Theses and Dissertations   1. Thesis and Dissertation Collection, all items

2022-12

EXPLORING EFFECTIVE AND ETHICAL NUDGES IN HOMELAND SECURITY

Reid, Brett

Monterey, CA; Naval Postgraduate School

https://hdl.handle.net/10945/71531

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

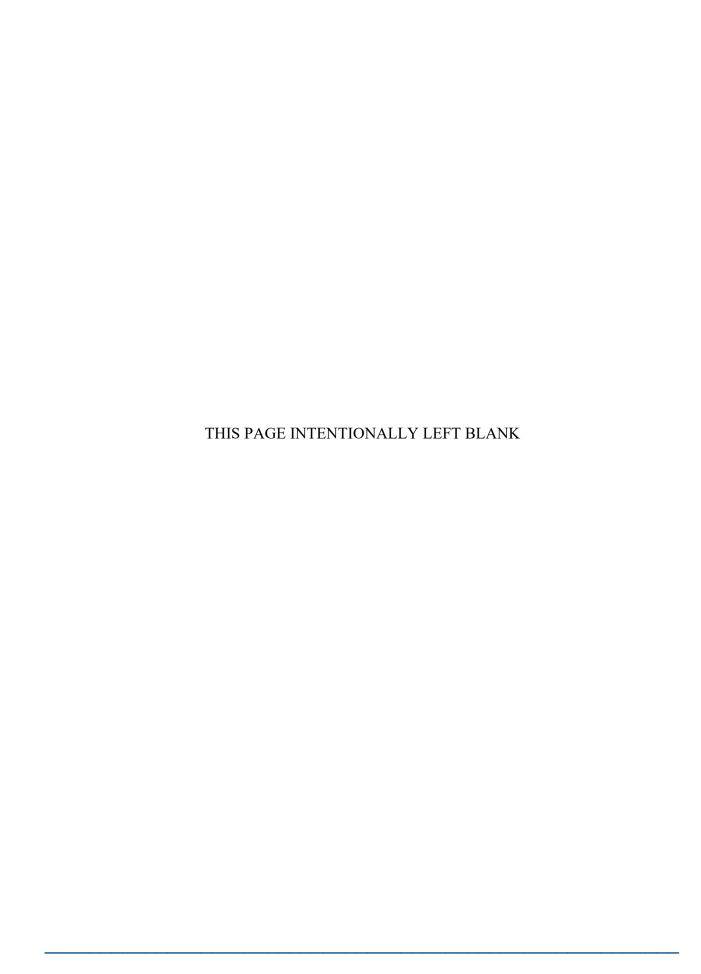**EXPLORING EFFECTIVE AND ETHICAL NUDGES IN HOMELAND SECURITY**

by

Brett Reid

December 2022

Co-Advisors: Richard D. Bergin IV
Mollie R. McGuire

Approved for public release. Distribution is unlimited.

THIS PAGE INTENTIONALLY LEFT BLANK

13. ABSTRACT (maximum 200 words)

Nudge theory is the popular new kid on the policy block promising low-cost, effective, liberty-preserving interventions that promote individuals' welfare. However, effective nudges do not appear to be prevalent in homeland security relative to its popularity. This thesis looks for such through a systematic and gray literature search. It further explores what makes nudges generally effective and whether such principles can be used in creating effective nudges in homeland security contexts. This is accomplished by exploring popular nudge frameworks, analyzing meta-analyses and scoping reviews, and discussing known nudge limitations. Lastly, assuming homeland security nudges can be effective, an exploration of significant ethical issues is provided. The resultant findings support the lack of popularity for effective nudges in homeland security. However, the exploration of nudge effectiveness generally gives reason to believe homeland security nudges can be effective (and this thesis provides a four-question framework to help guide the creation of such). Further, this thesis finds legitimate debate surrounds general nudge ethicality, but develops a six-question framework for homeland security practitioners to help determine whether their proposed intervention is both a nudge and ethical. Ultimately, this thesis should be used as a foundation from which to carefully explore and potentially create, implement, and test homeland security nudges.

THIS PAGE INTENTIONALLY LEFT BLANK

**EXPLORING EFFECTIVE AND ETHICAL NUDGES
IN HOMELAND SECURITY**

Brett Reid
Supervisory Immigration Services Officer, U.S. Citizenship and Immigration Services,
Department of Homeland Security
BA, University of California, Irvine, 2008
MPA, University of Southern California, 2015

Submitted in partial fulfillment of the
requirements for the degree of

**MASTER OF ARTS IN SECURITY STUDIES
(HOMELAND SECURITY AND DEFENSE)**

from the

**NAVAL POSTGRADUATE SCHOOL
December 2022**

Approved by: Richard D. Bergin IV
Co-Advisor

Mollie R. McGuire
Co-Advisor

Erik J. Dahl
Associate Professor, Department of National Security Affairs

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

Nudge theory is the popular new kid on the policy block promising low-cost, effective, liberty-preserving interventions that promote individuals' welfare. However, effective nudges do not appear to be prevalent in homeland security relative to its popularity. This thesis looks for such through a systematic and gray literature search. It further explores what makes nudges generally effective and whether such principles can be used in creating effective nudges in homeland security contexts. This is accomplished by exploring popular nudge frameworks, analyzing meta-analyses and scoping reviews, and discussing known nudge limitations. Lastly, assuming homeland security nudges can be effective, an exploration of significant ethical issues is provided. The resultant findings support the lack of popularity for effective nudges in homeland security. However, the exploration of nudge effectiveness generally gives reason to believe homeland security nudges can be effective (and this thesis provides a four-question framework to help guide the creation of such). Further, this thesis finds legitimate debate surrounds general nudge ethicality, but develops a six-question framework for homeland security practitioners to help determine whether their proposed intervention is both a nudge and ethical. Ultimately, this thesis should be used as a foundation from which to carefully explore and potentially create, implement, and test homeland security nudges.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF FIGURES

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF TABLES

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF ACRONYMS AND ABBREVIATIONS

BIT	Behavioural Insights Team
EAST	Easy, Attract, Social, Timely
FEMA	Federal Emergency Management Agency
FOP	front of packaging
FTA	failure to appear
NUDGES	incentives, understanding mappings, defaults, give feedback, expect error, and structure complex choices

THIS PAGE INTENTIONALLY LEFT BLANK

EXECUTIVE SUMMARY

Nudge theory exploded onto the academic and policy scene in 2008 with Richard Thaler and Cass Sunstein's seminal book, *Nudge*.[1] In it, they argue that an individual can improve people's choices by altering the contextual decisional environment to *nudge* said people towards a more positive outcome or choice.[2] They further argue that policymakers should nudge individuals in alignment with a novel ethical framework, "libertarian paternalism."[3] As Thaler and Sunstein present it, libertarian paternalism is more or less the idea that an intervention (a nudge) should not limit people's absolute abilities to make a choice (their liberty) and that such nudges should guide people to make choices they themselves would judge to be better (i.e., the decision-maker views the nudged decision to be in her best interests).[4]

Much hope and optimism has sprung from nudge theory and libertarian paternalism regarding their potential to improve various policy problems. Entire "nudge units," such as the Behavioural Influence Team based in the United Kingdom, have been created to tackle a host of policy problems in various contexts across the world.[5] However, it is unclear whether nudge theory has significantly percolated into the consciousness and practices of homeland security practitioners and policymakers. In addition, to the extent homeland security nudges have been used, whether they are effective. To better assess these questions, this thesis conducted a systematic and gray literature search, presented in Chapter II, for actual usages of nudges in homeland security contexts.

This search resulted in six nudge studies related to homeland security. This small number relative to nudge theory's popularity outside the field provides some evidence

---

[1] Richard Thaler and Cass Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness* (New York: Penguin Books, 2009).

[2] Thaler and Sunstein, 3–4.

[3] Thaler and Sunstein, 5.

[4] Thaler and Sunstein, 5.

[5] David Halpern, *Inside the Nudge Unit: How Small Changes Can Make a Big Difference* (London: Penguin Random House, 2015), 8.

nudges are not being readily used in homeland security. Nevertheless, four key takeaways distilled from the literature were relevant to homeland security practitioners/policymakers utilizing nudges in their specific contexts: nudge interventions have varying effectiveness and outcomes in homeland security contexts; no dominant nudge taxonomy or framework exists; nudges can be used on various populations; and certain types of nudges appear more likely to be used than others.

These takeaways, in combination with the limited number of actual homeland security nudges, set up an important follow-up question. Namely, can nudge interventions be successfully implemented across the homeland security domain (i.e., can nudges be effective in various homeland security contexts)? Chapter II empirically explored this question and found the answer to be inconclusive. Chapter III then conceptually examined the same question by exploring general nudge effectiveness.

Three different avenues of pursuit shaped the exploration of general nudge effectiveness. First, various nudge frameworks created with the purpose of helping public practitioners/policymakers create effective nudge interventions were explored. Second, recent meta-analyses and scoping reviews related to nudge effectiveness were analyzed for possible takeaways. Third, known limitations to nudge effectiveness were discussed.

This approach provided three takeaways for homeland security practitioners/ policymakers. First, the results suggest a qualified but optimistic "yes" to the question of whether nudges can be effective in homeland security. Second, the exploration provided a foundational understanding of the current evidence of general nudge effectiveness. Third, the analysis provided grounds to better think about how and where nudges might be effective and warranted in one's specific context(s).

The third key takeaway, specifically, the grounds to better think about how and where nudges might be effective in homeland security, was further buttressed by a four-question effectiveness framework developed in this thesis. The framework requires the practitioner/policymaker to examine, relative to their homeland security problem, which heuristics and biases are at play, what nudge framework should be used in creating the nudge, which nudge categories should be applied, and which nudge limitations are likely

to exist. Responding to this four-question framework should improve the likelihood that a nudge intervention in a homeland security context would be effective.

However, whether a nudge is effective is not the only question to consider. An equally if not more important question is whether nudges, assuming they can be effective in homeland security contexts, should be utilized. This thesis explores the ethics of nudges and the associated ethical framework, libertarian paternalism. In particular, it explores critical related ethical issues and concludes that the jury is still dispositive with respect to whether nudges are generally ethical. However, understanding that nudges are to some extent already being utilized and may be used in the future, this thesis provides a homeland security–specific ethical framework to guide practitioners/policymakers in determining whether a proposed nudge intervention would be ethical.

The ethical framework is composed of six questions: Is the proposed intervention a mandate, a ban, coerce, or otherwise provide significant positive or negative incentives to the individual(s) targeted? Is the proposed intervention intended to promote the welfare of the individual(s) targeted? Is (are) there reasoning failure(s) at play? Does the proposed nudge need to be secret? Does the proposed nudge violate autonomy, dignity, and/or self-government? Is the proposed nudge intervention the most effective policy to promote the individual's(s') welfare relative to other possible interventions? After answering these six questions, homeland security practitioners/policymakers can be more confident that their proposed intervention is in fact a nudge and ethical.

The conclusion suggests opportunities for future research including the conceptual and experimental testing of the four-question effectiveness framework and six-question ethical framework developed in this thesis. It further argues there is ample opportunity for careful exploration, creation and testing of nudge interventions in homeland security contexts. Any experimentation should preferably have its process meticulously documented, should be implemented with a randomized controlled trial, and the evidence should be gathered and shared with the broader homeland security community.

THIS PAGE INTENTIONALLY LEFT BLANK

ACKNOWLEDGMENTS

I would like to first and foremost thank my exceptional thesis advisory committee, Dr. Mollie McGuire and Dr. Richard Bergin. Without their advice, assistance, and most importantly their unyielding and patient support, this would not have been possible.

I would also like to give a tremendous amount of thanks to my writing coach, Marianne Taflinger, and my classmate and seat neighbor, Lisa Davidson, for their tenacious encouragement, practical support, and timely cajoling. Without them, I might still be wandering the thesis woods.

Further great thanks go to my editors, Noel Yucuis and Chloe Woida, my fellow 1902 cohort members, and the many CHDS support staff and instructors, who even throughout COVID-19, provided the utmost support and from whom I learned so much.

I am also grateful to all those in my agency who supported my candidacy and the work needed to complete this project, with special thanks to Rick Torres, Christiana Knasiak, and Director Kathy Baran.

Last, but certainly not least, I am forever indebted to all my friends and family who had to psychically share much of the stress of this project and heard way too many times that I could not join them for this or that event. I particularly owe my dearest Linda for her vast patience, constant understanding, and the full spectrum of emotional and practical support. It takes a village and I have a wonderful one.

THIS PAGE INTENTIONALLY LEFT BLANK

I. INTRODUCTION

A. PROBLEM STATEMENT

Behavioral science challenges the assumptions made by neoclassical models of rational choice wherein a decision-maker is presumed to be fully rational (i.e., has stable and well-defined preferences that are maximized, preferences reflect all costs and benefits, and are updated and revised in accordance with additional relevant information).[1] Decision-making outside of the rational choice theory has been the focus of numerous studies, dating back to the 1950s when Herbert Simon argued that limits in knowledge/information and in the ability to process information restrict decision-makers' ability to make optimal decisions, which he termed, "bounded rationality."[2] In addition, Tversky and Kahneman, through their research on heuristics and biases, arguably show that decision-makers make suboptimal decisions because, following the notion of bounded rationality, decision-makers use cognitive shortcuts (heuristics) that can lead to systematic biases (errors) in decisions compared to what would otherwise be expected under rational choice theory.[3] Their research, along with other behavioral economics/social science research, have laid the foundation for better understanding the conditions under which individuals are more likely to stray from making optimal decisions. In the homeland security domain, understanding how real people actually behave and make choices is vitally important for any practitioner and/or policymaker to understand, especially in the arena of policy decisions where both lives and important assets can be at stake.

Although not particularly focused on the homeland security arena, Richard Thaler and Cass Sunstein take the general understanding of how people behave—that people make

---

[1] Glen Whitman and Mario Rizzo, "An Introduction to Behavioral Economics," in *The Behavioral Economics Guide 2014*, ed. Alain Simpson (London: Behavioral Economics Group, 2019), https://www.behavioraleconomics.com/the-be-guide/.

[2] H. A. Simon, *Models of Bounded Rationality* (Cambridge, MA: MIT Press); Alain Samson, ed., *The Behavioral Economics Guide 2014* (London: Behavioral Economics Group, 2019), https://www.behavioral economics.com/be-guide/the-behavioral-economics-guide-2014/.

[3] Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus and Giroux, 2011); Simpson, *The Behavioral Economics Guide 2014*, https://www.behavioraleconomics.com/the-be-guide/; Malcolm Gladwell, *Blink* (New York: Back Bay Books, 2005).

1

systematically biased choices/decisions—to argue for what they coin as nudge theory. Essentially, nudge theory explores how one might improve people's choices by altering the contextual decisional environment to *nudge* said people towards a more positive outcome/choice.[4] Such nudging, they argue, is not only preferable practically, but ethically as well, as long as such nudges conform to a conceptual framework which Thaler and Sunstein term "libertarian paternalism." Libertarian paternalism is more or less the idea that an intervention or nudge should not limit people's absolute abilities to make a choice/decision (their liberty) and that such a nudge will actually guide people to make a choice/decision they themselves would judge to be better (i.e., the individual views the decision to be in her best interests).[5]

Nudge theory (and the ethical framework of libertarian paternalism), while just over a decade old, is still a relatively nascent discipline with scholars and practitioners actively experimenting with, critiquing, and trying to understand the effects and ethical implications of nudging. Although there are some qualitative and quantitative systematic studies reviewing nudging effectiveness, they are largely focused on specific contexts and do not address whether nudges are effective across contexts or, more specifically, in those of homeland security (though Hummel and Maedche in their 2019 review argue that "nudges seem to work but the effect sizes are influenced by the application context and especially by the nudge category [e.g., defaults or warnings/graphics]").[6]

Further, since homeland security is also a nascent discipline it is understandable that there are limited studies related to nudges and homeland security—too limited to fully understand whether nudges in homeland security contexts are effective. In addition to questions of effectiveness, the ethical implications of nudging, while increasingly nuanced, are also still an active ground for discussion and debate and to this author's knowledge

---

[4] Richard Thaler and Cass Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness* (New York: Penguin Books, 2009).

[5] Thaler and Sunstein, 5.

[6] Dennis Hummel and Alexander Maedche, "How Effective Is Nudging? A Quantitative Review on the Effect Sizes and Limits of Empirical Nudging Studies," *Journal of Behavioral and Experimental Economics* 80 (June 2019): 56, https://doi.org/10.1016/j.socec.2019.03.005. Note: Hummel and Maedche also state that their study "can only be a first step and further research is needed on [nudge effectiveness]." Hummel and Maedche, 56.

have not been discussed specifically in the context of homeland security.[7] As such, better understanding nudge effectiveness and ethics in relation to homeland security could have significant practical and ethical utility to homeland security practitioners/policymakers looking for a low-cost, but more importantly, effective tool for influencing behavior that is normatively justifiable.

Therefore, this thesis examined whether recent nudge interventions in homeland security had been documented, whether they have been effective, and whether there were any observable takeaways for homeland security practitioners/policymakers. This thesis further explored the question of nudge effectiveness more generally to better understand whether nudges could be effective throughout the homeland security domain. Finally, this thesis examined significant ethical implications of nudge theory and the practice of nudging and how these implications might be relevant in the specific context of homeland security.

B. RESEARCH QUESTIONS

1. Is nudging being implemented in homeland security, and if so, has it been effective?

2. Assuming nudge interventions are not already happening throughout homeland security, are nudge interventions generally effective and if so, can they be expanded throughout homeland security contexts?

3. Assuming effectiveness, can nudging be used ethically in homeland security?

C. LITERATURE REVIEW

This section reviews the literature on behavioral economics relating to decision-making. In particular, this review looks at decision-making in relation to the relatively recent creation of and practical application of nudges and "choice architecture."[8]

---

[7] Adrien Barton and Till Grüne-Yanoff, "From Libertarian Paternalism to Nudging—and Beyond," *Review of Philosophy and Psychology* 6 (June 2015): 341–359, https://doi.org/10.1007/s13164-015-0268-x.

[8] Thaler and Sunstein, *Nudge*.

In 2008, Thaler and Sunstein introduced the world to the ideas of nudges and choice architecture. They posit that choice architecture is the context which surrounds and influences a decision-maker, and a "choice architect" is one who alters or shapes that context to strategically influence decision-makers in a particular manner.[9] A nudge, in the two authors' view, is any intervention in the choice architecture that predictably alters people's decisions, but does not significantly change the underlying incentives of the decision or alter the availability of choices that the decision-maker has.[10] Through the use of nudges, Thaler and Sunstein argue that it is possible to improve decision-making, leading to better outcomes for both individuals and society as a whole.[11]

Thaler and Sunstein argue improvements to decision-making through nudges is possible because decision-makers are often not perfectly rational (i.e., they do not make optimal decisions) and cannot be expected to have nearly enough experience across all the various decision domains one is likely to encounter in life.[12] In fact, as Amos Tverskey and Daniel Kahneman discovered, individuals often rely on "rules of thumb" (i.e., heuristics) for a variety of decision-making.[13] In many cases, these heuristics provide positive results, but they can also lead to systematically biased decisions.[14] Such biased decisions can often result from how two types of thinking, often termed System 1 and System 2 thinking, interact.[15] System 1 is an individual's automatic, rapid, and intuitive thinking system whereas System 2 is one's reflective, slow, and rational system.[16] Sometimes System 1 biases System 2 or System 2 may not be activated at all (as in when

---

[9] Thaler and Sunstein, 3.

[10] Thaler and Sunstein, 6.

[11] Thaler and Sunstein, 5.

[12] Richard Thaler, *Misbehaving: The Making of Behavioral Economics* (New York: W.W. Norton & Company, 2015), 324.

[13] Thaler and Sunstein, *Nudge*, 22–23. See also Amos Tversky and Daniel Kahneman, "The Framing of Decisions and the Psychology of Choice," *Science* 211, no. 4481 (January 1981): 453–458, https://doi.org/10.1126/science.7455683; Daniel Kahneman, "Maps of Bounded Rationality: Psychology for Behavioral Economics," *American Economic Review* 93, no. 5 (December 2003):1449–1475, https://doi.org/10.1257/000282803322655392.

[14] Thaler and Sunstein, *Nudge*, 22–23.

[15] Thaler and Sunstein, 22–23.

[16] Thaler and Sunstein, 19–22.

one is dodging an unexpected thrown ball).[17] As such, a knowledgeable and conscientious choice architect under certain circumstances can follow some basic principles to design the contextual environment so that the automatic, rapid, and intuitive thinking system (System 1) of the decision-maker adopts the optimal choice.[18] Such principles include recognizing that a default option is often chosen by decision-makers because it is the path of least resistance, expecting people to make errors, giving feedback when possible, improving decision-makers' ability to map the decision to the benefit, structuring complex choices to reflect an understanding that people use simplifying strategies when decisions get increasingly complex, and understanding the incentives of the system/context.[19] In addition, Thaler and Sunstein note that in real life no "neutral choice architecture" exists, which means that all decision-makers are being influenced by contextual factors, whether they are intentionally designed/nudged by choice architects or not.[20]

Critics of nudges and choice architecture (or nudge theory more generally) commonly focus on ideological critiques rather than on empirical merit.[21] In general, two overarching groups of objections to nudging emerge. One group of objections has to do with ethical concerns surrounding government's use of nudging from small government–favoring, libertarian, and/or anti-paternalists such as Richard Epstein and Ricardo Rebonato. They argue that while nudges (or nudge theory) may have practical evidence to support it, it is ethically objectionable as either manipulation and/or another form of ill-conceived paternalism.[22] Another group of objectors argues that nudging does not go far enough and more rigorous intervention is needed to deal with today's perceived societal

---

[17] Thaler and Sunstein, 19.

[18] Thaler and Sunstein, 85.

[19] Thaler and Sunstein, 83–102.

[20] Thaler and Sunstein, 3.

[21] Some also question whether nudges are effective. See Frank Mols et al., "Why a Nudge Is Not Enough: A Social Identity Critique of Governance by Stealth," *European Journal of Political Research* 54, 1 (February 2015): 81–98, https://doi.org/10.1111/1475-6765.12073.

[22] Riccardo Rebonato, *Taking Liberties: A Critical Examination of Libertarian Paternalism* (New York: Palgrave Macmillan, 2012); Richard Epstein, *Skepticism and Freedom: A Modern Case for Classical Liberalism* (Chicago: University of Chicago Press, 2003).

ills.[23] Thaler and Sunstein attempt to navigate between these two opposing poles of objections by arguing the usage of nudging will provide the greatest benefit if it fits within their more general idea and ethical framework, libertarian paternalism.

Libertarian paternalism, they note, is more or less the idea that one can design certain policies or choice architectures that do not actually limit people's absolute abilities to make a decision/choice (their liberty), but that do help people to make the decision/choice that is in their best interests/achieve their goals (personal/social benefit).[24] They further indicate that the inherent assumption behind libertarian paternalism is that people cannot be experts in all domains and therefore are not often capable of making optimal decisions though they are regularly required to decide.[25] Particularly, Thaler and Sunstein argue that people are unlikely to make optimal decisions when the choices/decisions are difficult; have consequences that do not immediately follow the choices/decisions, or provide ambiguous feedback; and/or are choices/decisions not made frequently so that learning cannot readily occur.[26] The debate for and against libertarian paternalism generally and nudging specifically is far from closed at present, but governments and private sector nudge teams across the world are increasingly implementing nudge theory.

Such libertarian paternalism, whether accepted in name or not, is perhaps best epitomized in practice in the United Kingdom, where David Halpern became the head of the Behavioural Insights Team (BIT), more commonly referred to as "The Nudge Unit." In Halpern's book, *Inside the Nudge Unit*, he documents the early years of the BIT as a small experimental team in the then newly elected Prime Minister David Cameron's government, which, during BIT's first two years, conducted dozens of experiments showing how behavioral science and nudges can be used to make seemingly small and

---

[23] See, for example, Mols et al., "Why a Nudge Is Not Enough," 81–98.

[24] Richard Thaler, *Misbehaving: The Making of Behavioral Economics* (New York: W.W. Norton & Company, 2015), 324.

[25] Thaler, 324.

