PAR PUBLIC ADMINISTRATION REVIEW

Lars Tummers
Utrecht University

Viewpoint
Stephen E. Condrey and Tonya Neaves, Associate Editors

Public Policy and Behavior Change

Abstract: *Changing behavior is often necessary to tackle societal problems, such as obesity, alcohol abuse, and debt problems. This article has two goals. First, it aims to highlight how governments can try to change the behavior of citizens. Government can use policy instruments to do so, including incentives, bans and mandates, information campaigns, and nudges. However, the government should not be a manipulator that applies policy instruments without societal support. Therefore, the second goal of the article is to provide a conceptual framework that helps analyze whether public policies to stimulate behavior change are effective and supported by key stakeholders. This conceptual framework has five criteria indicating the extent to which there is effective and supported behavior change: the policy is (1) effective and (2) efficient, and there is support for the policy among (3) politicians, (4) implementing organizations, and (5) citizens. The article ends with suggestions to study public policy aimed at behavior change.*

Lars Tummers is professor of public management and behavior in the School of Governance at Utrecht University. His main research interests are public management, stereotypes, leadership, and behavior change. Related to this, he is developing—with others—an interdisciplinary field combining psychology and public administration, called *Behavioral Public Administration*.
E-mail: l.g.tummers@uu.nl.

Changing behavior is often necessary to tackle societal problems. If we want citizens to get into debt less often, we need to analyze how we can help these people save more and spend less (Brown et al. 2016). If we want people to be healthier, we need to make sure people exercise more and consume less sugar and fat (Warburton, Nicol, and Bredin 2006). If we want to reduce student absenteeism, we must find ways to stimulate students to go to school (Rogers and Feller 2018). There are policy instruments that governments can use to change behavior. Simply put, these include financial incentives, bans and mandates, information campaigns, and, more recently, nudges.

Policy instruments offer concrete opportunities for governments to stimulate behavior change. However, governments should not be manipulators that apply the latest behavior change "tricks" without broad support, especially when such tricks use human limitations and biases. Governments need support for behavior change. Public administration studies show what can happen when such support is lacking. For instance, the work of O'Leary (2010) on guerrilla government shows that public employees who do not support governmental actions can sabotage public policies. Hood (2006) vividly illustrates how public employees can "game" the extensive system of managing public services by targets and which strategies can be used to counter this. A recent overview of change management in the public sector (Kuipers et al. 2014) highlights the importance of support by key stakeholders in reforms. More tailored to behavior change interventions, John (2018) shows that various behavior change interventions are not supported by citizens and therefore can backfire. He also notes that using insights from behavioral science can improve the effectiveness of policy instruments.

In this article, I aim to provide a short and accessible overview that informs practitioners and scholars about a topic of importance—in this case, how public policies can engender behavior change on the part of citizens. (For a focus on politicians or public managers, see, e.g., Bellé, Cantarelli, and Belardinelli 2018; George et al. 2018; Nielsen 2014). I aim to answer two key questions. First, which policy instruments are available to change the behavior of citizens? I discuss four policy instruments: incentives, bans and mandates, communication campaigns, and nudges. Second, how can governments analyze whether behavior change interventions are effective and supported by key stakeholders? I will develop a conceptual framework with five criteria for effective and supported behavior change. This framework can be used to study behavior change by governments. The article ends with suggestions for scholars and practitioners to further understand and stimulate effective and supported public policies to stimulate behavior change.

Policy Instruments to Stimulate Behavior Change

Governments have a number of instruments to bring about behavior change. Traditionally, public administration scholars have distinguished the carrot,

Public Administration Review, Vol. 79, Iss. 6, pp. 925–930. © 2019 The Authors. *Public Administration Review* published by Wiley Periodicals, Inc. on behalf of The American Society for Public Administration.
DOI: 10.1111/puar.13109.

the whip, and the sermon (Bemelmans-Videc, Rist, and Vedung 1998).

The carrot stands for changing behavior by changing incentives. For instance, in a large overview study of 30 countries, Sierzchula et al. (2014) find that financial incentives are positively correlated with a country's electric vehicle market share. However, the effects of financial incentives are not always as expected (Gneezy, Meier, and Rey-Biel 2011). For instance, recent studies in the field of public administration highlight that small economic incentives may have no effect at all, making them very inefficient (Bellé and Cantarelli 2015; Voorberg et al. 2018), and that economic incentives can crowd out prosocial motivation (Bellé 2015).

