication. Depending on the patient's financial situation, the harm of imposing such costs may exceed the health benefits of taking the medication.

With nonpaternalistic nudges, the patient may simply ignore the smart pill bottle, but a call from the pharmacy may be beneficial. The pharmacist can switch the prescription to a cheaper

generic version or guide the patient to a payment assistance program. Thus, the nonpaternalistic nudge may not deliver health benefits, but it does not impose any costs on the patient.

Heterogeneity of Errors

One important lesson from the medication adherence example is the need to account for differences among patients. Different patients may exhibit different biases or face nonbehavioral barriers to medication adherence. To address these causes, policymakers need to use a variety of behavioral and nonbehavioral interventions on the same population of patients. But if policymakers cannot easily differentiate patients with different behavioral biases, they cannot effectively target their nudges. Consequently, policymakers will have to apply all nudges to all patients. For example, each patient may have to receive a call from a doctor's office explaining the importance of completing the course of medication when only some patients may have flawed mental models. Similarly, all patients may have to be enrolled in automatic delivery when only some patients may procrastinate. What this means in practice is that nudges will affect patients under not just one but all scenarios at once. Thus, for some patients, automatic delivery will be exactly the right intervention, but for others it will address the wrong bias or wrongly assume bias where none exists.

This case highlights the important difference between paternalistic and nonpaternalistic nudges. Paternalistic nudges provide the most effective solution for the group for which they address the correct bias, but they harm every other group that has a different underlying cause. In contrast, nonpaternalistic nudges may not be as effective when applied to the correct bias, but they do not harm those who have a different underlying cause. Consequently, different nonpaternalistic nudges can be safely combined and applied to an entire population with heterogeneous causes of error.

6. Conclusion

Discussions about nudges typically assume they are necessarily paternalistic. Advocates promote them as a less offensive version of paternalism, a version which imposes the paternalist's choices on consumers yet grants consumers an opportunity to opt out. Critics argue that soft paternalism still suffers from many of the same epistemic challenges as hard paternalism. In addition, they point out that the very effectiveness of some nudges shows that opting out may not be as easy and free of costs as advocates claim.

Still, nudges need not be paternalistic. Policymakers can use behavioral interventions to counter consumer biases and help consumers make better choices without imposing a specific choice on consumers. Such nonpaternalistic nudges can improve consumer choice by providing helpful feedback or timely reminders or by simplifying the decision-making process.

The main difference between paternalistic and nonpaternalistic nudges is in the way they address the epistemic challenges that policymakers face in constructing policies. Paternalistic policies require policymakers to identify the optimal choice for consumers in an effort to push them toward the optimal choice and away from their current biased choice. But if policymakers misdiagnose a bias (by assuming the wrong bias or by assuming bias where none exists), they risk harming consumers by pushing them into a suboptimal choice. In contrast, nonpaternalistic nudges rely on making it easier for consumers to make better choices but do not require policymakers to define an optimal choice.

Comparison of the two types of nudges points to a tradeoff. On the one hand, nonpaternalistic nudges are less likely to harm consumers. If policymakers correctly identify the bias, the nudge is likely to help consumers make a better choice. If policymakers misidentify the bias, consumers will likely ignore the nudge. In contrast, paternalistic nudges

can impose policymakers' mistakes on consumers and push them toward suboptimal choices. This possibility becomes particularly important when suboptimal choices in a target population are caused by a variety of behavioral and nonbehavioral barriers. Nonpaternalistic nudges allow policymakers to use a number of different behavioral interventions at the same time. These nudges will help consumers for whom the intervention matches the bias but will not harm the remaining consumers.

On the other hand, paternalistic nudges may be more effective. Paternalistic nudges impose a specific choice on consumers. If policymakers set the optimal choice as the default, consumers who stick with the default option will make the optimal choice. In contrast, nonpaternalistic nudges may have a more incremental effect. For example, an energy efficiency label that informs consumers about expected energy costs may reduce their present bias but not eliminate it.

Ultimately, nonpaternalistic nudges may offer policymakers a useful alternative to paternalistic policies. Because nonpaternalistic nudges do not impose a specific choice on consumers, such nudges avoid the ethical objections related to paternalistic nudges. In addition, they allow policymakers to eschew the epistemic challenges of paternalistic policies and avoid harming consumers by pushing them toward suboptimal choices.