[26] Thaler and Sunstein, *Nudge*, 78–9.

often low-cost changes resulting in large effects.[27] Examples of these low-cost changes run throughout the book, from increasing repayment of car registration fines by 9% by including a picture of the driven car with the payment letter, to increasing the attendance rate at job fairs by unemployed persons by up to 17% by sending a reminder text.[28] Perhaps more importantly than the individual examples provided throughout, Halpern explores and discusses the individual components of the framework BIT developed through practice, which they termed the EAST (Easy, Attract, Social, Timely) framework, to guide them in their work.[29] The EAST framework is a mental heuristic for the various behavioral science insights that an individual or institution can use as a checklist to identify nudge ideas to test sooner rather than later.[30]

As a complement to Halpern's book, Sunstein outlines a diverse range of nudge initiatives that took place in the United States from 2008 to 2014.[31] One interesting example he highlights is how behavioral science insights in the form of nudges have been used in the U.S. finance industry. In 2009, the Federal Reserve Board required U.S. banks to change their defaults for their overdraft protection programs from opt-out to opt-in.[32] Requiring individuals to intentionally opt in to overdraft protection saved a large number of individuals from being charged large overdraft fees either because they did not know about the fees or did not realize how high they could be.[33] In addition to Halpern, Thaler, and Sunstein, proponents of nudging such as Michiru Nagatsu and Andreas Schmidt defend the ethical bases of nudging by explaining how nudging does not infringe on personal

---

[27] David Halpern, *Inside the Nudge Unit: How Small Changes Can Make a Big Difference* (London: Penguin Random House, 2015), 8. Note that the BIT is no longer a part of the United Kingdom's government.

[28] Halpern, 90–92, 119–121.

[29] Halpern, 59–61.

[30] Halpern, 59–61.

[31] Cass R. Sunstein, "Nudging: A Very Short Guide," *Journal of Consumer Policy* 37, no. 4 (December 2014): 583–88, https://doi.org/10.1007/s10603-014-9273-1.

[32] Sunstein, "Nudging"; Cass R. Sunstein, "Behaviorally Informed Policy: A Brisk Progress Report," SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, 2019), 10, http://dx.doi.org/10.2139/ssrn.3461781.

[33] Sunstein, 10–11.

7

autonomy (liberty) if such nudging is transparent, democratic, and properly understood.[34] Taken together, proponents of nudges to influence people's decisions are more than mere theoreticians; rather, real nudging by real governments and private sector nudge teams, informed by behavioral science insights, has and is happening throughout the world. However, the total implications and possibilities of this practice are still just starting to be explored, especially in relation to the homeland security enterprise.

D.   RESEARCH DESIGN

A systematic and gray literature search was used to look for examples of nudges being implemented in a homeland security context. The search covered the years from 2008 to May 2020. It focused on those studies that actually discuss and/or measure nudge efficacy and are directly related to homeland security. In examining actual usages of nudges in homeland security contexts, the goal was to find effectiveness trends and/or overarching patterns that homeland security practitioners/policymakers can use to better understand how nudges might apply in their own narrower homeland security contexts.

Additionally, an examination of nudge effectiveness generally was conducted through three main avenues. First, an exploration of various nudge frameworks developed for practitioners/policymakers was articulated. Second, a systematic review of meta-analyses and scoping reviews related to nudge effectiveness was analyzed. Third, a discussion related to a set of known nudge limitations was supplied. All three avenues were combined with the goal of providing homeland security practitioners/policymakers with a comprehensive understanding of nudge effectiveness generally so they can better understand and think about how to create their own effective homeland security nudges.

Last, this thesis conducted an exploration of some of the major ethical dimensions of nudges. It concludes the debate is still unsettled as to whether nudges should generally be considered ethical. However, understanding that nudges have already been used in homeland security, will likely continue to be used, and that the larger debate regarding

---

[34] Michiru Nagatsu, "Social Nudges: Their Mechanisms and Justification," *Review of Philosophy and Psychology* 6, no. 3 (September 2015): 481–94, https://doi.org/10.1007/s13164-015-0245-4; Andreas T. Schmidt, "The Power to Nudge," *American Political Science Review* 111, no. 2 (May 2017): 404–17, https://doi.org/10.1017/S0003055417000028.

when and where governments can intervene has been ongoing for centuries, this thesis provided a six-question homeland security framework to practitioners/policymakers to determine whether their proposed intervention was a nudge and likely ethical.

E.   LIMITS TO RESULTS

There are a couple limitations of note related to both this thesis's discussion surrounding nudges in homeland security and nudge effectiveness generally. Namely, limited time and resources prevented the author from searching every potential source for nudge studies or experiments related to homeland security and nudge effectiveness. Rather, the searches were limited both in time and to certain databases. While these were indeed limitations, they were not anticipated to be overly significant for two main reasons. First, in relation to homeland security nudge studies, more recent studies are more likely to provide better evidence and represent the current state of the science, as both researchers and practitioners have had more time to understand and use nudge theory since its rather recent origins and rise in popularity since 2008. Likewise, similar reasoning applies to the meta-analyses and scoping reviews, with a bias even more towards the present since it takes time for research studies to be conducted in large enough numbers and quality for such reviews. Second, in looking for homeland security nudge use, a gray literature search was conducted to complement the systematic search, expanding the potential for finding related studies.

There is also one limitation of note in relation to this thesis's ethical discussion. Namely, this thesis largely examined the ethical nudge literature in relation to governmental nudging rather than private nudging. As such, this thesis should not be construed to comment on the ethical implications of behavioral science generally or in the private domain.

THIS PAGE INTENTIONALLY LEFT BLANK

II. CURRENT NUDGES IN HOMELAND SECURITY

This chapter finds nudges in homeland security to be limited but extracts four key takeaways for homeland security practitioners/policymakers. These takeaways are that nudge interventions have varying effectiveness and outcomes in homeland security contexts; that no dominant nudge taxonomy or framework exists; that nudges can be used on various populations; and that certain types of nudges appear more likely to be used than others. This chapter discovers these takeaways by looking at six cases of nudging in various homeland security contexts. It explores which types of nudge interventions were used, assesses whether they were effective, and considers the use cases for practitioners/policymakers.

More specifically, the goals of this chapter are accomplished by illustrating cases of nudge interventions in homeland security from two angles. First, it describes nudge interventions in homeland security that were discovered through a systematic search of the academic literature. Second, it includes homeland security nudges that were found through a gray literature search. This two-angled approach serves two purposes: since nudge theory and homeland security are new and emerging academic disciplines, academic research might less prevalent. Also, discussions of nudge interventions outside an academic context but related to homeland security could provide additional insights not otherwise captured by the academic literature.[35]

A. SEARCH APPROACH

The systematic search for academic studies took place from May 2020 to September 2020. The search phase was intentionally separated into two parts. In the first part, a systematic literature search for peer reviewed articles was conducted across a number of academic databases. The range of the search reflected the assumption that a wide net should be cast for results relevant to "homeland security," which remains a broadly defined term. The databases included ProQuest (all databases), EBSCOhost,

---

[35] Michael Falkow, "Does Homeland Security Constitute an Emerging Academic Discipline?" (master's thesis, Naval Postgraduate School, 2013), 23–44, https://calhoun.nps.edu/handle/10945/32817.

NAVAL POSTGRADUATE SCHOOL | MONTEREY, CALIFORNIA | WWW.NPS.EDU

ScienceDirect (Elsevier), Web of Science (all databases), Emerald, Sage, SpringerLink, Taylor & Francis Online, and Wiley Online Library.

The key terms applied for this search phase were "nudge" and "nudging" with the Boolean operators "OR," combined with the term "homeland security" and the Boolean operator "AND"—for example *(nudge OR nudging) AND "homeland security."* The terms "nudge" and "nudging" were used because it was presumed that they would cover any sort of intervention that was in line with Thaler and Sunstein's original definition of nudge as "any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives."[36] Iteratively, the terms "choice architect" and "choice architecture" were combined with the term "homeland security" to search for additional results.[37]

However, given sparse initial results and the understanding that "homeland security" is an umbrella term for a host of different ideas, additional search terms for homeland security were incorporated. During the iterative part of the predetermined search phase, Christopher Bellavita's "Changing Homeland Security: What is Homeland Security?" was instrumental in determining the search strategy.[38] Bellavita identifies and analyzes seven different definitions of homeland security and concludes his analysis with an amorphous, though optimistic, note that "homeland security is a continuously evolving social construction, a reality shaped by social processes."[39] With such definitional ambiguity in mind, the author identified additional key search terms from the seven definitions of homeland security, while also utilizing his personal experiences as a

---

[36] Thaler and Sunstein, *Nudge*, 6.

[37] The term "choice architecture" was originally excluded based on the author's desire to stick as closely to Thaler and Sunstein's definition of nudge as possible. However, it became apparent that choice architecture and nudge were too closely intertwined to be excluded for these searches.

[38] Christopher Bellavita, "Changing Homeland Security: What Is Homeland Security?," *Homeland Security Affairs* 4, no. 1 (June 2008): 1–30, https://www.hsaj.org/articles/118.

[39] Bellavita, 22.

homeland security practitioner to identify other terms.[40] Subsequent to reviewing the literature, other iterative key search terms were identified.[41]

The following three databases were searched during the second search phase: ProQuest (all databases), EBSCOhost, and ScienceDirect (Elsevier).[42] The following terms were initially used to query each database during Search Phase 2A: "nudge" and "nudging" with the Boolean operator "OR," combined with the terms "terror," "terrorism," "terrorist," "terrorize," "immigration," "immigrate," "immigrant," "emigrate," "emigrant," "hazard," "national security," "border security," "citizenship," "catastrophe," "emergency management," and "disaster," with the Boolean operator "AND"—for example *(nudge OR nudging) AND terror*. Iteratively the terms "radical*," "radicalization," "naturalization," and "technological seduction" were included in Search Phase 2B. Also, as with the first phase, the terms "choice architect" and "choice architecture" were iteratively added with every other key term in Search Phase 2C and henceforth will be included in the discussion as a "nudge" (see Table 1).

Table 1.   Databases and Search Terms.[43]

Phase	Search Terms
2A	Nudge OR nudging AND terror, terrorism, terrorist, terrorize, immigration, immigrate, immigrant, emigrate, emigrant, hazard, national security, border security, citizenship, catastrophe, emergency management, disaster.
2B	Nudge OR nudging AND radical*, radicalization, naturalization, technological seduction. Choice architect OR choice architecture AND radical*, radicalization, naturalization, technological seduction
2C	Choice architect OR choice architecture AND terror, terrorism, terrorist, terrorize, immigration, immigrate, immigrant, emigrate, emigrant, hazard, national security, border security, citizenship, catastrophe, emergency management, disaster.

---

[40] The seventh definition, *Security Uber Alles*, is not used operationally but as a construct and, therefore, was not turned into a key word.

[41] The key search terms used to define homeland security terms/domains are surely not exhaustive. The author used his best judgment to capture a representative set of terms/domains.

[42] Compared to the initial search, the iterative search used a smaller subset of databases for the following two reasons: a presumption more narrowed terms would not require as broad of a search domain and due to the time constraints of the author.

[43] The search involved the following three databases: ProQuest (all databases), EBSCOhost, and ScienceDirect (Elsevier).

13

Thaler and Sunstein published *Nudge* in 2008. Therefore, the search covered 2008 to May 2020.[44] Additionally, a backward snowball method was applied by searching for all articles found in the search phases related to nudge *and* homeland security even if they were not ultimately included in this thesis (e.g., for normative or study design reasons). Similarly, forward snowball searches for citations of related articles were conducted through Google Scholar. Both backward reference snowballing and forward citation snowballing searches conformed to the inclusion and exclusion criteria and were repeated until no new papers were found.

This search identified four studies in which a nudge intervention took place in homeland security. This low number of studies over a large range of journals and time periods supports the idea that nudge interventions are not popular in homeland security scholarship. However, there are several plausible reasons for finding a small number of homeland security nudge studies. Nudges are reported in other academic search databases or through other key terms not identified by this thesis. It may be due to relatively small numbers of researchers proficient in homeland security and nudge due to these fields' recent development. Or, more nudge interventions might be occurring, but their high failure rate precludes reports since publications favor successful nudges over unsuccessful attempts.[45] Nudges might be used by those who do not realize they are nudging and therefore do not report these efforts. It is also possible nudges are not being conducted in a systematic, experimental fashion that meets the bar for academic publishing. Finally, homeland security nudge practitioners/policymakers may not have the time or feel the need to publish their results in academic journals.[46] As a result of the small number of academic studies, a gray literature search was incorporated into the approach to pursue additional insights.

---

[44] A starting date of 2008 was chosen based on reasoning similar to Hummel and Maedche's. Namely, the term "nudge" is central to the search strategy but was used minimally before 2008. See Hummel and Maedche, "How Effective is Nudging?," 48–49.

[45] Hummel and Maedche, 54.

[46] There is also a more uncomfortable possibility that as more nudge teams are created for profit, any insights gleaned may be viewed as a competitive advantage and not be shared widely with the practitioner and/or academic community.

A non-systematic gray literature search was conducted using Google search and focused on the terms "homeland security" and "nudge." This search revealed that the Action Design Network in partnership with the Applied Behavioral Science Association had created a Behavioral Science Team Directory of just under 600 behavioral science teams working in organizations throughout the world.[47] This directory was then used to look for behavioral teams in a government organization or body, an academic institution or unit, a non-profit or non-governmental organization, and independent research organizations or think tanks.[48] Subsequent to identification, the teams' websites were searched for any completed projects that might relate to homeland security and nudging.[49] Limitations to the gray literature search include the fact that active behavioral science teams not included in the directory likely were not considered; the creators of the directory make clear, "there is no exhaustive list of organizations applying behavioral science to their work."[50] In addition, only studies in English were examined. As such, the non-academic studies are neither exhaustive nor necessarily completely representative. Nonetheless, as with the academic studies, gray literature studies were also rare and yielded even fewer studies for analysis.

B.   STUDIES

This section discusses each of the relevant studies identified during the searches. For each, it presents the relevant area of homeland security and type of intervention, the study details and results, and a use case assessment.

---

[47] "Behavioral Teams Directory," Action Design Network, accessed September 10, 2022, https://www.action-design.org/behavioral-teams-directory.

[48] It was determined that incorporating behavioral team studies other than those in English would require substantial search resources and add increased definitional and conceptual confusion. As such, only English language studies were considered.

[49] It is important to distinguish that nudging and behavioral science are related but distinct. Behavioral science encompasses a much broader field with nudge theory nestled within.

[50] Stephen Wendel, "Behavioral Teams around the World," in *Designing for Behavior Change*, 2nd ed. (O'Reilly Media, 2020), 3, https://www.behavioralteams.com/wp-content/uploads/2020/10/Behavioral-Teams-Around-the-World_4Oct2020.pdf.

1. A Low-Cost Information Nudge Increases Citizenship Application Rates among Low-Income Immigrants[51]

a. Area of Homeland Security and Type of Intervention Used

Perhaps the most straightforward study of a nudge intervention in homeland security used an experiment in immigration. Michael Hotard et al. used a randomized controlled trial to determine "whether providing information about fee waiver eligibility increases naturalization rates and fee waiver usage among eligible low-income immigrants who are interested in citizenship."[52] The authors classified their intervention as an "informational nudge." The import of labelling their intervention in this way remains unclear because the study did not define the term, and academics and practitioners do not share one agreed-upon taxonomy or framework for classifying nudge interventions.

However, Hotard et al. might have derived this classification from the taxonomy of behavioral interventions created in the *House of Lords Behaviour Change Report, 2011*, which lists the following four types of nudges: "1) provision of information, 2) changes to the physical environment, 3) changes to the default policy, and 4) the use of social norms and salience."[53] This taxonomy was created for public policy interventions, and Hotard et al.'s study fits into this genre.[54] Hereafter in this thesis, the *House of Lords Behaviour Change Report* taxonomy will be used in all studies where a specific nudge taxonomy or framework is not provided in order to provide a consistent understanding of the type of

---

[51] Michael Hotard et al., "A Low-Cost Information Nudge Increases Citizenship Application Rates among Low-Income Immigrants," *Nature Human Behaviour* 3 (April 2019): 678–83, https://doi.org/10.1038/s41562-019-0572-z.

[52] Hotard et al., 678–679.

[53] House of Lords, Science and Technology Select Committee, *Behaviour Change* (London: Stationery Office Limited, 2011), https://publications.parliament.uk/pa/ld201012/ldselect/ldsctech/179/179.pdf.

[54] Münscher, Vetter, and Scheuerle provide another choice architecture taxonomy by distinguishing three categories: decision information, decision structure, and decision assistance. See Robert Münscher, Max Vetter, and Thomas Scheuerle, "A Review and Taxonomy of Choice Architecture Techniques," *Journal of Behavioral Decision Making* 29, no. 5 (December 2016): 514, https://doi.org/10.1002/bdm.1897. Hollands et al. present another typology of choice architecture interventions aimed at altering the microenvironments. They differentiate between three classes of interventions. Those that "primarily alter properties of objects or stimuli," "primarily alter placement of objects or stimuli, or "alter both properties and placement of objects or stimuli." See Gareth J. Hollands et al., "Altering Micro-Environments to Change Population Health Behaviour: Towards an Evidence Base for Choice Architecture Interventions," *BMC Public Health* 13, no. 1218 (December 2013): 3, https://doi.org/10.1186/1471-2458-13-1218.

16

nudge intervention used. In the case of Hotard et al.'s article, it appears an "information nudge" is equivalent to the "provision of information" nudge in the taxonomy.

b.   Study Details and Results

The purpose of the study's informational nudge intervention was to determine whether nudges effectively increased eligible people's usage of public benefits. The sample size of the experiment was 1,537 fee-waiver-eligible registrants, separated into a nudge group (1,207 persons) and a control group (330 persons).[55] The notice sent to the nudge group included two pieces of information: 1) it noted that the registrants were potentially eligible for a fee waiver (the nudge); and 2) it provided a link to a resource webpage about naturalization.[56] The notice sent to the control group provided the referral link, but did not notify recipients that they were potentially eligible for a fee waiver.[57] The study found the notice sent the nudge group was associated with an 8.6% increase in applications for the fee waiver compared to the control group.[58] This 8.6% increase was equivalent to a 35% application rate increase as 33% of the nudge group applied for the waiver compared to only 25% of the control group.[59] The study showed that the informational nudge intervention successfully increased eligible persons' utilization of public benefits.

c.   Use Case

The study shows that informational barriers may be preventing persons from successfully petitioning the government for naturalization benefits. One possible low-cost solution to overcoming some of these informational barriers would be an informational nudge.

---

[55] Hotard et al., "A Low-Cost Information Nudge Increases Citizenship Application Rates among Low-Income Immigrants," 679.

[56] Hotard et al., 679.

[57] Hotard et al., 679.

[58] Hotard et al., 679.

[59] Hotard et al., 679–680.

2. A Randomized Controlled Design Reveals Barriers to Citizenship for Low-Income Immigrants[60]

a. Area of Homeland Security and Type of Intervention Used

This study, similar to the first, examined nudge interventions related to immigration. The researchers used a randomized controlled design to look at five different behavioral nudges to see whether the nudges might improve the rate at which low-income immigrants submitted naturalization forms.[61] Immigrants submitting a form received one of five nudges: (a) a letter reminding the immigrants of their potential eligibility for a fee waiver, (b) a letter plus a $10 MetroCard to travel to a center that helps the immigrants complete the paperwork, (c) a letter plus four text message reminders, (d) a call from the help center with up to four follow-up calls, or (e) a $10 MetroCard if the immigrants showed up at an appointment.[62]

Jens Hainmueller et al. did not classify the type of nudge(s) they used, though they did call them low-cost nudges. However, following the taxonomy provided in the *House of Lords Behaviour Change Report*, the five nudges appear to align with provision of information.

b. Study Details and Results

This study systematically tested low-cost nudge interventions commonly used among immigration service providers to determine whether any of them were effective.[63] Hainmueller et al. found none of the five nudge interventions appeared to correlate with increased responses above the base rate associated with only informing immigrants they qualified for a fee waiver (the control).[64] The nudge group consisted of 1,224 persons, whereas the control group consisted of 536 persons. Based on their results, the researchers

---

[60] Jens Hainmueller et al., "A Randomized Controlled Design Reveals Barriers to Citizenship for Low-Income Immigrants," *PNAS* 115, no. 5 (January 2018): 939–44, https://doi.org/10.1073/pnas.1714254115.

[61] Hainmueller et al., 940.

[62] Hainmueller et al., app., 20.

[63] Hainmueller et al., 940.

[64] Hainmueller et al., 942.

initially posited the low-income immigrants faced time constraints, which prevented the nudges from being successful. But follow-up interviews revealed this to be an incomplete explanation.[65] The authors conclude that the nudges were unlikely to overcome whatever unknown barriers exist which prevent low-income immigrants from naturalizing.[66]

c.   Use Case

This study alongside the first study provides three important considerations for homeland security practitioners/policymakers thinking about implementing nudge interventions. First, nudges do not always work—even if it is a similar nudge, in a similar domain, and among similar populations. A practitioner/policymaker cannot assume a successful nudge intervention with a target group in one circumstance will guarantee similar success in another circumstance, or yield the same results.[67] Second, nudges may be less likely to work where stronger incentives push and/or pull individuals to make different choices than those targeted by the intervention.[68] Third, these push/pull factors may not be clear prior to or after the intervention. Therefore, additional research may be needed to tease out whether any such factors may be interfering with the nudge.

3.   Citizenship Ceremonies as an Opportunity for Behaviour Change: A Quasi-experiment with London Councils[69]

a.   Area of Homeland Security and Type of Intervention Used

Like the first two studies, this study also pertains to immigration. Peter John, Toby Blume, and Kieran Saggar used a quasi-experiment to determine whether behavioral

---

[65] Hainmueller et al., 942.

[66] Hainmueller et al., 944.

[67] Both Sunstein and Halpern make a similar point when they argue for empiricism (i.e., the testing) of nudge interventions. Cass R. Sunstein, "Nudges That Fail," *Behavioural Public Policy* 1, no. 1 (May 2017): 7, https://doi.org/10.1017/bpp.2016.3; Halpern, *Inside the Nudge Unit*, 266–98.

[68] Sunstein makes this point in "Nudges that Fail," 18–19.

[69] Peter John, Toby Blume, and Kieran Saggar, "Citizenship Ceremonies as an Opportunity for Behaviour Change: A Quasi-Experiment with London Councils," *Representation* 56, no. 2 (April 2020): 253–272, https://doi.org/10.1080/00344893.2020.1748701.

interventions in citizenship ceremonies could increase levels of active citizenship.[70] Citizenship ceremonies in the United Kingdom, which resemble the naturalization ceremonies of the United States Citizenship and Immigration Services, are compulsory events where persons who have completed an application for citizenship affirm their rights and duties. Follow-up surveys were sent to 490 ceremony participants (with 240 responding) to determine whether increased participation could be seen in three active citizenship areas: voter registration, volunteering, and blood donation.[71] The researcher used three groups of ceremonies in five locations to measure potential increases responsive to their interventions: citizenship ceremonies as usual (no intervention), ceremonies with a volunteer service present (non-nudge intervention), and ceremonies using behavioral insights and the volunteer service present (nudge intervention).[72]

Unlike the previous two studies, John, Blume, and Saggar provided the methodology they applied to create their nudge interventions. They used the academic literature, practitioner experience, and insights from the registrars to determine which interventions might be the most effective.[73] They subsequently identified and used six behavioral insights, applying a popular nudging framework called MINDSPACE (which will be further explored in the next chapter) to finalize their interventions.[74] John, Blume, and Saggar did not use every behavioral insight expressed in MINDSPACE to create their interventions, and it is unclear why they chose the ones they did. However, they used the following: "messenger, collective action, commitment, timeliness, reciprocity, and social norms."[75]

---

[70] John, Blume, and Saggar, 258.

[71] John, Blume, and Saggar, 258.

[72] John, Blume, and Saggar, 258.

[73] John, Blume, and Saggar, 258.

[74] Paul Dolan et al., "Influencing Behaviour: The Mindspace Way," *Journal of Economic Psychology* 33, no. 1 (February 2012): 264–277, https://doi.org/10.1016/j.joep.2011.10.009. The MINDSPACE framework is a well-known nudge framework, which is also a mnemonic for what the creators consider are the nine most robust automatic effects on behavior. These effects are categorized as follows: Messenger, Incentives, Norms, Defaults, Salience, Priming, Affect, Commitment, and Ego, which the authors claim can be used by practitioners and policymakers to create effective nudges. This framework is discussed in more detail in Chapter III.

[75] John, Blume, and Saggar, "Citizenship Ceremonies as an Opportunity for Behaviour Change," 259.