In addition to the carrot, there is the whip. A smoking ban in public places is a clear case in which the government uses the proverbial whip to guide citizens' behavior. Menzies et al. (2006) analyze the health effects of the Scottish prohibition on smoking in confined public places and find that it was associated with significant early improvements in respiratory and sensory symptoms of bar workers. Mandates are also grouped in this category. An example of a mandate is compulsory education (Angrist and Krueger 1991; Oreopoulos 2006).

The third policy instrument is the sermon. Prototypical examples of the sermon are the information campaigns of government about, for example, not drinking alcohol until age 21. Various studies—often involving health behavior change—have analyzed the effects of information campaigns (Snyder et al. 2004). In addition, educational programs can be seen as ways of communicating and socializing people into desired behaviors.

The carrot, whip, and sermon are based on rational decision making. However, people do not make completely rational decisions, as we know from the groundbreaking work of Herbert Simon (1947); for recent discussions in public administration, see Battaglio Jr. et al. 2019; Grimmelikhuijsen et al. 2017). Policy makers can—and often should—use notions of bounded rationality for behavior change (Benartzi et al. 2017; Shafir 2013; Zamir and Teichman 2018). In their groundbreaking book *Nudge* (2008), Thaler and Sunstein describe how policy makers can use such insights. A nudge is a way to change behavior without prohibiting options or significantly changing its costs. An example of a nudge is clarifying social norms. Both psychologists and sociologists have highlighted the importance of social norms (Cialdini and Trost 1998; March and Olsen 1989). Clarifying social norms can change behavior. For instance, Hallsworth et al. (2017) show that including the social norm message "Nine out of ten people pay their tax on time" causes more people to pay their taxes on time. Table 1 shows an overview of the four policy instruments (for a detailed discussion, see Howlett 2018).

Resistance to Behavior Change

The effectiveness of policy instruments is context dependent. For instance, generally, changing a default—such as changing the default to automatically saving for retirement—is very effective (Jachimowicz et al. 2019). However, changing the default can have negative effects when strong stakeholders oppose it (Barr, Mullainathan, and Shafir 2013). An example can clarify this. In a detailed study, Willis (2013) analyzes the effect of a default change in the American banking sector. She discusses that in the United States, you can make a payment when you do not have enough money in your account. This is known as "overdraft coverage." Suppose you want to buy a cup of coffee, but you have too little money in your account. You can still pay for the coffee by using overdraft coverage. However, you pay quite a large fee. This means that your cup of coffee does not cost $3 but $30, as you pay a $27 fee.

Overdraft coverage is very lucrative for banks. Willis notes that in 2009, consumers spent around $20 billion on overdraft fees in ATM and debit transactions. Especially people with lower incomes are paying: they often have too little money in their account. The U.S. government wanted to adjust this. Changing the default seemed an excellent way, given that it had been so successful in other contexts. In 2010, the government required a change in the default to *not* having overdraft coverage. However, banks were unwilling to give up this profitable part of their business (see also Barr, Mullainathan, and Shafir 2013). They used various tactics—paradoxically, often based on behavioral insights—to opt customers into overdraft coverage. For instance, customers only had to press a button at the ATM to override the default. About 50 percent of customers actively registered for overdraft coverage. They were, again, often people with lower incomes. The government's intervention failed miserably (Willis 2013). The costs for current account coverage have even gone up, from $27 on average to $30–$35.

A Conceptual Framework for Behavior Change by Governments

The example of the banking sector shows that the government must take the impact of stakeholders into account when developing public policies to stimulate behavior change. This is also linked to the "logic of appropriateness" and previous policy experiences (Lindblom 1959; March and Olsen 1989). In this article, I distinguish three types of support: political support, organizational support, and personal support. The corresponding acronym is POP, an abbreviation for popular. If the behavior change is supported politically, organizationally, and personally, it is *POPular*.

To analyze the extent to which a proposed behavior change is both effective and supported, practitioners and scholars can use five criteria. These criteria are listed in table 2. There are, of course, several additional criteria that may be important (see, e.g., March and Olsen 1989; Michie, van Stralen, and West 2011). However, as Goldstein and Gigerenzer (2011, 392) state, "the beauty of simple

Table 1 Four Policy Instruments for Behavior Change by Governments

	1. Carrot	2. Whip	3. Sermon	4. Nudge
Change via	Incentives	Mandates and bans	Information campaigns	Choice architecture
Slogan	Reward desired behavior!	Make unwanted behavior illegal!	Tell what desired behavior is!	Make desired behavior easy!
Example	Subsidize electric cars.	Prohibit possession of weapons.	Communication campaign for smoking cessation	Change default so people automatically save for retirement.