The "messenger" insight posits that the sender of a message determines its importance to the receiver.[76] For this reason, the former mayor of the town of Barking, an immigrant himself, delivered a message supporting active citizenship (the intervention) in the ceremony locations of Barking and Dagenham.[77] The idea was that the mayor, as an immigrant, would be relatable to the new citizens and thus his message emphasizing civic engagement would be viewed as more important and therefore more persons would participate in active citizenship.[78]

The "collective action" insight argues that collective incentives for doing good for others, not personal benefit alone, motivates people to act.[79] The intervention for the Southwark ceremony was a message that highlighted the benefits of active citizenship and its impact on local communities.[80] The message was presented via testimony from a person who had recently gone through a naturalization ceremony and was encouraged to use inclusive words to evoke a feeling of civic responsibility, in hopes this would increase active citizenship.[81]

The "commitment" insight states commitments can help individuals align their present behavior with their long-term desires and that public pledges are most effective.[82] This insight inspired an intervention in Hounslow in which, directly after a citizenship pledge to the queen, the government representative asked participants to make an additional commitment of active citizenship.[83] The prediction was that this added commitment would increase the number of individuals engaging in active citizenship.

The "timeliness" insight argues that the timing of a request influences the likelihood of a response because decisions can be influenced by mood (e.g., people are more likely to

---

[76] John, Blume, and Saggar, 259.

[77] John, Blume, and Saggar, 259.

[78] John, Blume, and Saggar, 259.

[79] John, Blume, and Saggar, 259.

[80] John, Blume, and Saggar, 259.

[81] John, Blume, and Saggar, 259.

[82] John, Blume, and Saggar, 259–60.

[83] John, Blume, and Saggar, 260.

act on suggestions to contribute to a pension right after they receive a pay raise).[84] John, Blume, and Saggar posited that citizenship ceremonies are likely a time of joy and therefore asking individuals to engage in active citizenship activities at such times would improve participation rates.[85] Bexley used this intervention type, inviting their mayor to discuss the various ways the new citizens could become involved with the local community, and to explain that this information could be found in their informational packets.[86] The timeliness insight predicted that having the mayor focus on citizenship engagement during his speech would lead to higher active citizenship.

The "reciprocity" insight employs people's instinctual understanding of fairness: when given a gift, or after experiencing a generous act, people will want to return it in kind.[87] In Southwark, each new citizen with a new citizenship certificate could take a free photo with a picture of the queen (a £20 value).[88] At the time of the photo, the individual was asked to participate in one of the three active citizenship activities.[89] Reciprocity predicts more persons would volunteer if they received the free photo.

The final insight used to create an intervention was "social norms." This insight assumes that individuals' behaviors can be influenced by others around them and/or what is perceived as normal behavior among groups and/or society generally.[90] Thus, John, Blume, and Saggar created a specific insert in the Westminster citizenship packets highlighting statistics making active citizenship activities appear normal and socially expected.[91] Such normalization of active citizenship was hoped to improve participation among naturalizing attendees.

---

[84] John, Blume, and Saggar, 260.

[85] John, Blume, and Saggar, 260.

[86] John, Blume, and Saggar, 260.

[87] John, Blume, and Saggar, 260–61.

[88] John, Blume, and Saggar, 261.

[89] John, Blume, and Saggar, 261.

[90] John, Blume, and Saggar, 261.

[91] John, Blume, and Saggar, 261.

b. Study Details and Results

John, Blume, and Saggar discovered the behavioral interventions (nudges), when compared to the comparison group (the control), increased the intention to volunteer by 14%, a jump from 52% to 66% (p-value = .04).[92] Further, registering to vote rose from 31% to 45%, a 14% increase (p = .07).[93] In addition, when taking the mean differences of all interventions together, the behavioral interventions seemed to have an overall positive impact.[94] However, due to the small number of persons experiencing each intervention, the researchers could not rule out a possible null effect for each individual intervention (i.e., that the interventions had no effect).[95] Overall, the authors found a positive effect from using behavioral insights, particularly in regards to the active citizenship activity of registering to vote.[96]

c. Use Case

This study underscores the conceptual fuzziness surrounding the creation of nudge interventions. That is, the authors used the MINDSPACE framework as a guide, but also academic literature, practitioner experience, and insights from the registers in formulating their nudge interventions. This combined approach makes it difficult to pinpoint the formulation of the nudge and whether its success or failure resulted from a misapplication of nudge concepts or some other reason. For example, John, Blume, and Saggar reported using the behavioral insight of reciprocity to design their photo-with-the-queen intervention.[97] However, in the MINDSPACE framework, reciprocity is largely listed as a core aspect of *commitment*, though it also plays a role in *incentives* and *norms*.[98] Yet, the study authors listed commitment and social norms as separate behavioral insights, which

---

[92] John, Blume, and Saggar, 261.

[93] John, Blume, and Saggar, 264.

[94] John, Blume, and Saggar, 264.

[95] John, Blume, and Saggar, 265.

[96] John, Blume, and Saggar, 268.

[97] John, Blume, and Saggar, 260–61.

[98] Paul Dolan et al., *MINDSPACE: Influencing Behaviour through Public Policy* (London: Institute for Government, 2010), 34, 38–39, https://www.bi.team/wp-content/uploads/2015/07/MINDSPACE.pdf.

23

they, in turn, used in creating two different interventions. This ambiguity around the use of behavioral concepts to create interventions is not uncommon in the nudge literature and has been pointed out as a serious issue in nudge study reliability.[99] For a practitioner/policymaker contemplating a new intervention, understanding how the choice architects create their nudges can be just as important as whether or not a nudge succeeds. Additionally, the greater the conceptual clarity, the more likely the practitioner/ policymaker can test the effects of that nudge for success and failure and replicate it as necessary.

4. Climate Change Catastrophes and Insuring Decisions: A Study in the Presence of Ambiguity[100]

a. *Area of Homeland Security and Type of Intervention Used*

This study used a default nudge intervention in the area of climate change catastrophes, within the domain of emergency management.[101] A climate change catastrophe is "a low-probability high-impact event that causes wide-scale damage," exemplified by wildfires, storms, and hurricanes.[102] The experimental study looked at whether a change to the default policy (the contribution status)—the nudge—would lead people to insure themselves against a climate change catastrophe.[103]

b. *Study Details and Results*

Sara le Roux conducted a study with 719 participants who played five rounds of a public goods game in groups of two. Public goods are those goods that, once created or

---

[99] Yiling Lin, Magda Osman, and Richard Ashcroft, "Nudge: Concept, Effectiveness, and Ethics," *Basic and Applied Social Psychology* 39, no. 6 (November 2017): 1–14, https://doi.org/10.1080/01973533. 2017.1356304.

[100] Sara le Roux, "Climate Change Catastrophes and Insuring Decisions: A Study in the Presence of Ambiguity," *Journal of Economic Behavior & Organization* 180 (December 2020): 992–1002, https://doi. org/10.1016/j.jebo.2018.07.021.

[101] Although this study focuses on the purchase of insurance, the author found a direct relation to FEMA, because of its mission to respond to weather-related catastrophes.

[102] Le Roux, 992.

[103] Le Roux, 993.

established, everyone consumes (e.g., public education or fire services).[104] This game aims for each participant to keep as much of their initial endowments of 30 currency units as possible.[105] If a climate catastrophe of unknown probability strikes during one of the five rounds, then both individuals lose whatever remains of their endowments.[106] In each round, both individuals can choose an amount from 0 to 4 units to contribute toward insurance without knowing how much the other individual contributed.[107] If, after five rounds, the group collectively contributed 20 or more currency units towards insurance, then the individuals would be safe from a climate catastrophe and would not lose their remaining endowment. The individuals could not communicate with each other.[108]

The study employed four treatments, with the first one serving as the baseline (the control). The other three treatments varied slightly from the first one. Only the fourth treatment, the nudge treatment, is relevant to this thesis. In the fourth treatment, the study automatically enrolled (default nudged) each individual in the group to make a defined contribution of two currency units to the insurance pot.[109] If an individual did not want to contribute the defined two currency units or wanted to contribute more than two, s/he had to solve a simple math problem to ensure it was a conscious and concrete decision and not a mistake.[110] The nudge treatment resulted in fewer groups successfully reaching the 20 unit minimum threshold to purchase insurance (57 groups or 58.76%), compared to the control group (60 groups or 66.67%).[111] In addition, the nudge group had a higher inefficiency rate—contributing less or more than the 20 unit insurance purchase threshold—of 71.13% compared to the control of 66.67%.[112] As a result, it was determined

---

[104] Le Roux, 997.

[105] Le Roux, 994.

[106] Le Roux, 994.

[107] Le Roux, 997.

[108] Le Roux, 994.

[109] Le Roux, 998.

[110] Le Roux, 998.

[111] Le Roux, 999.

[112] Le Roux, 999.

the default nudge intervention did not work and possibly backfired, resulting in a boomerang effect, which le Roux describes as occurring when "an attempt to persuade a subject results in the unintended consequence of him adopting an opposing position instead."[113]

c. Use Case

This study provides two important caveats for practitioners/policymakers looking to implement nudges. First, even though scholars consider default nudges to be the most effective type, this study shows they are not necessarily successful.[114] Second, nudges might create the opposite result from the result intended. The worst outcome is not an ineffective nudge (a null result), but one that weakens the effect sought.

5. Text Message Reminders Decreased Failure to Appear in Court in New York City[115]

a. Area of Homeland Security and Type of Intervention Used

This study was discovered through the gray literature search and concerns the area of criminal justice.[116] Although the criminal justice context was not initially seen to be narrow enough to fall within the academic search, two reasons supported this study's inclusion. First, the interventions were conducted by a behavioral science team, ideas42, identified by the Action Design Network. Second, the specific subdomains in which the behavioral interventions were used were judged to be sufficiently similar to other homeland security ones.[117]

---

[113] Le Roux, 999–1000.

[114] Thaler and Sunstein, *Nudge*, 85–89.

[115] Brice Cooke et al., *Using Behavioral Science to Improve Criminal Justice Outcomes* (Chicago: UChicago Crime Lab and Ideas42, 2018), https://www.ideas42.org/wp-content/uploads/2018/03/Using-Behavioral-Science-to-Improve-Criminal-Justice-Outcomes.pdf.

[116] The Legal Information Institute defines criminal justice as "a generic term that refers to the laws, procedures, institutions, and policies at play before, during, and after the commission of a crime." See "Criminal Justice," Legal Information Institute, July 2022, https://www.law.cornell.edu/wex/criminal_justice#:~:text=Criminal%20justice%20is%20a%20generic,the%20commission%20of%20a%20crime.

[117] It is arguable whether homeland security is a more specialized field under the criminal justice umbrella.

This study attempted two interventions to improve rates of failure to appear (FTA) in court for low level offenses in New York City. The first intervention utilized a quasi-experimental approach called regression discontinuity design (a pretest-posttest comparison) in order to test whether redesigning the summons form to make relevant information more salient would decrease FTAs.[118] The second intervention used a randomized controlled trial to examine whether text message reminders (similar to intervention "c" in Study Two) reduced FTAs.[119] The two interventions are not explicitly classified by the authors as nudge interventions, but the interventions meet the criteria to be considered nudges.[120]

The two interventions were formulated by ideas42 and the University of Chicago's Crime Lab using ideas42's "behavioral diagnosis methodology" which identified four main factors leading to FTAs: incorrect mental models, present bias, social norms, and inattention.[121] The methodology used was not defined in the study, but it appears to have four steps: (1) Define, (2) Diagnose, (3) Design, and (4) Test.[122] Classifications of the nudge intervention types were not offered within the study; it appears the interventions fit within "provision of information" and "the use of social norms and salience" nudges within the *House of Lords Behaviour Change Report* taxonomy.

b. *Study Details and Results*

Brice Cooke et al. conducted two overarching interventions in this study. The first intervention involved redesigning and replacing the old summons form in March 2016 and fully adopting a new one in June 2016.[123] The research team's regression discontinuity design determined those who received the new summons form showed rates of FTA 6.4%

---

[118] Cooke et al., *Using Behavioral Science to Improve Criminal Justice Outcomes*, 4, 15.

[119] Cooke et al., 15.

[120] Cooke et al., 19.

[121] Cooke et al., 9.

[122] BETA Project Team, *Small Changes, Real Impact: Applying Behavioral Economics in Asset-Building Programs* (BETA Project Team, 2013), http://www.ideas42.org/wp-content/uploads/2015/05/CFED-ideas42-Small-Changes-Real-Impact.pdf.

[123] Cooke et al., *Using Behavioral Science to Improve Criminal Justice Outcomes*, 15.

27

lower than those who received the old summons form.[124] The number of participants in this first part of the study was not listed.

The second major intervention included a randomized controlled trial from March 2016 to September 2017 and included anyone in New York City who had been issued a summons and who provided a cell phone number.[125] Twenty thousand recipients received either pre-court messages, post-court (post-FTA) messages, or no messages (the control group).[126] The pre-court messages were categorized into four groups: plan-making messages, consequences messages, a combination of both plan-making and consequences messages, or no messages (see Table 2).[127] The post-FTA messages, which were only issued if an individual did not show up to court, were divided into eight groups: pre-court combination + post-FTA consequences, pre-court consequence + post-FTA consequences, pre-court consequence + no post-FTA message, pre-court plan-making + post-FTA consequence, pre-court plan-making + no post-FTA message, no pre-court message + post-FTA consequences, no pre-court message + post-FTA social norms, and no pre-court messages + no post-court messages (see Table 3).[128] Though twenty thousand recipients received the messages, the specific breakdown of participants and who received which message(s) was not provided.

---

[124] Cooke et al., 15.

[125] Cooke et al., 15.

[126] Cooke et al., 15.

[127] Cooke et al., 16.

[128] Cooke et al., 16–17.

Table 2.   Pre-court Message Groups[129]

Pre-court Messages:	Combination Messages	Consequences Messages	Plan-Making Messages	No Messages
Group 1	X			
Group 2		X		
Group 3			X	
Control				X

Table 3.   Pre-court + Post-court Message Groups[130]

Post-FTA Messages:	No Messages	Consequences Message	Social Norms Message
Group 1-A		X	
Group 2-B		X	
Group 2-C	X		
Group 3-D		X	
Group 3-E	X		
Control-F		X	
Control-G			X
Control-Control	X		

Although the specific number of participants was not provided, the percentage of FTAs per message group were provided and differed based on the type of messages received.[131] If an individual received any pre-court message, FTAs on the day of court were reduced by 21% compared to the no message group.[132] The combination messages (plan-making + consequences) were the most effective at reducing FTAs on the day of

[129] Cooke et al., 16.

[130] Cooke et al., 16–17.

[131] Cooke et al., 16–17.

[132] Cooke et al., 16.

court by 26% (from 38% FTA to 28%).[133] For those individuals who did not show up to court (FTAs), warrant rates after 30 days were compared among the eight post-FTA message groups (see Table 3).[134] All seven message groups had a lower warrant rate than the no message comparison group.[135] The most effective messaging of all the groups was a pre-court combination + post-FTA consequences with a 32% decrease (from 24.3% open warrants to 16.6%).[136] Additionally, it was determined that pre-FTA messages were 11% more impactful compared to post-FTA messages and that consequences messages were 2% more effective than social norms messages.[137]

Figure 1.   Open Warrant Rate 30 Days after Court Dates[138]

c.   Use Case

As in Study One, this study provides further evidence that informational nudges can be cheap and effective in the right contexts (e.g., on governmental forms), but are not a panacea. Although one cannot know a priori whether other governmental forms in

---

[133] Cooke et al., 16. Note: These gains are in addition to those from the redesign of the summons.

[134] Cooke et al., 16.

[135] Cooke et al., 17.

[136] Cooke et al., 17.

[137] Cooke et al., 16.

[138] Source: Cooke et al., 17.

30

homeland security are likely to benefit from informational nudges, the relatively low cost and easy scalability of using informational nudges on forms relative to their potential benefits should motivate additional experimentation.

In addition, Cooke et al. argue their study indicates that nudges can be just as effective in criminal justice as they are in non-criminal domains.[139] Furthermore, oftentimes criminal justice focuses on deterrence, but behavioral science literature and this study indicate not all persons carefully weigh the costs and benefits of their actions, which is necessary for effective deterrence.[140] Behavioral science techniques, such as nudges, may improve criminal justice outcomes beyond increasing or decreasing penalties.[141] Since homeland security can often have significant overlap with criminal justice, such arguments should be of keen interest to any homeland security practitioners/policymakers interested in nudges.

6. Metropolitan Police's Strategic Insight Unit[142]

a. *Area of Homeland Security and Type of Intervention Used*

This study was discovered through the gray literature search and concerns the area of cybersecurity. Similar to Study Five, the context of cybersecurity was deemed overbroad for inclusion in the academic search.[143] The BIT conducted this study as an attempt, through three non-randomized interventions, to reduce the Metropolitan Police Service's susceptibility to phishing attacks.[144] As with Study Five, the term "nudge" is not utilized

---

[139] Cooke et al., 19.

[140] Cooke et al., 6.

[141] Cooke et al., 6.

[142] "Strengthening the Metropolitan Police against Cyber Attacks," Behavioural Insights Team, accessed April 20, 2021, https://www.bi.team/case-studies/strengthening-the-metropolitan-police-against-cyber-attacks/.

[143] It is acknowledged that cybersecurity is a significant mandate of homeland security. However, the term itself goes so far beyond homeland security, it was judged to be beyond the scope of this paper (as was digital nudging). However, technological seduction was included in the systematic search.

[144] The BIT was formerly founded in 2010 as part of the UK government. It is now a private for-profit social purpose company. See Halpern, *Inside the Nudge Unit*, xiii; "Who We Are," Behavioural Insights Team, accessed September 22, 2022, https://www.bi.team/about-us-2/who-we-are/; Behavioural Insights Team, "Strengthening the Metropolitan Police against Cyber Attacks."

in the study itself, but the BIT is known colloquially as "The Nudge Unit," and they used something similar to a provision of information by offering three types of preventative trainings as interventions.

b. *Study Details and Results*

The BIT tested three types of preventive trainings about phishing emails in groups, alongside a control group which received no training. Individuals either received a Centre for the Protection of National Infrastructure email; an email from BIT designed based on BIT's research and including simple rules of thumb for avoiding phishing scams; or the same email from BIT delivered immediately after the target activated a mock phishing email that took them to a mock credential page (BI Embedded training).[145] Seventeen thousand officers were randomly assigned to one of these four training groups.[146] The BIT team then sent mock phishing emails three weeks and three months after the trainings occurred.[147] All three training interventions reduced the number of persons who clicked on the mock phishing emails, but the BIT Embedded training had the greatest reduction in clicks by 29.48% after three weeks and 21.33% after three months.[148]

c. *Use Case*

This study shows one important reality: nudges can be used on individuals working for or within an organization, not just individuals external to them. Although nudge architects external to the organization were involved in this example, all persons are susceptible to nudges, even homeland security professionals thinking about implementing nudges to pursue homeland security objectives. Further, nudges may be utilized *within* homeland security organizations. Nudge use does not have to be limited to specific homeland security contexts (e.g., terrorism or emergency management) or public facing products (e.g., immigration forms). Many of the potential ethical issues arising from nudge

---

[145] Behavioural Insights Team.

[146] Behavioural Insights Team.

[147] Behavioural Insights Team.

[148] Behavioural Insights Team.

intervention (to be explored in Chapter IV) may become muted if the nudges target the "in-house" organization.

C. KEY TAKEAWAYS FROM THE SELECTED NUDGE STUDIES

Although the studies are selective, there are four key takeaways for homeland security practitioners/policymakers. First, in two of the six studies examined, the nudge failed. Default interventions are generally considered to be powerful choice architecture in nudge theory,[149] but even the default nudge conducted in the fourth study appears to have caused opposite results from those intended. In addition, these studies show that nudge interventions in homeland security are likely to have varying levels of success or may even backfire, just like nudges in other contexts. Homeland security nudges follow the emerging pattern that an effective nudge in one context does not guarantee success in another or even a similar context.

A second takeaway concerns the lack of a standard or broadly accepted nudge taxonomy or framework, which in turn makes it difficult to compare across studies. How one qualifies something as a nudge, even in an academic paper, is not obvious. In four of the six studies, Thaler and Sunstein, who created nudge theory, were not even mentioned. Three of the six studies did not provide a methodology for how they created their nudge(s) nor a taxonomy or framework for definition. Only one study, Study Three, cited a well-known nudge framework—MINDSPACE. In the two studies with behavioral teams, both used their own "in-house" methodology to develop their nudge interventions. Such conceptual fuzziness surrounding a nudge intervention and how it is selected for use leads to two serious challenges. First, it makes it difficult to systematically examine whether a nudge itself is or is not being used (or whether the intervention is some other sort of behavioral intervention or even a mandate or ban), which makes it difficult to compare across studies. Second, conceptual fuzziness makes it difficult, if in fact a nudge occurred, to determine a distinct causal link to the outcome, since the variables in creating the nudge are often obscured. Although this thesis attempts to maintain a clear and consistent

---

[149] Thaler and Sunstein, *Nudge*, 85–89.

definition, these studies are representative of the general challenge for those attempting to understand and use nudges in theory and practice.

A third noteworthy takeaway concerns the potential for choice architects to create nudges for various populations. That is, while the majority of the studies focused on creating nudges for individuals external to or independent of an organization, nudges can also be used for those within an organization. Study Six illustrated the use of nudges in this context. There is ample reason to believe nudges can be used within organizations, and that organization members can act as choice architects internally.[150] Furthermore, though not shown in these studies, increasing evidence suggests that choice architects fall prey to the same cognitive biases as everyone else, making them susceptible to nudges.[151] Such an observation should make potential homeland security nudge architects more humble in their approach, but also opens up further opportunities for nudge experimentation: it could start "closer to home."[152]

A final takeaway is related to the types of interventions used. Though this sampling is not representative, and no consistent taxonomy or framework was used in the studies themselves, upon applying the *House of Lords Behaviour Change Report* taxonomy, five of the six studies appeared to use a "provision of information" nudge. There is some evidence in the literature that certain types of nudges are used more than others.[153] While the studies here cannot offer conclusive support to the claim, the frequency of "provision of information" nudges does buttress the possibility. If it can be further substantiated that

---

[150] Such usage does not currently appear to be popular in the literature though there does not seem to be a limit in principle. In fact, it could be argued that individuals working under voluntary contract to an organization are de facto giving permission to the organization to be nudged since in theory, the individual's goals should be aligned with the organization's. As such, nudges could potentially be in the "best interest" of the individual if they are in the "best interest" of the organization.

[151] The active research field around this logic is called behavioral public choice. While still relatively nascent, the evidence seems to suggest bureaucrats are not immune from behavioral biases (i.e., they too appear to suffer from irrationality). For a good overview of this, see Kip Viscusi and Ted Gayer, "Behavioral Public Choice: The Behavioral Paradox of Government Policy" (Mercatus Working Paper, George Mason University, 2018), http://dx.doi.org/10.2139/ssrn.3191387.

[152] Additionally, nudges aimed internally may have fewer ethical concerns than those used on an external target population. The ethics of nudges in the context of homeland security will be further explored in a later chapter.

[153] Hummel and Maedche, "How Effective is Nudging?," 48–49.

some types of nudges are more frequently used than others, these trends may be relevant to practitioners/policymakers looking to implement a nudge for two related reasons. First, these trends will provide context to determine how novel a proposed nudge intervention may be, and therefore how quick and fruitful searches for comparable examples are likely to be. Second, these trends will provide hints about which interventions are likely to be easier to implement and/or justify, with a presumption that more common nudges are generally easier, may have templates to follow, and are more justifiable. As creating and implementing nudges are not without cost or controversy, potentially minimizing these factors can increase the probability of success.

D.   CONCLUSION

This chapter examined a selection of six studies of various nudge interventions used in several different homeland security contexts. The relatively low number of studies supports the notion that nudges are not being commonly used throughout homeland security. Further, four key takeaways were provided for homeland security practitioners/ policymakers who are considering implementing their own nudge interventions. Such insights showed that the effectiveness of nudge interventions vary; that nudge architects do not share a consistent or dominant theoretical framework among them; nudges can be used on a variety of populations—even, potentially, on choice architects themselves; and the types of nudge interventions used in practice vary.

THIS PAGE INTENTIONALLY LEFT BLANK

III.   CAN NUDGES BE EFFECTIVE IN HOMELAND SECURITY?

The previous chapter explored cases of nudge interventions used in homeland security contexts. Relative to the overall popularity of nudge theory, finding examples of homeland security nudge interventions proved difficult. Even so, four takeaways emerged from the studies surveyed. Namely, nudge interventions have varying effectiveness and outcomes in homeland security contexts; no dominant nudge taxonomy or framework exists; nudges can be used on various populations; and certain types of nudges appear more likely to be used than others. Such takeaways set up an important question for homeland security practitioners/policymakers thinking about utilizing nudge interventions: can nudge interventions be successfully implemented across homeland security contexts (i.e., can nudges be effective in the homeland security domain)? In response, this chapter proposes a qualified "yes," based on a conceptual exploration of nudge effectiveness.

This chapter seeks to conceptually understand the potential for nudge success in homeland security by exploring nudge effectiveness more generally. Such exploration meets two objectives. First, it provides homeland security practitioners/policymakers with a foundational understanding of nudge effectiveness and an appreciation of its complexity. Second, with a better understanding of what makes nudges effective, a homeland security practitioner/policymaker can better judge how and where nudges might be effective and warranted in her own specific context.[154]

---

[154] One potential obstacle holding back nudge implementation may be the perceived costs for any sort of nudge failure. In the homeland security domain, the costs of failure can be lives lost, which may make nudge experimentation less justifiable.

A. EFFECTIVE NUDGES

Examining general nudge effectiveness—defined as an intervention reliably resulting in the desired outcome—can be a challenge.[155] Much of the challenge stems from the difficulty of generalizing from the current nudge evidence. Specifically, nudge effectiveness research has largely focused on certain contexts (such as health or digital nudging), often contains large heterogeneity across various dimensions (e.g., study design, populations, interventions, etc.), and is potentially impacted by publication bias.[156]

Facing the challenge of assessing nudge effectiveness, this section takes a three-pronged approach. First, it discusses some of the more popular frameworks nudge advocates have developed specifically with the intent to help practitioners/policymakers create effective interventions. Second, it analyzes nudge meta-analyses and scoping reviews related to nudge effectiveness. Last, it explores a selection of limitations to nudge effectiveness. This approach provides a fairly comprehensive understanding of nudge effectiveness, which can be leveraged by homeland security practitioners/policymakers contemplating nudge interventions in their specific homeland security contexts.

1. A Handful of Nudge Frameworks[157]

This section explores some of the more popular nudge frameworks created to guide practitioners/policymakers in the formation of effective nudges. Addressing every

---

[155] Note that this chapter does not treat the *efficiency* of nudges (i.e., the per-dollar cost of a nudge in absolute terms or relative to an alternative policy intervention). Although an important question, the question lies outside the scope of this thesis. Although some evidence suggests governmental nudges are efficient, the premise behind Thaler and Sunstein's nudge theory is that it is cheap, not just effective. Shlomo Benartzi et al., "Should Governments Invest More in Nudging?," *Psychological Science* 28, no. 8 (June 2017): 1042, https://doi.org/10.1177%2F0956797617702501; Lin, Osman, and Ashcroft, "Nudge," 300.

[156] Hummel and Maedche, "How Effective is Nudging?," 48, 54. Note that Hummel and Maedche's study aims to be an exception to the current state of affairs. See also Lin, Osman, and Ashcroft, "Nudge," 299–300; Barnabas Szaszi et al., "A Systematic Scoping Review of the Choice Architecture Movement: Toward Understanding When and Why Nudges Work," *Behavioral Decision Making* 31, no. 3 (July 2018): 356, 362, https://doi.org/10.1002/bdm.2035.

[157] While not all nudge frameworks will be listed, some others of note include BASIC and SNAP. Organisation for Economic Co-operation and Development, *Tools and Ethics for Applied Behavioural Insights: The BASIC Toolkit* (Paris: OECD Publishing, 2019), https://doi.org/10.1787/9ea76a8f-en; Ivo Vlaev and Paul Dolan, "From Changing Cognitions to Changing the Context: A Dual-Route Model of Behaviour Change" (discussion paper, Imperial College, 2009), 1–94, https://spiral.imperial.ac.uk/bitstream/10044/1/4197/1/Dolan%202009-04.pdf.

framework created for nudge interventions lies beyond the scope of this thesis. The four selected frameworks are NUDGES, MINDSPACE, EAST, and Sunstein's Ten Important Nudges. Through exploring these frameworks, the reader should better understand the underlying processes and principles determining whether nudges could be effective in a policy context.

a. The NUDGES Framework

Since Thaler and Sunstein popularized nudge theory, the framework developed in *Nudge* marks the starting point for this analysis. The authors argue for a mnemonic framework, *NUDGES,* based on six principles for good choice architecture.[158] These principles are: i**N**centives, **U**nderstanding mappings, **D**efaults, **G**ive feedback, **E**xpect error, and **S**tructure complex choices.[159] In discussing these principles, Thaler and Sunstein do not distinguish between choice architecture as a system and the more narrow context of operating in the system using nudges. In addition, they substitute "good" for "effective," which is potentially inaccurate since "good" also implies an ethical judgment. As such, the following principles should be presumed for effectiveness and to apply to nudges as well as choice architecture more generally (Chapter IV will explore the ethics of nudges). Understanding these principles can provide a foundation to understanding what makes nudges effective.

Thaler and Sunstein's first principle argues choice architects should think about the right "iNcentives" for the right people.[160] In thinking about incentives, a choice architect can ask themselves four questions to better understand the incentives at play: who uses, chooses, pays, and profits?[161] For example, if a choice architect were looking at increasing the amount of healthy food consumption at a business's cafeteria, she would want to look at who is using the cafeteria, who makes the food choices, who is paying for the food, and who profits in the current setup. Answers to these questions can help her figure out where

---

[158] Thaler and Sunstein, *Nudge*, 102.

[159] Thaler and Sunstein, 102.

[160] Thaler and Sunstein, 99–101.

[161] Thaler and Sunstein, 99.

an alteration/nudge might encourage behavior change. Thaler and Sunstein believe that the free market has often already addressed these questions, but sometimes various incentives conflict and/or choosers do not notice which incentives are at play.[162] As such, a choice architect must examine the salience of the incentives in addition to the above other questions to help decision-makers choose wisely.[163] In the cafeteria example, employees likely notice the costs of the items purchased, but they may not know or notice the amount of fat or sugar of an item (i.e., the sugar/fat content is not salient). Recognizing this possibility, the choice architect can reason purchasers may be unknowingly consuming higher fat/sugar items because such information is not being made salient. They can then attempt to make this information more salient, say by putting the sugar and fat grams in red text, or placing a "high sugar" or "high fat" warning label on the food. In summary, understanding the various incentives at play can help a choice architect more effectively nudge individuals.

"Understanding mappings" is the second principle that Thaler and Sunstein advocate choice architects consider to create effective nudges.[164] A mapping is the relationship between an individual's choice and her resulting welfare.[165] An individual may more easily predict the impact of some choices than others on her own welfare (i.e., some decisions are more easily mapped). To illustrate an easier mapping situation, Thaler and Sunstein use the example of a person choosing from a handful of familiar ice cream flavors, versus a more complicated mapping situation choosing among different treatment options for prostate cancer.[166] Selecting a cancer treatment is a more difficult mapping situation because the individual is unlikely to have a good idea which treatment option will lead to higher welfare because the individual likely has little experience in this domain, may not understand how he would feel under different treatments, the probabilities of success, etc. In short, individuals in difficult mapping situations may not understand how

---

[162] Thaler and Sunstein, 100.

[163] Thaler and Sunstein, 100–101.

[164] Thaler and Sunstein, 93–96.

[165] Thaler and Sunstein, 94.

[166] Thaler and Sunstein, 94.

to make the optimum choice relative to their welfare and are, as a result, more likely to make a suboptimal choice. Therefore, a choice architecture or nudge that improves individuals' ability to map choices to their welfare (e.g., by simplifying complex treatment options into an easy-to-understand pamphlet) can more effectively influence choice (presuming the intended outcome is aligned with the individual's welfare), making it more effective.

Preset "Default" choices are very strong influences on behavior and are Thaler and Sunstein's third principle.[167] A preset choice is the one an individual will end up making (actively or not) if he or she does not take an action. An example is the desktop image that automatically loads on a new computer unless it is manually changed. Defaults are based on the psychological idea that people often choose the path of least resistance whether or not it is to their benefit.[168] Thaler and Sunstein argue the defaults in a system should be examined and perhaps even changed by the choice architect to nudge people into welfare-enhancing decisions.[169] Thaler and Sunstein do note that the choice of defaults can be ethically and practically controversial, even though they believe such choices are unavoidable unless an individual is forced to choose from a set of options (termed mandated choice).[170] Although an effective choice architecture does not need to incorporate defaults, they can be very effective when instituted.

A nudge does not always need to alter individuals' decisions before they make them in order to be effective. Thaler and Sunstein's fourth principle, "Give feedback," assumes individuals perform best based on feedback (i.e., when information is given on what they are doing right and wrong).[171] They further argue some of the most important feedback addresses errors or something that might go wrong.[172] An example of feedback about something that might go wrong would be the gas light turning on when one's car is running

---

[167] Thaler and Sunstein, 85–89.

[168] Thaler and Sunstein, 85.

[169] Thaler and Sunstein, 85–87.

[170] Thaler and Sunstein, 87–88.

[171] Thaler and Sunstein, 92.

[172] Thaler and Sunstein, 92.

low on gas. In short, a system or nudge that provides feedback at the right time should be more effective and provide greater benefit to the individual even when an individual has already made a choice.[173]

The "Expect error" principle is related to the "Give feedback" principle in that it too does not seek to alter people's decisions prior to them being made.[174] Rather, it is based on the idea that individuals should be expected to make mistakes and therefore the system or nudge should seek to mitigate the resultant consequences.[175] One common error individuals make is called a "post-completion" error, occurring when an individual forgets things related to a previous step in the process after completing the main task.[176] Someone forgetting to retrieve her ATM card after getting cash is an example of this error given in *Nudge*.[177] A way to nudge users to make fewer of these errors would be to create a "forcing function," which requires an individual to perform a task before achieving a particular outcome.[178] In this example, the forcing function might require a user to remove her ATM card from the machine before she is able to retrieve her cash, thus minimizing the chance of forgetting the card. Expecting errors and then creating systems or nudges to minimize or prevent such errors can lead to more effective systems and nudges.

The final principle leading to more effective nudges is "Structure complex choices."[179] When individuals are presented with a limited number of choices, they are often able to weigh each choice relative to each other in order to make an optimum selection.[180] The more complex and numerous the choice(s), the more individuals need to use alternative (simplifying) choice strategies.[181] For example, if someone wanted to buy

---

[173] Thaler and Sunstein, 92–93.

[174] Thaler and Sunstein, 89.

[175] Thaler and Sunstein, 89.

[176] Thaler and Sunstein, 90.

[177] Thaler and Sunstein, 90.

[178] Thaler and Sunstein, 90.

[179] Thaler and Sunstein, 96–99.

[180] Thaler and Sunstein, 96.

[181] Thaler and Sunstein, 97.

a new car, they could list out all the different variables between the cars (e.g., price, color, comfort, top speed, etc.) and then determine which are more important, with the most important variables driving the decision. This process of decision-making is termed a "compensatory strategy" because the value of one variable can compensate for another variable(s).[182] A nudge architect can understand when and where simplification will be employed and thus structure the choice sets to influence individual decisions—for example, by putting healthier items in the beginning of a long food menu, rather than in the very back.[183] An individual may be more likely to benefit from a nudge that simplifies or better structures choice sets as they become more complicated.[184] As such, understanding choice sets and how to structure them can make a nudge more effective.

With these six principles in mind, Thaler and Sunstein argue choice architects can create systems or nudges that are more likely to improve outcomes for individuals (i.e., the nudges are more likely to be effective).[185] These principles are not limited to particular contexts or populations. As such, a homeland security practitioner/policymaker can conceivably use these principles to create effective nudges.

b.   The MINDSPACE Framework

This choice framework focuses on specific aspects, often environmental, that shape unconscious decisions. Paul Dolan et al.'s MINDSPACE framework is offered to help those who want to apply this "context model of behaviour," and suggests choice architecture can predictably influence behavior largely at the subconscious level (System 1) by changing the decisional environment (i.e., by nudging).[186] They argue that the MINDSPACE framework synthesizes some of the most robust effects related, but not

---

[182] Thaler and Sunstein, 97.

[183] Thaler and Sunstein, 97.

[184] Thaler and Sunstein, 92–93.

[185] Of course, one can theoretically "nudge" an individual toward behavior that does not make the individual better off. However, Thaler and Sunstein would argue such an intervention would not classify as a nudge as they have defined it. Thaler and Sunstein, 6.

[186] Dolan et al., "Influencing Behaviour," 265.

43

exclusively, to influencing the behavior of individuals through the automatic system.[187] These nine effects on behavior may have some overlap but are: "Messenger, Incentives, Norms, Defaults, Salience, Priming, Affect, Commitment, and Ego."[188] Understanding these nine effects can lead to a better understanding of what makes a nudge effective.

(1) Messenger

The person who delivers a message can influence the behavior of the receiver. This "Messenger" effect holds that information takes on unconscious weight based on its originator.[189] A message that comes from someone who has authority and/or shares characteristics with the receiver (e.g., gender, ethnicity, culture, etc.) receives greater consideration; one's feelings towards the messenger also influence how the message is received.[190] For example, a female doctor, who is both respected and liked, speaking to a group of female nurses will likely produce more compliant behavior in these nurses. If one seeks to nudge people through information, understanding who should give the message is an important consideration.

(2) Incentives

Behavioral incentives influence individuals' behaviors even though classical supply and demand economics does not account for such effects. Dolan et al. argue five main behavioral economic incentives can particularly influence behavior. The five incentives are reference points, losses that loom larger than gains, overweighting of small probabilities, discrete mental accounts, and present bias.[191] Each one of these arises from a psychological, rather than a strictly economic influence.

Using the knowledge of behavioral incentives allows for the creation of more effective interventions. Reference point effects argue that not only does the final outcome

---

[187] Dolan et al., 265.

[188] Dolan et al., 265.

[189] Dolan et al., 266.

[190] Dolan et al., 266.

[191] Dolan et al., 267.

matter to individuals, but also how far such an outcome deviates from some perceived beginning reference point—influence the reference point and you influence the final outcome.[192] Loss aversion, where individuals suffer from losses more than they appreciate gains, can be effectively levered by interventions focusing individuals' attention on perceived losses rather than positive gains (e.g., rewards).[193] In addition to loss aversion, individuals appear to be more influenced by small probabilities, especially regarding events that are more readily imagined or recalled.[194] As such, individuals can potentially be more influenced if risks are advertised and/or the perceived intensity of risks are increased (e.g., by using graphic language or images).[195] Another behavioral incentive relates to the idea that most individuals think of money as sitting in different mental buckets (e.g., savings, entertainment, rent, etc.), and people hesitate to move money between them.[196] One can influence behavior by altering how people perceive what goes in or out of these buckets. Last, people tend to prefer smaller, immediate payoffs over larger, more delayed ones.[197] As such, a choice architect should understand these and other behavioral incentives— which vary from the standard economic incentives—can be leveraged to improve the effectiveness of nudges.[198]

(3) Norms

Not only do individual psychological principles guide behavior, but the psychology of the group does, too. The norms effect suggests that conforming to social and cultural norms within a given society or group shapes individual behavior.[199] Norms are "the behavioural expectations, or rules, within a society or group, or alternatively a standard,

---

[192] Dolan et al., 267.

[193] Dolan et al., 267.

[194] Dolan et al., 267.

[195] Dolan et al., 267.

[196] Dolan et al., 268.

[197] Dolan et al., 268.

[198] Dolan et al., 268.

[199] Dolan et al., 268.

customary, or ideal form of behavior."[200] Such norms can influence behavior at conscious and subconscious levels. Dolan et al. propose four important lessons for nudges related to norms. First, when a norm of behavior is desirable, informing people about the norm makes sense.[201] Second, the norm presented should be as relatable to the target population as possible.[202] For example, a norm indicating electric consumption conservation would be more relatable if it is about one's immediate neighborhood rather than the entire state. Third, just because something is a norm doesn't mean it cannot benefit from reinforcement.[203] Fourth, one should be cautious that presenting a norm can backfire if it leads to a relative increase in one's behavior.[204] For example, if a norm intervention intending to save water conveys a message that most people in one's neighborhood water their grass three times a week but the recipient of the norm waters twice per week, the recipient might actually increase their water usage to three times per week, achieving the opposite of the goal. In summary, an intervention can be more successful if it highlights desirable norms for individuals, targets individuals with norms, reinforces existing norms, and/or does not unintentionally provide information to certain individuals which unintentionally increases the unwanted behavior.[205] Understanding when and how to apply group psychological influences to nudges can improve their effectiveness.

(4)   Defaults

A default is the option that will result if an individual takes no action.[206] As this effect resembles the discussion in the NUDGES framework, this section just reminds the reader defaults rate as one of, if not the most effective influences on behavior.

---

[200] Dolan et al., 268.

[201] Dolan et al., 268.

[202] Dolan et al., 268.

[203] Dolan et al., 268.

[204] Dolan et al., 268.

[205] Dolan et al., 268–69.

[206] Dolan et al., 269.

(5)   Salience

Since attention has limits, choice architects can draw out the pertinent aspects of choice to better target their interventions. Salience refers to that which draws individuals' attention.[207] All persons' conscious attention has limits relative to the amount of total available information in a decisional context.[208] In such contexts, individuals are more likely to pay attention to things that are "novel," "accessible," and "simple" and will not consciously process information unless it is made salient.[209] Within the salience effect is the idea of anchoring, which argues individuals use an initial state of affairs, even if arbitrary, to anchor their eventual decision.[210] For example, the Manufacturers Suggested Retail Price on new car windows will act as an anchor that will influence the eventual negotiated price. In short, utilizing salience effects can help nudges be more effective by capturing the attention of the targeted individuals.

(6)   Priming

Prior exposure to various stimuli, even at an unconscious level, may influence future behavior.[211] This "priming" effect appears to act outside of conscious awareness.[212] For example, exposing people to the scent of a cleaner led to more individuals keeping their tables clean at a restaurant.[213] The current state of research remains largely unclear on which of the plethora of stimuli individuals experience every day have significant behavioral effects.[214] Nevertheless, a nudge may have enhanced effectiveness if it can be associated with certain primes.

---

[207] Dolan et al., 269.

[208] Dolan et al., 269.

[209] Dolan et al., 269.

[210] Dolan et al., 270.

[211] Dolan et al., 270.

[212] Dolan et al., 270.

[213] Dolan et al., 270.

[214] Dolan et al., 270.

(7) Affect

Emotions can have a strong influence on behavior. The affect effect describes individuals' emotional experience in response to stimuli.[215] These emotional responses can influence behavior and judgments before conscious deliberative cognition occurs.[216] Further, emotions can affect choices even in uncertain circumstances and over the short and long term.[217] One can influence behavior by changing the emotional context in which individuals behave, for example, by invoking disgust or sadness.[218] Such affect effects can be a powerful tool to help create effective nudges.

(8) Commitment

Individuals' future behaviors can be subconsciously impacted by a past conscious choice. This can happen through various precommitment devices (e.g., signing up for a monthly automatic withdrawal amount to a retirement account).[219] Research surrounding commitments also shows that commitments are more effective if higher costs can be associated with not meeting them.[220] One of the most successful paths for increasing commitment costs is to make them public.[221] Reciprocity, in which an individual responds to another's behavior based on perceived fairness rather than rational cost analysis, also impacts commitments.[222] In short, understanding when and how commitment devices can influence future behavior can improve the effectiveness of a nudge.

(9) Ego

Individuals tend to act in accordance with how they view themselves and the groups with which they identify. This desire to act in accordance with one's self-image is termed

---

[215] Dolan et al., 271.

[216] Dolan et al., 271.

[217] Dolan et al., 271.

[218] Dolan et al., 271.

[219] Dolan et al., 271.

[220] Dolan et al., 271.

[221] Dolan et al., 271.

[222] Dolan et al., 271.

the "Ego" effect.[223] Further, individuals often compare themselves (and their groups) to others in a positively biased manner.[224] Additionally, individuals will view the world through attributions that make them feel more positive about themselves, which can be levered by interventions that affect self-esteem.[225] Another effect of ego is when small and easy changes can actually lead to bigger and more difficult changes in behavior as individuals attempt to align their current self-image with their prior decisions.[226] As such, understanding how individuals view themselves and their groups can allow for a choice architect to create seemingly minor interventions that can lead to outsized changes in behavior, thus potentially allowing more effective nudges.

(10)   Summary

The MINDSPACE framework aims to influence behavior through interventions largely targeting the subconscious. Dolan et al. specifically argue for practitioners/ policymakers to use these principles as a sort of checklist or toolkit for effectively influencing individuals.[227] They further argue that many of Thaler and Sunstein's NUDGES principles overlap with or are explained by MINDSPACE effects.[228] However, Dolan et al. acknowledge the need for more analysis and data to gauge the effectiveness of these "nudge-like" interventions, whether there are different responses in different populations, and whether any of the effects lead to habitual behavior.[229] But when viewed as a whole, MINDSPACE provides an expansive set of effects for a homeland security practitioner/policymaker looking to develop effective nudges.

---

[223] Dolan et al., 272.

[224] Dolan et al., 272.

[225] Dolan et al., 272.

[226] Dolan et al., 272.

[227] Dolan et al., 273.

[228] Dolan et al., 273.

[229] Dolan et al., 273–74. It should be noted that not all interventions need to be repeated to be effective. For example, a default organ donation intervention most likely needs to work only once.

c. The EAST Framework

As with the other two frameworks so far discussed, the EAST framework was intended for practical use. It was developed by the BIT as a simplified tool for daily use in order to help its users examine and address a problem behaviorally.[230] EAST stands for Easy, Attractive, Social, and Timely.[231] Although the BIT does not explicitly state the EAST framework applies to nudges as this thesis defines them, the BIT itself is informally known as The Nudge Unit. It was the first to apply behavioral science in a systematic way, and hundreds of current behavioral insight teams have been modeled after them.[232] Additionally, Thaler himself contributed to the EAST framework, which is a distinct, but somewhat simplified derivation of the MINDSPACE framework.[233] As with the two previously explored frameworks, the EAST framework can provide a lens to better understand nudge effectiveness.

One can influence behavior through the costs associated with performing it. Individuals are often more likely to pursue behaviors that are "Easy."[234] To apply this concept, a choice architect can do one to three different things. He can decrease things that make a preferred choice/task more difficult—that is, reduce the friction or hassle associated with completing it—or increase these aspects to make other choices more difficult.[235] He can also understand what defaults are at play and change them or implement new ones.[236] Last, he can simplify the message or process, thus making it easier for individuals to understand.[237] One or all of these strategies can be applied to make a nudge more effective.

---

[230] Halpern, *Inside the Nudge Unit*, 60–61.

[231] Halpern, 60.

[232] Malte Dewies et al., "Applying Behavioural Insights to Public Policy: An Example from Rotterdam," *Global Implementation Research and Applications* 2, no. 1 (March 2022): 53, https://doi.org/10.1007/s43477-022-00036-5.

[233] Owain Service et al., *EAST: Four Simple Ways to Apply Behavioural Insights* (London: Behavioural Insights Team, 2014), https://www.bi.team/wp-content/uploads/2015/07/BIT-Publication-EAST_FA_WEB.pdf.

[234] Halpern, *Inside the Nudge Unit*, 65.

[235] Halpern, 65–77.

[236] Halpern, 63–65.

[237] Service et al., *EAST: Four Simple Ways to Apply Behavioural Insights*, 16.

Catching individuals' attention through an attractive offer can also influence behavior. However, any attractive offer requires two elements to be successful: (1) it must attract the individual's attention; and (2) it has to be itself attractive/persuasive.[238] To meet the first element often requires the offer be salient, a quality which can be increased through personalization or contrasting two or more things together.[239] Messenger effects, financial incentives (though these are not technically nudges according to Thaler and Sunstein's definition), and non-financial incentives (e.g., shock or humor) can make the offer itself more attractive/persuasive.[240] This "Attract" principle can be used to create more effective nudges.

The third EAST principle for effective intervention is that it should be "Social."[241] This principle is very similar to the social norms effect in the MINDSPACE framework. Here, EAST similarly argues that the actions of others can influence individuals, especially if the individuals targeted are definably similar to the actors.[242] Further, if the nudge can show most individuals perform the desired behavior, it is more likely to be effective.[243] People also tend to reciprocate and act differently if they think others are watching.[244] They are more likely to perform a particular behavior if a "commitment device" is employed.[245] One or all of these social insights can be used to make a nudge more effective.

The final principle for effective nudging argues interventions need to be "Timely."[246] Timeliness relates to when an intervention occurs and is understood through

---

[238] Halpern, *Inside the Nudge Unit*, 102–103.

[239] Halpern, 84, 86, 103.

[240] Halpern, 97–102.

[241] Service et al., *EAST: Four Simple Ways to Apply Behavioural Insights*, 28.

[242] Halpern, *Inside the Nudge Unit*, 125.

[243] Service et al., *EAST: Four Simple Ways to Apply Behavioural Insights*, 28.

[244] Halpern, *Inside the Nudge Unit*, 125.

[245] Service et al., *EAST: Four Simple Ways to Apply Behavioural Insights*, 34.