Table 2 Conceptual Framework for Public Policies to Engender Behavioral Change

Focus	Criterion	Short Description	Example Question
Behavior change	Effective behavior change	The degree to which the public policy produces the intended behavior change	To what extent does the public policy result in behavioral change?
	Efficient behavior change	The degree to which the public policy uses minimum resources to produce the intended behavior change	How much time and money is spent on this policy as compared to its results?
Support	Political support	The degree to which political parties back the public policy	To what extent do political parties support the public policy?
	Organizational support	The degree to which implementing organizations back the public policy	To what extent do organizations support the public policy?
	Personal support	The degree to which public service providers and citizens back the public policy	To what extent do public service providers and citizens support the public policy?

models is that one can easily discover their limits, that is, their boundary conditions, which in turn fosters clarity and progress." This can also help practitioners. I have therefore explicitly chosen to keep the framework relatively simple.

To illustrate these five criteria, I use a concrete case. In a recent high-quality article in the prestigious medical journal *The Lancet*, Hallsworth et al. (2016) test the power of social norms to ensure that doctors prescribe fewer antibiotics. One of the major drivers of antimicrobial resistance—a major societal problem in many countries (WHO 2014)—is prescription of antibiotics by general practitioners (GPs) when such antibiotics are not necessary. This is a serious concern, as at least 30 percent of antibiotics prescribed in U.S. physicians' offices and emergency departments are unnecessary (Fleming-Dutra et al. 2016).

The researchers identified GPs who prescribed antibiotics more often than average. These GPs probably, but not necessarily, prescribed too much. A randomly selected set of GPs received a letter stating that their general practice prescribed more antibiotics than 80 percent of their colleagues in their local area. In this way, the researchers highlighted the social norm. The GPs discovered that they deviated from the norm. This "nudge" provided the desired effect. The approximately 3,000 doctors who received the letter prescribed approximately 70,000 fewer antibiotics in six months. Interestingly, after re-randomization, a group of GPs received patient-focused information that promoted reduced use antibiotic use. Contrary to the nudge intervention, this "sermon" intervention had no effects on antibiotic items dispensed.

The five criteria for supported behavior change can be applied to the *Lancet* study. The first criterion focuses on the effectiveness of the intervention. If we operationalize effectiveness as reduced antibiotic prescribing, the nudge intervention was a resounding success, while the sermon intervention was ineffective. However, it is unclear how long the effects of the nudge intervention last. Should researchers keep sending messages to reduce antibiotic prescribing, or is one letter enough? Moreover, effectiveness is not only about reaching direct goals. Side effects can occur. Imagine that your doctor had received the "social norm" letter just before your visit and decided not to prescribe antibiotics to you, maybe because of this letter. You become sicker and end up in the hospital. If you had been given antibiotics, this would not have happened. Taking this into account, to what extent was the study a success? Multiple effects are possible, and denying or not measuring them gives a distorted image. Fortunately, such negative unintended consequences do not occur often (Arnold and Straus 2005). But the study would have been even stronger if the researchers had measured such side effects, as they acknowledge themselves (Hallsworth et al. 2016, 1751).

The second criterion concerns the efficiency of the intervention. Efficiency is the extent to which the intervention converts its resources economically into results to achieve the maximum possible outputs. In this case, the costs are fairly limited, and the effects are quite substantial. The researchers only sent letters, which—in the nudge intervention—led to less use of antibiotics. This is probably more efficient than, for instance, financially incentivizing GPs, which comes with a host of ethical complications.

The last three criteria focus on support for the intervention. The first criterion is about political support. To what extent is it politically feasible to implement such nudge interventions? Do political parties consider it appropriate that doctors prescribe fewer antibiotics because of psychological tricks? Although not much is known about political support specifically for using social norms to reduce antibiotic prescribing, much more is known about the general acceptance of nudges. Some politicians strongly support nudges, including Barack Obama (who appointed Cass Sunstein as administrator of the White House Office of Information and Regulatory Affairs) and David Cameron (who appointed Richard Thaler as an unpaid adviser and supported the Behavioral Insights Team, or nudge unit, within the U.K. Cabinet Office). However, political parties are less charmed by nudges or note that it differs per topic whether one can and may use nudges (Leggett 2014; Schubert 2017).