[246] Service et al., 37.

three distinct aspects.[247] First, in the causal sense of timing, it is better to intervene sooner than later.[248] Second, there are critical moments when intervening can cause a seemingly outsized effect (e.g., language learning in early childhood seems to lead to higher fluency in adulthood).[249] Third, individuals do not have consistent preferences over time.[250] A preeminent example of this is when an individual tells himself he is on a diet, but when presented with cake, decides to eat it.[251] Such inconsistent preferences can also be due to decisional fatigue (the draining of willpower due to the number of decisions or difficulty of decisions made in a time period), priming, or not having a commitment strategy.[252] As with the other principles, one should keep these three aspects of timeliness in mind for a more effective nudge.

The EAST framework is another practical tool that homeland security practitioners/ policymakers can use when thinking about how to create an effective nudge intervention. Like the other frameworks discussed, its applicability is not contextually limited. However, unlike the other two, the BIT argues the EAST framework should only be applied when the nature and context of the problem for which one seeks to intervene are fully understood.[253] In service to this, BIT developed a four-step process: first, an outcome is defined; second, its context is understood; third, the intervention is built; and fourth, it is tested, learned from, and adapted.[254] In this process, nudge builders apply the EAST framework during the third step.[255] As such, understanding this four-step process in conjunction with the EAST framework can provide a homeland security practitioner/

---

247 Halpern, *Inside the Nudge Unit*, 126–127; Service et al., *EAST: Four Simple Ways to Apply Behavioural Insights*, 37.

248 Halpern, *Inside the Nudge Unit*, 128.

249 Halpern, 129.

250 Halpern, 139.

251 In the literature, this is called hyperbolic discounting. Halpern, 139.

252 Halpern, 139–145.

253 Service et al., *EAST: Four Simple Ways to Apply Behavioural Insights*, 43.

254 Service et al., 47.

255 Service et al., 47.

policymaker with a better understanding of how to create and implement an effective nudge.

d.   *Sunstein's Ten Important Nudges*

In Sunstein's essay, "Nudging: A Very Short Guide," he lists what he sees as ten important nudges, possibly the most important, for public policy.[256] Though these ten nudges are more a list than a framework—Sunstein calls them a catalogue—other scholars have referenced them as a framework and they are of significant general importance to this discussion.[257] The ten nudges Sunstein lists are "Default rules," "Simplification," "Use of social norms," "Increases in ease and convenience," "Disclosure," "Warnings, graphic, or otherwise," "Precommitment strategies," "Reminders," "Eliciting implementation intentions," and "Informing people of the nature and consequences of their own past choices."[258] Although Sunstein does not precisely define why the ten nudges are important, the context of his discussion indicates that he believes these are likely to be the most effective nudges.

Most of Sunstein's ten nudges have already been adequately examined in other frameworks above. These include default rules, simplification, use of social norms, increases in ease and convenience, precommitment strategies, and reminders (i.e., feedback). As such, these nudges will not be reexamined here.

However, disclosure, warnings, eliciting implementation intentions, and disclosing consequences require further elucidation to understand their impact on nudge effectiveness. Disclosure nudges are those that provide information to an individual that is hopefully comprehensible and accessible.[259] The more readily understood it is, the more likely it is to shift behavior. Warnings, such as "large fonts, bold letters, and bright colors," can get individuals' attention and can particularly be beneficial in dangerous circumstances.[260]

---

[256] Sunstein, "Nudging," 585.

[257] See, for example, Hummel and Maedche, "How Effective Is Nudging?," 55.

[258] Sunstein, "Nudging," 585–87.

[259] Sunstein, 586.

[260] Sunstein, 586.

Further, they might counteract people's propensity to be overly optimistic, though one must be careful to determine whether people might actually discount a warning rather than heed it.[261] Here, Sunstein argues individuals are more likely to respond positively to warnings if they are provided concrete steps on how to follow them.[262] Another important nudge relates to the idea that people are more likely to follow through on a behavior following a prior elicitation of such an intention.[263] This process is similar to having people commit in advance to a course of action, but different because it requires no commitment. Last, organizations often have a lot of information on individuals' past choices that such individuals may not be aware of themselves (e.g., Google and its knowledge of individuals' search histories).[264] Sunstein argues this information can be provided to individuals, which can in turn shift their behavior.[265] These four nudges, in addition to the six not discussed, are what Sunstein posits to be ten of the most effective ways a choice architect can nudge and thus influence individual behavior.

As with the other frameworks discussed, Sunstein's "Very Short Guide" is meant for practitioners/policymakers with applicability across a wide variety of contexts and populations. A homeland security practitioner/policymaker should understand these nudges and leverage this understanding when contemplating a nudge for her own context.

e.   *Summary*

This section has looked at various nudge frameworks in an attempt to better understand nudge effectiveness. Specifically, these frameworks can provide guidance for creating more effective nudges. It is also notable that, while distinct, the frameworks share a significant number of overlapping characteristics and principles. Yet, it is worth cautioning that there is little causal evidence supporting these frameworks vis-à-vis

---

261 Sunstein, 586.

262 Sunstein, 586.

263 Sunstein, 587.

264 Sunstein, 587.

265 Sunstein, 587.

creating effective nudges.[266] As such, a discussion of frameworks alone does not provide an adequate understanding of nudge effectiveness, especially in relation to a homeland security practitioner/policymaker looking to implement nudges in a novel context. Consequently, the next section tackles nudge effectiveness by exploring its evidence base.

2.   Meta-analyses and Scoping Reviews

This section examines the evidence base surrounding nudge effectiveness through a discussion of meta-analyses and scoping reviews. The author originally posited meta-analyses alone would provide significant insight related to nudge effectiveness because of their quantitative, scientific synthesis of research results.[267] Although this bore some fruit, there were insufficient meta-analyses that reviewed nudge effectiveness generally to allow for a fully fleshed-out discussion. In addition, systematic reviews concerning the effectiveness of nudges were also scarce or covered only domain-specific areas, preventing a general examination of effectiveness.[268] Although the meta-analyses discovered will be discussed in relation to general nudge effectiveness, supplementing them with an examination of scoping reviews added value to understanding nudge effectiveness.

a.   *The Meta-Analyses*

Three databases (ScienceDirect, EBSCO Host, and ProQuest) and Google Scholar were searched for meta-analysis articles relating to nudge effectiveness from 2018 to May

---

[266] The frameworks themselves are based on robust evidence related to specific cognitive behaviors.

[267] Jessica Gurevitch et al., "Meta-Analysis and the Science of Research Synthesis," *Nature* 555, no. 7695 (March 2018): 175–176, https://doi.org/10.1038/nature25753.

[268] Szaszi et al., "A Systematic Scoping Review of the Choice Architecture Movement," 355; Literature reviews were much more common, but these were not considered because literature reviews tend to focus on a very narrow domain and, therefore, were not likely to provide the level of generalizability intended in this chapter. In addition, as was already discussed, nudges appear to be highly domain specific, so generalization of these to homeland security would likely be more problematic than beneficial. Of course, if homeland security reviews were discovered, these issues would be moot. None were found.

2020.[269] Four meta-analyses and one quantitative review of relevance were discovered and analyzed (see Table 4 for a summary of the main findings).[270]

---

[269] These years were chosen for two reasons: scoping reviews and meta-analyses look backward in time, so the more recent, the more likely they will have synthesized the field's most recent evidence; and nudge is an emergent discipline with a quickly evolving evidence base, which argues toward biasing more recent reviews. Additionally, "choice architect" and "choice architecture" were not searched as they did not previously yield any additional relevant articles in Chapter II's search.

[270] This quantitative review does not fit all the search criteria nor have the same level of rigor as a meta-analysis. However, it is included in this discussion because it was the only quantitative study found to directly and robustly attempt an examination of nudge effectiveness *generally* rather than context-dependently. It was discovered fortuitously during the literature review portion of the research phase.

Table 4.   Summary of Meta-Analyses + Quantitative Review Articles

Study	Focus	Sample	Significant Results
Antinyan and Asatryan, 2020[271]	Tax Compliance	n = 979 effect sizes from 45 studies	• The main finding was that a nudge from "the tax administration and the taxpayer is not as effective as often thought."[272] • The analysis provided "robust evidence that on average only deterrence interventions, i.e., nudges informing about audit probabilities and potential penalties, work in increasing compliance levels."[273] • The deterrence nudge effects were modest with a 1.5%-2.5% increase.[274] • Non-deterrence letters were ineffective. These included "letters that inform taxpayers about the importance of paying taxes for the adequate provision of public goods, about the (positive) behavior of their peers, or hint towards general appeals of paying taxes as a moral obligation are on average ineffective."[275]
Cadario and Chandon, 2020[276]	Healthy Eating/Nutrition	n = 299 effect sizes from 90 articles and 96 field studies	• They categorized seven healthy eating nudges into three categories: cognitively oriented (descriptive nutrition labeling, evaluative nutrition labeling, and visibility enhancements), affectively oriented (hedonic enhancements and healthy eating calls), and behaviorally oriented (convenience enhancements and size enhancements).[277] • Their multivariate, three-level meta-analysis, controlling for eating behavior, population, and study characteristics, yields a standardized mean effect size (Cohen's d) of 0.23 (equivalent to minus 124 kcal/day), which is considered a small effect.[278] • "Effect sizes increase as the focus of the nudges shifts from cognition (d = 0.12, −64 kcal), to affect

---

[271] Armenak Antinyan and Zareh Asatryan, *Nudging for Tax Compliance: A Meta-Analysis*, Discussion Paper No. 19–055 (Mannheim, Germany: ZEW, Centre for European Economic Research, 2019), http://dx.doi.org/10.2139/ssrn.3500744.

[272] Antinyan and Asatryan, 4.

[273] Antinyan and Asatryan, 4–5.

[274] Antinyan and Asatryan, 5.

[275] Antinyan and Asatryan, 5.

[276] Romain Cadrio and Pierre Chandon, "Which Healthy Eating Nudges Work Best? A Meta-Analysis of Field Experiments," *Marketing Science* 30, no. 3 (May–June 2020): 465–86, https://doi.org/10.1287/mksc.2018.1128.

[277] Cadrio and Chandon, 468.

[278] Cadrio and Chandon, 477.

Study	Focus	Sample	Significant Results
			(d = 0.24, −129 kcal), to behavior (d = 0.39, −209 kcal)."[279] • Nudges were found to be more effective for reducing unhealthy food consumption compared to increasing it or reducing total consumption.[280]
Hummel and Maedche, 2019 (Quantitative Review)[281]	Nudge Effectiveness	n = 317 effect sizes from 100 studies	• 190 (62%) nudge effects had statistically significant effects, while 118 (38%) were insignificant.[282] • Effect sizes were very diverse, but overall, nudges have a medium relative effect size of 21% and range from 0% to 1681%.[283] • Nudge effect sizes were not found to differ between conventional and digital nudges.[284] • Nudges can be effective, but its context and category impact it.[285] • Defaults had the largest median effects.[286]
Ikonen et al., 2019[287]	Healthy Eating/Nutrition	n = 1,594 effect sizes from 114 articles (130 studies)	• The effectiveness of three types of front of packaging (FOP) labels were assessed: reductive nutrient-specific labels (monochrome), interpretive nutrient-specific labels (traffic light, nutrition claim, health claim, and warning), and interpretive summary indicators (logo and rating).[288] • Overall, FOP labels influenced consumers' perceptions of healthiness and intention to purchase healthier items, but the outcomes were highly heterogeneous.[289] • FOP labels mostly helped consumers identify healthier options (with interpretive nutrient-specific labels having the greatest effect), and all labels had a positive effect on consumers' choices of healthier

---

[279] Cadrio and Chandon, 465.

[280] Cadrio and Chandon, 479.

[281] Hummel and Maedche, "How Effective Is Nudging?," 47–58.

[282] Hummel and Maedche, 53.

[283] Hummel and Maedche, 53.

[284] Hummel and Maedche, 54.

[285] Hummel and Maedche, 54.

[286] Hummel and Maedche, 54.

[287] Lina Ikonen et al., "Consumer Effects of Front-of-Package Nutrition Labeling: An Interdisciplinary Meta-Analysis," *Journal of the Academy of Marketing Science* 48, no. 3 (2020): 360–83, https://doi.org/10.1007/s11747-019-00663-9.

[288] Ikonen et al., 367.

[289] Ikonen et al., 367.

Study	Focus	Sample	Significant Results
			options, but for actual food consumption, FOB labels had no impact.[290]
Nisa et al., 2019[291]	Climate Change	n = 144 effect sizes from 83 studies—11 nudge effect sizes	• The study found behavioral interventions were largely ineffective in mitigating climate change, with no evidence of sustained positive effects once the intervention ends.[292] • The intervention with the highest mean effect size was choice architecture (nudges) with d = -0.352 (though this is a small effect).[293] • Being exposed to a nudge increased the probability of mitigating climate change by 25% compared to the control. However, nudges had small sample studies, which may have positively impacted effect size.[294] • It was recommended more nudge interventions be tested relating to climate change.[295]

All four meta-analyses discussed effectiveness in relation to their specific context rather than effectiveness generally. Two of the meta-analyses were related to food and nutrition, while one reviewed tax compliance and the other household actions related to climate change. While none reviewed effectiveness in relation to a homeland security context, at least two general takeaways of note emerge from the meta-analyses. First, all the meta-analyses reported that nudges had some effects on some of the variable(s) of interest in the direction desired. However, these effects varied in size based on the nudge types used, and depended on what was actually being measured—for example, food label nudges had an effect on perceptions and intentions, but not consumption.[296] Second, if the issue the nudges are intended to affect is large (e.g., tackling climate change), if it requires

---

[290] Ikonen et al., 368, 371.

[291] Claudia Nisa et al., "Meta-Analysis of Randomised Controlled Trials Testing Behavioural Interventions to Promote Household Action on Climate Change," *Nature Communications* 10, no. 4545 (October 2019): 1–13, https://doi.org/10.1038/s41467-019-12457-2.

[292] Nisa et al., 3–4.

[293] Nisa et al., 3–4.

[294] Nisa et al., 6.

[295] Nisa et al., 6.

[296] Ikonen et al., "Consumer Effects of Front-of-Package Nutrition Labeling," 371.

an enduring behavior change in the individual (as opposed to a single action taken in time), or if there are other strong motivating factors at play (e.g., strong financial incentives), the nudges are likely to be less effective at best or possibly may be entirely ineffective.[297] In short, the meta-analyses provide some evidence that some nudges can be effective in certain contexts, but the evidence is far from overwhelming. It might even be underwhelming if used towards supporting the idea that nudges would be effective in specific homeland security contexts.

Unlike the meta-analyses, the quantitative review by Hummel and Maedche attempts to analyze the effects and limits of nudging effectiveness generally; the authors claim it is the first study of its kind to do so.[298] Since this chapter is not intended to be contextually limited, Hummel and Maedche's work is of particular interest. Hummel and Maedche analyzed 317 effect sizes in 100 different papers.[299] Of these effects, 62% were statistically significant with a p-value of 0.05 or lower.[300] Overall, Hummel and Maedche found the median relative effect size, "the percentage change between the dependent variable of the treatment group and the control group," was 21%.[301] One notable limitation is that the median effect size of 21% should be seen as an upper bound since one-third of the studies reported statistically insignificant effects, the incidence of which is likely much higher due to publication bias preventing more insignificant results from being published.[302] Although they looked at studies from a variety of contexts—energy, environment, finances, health, policy-making, and privacy—policy-making had, perhaps

---

[297] See Nisa et al., "Meta-Analysis of Randomised Controlled Trials Testing Behavioural Interventions to Promote Household Action on Climate Change," 1–13; Ikonen et al., "Consumer Effects on Front-of-Package Nutrition Labeling," 360–383; Antinyan and Asatryan, *Nudging for Tax Compliance*, 1–43.

[298] Hummel and Maedche, "How Effective is Nudging?," 47–48. Hummel and Maedche argue there were only three prior quantitative analyses related to nudge effectiveness generally, but none of the three studies could provide generalizable results because they were non-systematic and did not have enough studies in their analysis. Hummel and Maedche, 48.

[299] Hummel and Maedche, 53.

[300] Hummel and Maedche, 53.

[301] Hummel and Maedche, 49, 53.

[302] Hummel and Maedche, 54–55. Hummel and Maedche found the number of studies reporting insignificant results surprising.

apropos to this chapter, the lowest median effect size at 6% (though the precise definition of "policy-making" remains unclear).[303] Hummel and Maedche also further delineated effect sizes by nudge category, in which they use a slightly modified nudge framework from Sunstein's Ten Important Nudges (see Table 5).

Table 5.   Median Effect Sizes Based on Nudge Category.[304]

Nudge Category	# of Studies	# of Effects	Median Effect Size
Default	21	62	50%
Simplification	4	12	25%
Social Reference	12	49	20%
Change Effort	14	41	25%
Disclosure	3	18	11%
Warnings/Graphics	18	55	20%
Precommitment	2	6	7%
Reminders	13	34	8%
Elicit Implementation Intentions	3	8	39%
Feedback	4	7	20

Table 5 shows the median effect sizes varied substantially based on the reported type of nudge implemented, with defaults having the largest median effect and precommitment strategies having the lowest followed by reminders.[305] Overall, Hummel and Maedche concluded that nudges seemed to be effective in a general context, but that this effectiveness varied based on application context and the nudge category.[306] Limitations of note include Hummel and Maedche not including a quality rating in their studies and being unable to conduct a meta-analyses due to the studies having insufficient data.[307] However, though this is only one study, Hummel and Maedche did find support

---

[303] Hummel and Maedche, 51, 54.

[304] Adapted from Hummel and Maedche, 55.

[305] Hummel and Maedche, 54.

[306] Hummel and Maedche, 55–56. No difference in effect sizes between the digital and conventional nudge settings was found.

[307] Hummel and Maedche, 50, 56.

61

for nudges being effective across contexts. This lends some credence to the idea that nudges have potential to be effective in homeland security contexts.

To summarize what was learned from these studies, the evidence shows that at least some nudges can be effective in various contexts. However, their effectiveness can be limited based on the context, the particular nudge intervention type used, how big of an issue the nudge is attempting to address, the motivational factors at play of the individuals being nudged, and whether the nudge sets out to create an enduring behavioral change. While not conclusive, these takeaways should be considered by homeland security practitioners/policymakers thinking about implementing nudges.

b. The Scoping Reviews

Though there is some definitional uncertainty, researchers generally use scoping reviews to help synthesize and provide an overview of an exploratory question.[308] More specifically, scoping reviews provide a map of the evidence (without judgment on its quality) and are tailor-made to research relatively unexplored fields dealing with broad concepts.[309] Since nudge effectiveness is a relatively unexplored field, examining scoping reviews in addition to meta-analyses was valuable in understanding general nudge effectiveness.

Five scoping reviews were discovered using the same search strategy used for the meta-analyses. Unfortunately, all but one of the scoping reviews discussed nudge effectiveness in relation to a specific context. The specific contexts reviewed were physical fitness, nudging in microbiology labs, nudging of healthcare professionals, and public policy and public management (see Table 6 for a summary of the main findings).

---

[308] Heather L. Colquhoun et al., "Scoping Reviews: Time for Clarity in Definition, Methods, and Reporting," *Journal of Clinical Epidemiology* 67, no. 12 (December 2014): 1294, https://doi.org/10.1016/j.jclinepi.2014.03.013.

[309] Peters Micah et al., "Guidance for Conducting Systematic Scoping Reviews," *International Journal of Evidence-Based Healthcare* 13, no. 3 (September 2015): 142, https://doi.org/10.1097/XEB.0000000000000050.

Table 6.   Summary of Scoping Review Articles

Study	Focus	Sample	Significant Results
Forberger et al. 2019[310]	Physical Activity	611 articles screened; n = 35 selected.	• Using Munscher, Vetter & Scheuerle's taxonomy, 30 of 35 studies changed the choice defaults with 27/30 using point-of-choice prompts (e.g., banners or posters). • All studies were in relation to individual lifestyle behaviors with no studies intervening on the meso- or macro-level.[311] • This review did not address the effectiveness of nudge interventions and found large research gaps related to such.[312] However, they concluded "nudging is in principle an effective approach to promote physical activity within the general population."[313]
Langford et al. 2019[314]	Microbiology	1,346 studies screened; n = 15 selected.	• The studies were heterogeneous with only one being a randomized controlled trial.[315] • Most of the studies focused on whether altering the default choice or adding framing commentary was effective.[316] • Most studies showed an improvement in antibiotic prescribing behavior.[317]
Nagtegaal et al., 2019[318]	Healthcare Professionals	2,322 articles screened; n = 100 selected.	• Using Munscher, Vetter & Scheuerle's taxonomy, a large number of different nudges were used, with 42% of the studies focused on reminders and/or making information visible.[319]

---

[310] Sarah Forberger et al., "Nudging to Move: A Scoping Review of the Use of Choice Architecture Interventions to Promote Physical Activity in the General Population," *International Journal of Behavioral Nutrition and Physical Activity* 16, no. 77 (September 2019), 1–14. https://doi.org/10.1186/s12966-019-0844-z.

[311] Forberger et al., 12.

[312] Forberger et al., 1, 3.

[313] Forberger et al., 1.

[314] Bradley J. Langford et al., "Nudging in MicroBiology Laboratory Evaluation (NIMBLE): A Scoping Review," *Infection Control & Hospital Epidemiology* 40, no. 12 (December 2019): 1400–1406, https://doi.org/10.1017/ice.2019.293.

[315] Langford et al., 1402, 1405.

[316] Langford et al., 1405.

[317] Langford et al., 1405.

[318] Rosanna Nagtegaal et al., "Nudging Healthcare Professionals towards Evidence Based Medicine: A Systematic Scoping Review," *Journal of Behavioral Public Administration* 2, no. 2 (October 2019): 1–20, https://doi.org/10.30636/jbpa.22.71.

[319] Nagtegaal et al., 6.

63

Study	Focus	Sample	Significant Results
			• Some nudges were more often applied than others and the type of nudge used appeared related to the desired outcome.[320] • 66% of nudges were applied to digital environments.[321] • 65% of studies reported success (defined as a statistically significant difference in behavior in the direction of the nudge intervention).[322] • Success appears to vary in terms of three contextual characteristics: the task at hand (e.g., nudging to promote hand hygiene was most successful), organizational context (nudging in hospitals was most effective), and occupational context.[323]
Szaszi et al., 2018[324]	Nudge Movement	2,670 studies identified; n = 156 studies selected.	• 422 interventions were tested with 56% being field studies and 46% lab studies.[325] • 82% of the interventions reported were successful, though success was not defined.[326] • "Forty-seven unique variables were found to moderate the effectiveness of the nudges" (e.g., specificity of commitment, goal setting, value of the default, gender, etc.).[327] • 42% of the studies were in the health domain, followed by 19% in sustainability.[328] No studies were in the homeland security domain. • The most popular default used was "change choice defaults" (57 studies) followed by "make information visible" (36 studies), with "change option consequences" (7 studies) being the least popular.[329]

---

[320] Nagtegaal et al., 6, 9.

[321] Nagtegaal et al., 7.

[322] Nagtegaal et al., 8.

[323] Nagtegaal et al., 10–11.

[324] Szaszi et al., "A Systematic Scoping Review of the Choice Architecture Movement, 355–66.

[325] Szaszi et al., 357–58.

[326] Szaszi et al., 359.

[327] Szaszi et al., 359.

[328] Szaszi et al., 359.

[329] Szaszi et al., 359.

Study	Focus	Sample	Significant Results
Van Deun et al. 2018[330]	Public Policy and Public Management	366 studies identified; n = 89 selected.	72% of the studies used qualitative research approaches, which may imply limited application and testing of nudge effects in public policy.[331] 60% of the studies focused on two policy sectors, health and environmental (60%).[332] - Only 28% of articles discussed heuristics or cognitive biases with a few of them more likely to be treated than others (present bias, loss aversion, and status quo bias).[333] - Most behavioral change targets are context-specific and vary between policy sectors (e.g., organ donation and recycling).[334] - Using the *House of Lords Behaviour Change Report* taxonomy, provision of information was the most used nudge (33%), followed by changes to the default policy (19%), and use of social norms and salience (17%).[335] 79 of the 89 studies examined reported on nudge effectiveness with 38 finding them effective, 19 finding them potentially effective, 16 with limited effect, and 3 with no effect.[336] 14 of 89 studies discuss efficiency with only 4 finding them to be efficient.[337]

Like the meta-analyses, the scoping reviews mostly found nudges to be effective to some extent within their contexts, though such effectiveness often varied widely, including being ineffective.[338] Unlike the meta-analyses, one scoping review by Barnabas Szaszi et al. examined nudge effectiveness generally (i.e., it was a domain general review). Of

---

[330] Hannah Van Deun et al., "Nudging in Public Policy and Public Management: A Scoping Review of the Literature" (paper presented at the PSA 68th Annual International Conference, Cardiff University, United Kingdom, March 26–28, 2018).

[331] Van Deun et al., 11.

[332] Van Deun et al., 12.

[333] Van Deun et al., 13–14.

[334] Van Deun et al., 14.

[335] Van Deun et al., 15–16.

[336] Van Deun et al., 18.

[337] Van Deun et al., 18.

[338] These are largely tentative conclusions as they have not been evaluated through advanced research techniques. Van Deun et al., 21.

relevance to this discussion, Szaszi et al. found the nudge movement to be growing across a variety of domains (though homeland security was not listed as one).[339] They also coded for 87 different subdomains, such as "[re]-using towels . . .donating to carbon offsetting programs . . . decreasing red light crossing behavior."[340] The large number of subdomains suggests researchers think nudges can be effective in a wide variety of contexts. This belief seems to be supported by the fact that 82% of the interventions reported success.[341] However, this study also provides support for the idea that the effectiveness of nudges is complicated, as "forty-seven unique variables were found to moderate the effectiveness of the nudges" (e.g., "making a pledge," "financial cost," "executive function strength," etc.).[342] Additionally, Szaszi et al. also find there are problems with the evidence when it comes nudge evidence. These include the lack of a consistently used and agreed-upon nudge taxonomy, a low number of quality studies, and publication bias.[343] As such, the general finding that nudges appear to be effective across domains should be viewed as far from dispositive.

In addition to Szaszi et al.'s study, the scoping review, "Nudging in Public Policy and Public Management: A Scoping Review of the Literature," by Hannah Van Deun et al., seemed to relate particularly closely to this discussion. In it, the authors attempt to answer the research question, "What is the current state of art of the literature regarding nudging in the field of public policy and public management?"[344] The scoping review attempts to examine the use and effectiveness of nudges as a policy tool.[345] Though a public policy and management context is not perfectly aligned with homeland security, the large majority of homeland security functions take place within government or through its

---

[339] Szaszi et al., "A Systematic Scoping Review of the Choice Architecture Movement," 359.

[340] Szaszi et al., 360.

[341] Szaszi et al., 359.

[342] Szaszi et al., 359–60.

[343] Szaszi et al., 362–64.

[344] Van Deun et al., 2.

[345] Van Deun et al., 3.

policies. As such, this scoping review will be analyzed in greater detail for any applicable insights.

Van Deun et al. identified 89 articles across various public policy fields, but did not discover one related to homeland security (at least insofar as homeland security has been defined in this thesis).[346] The majority of nudges set out to change one specific variable in time (e.g., filling out a form once) and the behavioral change targeted was context-specific.[347] The majority of studies (89%) focused on effectiveness as the outcome of interest, though a handful of studies examined efficiency, feasibility, and distributive effects.[348] "Efficiency" here relates to the costs and benefits associated with implementing a nudge policy (i.e., the ability of nudges to produce desired outcomes optimally); "feasibility" refers to the practicality of implementing a nudge policy, and "distributive effects" relates to how a nudge might impact those in different welfare brackets.[349] All three are important factors to consider as a homeland security practitioner/policymaker thinking about implementing a nudge, but lie outside the scope of this thesis.

Relevant to the scope of this thesis, the review found that 38/70 (43%) of the studies reporting an effectiveness outcome found nudging to be effective, while 19/79 (21%) found nudges to be potentially effective.[350] However, 21/79 (23%) studies found the nudges to have limited effects (i.e., they were only effective when combined with other traditional policy tools and/or could not fully achieve the desired outcome), that they were ineffective, or were unproven.[351] One notable limitation of this scoping review was its lack of peer review since it was presented at a conference. Overall, this scoping review lends support for the idea nudges can be effective in homeland security.

---

[346] Van Deun et al., 7.

[347] Van Deun et al., 14.

[348] Van Deun et al., 14–18.

[349] Van Deun et al., 18–19.

[350] Van Deun et al., 18.

[351] Van Deun et al., 17–18.

In summary, the scoping reviews appear to largely support the idea that nudges can generally be effective. When it comes to policy nudges, some may only work in combination with other traditional intervention tools. Overall, the scoping reviews lend support to the idea that nudges can be effective in homeland security contexts but are not likely to be a panacea for all policy problems. Rather, nudges are likely to have limitations that impact their effectiveness, and such limitations are apt to apply to homeland security contexts. Thankfully, scholars have already identified some of the most important nudge limitations.

3. Limitations on Nudge Effectiveness

So far, this chapter has explored nudge effectiveness through various nudge frameworks, meta-analyses, and scoping reviews. This chapter now turns to examine nudge effectiveness through potential limitations—that is, under what circumstances do nudges not work well or at all? Peter John's *How Far to Nudge?* presents eleven potential limiting factors on effectiveness for governmental nudges: limited range, weak effects, temporary effects, weak external validity, ineffective nudges, efficiency questions, potentially harmful, diverting public attention, limits to incrementalism, ideological, and negation of citizen feedback and intelligence.[352] Sunstein lays out his own reasons why nudges in general can fail: strong antecedent preferences, reactance, compensating behavior, confusing nudges, short-term effects, inaccurate understanding by choice architects, and counternudges.[353] This chapter will not discuss all of John's and Sunstein's limiting factors since some are more theoretical in nature, were previously discussed (e.g., external validity or generalizability issues), or are beyond the scope of this chapter (e.g., efficiency questions).[354] In addition, some limitations provided by the authors overlap with one another.

---

[352] Peter John, *How Far to Nudge? Assessing Behavioural Public Policy* (Cheltenham, UK: Edward Elgar, 2018), 88–107.

[353] Sunstein, "Nudges That Fail," 8, 11, 20–21.

[354] Anyone looking into implementing nudges should read about all the potential limitations and the arguments for and against it.

However, any homeland security practitioner/policymaker looking to implement nudges needs to consider how nudge effectiveness can be limited. Sunstein provides numerous reasons why nudges might have limited effects, including strong antecedent preferences, reactance, compensating behavior, confusing nudges, and short-term effects. Individuals may already have a strong preference at odds with the intended nudge outcome and therefore will resist the nudge.[355] For example, if one has a really strong preference for potato chips, putting them just out of reach relative to vegetables in a cafeteria line is unlikely to make a difference. Individuals may also resist a nudge merely because they recognize that they are being nudged, which is termed reactance.[356] Another possibility is the individual is successfully nudged, but the outcome variable of interest is counteracted by other behaviors of the individual (e.g., if someone is nudged to eat a healthy lunch, he might eat a more unhealthy dinner).[357] Further, the nudge might be too confusing to the individual, therefore preventing the person from behaving in the desired way.[358] Or there might be an immediate nudge effect, but the effect does not last over time (e.g., nudging someone to order a healthier lunch might work the first time, but does not work again).[359] All of these reasons may cause ineffectiveness of a nudge.

Other pinpointed causes of failure include incorrect hypotheses and counternudges. A choice architect may incorrectly hypothesize the reason(s) for why a behavior is not being done and therefore institute the wrong corrective nudge (e.g., a choice architect thinks the issue is that a form is too confusing and therefore simplifies it, thinking this will lead to more of a desired behavior, but in reality the form's complexity was not at issue and therefore the desired behavior is unaffected).[360] The potential for such incorrect hypotheses leads Sunstein to argue choice architects should test their interventions and not

---

[355] Sunstein, 8–11.

[356] Sunstein, 21.

[357] Sunstein, 21.

[358] Sunstein, 20.

[359] Sunstein, 21.

[360] Sunstein, 20.

just assume their understanding of relevant issues is correct.[361] Sunstein also argues nudges can fail when certain actors might have a strong economic or other incentive to prevent individuals from being nudged and therefore will intentionally try to counternudge.[362] For example, an individual might set up an alarm on her phone to nudge her to exit an application after a certain number of elapsed minutes. Understanding this is a possibility and wanting to keep the individual on the application, the application might be programmed to prevent the alarm from going off while it is running, thus counternudging. As such, incorrect hypotheses and counternudges are potential sources that can limit or eliminate the effect of nudges and must be considered.

In addition to Sunstein's reasons for potential nudge failures, John's limited range, weak effects, temporary effects, nudges that do not always work, and potentially harmful nudges need further investigation. First, nudges can have limited range for several reasons: individuals may already having strong preferences (as Sunstein observes), there may be insufficient defaults to apply to a situation (e.g., choosing which car to buy cannot be defaulted), or the nature of the governmental activity may not readily lend itself to nudging (e.g., building levees).[363] Another potential limitation to nudge effectiveness is that critics argue the effects of nudge are either insignificant or are relatively weak compared to other policy interventions and therefore not worth doing.[364] John also concurs with Sunstein regarding nudges potentially having temporary effects, in addition to Sunstein's list of failure conditions (i.e., nudges don't always work).[365] John further adds that nudges might be harmful over time if they create too much dependence and not enough active reflection on the part of individuals because the nudge itself is either disguising/moderating the bigger problem at play or possibly even exacerbating it.[366] For example, if an employee is only choosing healthier lunch meals because his work cafeteria has nudged him by placing the

---

[361] Sunstein, 20.

[362] Sunstein, 11–13.

[363] Sunstein, "Nudges That Fail," 8–11; John, *How Far to Nudge?*, 88–91.

[364] John, *How Far to Nudge?*, 91–93.

[365] John, 93–97.

[366] John, 98–99.

unhealthy food out of sight, the employee might never realize he should eat healthier and upon leaving the company and eating at a new cafeteria without the nudge, begins to eat unhealthy lunches. Here the nudge did not help the individual address the fundamental issue of limiting consumption of unhealthy food. In short, John elucidates another set of reasons homeland security practitioners/policymakers need to consider when trying to create an effective nudge.

When Sunstein and John's limitations are taken together, they present a formidable picture related to the limits on nudge effectiveness. Any homeland security practitioner/ policymaker should seek to understand potential limiting factors on nudge effectiveness as much as, if not more than, those factors that contribute to it. Doing so raises the likelihood the conceived and instituted nudge will be effective.

B.   CONCLUSION

As with so many aspects of nudge theory, its general effectiveness cannot be easily summarized or agreed upon. Nudge effectiveness is complex, context dependent, empirically driven, and still being explored as a much-debated subject. Further, many factors limit its generalizability. However, this chapter's exploration of various nudge frameworks, nudge effectiveness meta-analyses, scoping reviews, and nudge limitations all point towards the possibility that at least some nudges have the potential to be effective in at least some homeland security contexts. While this is a more limited conclusion than desired, it is more accurate and should be sufficient for homeland security practitioners/ policymakers to further explore nudge intervention possibilities. Additionally, in Chapter V, a four-question framework is recommended to help provide further ideas to think about nudge effectiveness for homeland security contexts.

THIS PAGE INTENTIONALLY LEFT BLANK

IV. EXPLORING THE ETHICS OF NUDGES IN HOMELAND SECURITY

The last chapter examined the effectiveness of nudges and concluded that homeland security practitioners/policymakers can potentially implement effective nudges in various homeland security contexts. Taking this optimistic note, this chapter addresses whether nudges *should* be used in homeland security. It concludes that the debate around nudge ethicality is still ongoing. This is not surprising as the debate around the broader concept of legitimate government intervention and its limits has been ongoing for centuries. Understanding that nudges are derivative of this larger debate and already being used in homeland security and may continue to be used, this thesis provides a six-question homeland security framework to guide practitioners/policymakers in determining whether their intervention is a nudge and whether it is likely to be ethical.

This chapter first explores some of the key ethical dimensions surrounding nudges and then examines these issues in relation to homeland security. The bulk of academic literature related to nudges deals with its ethical implications, and this literature is nuanced, unsettled, and touches upon many other large bodies of literature (e.g., law, public policy, and philosophy). Exploring the total body of literature on the ethics of nudging falls outside the scope of this thesis. Instead, this chapter aims to cover critical ethical (as opposed to practical) issues surrounding nudges. It then proceeds with a novel six-question ethical framework to guide homeland security practitioners/policymakers in whether a proposed nudge intervention in a homeland security context is likely to be ethical (based on an assumption of its benefits).[367] Further, the reader will walk away understanding that the ethics of nudging is complex and deserves further attention, research, and contemplation by homeland security practitioners/policymakers looking to implement nudges; this chapter provides a foundation to such contemplation.

---

[367] A practitioner/policymaker looking to implement a nudge would also need to keep in mind all those principles and considerations related to public policy implementation more generally (e.g., the constitution, regulatory processes and procedures, democratic representation, etc.).

A. ETHICS OF NUDGING—AN OVERVIEW

1. The Harm Principle and Paternalism

In 1859, the eminent philosopher, John Stuart Mill, articulated a fundamental and famous liberal objection to any coercive intervention, the harm principle. He lays out this principle in his renowned treatise, *On Liberty*, in which he states:

> the sole end for which mankind are warranted, individually or collectively, in interfering with the liberty of action of any of their number is self-protection. That the only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others. His own good, either physical or moral, is not a sufficient warrant. He cannot rightfully be compelled to do or forbear because it will be better for him to do so, because it will make him happier, because, in the opinions of others, to do so would be wise or even right. These are good reasons for remonstrating with him, or reasoning with him, or persuading him, or entreating him, but not for compelling him or visiting him with any evil in case he do otherwise.[368]

Mill believes that the only legitimate reason to intervene in the actions of another is to prevent said individual from inflicting harm to another individual now or in the future. Harm to oneself or to improve one's well-being is insufficient justification for intervention in Mill's eyes.

Mill's harm principle conflicts with ideas of paternalism. However, paternalism cannot be easily defined and no current consensus appears in the literature, and different ethical outcomes and considerations follow from particular definitions.[369] For example, Julian Le Grand and Bill New in *Government Paternalism: Nanny State or Helpful Friend?* provide a general definition of paternalism: "the interference by some outside agent in a person's freedom for the latter's own good."[370] Thaddeus Pope states in "Counting the Dragon's Teeth and Claws: the Definition of Hard Paternalism" that "paternalism is the restriction of a subject's self-regarding conduct primarily for the good of that same

---

[368] John Stuart Mill, *On Liberty* (Indianapolis: Hackett Publishing Company, 1978), 9.

[369] David J. Garren, "Paternalism, Part I," *Philosophical Books* 47, no. 4 (October 2006): 334, https://doi.org/10.1111/j.1399-5448.2006.00189.x-i1; John, *How Far to Nudge?*, 111.

[370] Julian Le Grand and Bill New, *Government Paternalism: Nanny State or Helpful Friend?* (Princeton: Princeton University Press, 2015), 7.

subject."[371] Thaler and Sunstein, in *Nudge*, defined a policy as paternalistic if it, "tries to influence choices in a way that makes choosers better off, *as judged by themselves* (emphasis in the original)."[372] What can be seen in these variant definitions is that a government agent need not be the source of paternalism. For example, a private doctor could engage in paternalism by prescribing the treatment plan the doctor thinks best for the patient, rather than letting the patient decide what she deems best. Further, paternalism is about interference in the choices of another for their benefit.

Although the literature about paternalism is robust, when discussing the ethics of nudges in relation to homeland security, this chapter will assume a focus on a subset of paternalism—namely, government paternalism.[373] Le Grand and New offer a working definition of it as any government intervention with respect to an individual that intends to, "address a failure of judgment by that individual [and] further [s] the individual's own good."[374] Since homeland security is intimately connected to, if not inseparable from government agencies and its agents, this link justifies the focus.[375] However, in exploring the ethical dimensions of government paternalism in relation to nudges, two other distinctions or categories of paternalism must first be distinguished: soft and hard paternalism *and* means and ends paternalism.

---

[371] Thaddeus M. Pope, "Counting the Dragon's Teeth and Claws: The Definition of Hard Paternalism," *Georgia State University Law Review* 20, no. 3 (Spring 2004): 660, https://gsulawreview.org/article/14705-counting-the-dragon-s-teeth-and-claws-the-definition-of-hard-paternalism.

[372] Thaler and Sunstein, *Nudge*, 5.

[373] For an in-depth examination of paternalism, see Le Grand and New, *Government Paternalism*.

[374] Le Grand and New, 23. Note that other paternalists may have a different definition of government paternalism, but for this chapter's purposes, Le Grand and New's definition is used.

[375] Even though there may not be a clear definition of homeland security, all definitions share a relationship between government and its citizens. See Bellavita, "Changing Homeland Security," 1–30.

2.   Soft and Hard Paternalism[376]

Both soft and hard paternalism argue that paternalism is sometimes justified.[377] The distinctions between the two are centered around whether an individual is acting voluntarily.[378] Joel Feinberg perhaps best represents the soft paternalist position when he argues in *Harm to Self* that it is ethically acceptable to intervene when an individual is acting substantially involuntarily.[379] Soft paternalists such as Feinberg often quote Mill as fundamentally supportive of such interventions when he states in *On Liberty*:

> Again, it is a proper office of public authority to guard against accidents. If either a public officer or anyone else saw a person attempting to cross a bridge which had been ascertained to be unsafe, and there were no time to warn him of his danger, they might seize him and turn him back without any real infringement of his liberty; for liberty consists in doing what one desires, and he does not desire to fall into the river. Nevertheless, when there is not a certainty, but only a danger of mischief, no one but the person himself can judge of the sufficiency of the motive which may prompt him to incur the risk; in this case, therefore (unless he is a child, or delirious, or in some state of excitement or absorption incompatible with the full use of the reflecting faculty), he ought, I conceive, to be only warned of the danger, not forcibly prevented from exposing himself to it.[380]

In Mill's view, the desire of the individual is clearly to not fall in the river, as such, an authority could legitimately intervene to prevent said individual from doing so without infringing on said person's liberty (i.e., the intervention is justified).

Pope follows this line of thinking when he lays out soft paternalism's four main criteria for determining the acceptability of intervention, namely, when an individual is, "(1) not factually informed, (2) not adequately understood, (3) coerced, or (4) otherwise

---

[376] Sometimes termed weak and strong paternalism, these terms are not perfectly overlapping or conceptually consistent.

[377] Gerald Dworkin, *The Theory and Practice of Autonomy* (Cambridge: Cambridge University Press, 1988), 124.

[378] Le Grand and New, *Government Paternalism*, 26; Joel Feinberg, *Harm to Self: The Moral Limits of the Criminal Law*, vol. 3 (New York: Oxford University Press, 1986), 113–115; Pope, "Counting the Dragon's Teeth and Claws," 659–722; Sarah Conly, *Against Autonomy: Justifying Coercive Paternalism* (New York: Cambridge University Press, 2013), 5.

[379] Feinberg, *Harm to Self*, 99.

[380] Mill, *On Liberty*, 95.

not substantially voluntary or free."[381] Someone who has a mental compulsion, is under the influence of a substance, or is about to do something under some sort of physical threat, can all be examples where the individual does not have a true choice in his actions and can be legitimately interfered with. In fact, soft paternalists have argued one can ethically be interfered with under soft paternalistic reasoning if one is merely attempting to ascertain whether an individual is acting voluntarily or if one thinks it is *likely* that one is acting involuntarily.[382] Such arguments expand the contexts where intervention is ethically acceptable for soft paternalists.

Although the literature disagrees on the definitional boundaries of soft paternalism and what can be classified as a soft paternalism intervention, it often shares an assertion that interventions in an individual's actions or her liberty will not substantively harm said individual's autonomy but is either neutral to or promotes it.[383] Such soft paternalistic interventions can support autonomy—and are therefore justifiable—by preventing harm to the "true" individual. That is, an individual, who if acting completely voluntarily, would not act in the way the intervention was designed to prevent.[384]

Although soft paternalism argues intervention can only be justified when an individual is acting involuntarily, hard paternalism does not entertain this constraint. Hard paternalists argue intervention is sometimes justified even *if* the individual's conduct is fully voluntary.[385] It justifies its interference with an individual's autonomy by arguing such interference supports the individual's overall welfare by either limiting harm or

---

[381] Pope, "Counting the Dragon's Teeth and Claws," 667.

[382] Pope, 668.

[383] Conly argues there is no clear dividing line between soft and hard paternalism and, therefore, the distinction should be largely dismissed. She uses this to argue for hard paternalism based on welfare considerations. Conly, *Against Autonomy*.

[384] Le Grand and New, *Government Paternalism*, 27.

[385] Dworkin, *The Theory and Practice of Autonomy*, 124.

providing a benefit.[386] For a hard paternalist, if the welfare of the individual benefits sufficiently, then intervention is justified no matter the desire or mental state of the individual. For example, a government outlawing cigarette smoking for all adults would be an example of hard paternalism. In general, there is more ethical pushback towards hard paternalism than soft because of its perceived greater potential to negatively impact one's liberty, freedom, and/or autonomy.

3. Liberty, Freedom, and Autonomy

Distinguishing between the terms of "liberty," "freedom," and "autonomy," which have philosophically distinct meanings when referring to the individual, are critical to exploring the ethics of paternalism since these definitions are used to argue for whether an intervention (e.g., a nudge) is justifiable.[387] In the literature, freedom and liberty are often distinguishable based on whether or not an individual's action is formally (*de jure*) or materially (*de facto*) constrained.[388] A formal constraint of liberty is one in which an individual either does not have the right to do some activity "x" or has the duty to do "x".[389] A material constraint on freedom limits the individual from physically doing some activity "x".[390] For example, if a law restricts an individual from littering on the highway, said individual does not have the *liberty* to throw her empty soda can out the window while she is driving. However, she does have the *freedom* to throw the can out the window since no physical or other force prevents her from doing so (assuming the car window is able to be

---

[386] Pope, "Counting the Dragon's Teeth and Claws," 684; Feinberg, *Harm to Self*, 12–16. Note that Pope provides a detailed definition of hard paternalism, which includes four conditions: (1) the paternalistic agent must intentionally limit the subject's liberty; (2) the agent must limit the subject's liberty primarily because she believes that intervention will contribute to the subject's welfare; (3) the agent's benevolent motive must be independent of the subject's contemporaneous preference; and (4) the agent must either disregard the fact that the subject engages in the restricted conduct substantially voluntarily or deliberately limit the subject's substantially voluntary conduct.

[387] All three terms have a rich philosophical history that is outside the scope of this paper. Some important readings related include Feinberg, *Harm to Self*; John Rawls, *A Theory of Justice* (Cambridge, MA: Harvard University Press, 1971); Isiah Berlin, *Four Essays on Liberty* (London: Oxford University Press, 1969); Dworkin, *The Theory and Practice of Autonomy*.

[388] Pope, "Counting the Dragon's Teeth and Claws," 673.

[389] Pope, 673–74.

[390] Pope, 674.

rolled down). As such, the individual has *de facto* freedom of action but does not have *de jure* liberty of action.[391] Such distinctions between freedom and liberty often determine which justifications can be made by paternalists for intervention and whether such interventions are indeed justifiable based on their impact on both.

Similarly, impacts to autonomy can also determine intervention justifiability. Autonomy is distinct both from freedom and liberty and often contains a multitude of concepts when applied to the individual (also often termed personal autonomy).[392] As with nudging, no universally accepted definition of autonomy prevails.[393] However, since the ethicality of a nudge can hinge on how autonomy is defined, a fuller understanding of it is essential.[394]

One way to explore the idea of autonomy is to recognize there is something like a core understanding of it. Le Grand and New provide this when they posit autonomy is "at root . . . an idea that emphasizes human beings' capacity for self-rule, their ability to act as deliberating agents."[395] In this definition, an agent is autonomous only if she can make her own decisions and deliberate on them.[396]

Beyond this core of autonomy, various scholars attempt to define their conceptions of autonomy. For example, Gerald Dworkin conceives of autonomy as, "a second-order capacity of persons to reflect critically upon their first-order preferences, desires, wishes, and so forth and the capacity to accept or attempt to change these in light of higher-order

---

[391] Freedom and liberty are not always so clearly distinguished in the literature and are often used interchangeably.

[392] Autonomy in Greek, *autos* (self) and *nomos* (rule), was once reserved for the self-rule or self-governance of independent city-states before being applied to the individual. It has since been expanded to the individual, often under the term "personal autonomy." See Tom L. Beauchamp and James F. Childress, *Principles of Biomedical Ethics*, 5th ed. (New York: Oxford University Press, 2001), 57–58; Le Grand and New, *Government Paternalism*, 107; Dworkin, *The Theory and Practice of Autonomy*.

[393] Dworkin, 6; Le Grand and New, *Government Paternalism*, 10.

[394] For a longer discussion on the concept of autonomy, see Le Grand and New, *Government Paternalism*, 106–32; Dworkin, *The Theory and Practice of Autonomy*.

[395] Le Grand and New, *Government Paternalism*, 10.