In addition to political support, support by organizations is relevant. The example of the American banks trying to override defaults shows how important support by the implementing organizations can be. As a result of strong resistance from banks, the policy became ineffective. Hence, there was a strong relationship between the first criterion (effectiveness) and the fourth (organizational support). This shows how the criteria can be related. In the case of antibiotic prescribing, it is unclear to what extent different organizations precisely support this social norm intervention. However, the trial was financially supported by Public Health England, which indicated that a major stakeholder supported it.

In addition to political and organizational support, there must be support from the individual public service providers and citizens. However, the researchers did not measure this support. In fact, the GPs and patients in the *Lancet* study did not know they were participating in an experiment. The researchers did not request their permission because they worried that doing so would cancel out the effects. This is understandable. However, recent studies have

shown that policy makers can be transparent about nudges without decreasing their effectiveness (Bruns et al. 2018). Furthermore, another option would be to measure attitudes toward the social norm intervention among a group of GPs and patients who were not part of the study (see, e.g., Sunstein, Reisch, and Kaiser 2019). This could indicate the extent to which GPs and patients would endorse such a behavior change intervention.

This example shows how the conceptual framework can be used. It moves beyond mere effectiveness of one goal. Instead, it takes into account positive and negative side effects, efficiency, and support from politicians, organizations, the implementing public service providers, and the public. The five criteria can be used by policy makers as a heuristic to check whether public policies to stimulate behavior change are suitable in specific contexts.

However, some remarks should be made. First, taking into account the wider institutional context is important. Some interventions may be very effective, efficient, and supported as stand-alone policies, but this may not be the case when combined with other policies. For instance, a recent study shows that introducing nudges may crowd out support for other policy instruments (Hagmann, Ho, and Loewenstein 2019). Furthermore, even within one dimension, there can be substantial heterogeneity. Behavioral interventions can be effective for one group while being ineffective for another, such as in the case of energy conservation nudges (Costa and Kahn 2013). Ultimately, designing public policies to stimulate behavior change is a normative activity (Fischer 2003; Oliver 2019).

Future Research into Behavior Change by Governments

In the coming years, scholars and practitioners can work together on research on public policy and behavior change through collaboration with practice and within science. I provide two future avenues for collaboration.

First, public administration scholars must collaborate more intensively with practitioners. This aligns with the broader call of public administration scholars to better connect science and society (Graffy 2008; Moynihan 2018), and with the development of *PAR* Viewpoint articles (Hall and Battaglio 2018). A fruitful way of collaborating would be to conduct experiments to test behavioral interventions in the field. This can be beneficial for society, as when Linos, Reinhard, and Ruda (2017) collaborated with the police force and used insights from behavioral science to reduce the racial gap of in the pass rate for a police exam. It can also benefit science by increasing our understanding of why certain interventions (fail to) work. For instance, Jachimowicz et al. (2018) used more than 200 field experiments by the company Opower to understand why social norms interventions to reduce energy use show high variability in effectiveness. I hope that in the coming years, more such collaborations will follow. I will work with others to achieve them.

Second, to further understand behavior change, we must collaborate with scholars outside public administration. Potentially interesting developments on behavior change can be found in diverse fields such as sociology (Smith and Christakis 2008), computer science (Hauser et al. 2018), and philosophy (Marlatt 2002). For instance, insights from cognitive science and psychology on compassion can be valuable. Many behavior change interventions are quite individualistic. *You* get a fine if you run a red light, *you* get a subsidy if you install solar panels, and *you* are nudged to become an organ donor. Little attention is paid to the fact that people can feel compassion. Compassion is broadly defined as valuing other people and caring about their welfare, but without necessarily feeling their pain (Bloom 2017). Can we change from an individualistic way of behavior change to behavior change geared toward compassion? Perhaps this is more effective, and there might also be more support for it. Insights from other disciplines might evoke novel ways to engender behavior change.