[396] See, also, Beauchamp and Childress, *Principles of Biomedical Ethics*, 58. According to Beauchamp and Childress, "Virtually all theories of autonomy agree that two conditions are essential for autonomy: (1) *liberty* (independence from controlling influences), and (2) *agency* (capacity for intention action)" (original emphasis).

preferences and values."[397] An example of this is a recovering alcoholic who still has a first-order preference to drink but has a second-order capacity to reflect on the unhealthiness of the habit for himself and therefore declines a drink when offered. Note, Dworkin does not require one be successful in resisting first-order desires to have autonomy. The recovering alcoholic would still be acting autonomously if he in fact drinks the beverage despite not having a second-order desire to do so, assuming he was critically reflecting on the action.

Similar to the distinction between *de facto* and *de jure* freedom and liberty above, Feinberg posits that an individual can have both *de facto* and *de jure* autonomy, with *de facto* being, "the actual condition of self-government" and *de jure,* "the sovereign right to self-government."[398] Making this distinction allows Feinberg to argue the individual has an absolute right to autonomy and it cannot be violated unless said individual is known to be acting involuntarily (thus the justification criterion behind soft paternalism).[399] Sen further elucidates this idea when he argues the ability of an individual to make free choices has both an instrumental (practical) and intrinsic value.[400] Both scholars use these definitions to argue for why an individual's autonomy should always be respected and interventions that do not are ethically suspect.

Tom Beauchamp and James Childress in, *Principles of Biomedical Ethics*, argue for a different conception of individual autonomy. Namely, an individual is autonomous if she can act without coercion and has a wide, not limited understanding of her action in pursuit of a self-chosen plan.[401] They further distinguish between autonomous persons and autonomous decisions, where an agent may be autonomous in general (i.e., an autonomous

---

[397] Dworkin, *The Theory and Practice of Autonomy*, 20.

[398] Feinberg, *Harm to Self*, 64–65. Additionally, Feinberg discusses four distinct concepts of autonomy as applied to the individual: (1) "the capacity to govern oneself"; (2) "the actual condition of self-government"; (3) "an ideal of character derived from that conception"; and (4) "to the sovereign authority to govern oneself, which is absolute within one's own moral boundaries." Feinberg, 28.

[399] Feinberg, *Harm to Self*, 98–171. Conly, *Against Autonomy*, 16–17, argues against Feinberg's conception of the core idea of autonomy being the right of an individual to make her own choices.

[400] Amartya Sen, "Freedom of Choice: Concept and Content," *European Economic Review* 32, no. 2–3 (March 1988): 270, https://doi.org/10.1016/0014-2921(88)90173-0.

[401] Beauchamp and Childress, *Principles of Biomedical Ethics*, 58.

person), but can make non-autonomous decisions. For example, someone who is acting under the influence of alcohol or narcotics is still an autonomous person generally but is not making autonomous decisions while under the influence. Such distinctions allow Beauchamp and Childress to argue an individual's autonomy should always be respected even if they might be making non-autonomous decisions.

Joseph Raz expands upon the idea of autonomy when he argues that one can only be fully autonomous if one is free from coercion, has the capacity to choose, and has sufficient options from which to choose from.[402] An individual held at gunpoint and asked, "your life or your wallet," or a paralyzed individual given the choice to walk or ride a bike to work, would both not have autonomy (one due to coercion, the other due to insufficient options).[403] Such a definition of autonomy allows Raz to argue that respect of an individual's autonomy requires said individual to not only be free from coercion, but requires an actual adequacy of choice (i.e., not just trivial choices).[404]

Despite other conceptions of autonomy, these are some of the more important ones for this discussion because each one provides important nuance for understanding a fuller conception of autonomy. As discussed, not all scholars agree on the definitional boundaries or even the conceptualization of autonomy, but with these autonomy concepts in mind, along with those of freedom and liberty, the ethics of nudge can be investigated. That is, an individual can have any combination of freedom, liberty, and/or autonomy as richly understood, and these hold some level of intrinsic value to an individual (even if that value cannot be precisely defined across all individuals). For example, a child often has the freedom and liberty to do all sorts of activities but will often lack the value of full self-autonomy as she likely has both a limited understanding of her choices and her parents or other adults often coerce those choices. On the other hand, an adult male walking outside an airport may have full personal autonomy in that moment but does not have the freedom or liberty to say, fly one of the planes safely without a license and training. As such, any

---

[402] Joseph Raz, *The Morality of Freedom* (New York: Oxford University Press, 1986), 373.

[403] Raz, 373.

[404] Raz, 374.

interventions aimed at either the child or adult male will not only have different justifications for interventions, but their perceived ethicality will be based on the interventions' impact to their relative freedom, liberty, and autonomy.[405]

4. Means and Ends Paternalism

Distinguishing between means and ends paternalism also provides a sharper conception of the ethical ramifications of nudge.[406] The distinction arises from the idea that individuals have both ends and means. An end of an individual is any sort of goal or value for which one directs one's action(s) to achieve. A means is anything an individual does to attempt to achieve said goal or value (the end). For example, if an athlete's end is to achieve a gold medal, she might attempt to do so in archery, swimming, or skiing. Achieving the gold medal is the end but choosing which sport to win the gold medal is the means. Based on this distinction, *means-related* paternalism relates to interventions, "concerned only with assisting in the *achievement* of ends that are considered to be fundamentally the individual's own—including the balance between these ends."[407] In contrast, e*nds-related* paternalism would be any intervention directed at an individual's goals or values themselves.[408] As with hard paternalism, ends-related paternalism is often met with greater ethical pushback due to its perceived greater impact on freedom, liberty, and autonomy.

Unlike soft and hard paternalism, where the state of the individual being intervened with is different (i.e., the level of voluntariness), in means and ends-related paternalism, the state of the individual is the same. Means and ends-related paternalism both argue intervention is justified to promote the individual's well-being when an individual is suffering from reasoning failure—is irrational.[409] What distinguishes the two lies in *what*

---

405 This assumes that paternalism can ever be justifiable, which the principle of anti-paternalism or "hard antipaternalism" rejects. See Pope, "Counting the Dragon's Teeth," 669.

406 Le Grand and New, *Government Paternalism*, 27.

407 Le Grand and New, 29.

408 Le Grand and New, 27.

409 Le Grand and New, 82–101.

(means or ends) of the individual is being intervened with. For critics, both types of paternalism can present unethical threats to individual freedom, liberty, and autonomy. However, Thaler and Sunstein believe they have come up with a novel solution to critics' concerns, namely, libertarian paternalism and nudges.[410]

5.   Libertarian Paternalism and Nudges

Thaler and Sunstein argue that libertarian paternalism and the interventions it supports—nudges—seek to maintain or even increase individuals' freedom of choice and thus should be viewed as liberty preserving and respectful of personal autonomy.[411] That is, individuals often commit consistent reasoning failures that lead to suboptimal decisions—social science research shows the negative effects of a lack of complete information, limited objectivity, limited willpower, and/or limited technical ability—such that intervention in the form of nudges is justified.[412] Specifically, government—a choice architect—can and should legitimately intervene/nudge in such circumstances to "influence choices in a way that will make choosers better off, *as judged by themselves* (emphasis in the original)" (i.e., government should nudge).[413] This, "as judged by themselves" clause ensures practitioners'/policymakers' nudges improve individuals' welfare, as judged by themselves, rather than as judged by the practitioners/policymakers,

---

[410] For clarity, I do not discuss the related concept of asymmetric paternalism. See Colin Camerer et al., "Regulation for Conservatives: Behavioral Economics and the Case for 'Asymmetric Paternalism,'" *University of Pennsylvania Law Review* 151, no. 3 (January 2003): 1211–54, http://www.jstor.org/stable/3312889?origin=JSTOR-pdf; Le Grand and New, *Government Paternalism*, 133.

[411] Thaler and Sunstein, *Nudge*, 5. There can be definitional confusion related to nudges and libertarian paternalism and whether the terms are interchangeable. Generally, nudges are a type of intervention and libertarian paternalism is the conceptual and ethical justification for their use. Barton and Grüne-Yanoff, "From Libertarian Paternalism to Nudging—and Beyond," 342–344. Sunstein moves away from this position posited in *Nudge* toward an intervention-by-intervention analysis of whether a nudge is sufficiently respectful of freedom, liberty, and personal autonomy relative to other benefits. Cass R. Sunstein, *The Ethics of Influence: Government in the Age of Behavioral Science* (New York: Cambridge University Press, 2016).

[412] Thaler and Sunstein, *Nudge*, 5; Le Grand and New, *Government Paternalism*, 83. Other non-nudge interventions may also theoretically be justified.

[413] Thaler and Sunstein, *Nudge*, 5.

which further legitimizes intervention.[414] That is, nudges should be viewed as a "relatively weak, soft, and nonintrusive type of paternalism."[415]

Furthermore, nudges should be viewed as a sort of *means-related* paternalism that supports liberty and autonomy because it does not question individuals' ends nor attempt to replace them with the government's.[416] Or, as Sunstein and Thaler state, "if people want to smoke cigarettes, to eat a lot of candy, to choose an unsuitable health care plan, or to fail to save for retirement, libertarian paternalists will not force them to do otherwise—or even make things hard for them."[417] Nudges are not mandates, bans, nor coerce behavior.[418] Therefore, nudges should also be seen as a sort of means-related paternalism that is respectful of freedom, liberty and autonomy because it doesn't restrict individual choice sets and seeks only to help an individual achieve her ends.[419] Consequently, critics of government intervention on freedom, liberty, and autonomy grounds should support libertarian paternalism and nudges.

6.   **Common Objections to Libertarian Paternalism and Nudges and Libertarian Paternalists' Responses**

Although Thaler and Sunstein hoped critics of government intervention would be accepting of libertarian paternalism and nudges, this has not happened. Rather, a large and evolving set of ethical objections to libertarian paternalism and nudges (as opposed to practical objections) exist. This section focuses on three overarching objections and some

---

[414] Welfare does not have one agreed-upon definition in the literature. Sunstein, *The Ethics of Influence*, 3. Sunstein convincingly argues that some form of cost–benefit analysis related to the consequences of the proposed policy intervention is likely most practical.

[415] Sunstein, *The Ethics of Influence*, 54.

[416] Sunstein, 54.

[417] Thaler and Sunstein, *Nudge*, 5.

[418] Sunstein, *The Ethics of Influence*, 54.

[419] Sunstein, 54–5.

libertarian paternalists' counter arguments.[420] These three objections are not exhaustive, settled, nor necessarily mutually exclusive, but generally fall under the headings of autonomy, dignity, and self-government. Understanding these objections and responses should provide a fuller understanding of significant ethical issues surrounding libertarian paternalism and nudges.

a. *Autonomy*

One significant ethical objection to libertarian paternalism and nudges cites their threat to autonomy. As shown, how one conceptualizes autonomy can play an influential role in determining whether autonomy has or has not been infringed or respected. However, there are three main autonomy criticisms challenging libertarian paternalism and nudges.

Rebonato argues libertarian paternalists may not technically remove any options from the choice set when they nudge (i.e., individuals have a nominal freedom of choice), but this is not equivalent to an *effective* freedom of choice.[421] The whole purpose of a nudge is to be effective and since nudges by their nature operate best at the subconscious level, most individuals will be unable to select a decision choice other than that in which they are being nudged by the choice architect.[422] Therefore, nudged individuals do not effectively have full autonomy.

---

[420] A full in-depth review of all such objections would be beyond the scope of this paper. However, see the following for various critiques: Robert Sugden, "Why Incoherent Preferences Do Not Justify Paternalism," *Constitutional Political Economy* 19, no. 3 (September 2008): 226–48, http://dx.doi.org/10.1007/s10602-008-9043-7; Daniel M. Hausman and Brynn Welch, "Debate: To Nudge or Not to Nudge," *Journal of Political Philosophy* 18, no. 1 (March 2010): 123–36, https://doi.org/10.1111/j.1467-9760.2009.00351.x; J. S. Blumenthal-Barby and Hadley Burroughs, "Seeking Better Health Care Outcomes: The Ethics of Using the 'Nudge,'" *American Journal of Bioethics* 12, no. 2 (February 2012): 1–10, https://doi.org/10.1080/15265161.2011.634481; Shlomo Cohen, "Nudging and Informed Consent," *American Journal of Bioethics* 13, no. 6 (May 2013): 3–11, https://doi.org/10.1080/15265161.2013.781704; T. M. Wilkinson, "Nudging and Manipulation," *Political Studies* 61, no. 2 (June 2013): 341–55, https://doi.org/10.1111/j.1467-9248.2012.00974.x; Yashar Saghai, "Salvaging the Concept of Nudge," *Journal of Medical Ethics* 39, no. 8 (August 2013): 487–493, https://doi.org/10.1136/medethics-2012-100727; Till Grüne-Yanoff, "Why Behavioural Policy Needs Mechanistic Evidence," *Economics and Philosophy* 32, no. 3 (November 2016): 463–83, https://doi.org/10.1017/S0266267115000425.

[421] Riccardo Rebonato, *Taking Liberties*, 132–133.

[422] Rebonato, *Taking Liberties*, 132–33. See also concerns related to nudges potentially becoming shoves: Henrik Skaug Saetra, "When Nudge Comes to Shove: Liberty and Nudging in the Era of Big Data," *Technology in Society* 59, no. 101130 (November 2019): 1–10, https://doi.org/10.1016/j.techsoc.2019.04.006.

The libertarian paternalists counter argue that studies tend to indicate that no nudge is 100% effective. Therefore, at least some people can choose a different outcome than that desired by the choice architect; thus, some level of autonomous decision-making must take place.[423] Consequently, nudges should not necessarily be rejected on autonomy grounds.

A second related but distinct criticism is that many nudges violate volitional autonomy (the ability to freely choose) in two ways. First, they largely succeed by deliberately using subconscious reasoning failures to their advantage to nudge individuals towards the libertarian paternalist's choice rather than the individual being nudged.[424] Second, nudges lack significant differences from subliminal messaging—messages conveyed completely below an individual's conscious ability to process.[425] As such, nudges should be seen as unethical due to their gross negative impact on volitional autonomy.

To address this concern, libertarian paternalists present a couple counterarguments. Thaler and Sunstein respond by arguing in support of John Rawl's *publicity principle*, which bans governments from applying policies that it would not be able to justify in public.[426] Policies that would impair autonomy too much or would not be respectful of its citizens, especially in relation to well-being improvements, would be unable to pass the publicity principle and therefore would be unallowable.[427] For example, if the government created a default to automatically enroll every tax payer to pay for a charity of the government's choosing, such an intervention would likely be viewed as a serious autonomy violation and would not conform with the publicity principle. Libertarian paternalists further argue that nudges should promote volitional autonomy because they do not pursue their own ends, but rather help individuals achieve their chosen ends by only improving

---

[423] Le Grand and New, *Government Paternalism*, 145.

[424] Andreas T. Schmidt and Bart Engelen, "The Ethics of Nudging: An Overview," *Philosophy Compass* 15, no. 4 (April 2020): 4–5, https://doi.org/10.1111/phc3.12658.

[425] Le Grand and New, *Government Paternalism*, 143.

[426] Rawls, *A Theory of Justice*, 570.

[427] Thaler and Sunstein, *Nudge*, 247–248.

how they pursue them.[428] As such, nudges should not necessarily be seen to limit volitional autonomy.[429]

A third criticism argues libertarian paternalists assume individuals have preferences knowable by the government, which supports government intervention in circumstances the government considers unaligned to these preferences.[430] Robert Sugden refutes this premise by pointing out the lack of psychological foundations on which libertarian paternalists can make such a claim.[431] That is, no objective foundation allows an individual to view their actions as errors "as judged by themselves," and therefore libertarian paternalists are unjustifiably infringing on such individuals' autonomy by overriding their preferences at least as much as in traditional paternalism.[432] Joel Anderson adds to this line of critique by arguing nudges are not limited to circumstances of insanity or misinformation as most people most of the time appear to be acting rationally.[433] Therefore, nudges are being broadly justified on top of a much smaller range of behaviors relative to its larger impacts on rational autonomous behavior.

Thaler and Sunstein address these critiques in two ways. First, they contend that nudges are often unavoidable as choice architecture exists in any decisional context. If the government intentionally nudges for citizens' benefit, rather than just letting choice architecture be random or even harmful, it would serve individuals' best interests.[434] Second, nudging in specific contexts requires some sort of cost-benefit analysis to ensure that any negative impacts (costs) will be minimized and the benefits to individuals will be

---

[428] Schmidt and Engelen, "The Ethics of Nudging," 4.

[429] There is some concern as to whether there is a tradeoff between increasing transparency and decreasing nudge effectiveness. Le Grand and New, *Government Paternalism*, 143.

[430] Thaler and Sunstein, *Nudge*, 110–111.

[431] Robert Sugden, "Do People Really Want to Be Nudged Towards Healthy Lifestyles?," *International Review of Economics* 64, no. 2 (June 2017): 116–18, https://doi.org/10.1007/s12232-016-0264-1.

[432] Sugden, 116–118, 122.

[433] Joel Anderson, "Review of Thaler & Sunstein 'Nudge: Improving Decisions About Health, Wealth, and Happiness,'" *Economics and Philosophy* 26, no. 3 (November 2010): 372, https://doi.org/10.1017/S0266267110000301.

[434] Thaler and Sunstein, *Nudge*, 246, 252.

maximized.[435] Such analysis should help to ensure government intervention remains justified and does not lead to an ever increasing number of nudges for marginal gain (i.e., there should be no slippery slope towards limitless nudges). As such, Thaler and Sunstein recognize these legitimate concerns, but argue they are not dispositive as there are instances where the benefits of conscious nudging can outweigh the costs.

b.   Dignity

Another common ethical objection to libertarian paternalism intervention is that nudges are an infringement on individual dignity. The idea of dignity is complex, contested, and can overlap with the concept of autonomy.[436] However, the complaints from dignity tend to stem from two areas: manipulation and infantilizing.

The manipulation argument is that nudges often work best when they are under the radar of the individuals' being nudged. For this reason, many nudges—especially successful ones—are likely influencing individuals without conscious knowledge and consent, which shows a lack of full respect for said individuals and should be seen as manipulative.[437] Thaler and Sunstein retort with the publicity principle, which they argue can ensure the government will respect the dignity of individuals as any nudge that is seen to be manipulative by either the public or the nudge architect, would not be enacted.[438] As such, though not inherent to libertarian paternalism per se, the publicity principle can help ensure individuals' will not be manipulated by nudges.[439]

Another dignity objection, termed the infantilizing argument, cannot similarly be addressed by the publicity defense. The infantilizing argument states nudges should

---

[435] Thaler and Sunstein, 253.

[436] Sunstein, *The Ethics of Influence*, 67–68.

[437] Schmidt and Engelen, "The Ethics of Nudging," 7.

[438] Thaler and Sunstein, *Nudge*, 246–49. The publicity principle has been challenged as a legitimate solution. Wilkinson, "Nudging and Manipulation," 341–55.

[439] This critique and response seem identical to the second autonomy critique regarding subconscious reasoning failures already discussed. However, the variance lies in what the nudge impacts, namely autonomy and dignity. In the autonomy critique, nudges are said to be negatively impacting the self-governance of individuals. In the dignity critique, nudges are said to be negatively impacting an individual's dignity regardless of whether there are impacts to autonomy.

88

presumptively be viewed as wrong and an affront to dignity because the "choice architect knows better than the chooser, who is thought to be incapable of making the right judgments for herself."[440] To put it another way, the government would not be respecting individuals' dignity whenever it presumes its citizens are incapable of acting correctly without intervention and therefore seeks to intervene.[441] Sunstein identifies with this concern and attempts to address it in two ways. First, he argues that not all nudges are alike and therefore not all nudges necessarily impact dignity. He uses an example of a Global Positioning System as a nudge that does not insult anyone's dignity in and of itself.[442] His second argument is that dignity might need to be weighed in relation to welfare gains.[443] Thus, if the welfare gains outweigh the negative impact on dignity, then the nudge should not necessarily be considered unethical.

c.   *Self-Government*

A final overarching objection is that nudges present at least four dangers to self-governance at an individual and governmental level. First, bureaucrats may not have beneficent ends, but illicit ones.[444] As such, self-interested or captured bureaucrats could use nudges to pursue their ends rather than those of the individual. This may be especially dangerous as compared to other forms of policy intervention because nudges largely operate subconsciously and therefore can be implemented without going through the normal gated policy-making process.[445] Unlike a public mandate or ban which has an extensive vetting process before implementation, nudges may be enacted without individuals even being aware their choices are being nudged, thus compromising their ability to self-govern.

---

[440] Nicolas Cornell, "A Third Theory of Paternalism," *Michigan Law Review* 113, no. 8 (June 2015): 1295, https://repository.law.umich.edu/mlr/vol113/iss8/1.

[441] Sunstein, *The Ethics of Influence*, 67–72.

[442] Sunstein, 69.

[443] Sunstein, 67–68.

[444] Rebonato, *Taking Liberties,* 221–226; Thaler and Sunstein, *Nudge*, 242–44.

[445] Thaler and Sunstein, *Nudge*, 242.

Thaler and Sunstein recognize this possibility as a legitimate concern, but argue this concern applies to all policies of government and therefore this is not an argument against nudges specifically, but rather for more transparency and incentive alignment to minimize such concerns.[446] As such, nudges should not presumptively be considered a danger to self-government.

A second objection on grounds of self-government argues against the idea that government bureaucrats are any more rational than the people they are attempting to nudge, thus why should they be allowed to intervene in the self-governance of others?[447] Although this argument may not be a completely ethical one, it has self-government implications. The right to intervene assumes that such intervention would lead to better outcomes; nonetheless, the new field of behavioral public choice is increasingly calling this assumption into question.[448] Sunstein does not argue that government and its agents are more rational than its targets, but rather responds by arguing choice architecture is inevitable and thus, one should support nudges over mandates and bans precisely because government agents may be biased and/or ignorant.[449] Such resultant mandates and bans would arguably be more harmful towards self-governance as they are absolute, while nudges are in principle, liberty preserving.[450]

Thirdly, even if nudges are successful or allowed in certain limited areas, this permission alone could lead to a slippery slope where nudges are eventually used across all areas of individuals' lives, either based on previous governmental success or general institutional drift.[451] Thaler and Sunstein make three arguments in response. First, the slippery slope argument does not actually address the actual merits of nudges so greater

---

[446] Thaler and Sunstein, 242–44.

[447] Sunstein, *The Ethics of Influence*, 75–77. The active research field around this logic is called behavioral public choice.

[448] Sunstein, 74–77.

[449] Sunstein, 74–77.

[450] Thaler and Sunstein, *Nudge*, 5.

[451] Thaler and Sunstein, 239–41.

use is not necessarily negative.[452] Second, choice architecture is inevitable in many domains anyway.[453] Third, nudges should minimize costs to ensure opt-outs as much as possible and therefore likely limits just how far the slope could extend.[454] As such, while a slippery slope towards decreasing self-government through runaway nudges is theoretically possible, Thaler and Sunstein do not think it is of sufficient danger relative to the nudge program's potential benefits.

Finally, critics hold nudges present a danger to self-government because they often exploit reasoning failure, rather than attempting to correct for it or allowing the individual to learn from her mistakes. Nudges are likely to deprive the individual of the ability to learn and improve her decision-making skills, thus harming her ability to make better self-governing decisions in the future or atrophy her critical reasoning capabilities from disuse and the inability to learn from incorrect decisions.[455] Thaler and Sunstein agree that the right to be wrong is important, which is why all nudges should include the ability of individuals to easily opt-out.[456] They also argue that not all lessons may be worth learning if they lead to serious harm that a nudge may prevent.[457] Sunstein also argues that this critique can be addressed in a democratic society by making all nudges transparent.[458] In such instances, a nudge that presents sufficient danger to self-government would not be accepted by the public and thus the ethical concerns become moot. Therefore, nudges should not necessarily be dismissed as unethical on self-government grounds.

---

[452] Thaler and Sunstein, 239–41.

[453] Thaler and Sunstein, 239–41.

[454] Thaler and Sunstein, 239–41.

[455] Evan Riley, "The Beneficent Nudge Program and Epistemic Injustice," *Ethical Theory and Moral Practice* 20, no. 3 (June 2017): 597–616, https://doi.org/10.1007/s10677-017-9805-2. Some scholars have suggested an alternative to nudging in partial response to this issue, termed "boosting." Ralph Hertwig and Till Grüne-Yanoff, "Nudging and Boosting: Steering or Empowering Good Decisions," *Perspectives on Psychological Science* 12, no. 6 (November 2017): 973–986, https://doi.org/10.1177/1745691617702496.

[456] Thaler and Sunstein, *Nudge*, 244.

[457] Thaler and Sunstein, 251–54.

[458] Sunstein, *The Ethics of Influence*, 73–74.