Conclusion

Changing behavior is often necessary to tackle societal problems. I highlighted four policy instruments that can stimulate behavior change: incentives, bans and mandates, communication, and nudges. However, the government should not be a manipulator that applies the latest policy instruments without broad support. The conceptual framework for effective and supported behavior change hopefully helps ask critical questions when studying behavior change by governments. New theory development and more collaboration between practitioners and scholars can help us understand how to achieve effective and supported behavior change. By collaborating with practitioners on important societal problems in need of behavior change, public administration can increasingly become a "design science" (Barzelay and Thompson 2010; Simon 1996)—a scientific field that helps practice tackle societal problems.

Acknowledgments

I would like to thank Jeremy Hall and Paul Battaglio and the anonymous reviewers for their constructive suggestions on previous versions of this article. This article is partly based on my inaugural lecture at Utrecht University. I acknowledge funding from NWO Grant 016.VIDI.185.017. Furthermore, I acknowledge that this work was supported by the National Research Foundation of Korea Grant, funded by the Korean Government (NRF-2017S1A3A2067636).

References

Angrist, Joshua D., and Alan B. Krueger. 1991. Does Compulsory School Attendance Affect Schooling and Earnings? *Quarterly Journal of Economics* 106(4): 979–1,014.

Arnold, Sandra R., and Sharon E. Straus. 2005. Interventions to Improve Antibiotic Prescribing Practices in Ambulatory Care. *Evidence-Based Child Health: A Cochrane Review Journal* 1(2): 623–90.

Barr, Michael S., Sendhil Mullainathan, and Eldar Shafir. 2013. Behaviorally Informed Regulation. In *The Behavioral Foundations of Public Policy*, edited by Eldar Shafir, 440–61. Princeton, NJ: Princeton University Press.

Barzelay, Michael, and Fred Thompson. 2010. Back to the Future: Making Public Administration a Design Science. Special issue. *Public Administration Review* 70: S295–97.

Battaglio, Paul, Jr., Paolo Belardinelli, Nicola Bellé, and Paola Cantarelli. 2019. Behavioral Public Administration ad fontes: A Synthesis of Research on Bounded Rationality, Cognitive Biases, and Nudging in Public Organizations. *Public Administration Review* 79(3): 304–20.

Bellé, Nicola. 2015. Performance-Related Pay and the Crowding Out of Motivation in the Public Sector: A Randomized Field Experiment. *Public Administration Review* 75(2): 230–41.

Bellé, Nicola, and Paola Cantarelli. 2015. Monetary Incentives, Motivation, and Job Effort in the Public Sector: An Experimental Study with Italian Government Executives. *Review of Public Personnel Administration* 35(2): 99–123.

Bellé, Nicola, Paola Cantarelli, and Paolo Belardinelli. 2018. Prospect Theory Goes Public: Experimental Evidence on Cognitive Biases in Public Policy and Management Decisions. *Public Administration Review* 78(6): 828–40.

Bemelmans-Videc, Marie-Louise, Ray C. Rist, and Evert Vedung, eds. 1998. *Carrots, Sticks and Sermons: Policy Instruments and Their Evaluation*. New Brunswick, NJ: Transaction Publishers.

Benartzi, Shlomo, John Beshears, Katherine L. Milkman, Cass R. Sunstein, Richard H. Thaler, Maya Shankar, Will Tucker-Ray, William J. Congdon, and Steven Galing. 2017. Should Governments Invest More in Nudging? *Psychological Science* 28(8): 1041–55.

Bloom, Paul. 2017. Empathy and Its Discontents. *Trends in Cognitive Sciences* 21(1): 24–31.

Brown, Meta, John Grigsby, Wilbert van der Klaauw, Jaya Wen, and Basit Zafar. 2016. Financial Education and the Debt Behavior of the Young. *Review of Financial Studies* 29(9): 2490–522.

Bruns, Hendrik, Elena Kantorowicz-Reznichenko, Katharina Klement, Marijane Jonsson, and Bilel Rahali. 2018. Can Nudges Be Transparent and Yet Effective? *Journal of Economic Psychology* 65: 41–59.

Cialdini, Robert B., and Melanie R. Trost. 1998. Social Influence: Social Norms, Conformity and Compliance. In *The Handbook of Social Psychology*, edited by Daniel T. Gilbert, Susan T. Fiske, and Gardner Lindzey, 151–92. New York: McGraw-Hill.

Costa, Dora L., and Matthew E. Kahn. 2013. Energy Conservation "Nudges" and Environmentalist Ideology: Evidence from a Randomized Residential Electricity Field Experiment. *Journal of the European Economic Association* 11(3): 680–702.

Fischer, Frank. 2003. *Reframing Public Policy: Discursive Politics and Deliberative Practices*. Oxford: Oxford University Press.

Fleming-Dutra, Katherine E., et al. 2016. Prevalence of Inappropriate antibiotic prescriptions among US ambulatory care visits, 2010–2011. *Journal of the American Medical Association* 315(17): 1864–73.

George, Bert, Martin Baekgaard, Annelien Decramer, Mieke Audenaert, and Stijn Goeminne. 2018. Institutional Isomorphism, Negativity Bias and Performance Information Use by Politicians: A Survey Experiment. *Public Administration*. Published electronically on February 7. https://doi.org/10.1111/padm.12390.

Gneezy, Uri, Stephan Meier, and Pedro Rey-Biel. 2011. When and Why Incentives (Do not) Work to Modify Behavior. *Journal of Economic Perspectives* 25(4): 191–210.

Goldstein, Daniel G., and Gerd Gigerenzer. 2011. The Beauty of Simple Models: Themes in Recognition Heuristic Research. *Judgment and Decision Making* 6(5): 392–95.

Graffy, Elisabeth A. 2008. Meeting the Challenges of Policy-Relevant Science: Bridging Theory and Practice. *Public Administration Review* 68(6): 1087–1,100.

Grimmelikhuijsen, Stephan, Sebastian Jilke, Asmus Leth Olsen, and Lars Tummers. 2017. Behavioral Public Administration: Combining Insights from Public Administration and Psychology. *Public Administration Review* 77(1): 45–56.

Hagmann, David, Emily H. Ho, and George Loewenstein. 2019. Nudging Out Support for a Carbon Tax. *Nature Climate Change* 9: 484–89.

Hall, Jeremy L., and R. Paul Battaglio, Jr. 2018. Transition and Plotting a Course. *Public Administration Review* 78(1): 5–6.

Hallsworth, Michael, Tim Chadborn, Anna Sallis, Michael Sanders, Daniel Berry, Felix Greaves, Lara Clements, and Sally C. Davies. 2016. Provision of Social Norm Feedback to High Prescribers of Antibiotics in General Practice: A Pragmatic National Randomized Controlled Trial. *The Lancet* 387(10029): 1743–52.

Hallsworth, Michael, John List, Robert Metcalfe, and Ivo Vlaev. 2017. The Behavioralist as Tax Collector: Using Natural Field Experiments to Enhance Tax Compliance. *Journal of Public Economics* 148(C): 14–31.

Hauser, Oliver, Michael Greene, Katy DeCelles, Michael Norton, and Francesca Gino. 2018. *Minority Report: A Big Data Approach to Organizational Attempts at Deterring Unethical Behavior*. Surrey: *Academy of Management Global Proceedings* no. 2018.

Hood, Christopher. 2006. Gaming in Targetworld: The Targets Approach to Managing British Public Services. *Public Administration Review* 66(4): 515–21.

Howlett, Michael. 2018. *Designing Public Policies: Principles and Instruments*, second ed. London: Routledge.

Jachimowicz, Jon M., Shannon Duncan, Elke U. Weber, and Eric J. Johnson. 2019. *When and Why Defaults Influence Decisions: A Meta-Analysis of Default Effects*. *Behavioral Public Policy*. Published electronically on January 24. https://doi.org/10.1017/bpp.2018.43.

Jachimowicz, Jon M., Oliver P. Hauser, Julia D. O'Brien, Erin Sherman, and Adam D. Galinsky. 2018. The Critical Role of Second-Order Normative Beliefs in Predicting Energy Conservation. *Nature Human Behaviour* 2(10): 757–64.

John, Peter. 2018. *How Far to Nudge? Assessing Behavioral Public Policy*. Cheltenham: Edward Elgar.

Kuipers, Ben, Malcolm Higgs, Walter Kickert, Lars Tummers, Jolien Grandia, and Joris van der Voet. 2014. The Management of Change in Public Organizations: A Literature Review. *Public Administration* 92(1): 1–20.

Leggett, Will. 2014. The Politics of Behaviour Change: Nudge, Neoliberalism and The State. *Policy and Politics* 42(1): 3–19.

Lindblom, Charles E. 1959. The Science of Muddling Through. *Public Administration Review* 1(9): 79–88.

Linos, Elizabeth, Joanne Reinhard, and Simon Ruda. 2017. Leveling the Playing Field in Police Recruitment: Evidence from a Field Experiment on Test Performance. *Public Administration* 95(4): 943–56.

March, James G., and Johan P. Olsen. 1989. *Rediscovering Institutions: The Organizational Basis of Politics*. New York: Free Press.

Marlatt, G.Alan. 2002. Buddhist Philosophy and the Treatment of Addictive Behavior. *Cognitive and Behavioral Practice* 9(1): 44–50.

Menzies, Daniel, et al. 2006. Respiratory Symptoms, Pulmonary Function, and Markers of Inflammation among Bar Workers before and after a Legislative Ban on Smoking in Public Places. *Journal of the American Medical Association* 296(14): 1742–48.

Michie, Susan, Maartje M. van Stralen, and Robert West. 2011. The Behaviour Change Wheel: a New Method for Characterizing and Designing Behaviour Change Interventions. *Implementation Science* 6(1): 42.

Moynihan, Donald. 2018. A Great Schism Approaching? Toward a Micro and Macro Public Administration. *Journal of Behavioral Public Administration* 1(1): 1–8.

Nielsen, Poul Aaes. 2014. Learning from Performance Feedback: Performance Information, Aspiration Levels, and Managerial Priorities. *Public Administration* 92(1): 142–60.

O'Leary, Rosemary. 2010. Guerrilla Employees: Should Managers Nurture, Tolerate, or Terminate Them? *Public Administration Review* 70(1): 8–19.

Oliver, Adam. 2019. Toward a New Political Economy of Behavioral Public Policy. *Public Administration Review*. Published electronically on July 28. https://doi.org/10.1111/puar.13093.

Oreopoulos, Philip. 2006. Estimating Average and Local Average Treatment Effects of Education When Compulsory Schooling Laws Really Matter. *American Economic Review* 96(1): 152–75.

Rogers, Todd, and Avi Feller. 2018. Reducing Student Absences at Scale by Targeting Parents' Misbeliefs. *Nature Human Behaviour* 2(5): 335–42.

Schubert, Christian. 2017. Exploring the (Behavioral) Political Economy of Nudging. *Journal of Institutional Economics* 13(3): 499–522.

Shafir, Eldar, ed. 2013. *The Behavioral Foundations of Public Policy*. Princeton, NJ: Princeton University Press.

Sierzchula, William, Sjoerd Bakker, Kees Maat, and Bert van Wee. 2014. The Influence of Financial Incentives and Other Socio-Economic Factors on Electric Vehicle Adoption. *Energy Policy* 68: 183–94.

Simon, Herbert A. 1947. *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization*. New York: Macmillan.

———. 1996. *The Sciences of the Artificial*, 3rd ed. Cambridge, MA: MIT Press.

Smith, Kirsten P., and Nicholas A. Christakis. 2008. Social Networks and Health. *Annual Review of Sociology* 34: 405–29.

Snyder, Leslie, Mark Hamilton, Elizabeth Mitchell, James Kiwanuka-Tondo, Fran Fleming-Milici, and Dwayne Proctor. 2004. A Meta-analysis of the Effect of Mediated Health Communication Campaigns on Behavior Change in the United States. Supplement 1. *Journal of Health Communication* 9: 71–96.

Sunstein, Cass R., Lucia A. Reisch, and Micha Kaiser. 2019. Trusting Nudges? Lessons from an International Survey. *Journal of European Public Policy* 26(10): 1417–43.

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

Voorberg, William, Sebastian Jilke, Lars Tummers, and Victor Bekkers. 2018. Financial Rewards Do Not Stimulate Coproduction: Evidence from Two Experiments. *Public Administration Review* 78(6): 864–73.

Warburton, Darren, Crystal Nicol, and Shannon Bredin. 2006. Health Benefits of Physical Activity: The Evidence. *Canadian Medical Association Journal* 174(6): 801–9.

Willis, Lauren. 2013. When Nudges Fail: Slippery Defaults. *University of Chicago Law Review* 80(1155–1): 229.

World Health Organization (WHO). 2014. *Antimicrobial Resistance: Global Report on Surveillance*. https://www.who.int/drugresistance/documents/surveillancereport/en/ [accessed September 2, 2019].

Zamir, Eyal, and Doron Teichman. 2018. *Behavioral Law and Economics*. Oxford: Oxford University Press.