7. Summary

The ethical issues related to libertarian paternalism and nudges are broad, deep, and still in active dispute. This is no surprise considering the larger debate surrounding legitimate government intervention has been ongoing for centuries. Nevertheless, this section has aimed to provide homeland security practitioners/policymakers with a foundational understanding of some of the significant ethical issues surrounding libertarian paternalism and nudges. In the next section, this foundational understanding is used to develop a framework to help homeland security practitioners/policymakers better think through the ethical considerations when/if attempting to implement a nudge in their specific context.

B. APPLYING THE ETHICS OF NUDGES TO HOMELAND SECURITY INTERVENTION

In Sunstein's more recent writing, *The Ethics of Influence*, he evolves his position towards stronger support for a policy-by-policy analysis of nudges rather than relying on libertarian paternalism as an overarching justification.[459] Although this is a reasonable approach, it is also important to begin to explore what a more general decisional framework might look like for a homeland security practitioner/policymaker looking to ethically implement nudges.[460] It is entirely possible discussing such a framework might be putting the cart before the horse since it presumes governmental nudges can be generally ethical, which the literature has not decisively concluded.[461] However, Chapter I has already discussed instances of its use in homeland security and there is no indication nudges are likely to decrease in frequency in other governmental areas or homeland security. Some homeland security practitioners/policymakers may not even realize they are using a nudge intervention. As such, it seems prudent, pressing, and intellectually interesting to begin an exploration of an ethical nudge decisional framework in the context of homeland security.

---

[459] Sunstein, 11, 31–32, 53–54.

[460] This discussion is limited to the ethics of nudging qua nudging. There are of course other ethical concerns for interventions related to the democratic policy-making process (e.g., individual institutional rules, legal aspects, costs, political concerns, etc.).

[461] It is unclear how realistic a decisive conclusion can be reached.

Therefore, this thesis proposes a homeland security–specific six-step question framework to help determine if a proposed homeland security intervention is in fact a nudge and is ethical. Resultant answers, where possible, should provide supporting evidence and/or descriptive responses with supporting reasons for each question. In relation to the ethical issues, this framework should be viewed as a way to better understand them and to help homeland security practitioners/policymakers compose a clearer, more defensible, and replicable process for such when proposing a nudge. It should not be presumed to give simple yes or no answers.

C. A SIX-QUESTION ETHICAL FRAMEWORK FOR NUDGE INTERVENTION IN HOMELAND SECURITY

1. Is the Proposed Intervention a Mandate, or a Ban, to Coerce or Otherwise Provide Significant Positive or Negative Incentives to the Individual(s) Targeted?

Although not an ethical question, this question is important because a "yes" to this question means the intervention is not a nudge and subsequent questions may be skipped. As Thaler and Sunstein make clear, a nudge is not meant to mandate, forbid, or significantly change the economic incentives (e.g., a tax or subsidy); rather, it is something that is meant to be easy and cheap to avoid—it preserves freedom of choice.[462] If one answers "no" to this question, then one can proceed to question two.

2. Is the Proposed Intervention Intended to Promote the Welfare of the Individual(s) Targeted?

This chapter began its ethics exploration with Mill's harm principle. His objection to all forms of paternalism is fundamental to address. Consequently, the following must be determined for the proposed intervention:

a) is it overwhelmingly related to promoting the benefit of others and/or to prevent harm to others; *or* b) is it for the benefit of or to prevent harm to the targeted individual(s)?

---

[462] Thaler and Sunstein, *Nudge*, 5.

If the proposed intervention falls within "a," then it does not meet the definition of a nudge as used throughout this thesis. This fact does not mean therefore behavioral science techniques may not be applicable or that other ethical issues are not at play, but nudge's ethical issues become moot for this proposed intervention. Thus, its acceptability (or lack thereof) should be sought in other places.[463] If, however, the proposed intervention falls within "b," then one would move to question three. It should be noted that it is difficult to answer the welfare question in an absolute sense as it is not strictly amendable to objective metrics. However, this thesis agrees with Sunstein when he argues for some sort of cost-benefit analysis approach for weighing welfare.[464]

3.   Is (Are) There Reasoning Failure(s) at Play?

As discussed, nudges are arguably a type of means-related paternalism. For supporters of such, interventions are only justified when those targeted exhibit observed or expected reasoning failures.[465] Thaler and Sunstein articulate various situations when reasoning failure is likely to happen. These include situations where benefits are likely to occur sooner relative to costs, when the decision is more difficult, when a decision is made infrequently, when feedback is limited, or when one's preference might be unclear.[466] Similarly, Le Grand and New argue reasoning failure is likely to systematically and genuinely occur when an individual has limited technical ability, limited imagination in relation to the benefits or costs of a decision in the short or long term, limited willpower, and/or limited objectivity.[467] As such, one must ask whether or not the individuals targeted are suffering or are likely to suffer from one or more of the above reasoning failures (or other confirmed reasoning failure(s) in the behavioral literature). If no such reasoning

---

[463] Other nudge advocates do not necessarily limit nudges to the definition proposed by Thaler and Sunstein. In such cases, it is estimated the above ethical issues and this framework would still be substantively applicable.

[464] Sunstein, *The Ethics of Influence*, 53.

[465] Authors, such as Conly in *Against Autonomy*, argue against a clear distinction between means and ends-related paternalism and, therefore, argue ends-related paternalism can be justified.

[466] Thaler and Sunstein, *Nudge*, 74–78. While these are cases in which reasoning failure is more likely, they should not be considered exhaustive.

[467] Le Grand and New, *Government Paternalism*, 82–101.

94

failure exists or is likely, then once again nudge ethical issues become moot because the proposed intervention is no longer a nudge as defined. If on the other hand, reasoning failures emerge, then it is on to question four and one can be confident at this point that the proposed intervention is a nudge.

4. Does the Nudge Need to Be Secret?

Many critics attack nudges from various angles based on their potential to operate beneath the level of consciousness. Thaler and Sunstein attempted to counter these attacks by arguing for a general guiding principle of transparency, particularly, Rawls' publicity principle.[468] Such a principle seems prudent, but it may apply less than in many other governmental areas due to the unique nature of homeland security. Though homeland security does not appear to have a singular definition, certain domains do not operate with complete transparency. In reality, Rawls's publicity principle would still be applicable to a secret nudge since it argues any government policy which cannot or will not be publicly defended should be banned. But the U.S. government is under no legal obligation to follow this principle and routinely does not in homeland security (rightly or wrongly). One should thus ask whether the intended nudge is meant to be secret. If it is meant to be secret with no foreseen future potential to realistically be revealed to the public, then a homeland security practitioner/policymaker should be more hesitant to implement it for the potential of harm that may arise due to the absence of a realistic limiting principle. However, if the nudge does not require secrecy, then it is much simpler to move to question five.

5. Does the Proposed Nudge Violate Autonomy, Dignity, and/or Self-government?

Critics of nudge interventions argue any nudge will violate one and/or all three of the above values and therefore are unjustifiable. Yet, nudge supporters, while acknowledging the possibility that nudges violate one and/or all three values, argue either that nudges need not necessarily violate them if designed well enough or that cost-benefit analysis should be used to measure whether the violations to such (the costs) are

---

[468] Thaler and Sunstein, *Nudge*, 247–48.

outweighed by the benefits gained by the individuals targeted. Going through the process of answering question five can help to ensure these important values are both considered and formally addressed. For this question, if the answer is yes or no, it is likely one will still proceed to question six.[469]

6. Is the Proposed Nudge the Most Effective Policy to Promote the Individual's(s') Welfare Relative to Other Possible Interventions?

Answering this question will likely require a significant empirical component and therefore may not be fully answerable prior to implementation. But, as the nudge field rapidly evolves, research should be conducted to answer this question prior to any nudge implementation. In answering this question, various considerations related to interventions can be examined (e.g., agency capacity/resources, legal authorities, political climate, etc.). However, the most important considerations in the context of this framework are twofold: First, has an intervention related to the outcome (nudge or otherwise) occurred anywhere else and was it effective or not? Second, does the proposed intervention maximize the welfare of the targeted individual(s) *relative* to any other possible policy proposals?

Further, question six should help weigh the effectiveness question against other policy alternatives such as economic incentives, mandates, and/or bans. Although it sets aside the broader question of the welfare of the individual, question six ensures any proposed nudge intervention will not be inferior to other interventions (assuming an alternative policy choice is possible and welfare is defined in the same way). If one arrives at this final question and the resultant answer is a yes, one can be more confident that the proposed nudge intervention is more likely to be ethical.

---

[469] It is also acknowledged that cost–benefit analysis is already required for any federal government–proposed regulations, so this question might seem duplicative in such instances. However, specifically examining the costs and benefits related to autonomy, dignity, and self-government goes beyond a typical cost–benefit analysis and is particularly important when it comes to nudge interventions because of their potential deleterious effects on each.

D. APPLYING THE SIX-QUESTION ETHICAL FRAMEWORK TO A THEORETICAL HOMELAND SECURITY PROBLEM

To provide a better understanding of this six-question nudge intervention framework, a potential homeland security policy problem will be explored. Take for example a Western regional Federal Emergency Management Agency (FEMA) director tasked with improving the percentage of households in the region that have emergency rations sufficient to sustain a household for up to two weeks in the event of an emergency where ration supply chains become temporarily disrupted (two weeks is the current recommended amount of emergency rations).[470] The intervention preliminarily proposed is a letter to each of the households explaining the importance of having two weeks supply of emergency rations and a printed website link that provides additional information on how one can acquire such rations and how to store them. A second reminder letter will be sent to each household three months later.[471]

1. Is the Proposed Intervention a Mandate, or a Ban, to Coerce, or Otherwise Provide Significant Positive or Negative Incentives to the Individual(s) Targeted?

The intervention proposed does not mandate households to purchase emergency rations or ban them from getting help during an emergency if they do not purchase such rations. In addition, as currently constructed, the proposed letters and language does not provide positive or negative incentives to the households to purchase the rations. As such, the FEMA director can confidently answer "no" to the first question and move on to the second.

2. Is the Proposed Intervention Intended to Promote the Welfare of the Individual(s) Targeted?

Here, the director would ask about the raison d'etre of this attempted intervention (i.e., does it promote the welfare of others or those targeted)? If there is not a single

---

[470] "Food and Water in an Emergency," Federal Emergency Management Agency, August 2004, https://www.fema.gov/pdf/library/f&web.pdf.

[471] At this point, the intervention is rather vague but has enough conceptualization that the six-question nudge framework can be applied.

overriding logic, then what are the various intentions of this intervention? Here, the director might answer by arguing a household with adequate means to feed itself during a food supply disruption ensures it will not be harmed by food scarcity and therefore bolsters the welfare of the household. She might also argue that a higher percentage of households in a region sufficiently prepared for an emergency could conceivably provide community benefits to less prepared households except under the most extreme supply chain disruption scenarios. However, it appears the primary benefit of the emergency rations accrue most immediately and heavily to the members of the households themselves, while secondary benefits might accrue to surrounding households and persons based on the nature of emergency. As such, an intervention focused on increasing the percentage of households with emergency rations seems intended to primarily promote the welfare of these households. Thus, the director could answer "yes" to the second question and would move on to question three.

3.   Is (Are) There Reasoning Failure(s) at Play?

Here, the director can do two main things in answering this question. First, she can do research to determine whether any studies show reasoning failure among households related to emergency preparation. Second, she can also hypothesize the possible reasoning failures and argue for whether they are likely, based on her expertise and experiences (along with those of the rest of her team). If studies address this question, they likely should be weighed quite heavily in the final judgment. But the nature of this question should be understood to *not* lead to simple black and white judgments. While there are situations where reasoning failure appears very likely providing justification for intervention, Sunstein and Thaler argue against a priori/dogmatic justifications rather than empirical ones.[472] Assuming no studies on this issue, the director herself might want to solicit her own studies if she had the resources and personnel to help better answer this question. If not, she would lay out her reasoning for why households do not have sufficient emergency rations for two weeks. If such reasoning shows that it is likely due to reasoning failure(s)

---

[472] Cass R. Sunstein and Richard H. Thaler, "Libertarian Paternalism Is Not an Oxymoron," *University of Chicago Law Review* 70, no. 4 (2003): 1201–1202, https://doi.org/10.2307/1600573.

rather than say, rational cost-benefit analysis, the director will answer "yes" to this question and move on to question three.[473]

4.   Does the Proposed Nudge Need to Be Secret?

In this case, no reason supports keeping the nudge secret from the public. No adversarial parties are likely to contest it and simply sending letters to each household does not convey any information to others on whether a household does or does not have emergency rations. The director would answer "no" to this question and advance to question five with the understanding that she can apply the publicity principle to this proposed nudge.

5.   Does the Proposed Nudge Violate Autonomy, Dignity, and/or Self-government?

As before, the director might look at previous studies related to similar letter campaigns to see whether such campaigns were viewed by scholars or the public to violate autonomy, dignity, and/or self-government, to what extent and why. In addition, she can calculate the potential consequences of the policy intervention relative to each value. In this case, though the specific wording has not yet been chosen, the director would reason that a generic letter campaign to each household does not significantly infringe on the autonomy of households. Although such letter campaigns may infringe on the households' attention, it neither seeks to limit freedom of choice nor does it use subconscious reasoning failures to achieve the intervention's goals. The campaign does presume to know the preferences of the households and assumes that such preferences are unfulfilled. These seem reasonable considering the potential benefits accruing to a household with emergency rations relative to the costs of the letter campaign to households (e.g., the time and cost of purchasing emergency rations, capturing attention during the reading of said letters, and

---

[473] At this point, it should be clear that answering this question potentially opens up the practitioner/ policymaker to a high degree of subjectivity. However, this often cannot be helped as a practitioner/ policymaker never has perfect knowledge of reality. However, the hope of this question is to ensure the practitioner/policymaker articulates and defends his position in writing so that others can critique it in the present and over time as additional information (empirical and conceptual) comes into play.

potential negative psychological feelings related to not purchasing the recommended two weeks of rations).

In relation to the households' dignity, the director can argue the letter campaign meets the publicity principle and is not manipulative. However, she would need to acknowledge the letter potentially infantilizes the households by providing them not only one letter, but a reminder letter as well. Here, the director can argue the benefits of having rations in an emergency due to the letter campaign is sufficiently high relative to the costs to a household's dignity. In addition, the director could argue the letter campaign is universal and therefore does not seek to treat any type or group of households differently from any other and therefore does not have dignity concerns on disparate impact grounds. As such, it seems while the dignity concerns cannot be dismissed, they are likely not sufficiently high relative to the potential benefits of the proposed intervention.

Lastly, in examining the self-government costs and benefits, the director could reason the letters are not mandates, which would be a far greater infringement of self-government and that a household can easily opt-out of purchasing emergency rations by simply throwing away the letters. In addition, the proposed intervention complies with the publicity principle and therefore is discoverable, which further minimizes potential harm to self-government. Lastly, the letters do not attempt to exploit reasoning failures as currently construed and allows for households to continue to make their choices on whether they want to purchase the rations. As such, an overall analysis of this question would lead the director to answer "yes," but since the potential benefits significantly outweigh the costs to autonomy, dignity, and self-government, she would move on to the final question.[474]

---

[474] If the costs are greater than the benefits, the intervention should not be pursued. However, it is important to realize that such a judgment can be highly subjective, so it is incumbent upon the policymaker to fully reason out the various costs and benefits for each of the values as objectively as possible.

6. Is the Proposed Nudge the Most Effective Policy to Promote the Individual's(s') Welfare Relative to Other Possible Interventions?

Here, the director would conduct research to answer this question. First, she would look for the same or similar interventions related to the intended outcome in the United States and possibly other countries. Based on the research, a clear answer might emerge related to which policy is most effective. Additionally, the director could think up reasonable alternative policy interventions based on her knowledge and expertise. For example, a mandate requiring the purchase of rations, a tax incentive given by the states covering her region for the purchase of emergency rations, or even another sort of nudge such as advertisements on television. The director should weigh all reasonable policy alternatives versus the proposed intervention through a consistent structured cost-benefit approach to determine relative effectiveness. If any alternative policy provides more anticipated benefits than costs relative to the proposed nudge intervention, then the director would answer "no," and the proposed nudge intervention should not be pursued even though all the other questions up to now supported its implementation.[475]

E. CONCLUSION

There is no shortage of ethical dilemmas related to nudge usage in homeland security. This chapter has explored many of these significant dilemmas and in response, proposed a homeland security–specific six-question ethical framework in which to determine whether a proposed policy intervention is a nudge that is likely to be ethical. It should be noted this framework has not been empirically tested. As such, it should be perceived as a way to better think through the ethical issues of nudge use in homeland security rather than as something that provides conclusive answers. In addition, it will likely need adapting and updating based on specific homeland security concerns and usage in the field, as well as continued evolution of the literature.

---

[475] Nudges may be intentionally easy to avoid, but they are not necessarily easy to use ethically.

THIS PAGE INTENTIONALLY LEFT BLANK

V.   CONCLUSION AND RECOMMENDATIONS

This thesis has examined six studies of actual nudge use in homeland security contexts and found their effectiveness to be mixed and their usage limited. In addition, four takeaways for homeland security practitioners/policymakers emerged: nudge interventions have varying effectiveness and outcomes in homeland security contexts; no dominant taxonomy or framework for nudges exist; nudges can be used on various populations; and certain types of nudges appear more likely to be used than others.

In Chapter III, general nudge effectiveness was conceptually examined through three different channels. First, it examined nudge frameworks meant to be used by nudge practitioners for creating successful interventions. Second, it analyzed meta-analyses and scoping review results related to nudge effectiveness. Third, it discussed the known limitations to nudge effectiveness. Combined, the results of this three-part conceptual examination support the argument that, while it is difficult to make general conclusions about nudge effectiveness, at least some nudges can be effective in some homeland security contexts.

Chapter IV explored some of the key ethical dimensions surrounding libertarian paternalism and nudge interventions. It concluded that the jury is still out on whether nudge interventions are generally ethical. However, understanding that ethical questions are not settled, Chapter IV provided a six-question framework to be used by practitioners/ policymakers to help better determine whether a proposed intervention is a nudge and likely to be ethical. It also cautioned readers seriously contemplating nudge interventions to invest additional time learning about the various ethical dimensions of nudges.

This final chapter contains a recommendation for homeland security practitioners/ policymakers to use a four-question framework to help think about nudge effectiveness in relation to homeland security contexts. It concludes with opportunities for future research.

A. THINKING ABOUT EFFECTIVE NUDGES IN HOMELAND SECURITY CONTEXTS: A FOUR-QUESTION EFFECTIVENESS FRAMEWORK

Chapter III found the question of nudge effectiveness to be unsettled, incomplete, and complex. As such, any attempt to determine a priori whether a nudge intervention will be effective in a novel homeland security context is, at best, speculative. Perhaps more important than anything else mentioned on this topic would be Sunstein's caution:

> For all policies, including nudges, it is exceedingly important to rely on evidence rather than intuitions, anecdotes, wishful thinking, or dogmas . . . some policies, including some nudges, seem promising in the abstract but turn out to fail in practice. Empirical tests, including randomized controlled trials, are indispensable.[476]

However, though this author fully supports empirical testing and randomized controlled trials, careful speculation is not without value as it can provide future practitioners/policymakers a way to make better-informed, evidence-based guesses as to where nudges might be effective in their particular homeland security contexts relative to the array of potential interventions.

This thesis is not the only one to attempt such speculation. For example, Robert Baldwin's "From Regulation to Behaviour Change: Giving Nudge the Third Degree" ambitiously attempts to provide a general set of conditions for effective and ethical nudge use.[477] Unlike Baldwin, this thesis attempts a more circumspect goal of approaching nudge effectiveness in relation to homeland security contexts. Namely, four questions have been derived from the examination in Chapter III to help determine whether a nudge might be an effective tool to use in a homeland security context (this framework can be used in conjunction with the six-question framework elucidated in Chapter IV).

1. What Are the Heuristics and Biases at Play?

Hannah Van Deun et al. state, "nudging assumes that human behaviour is subject to heuristics and biases, causing nudge policies to be based on these underlying

---

[476] Sunstein, "Nudging," 585.

[477] Robert Baldwin. "From Regulation to Behaviour Change: Giving Nudge the Third Degree," *Modern Law Review* 77, no. 6 (November 2014): 831–857, https://doi.org/10.1111/1468-2230.12094.

mechanisms in order to effectively change human behaviour."[478] Although the authors make this statement in relation to how nudge policies can influence behavior, asking which heuristics and biases are at play among the individuals targeted is also critical. Answering this question with reference to one's specific homeland security expertise can help determine whether a nudge should even be considered, rather than or in addition to some other policy instrument (e.g., mandates, bans, or incentives). For example, an adversarial individual (e.g., a terrorist) might suffer from a heuristic or bias in relation to his/her desire to commit an act of terror, but he/she is *not* likely suffering from a heuristic or bias in relation to the actual act of carrying out an attack. In this case, even if such a person were suffering from a heuristic or bias in carrying out the act, a practitioner/policymaker would not wish to nudge such an individual into being able to accomplish his goal more successfully. A nudge intervention that does not seek to combat specific heuristics and biases may not only be ineffective, but potentially harmful. Further, not understanding which heuristics and biases are at play increases the probability a nudge will either be ineffective or lead to unintended consequences.

2. What, if Any, Nudge Framework Should Be Used in Formulating a Nudge?

A significant portion of Chapter III addressed various nudge frameworks suggested for practitioners/policymakers to use when formulating possible nudge interventions. Although the chapter did not endorse any particular framework, using *a* framework is highly encouraged. Despite the lack of causal evidence connecting use of a framework with effectiveness of nudges, there is existing evidence to support many of the frameworks' individual behavioral interventions. Further, following a framework allows one to think through how the various behaviors can be addressed with one or more interventions (nudge or otherwise) in a structured and consistent manner.

---

[478] Van Deun et al., "Nudging in Public Policy and Public Management," 13.

3. Which Nudge Category(ies) Should Be Applied to the Specific Context(s)?

Hummel and Maedche discovered category-context associations in nudging interventions.[479] In their approach, category is the type of nudge being used and the context is the environment for its implementation. Hummel and Maedche do not specify why such an association exists, but it may arise because nudge implementers believe certain nudges will work better in certain contexts, because certain nudges do work better in specific contexts, and/or because certain nudges are more feasible than others in certain contexts.

However, although practitioners may not know why certain nudges seem to be deployed in certain contexts, any decision-maker should think deeply about their specific context and whether certain types of nudges might be more effective than others. One could ask questions such as: What makes my specific policy context unique? How is the context similar to others? Would this context be amenable to certain sorts of nudge interventions rather than others? Is a nudge intervention likely to be effective for this context at all? What are the characteristics of the target population? Questions like these should be asked and answered to provide a more concrete sense of which nudges might be more effective than others and might provide concrete bases for hypothesis and eventual testing if implemented.

4. Which Nudge Effectiveness Limitations Are Likely to Exist?

Though not exhaustive, Chapter III identified significant practical limiting factors on the effectiveness of nudges. Any prudent homeland security practitioner/policymaker looking to nudge should take time to think carefully about which nudge limiting factors, if any, are likely to apply. Given possible limitations, nudge architects should consider whether these are likely to be fatal to the effectiveness of the nudge. If not fatal, how significant of an impact would the limitation(s) have? And if significant, can the limitations be moderated through other nudges or policy interventions? If moderation is not possible, perhaps other policy interventions should be more heavily considered. Similarly, if upon

---

[479] Hummel and Maedche, "How Effective Is Nudging?," 55.

further thought the nudge limitations are likely to be fatal, the nudge in question should not be considered further.

B. FINAL THOUGHTS ON EFFECTIVE NUDGES IN HOMELAND SECURITY

No matter the expertise of the practitioner/policymaker, current evidence of nudge effectiveness suggests caution when thinking about applying nudges to a novel context. Further, though the discussed four-question framework should assist in this, it has not been empirically tested. As a homeland security practitioner/policymaker, caution in relation to nudge implementation is likely even more important than in the typical governmental domain for two reasons. First, there do not appear to be many reported instances of nudges being used in homeland security contexts; therefore, implementation is likely to be truly novel. Second, in many homeland security contexts, getting things wrong can have high costs, including lost lives. This does not mean nudges should never be contemplated for use or experimentation, but rather that they should be viewed with the proper level of evaluation and rigor, as with any other policy intervention.

C. OPPORTUNITIES FOR FUTURE RESEARCH

There are at least four different avenues for future research for nudges and homeland security. First, this thesis only explored the effectiveness and ethics of nudges in relation to homeland security. Other pertinent questions include whether homeland security nudges are likely to be efficient and garner public support. Second, the six-question ethical framework in Chapter IV can be conceptually and empirically tested for usefulness and completeness. Third, this chapter's four-question effectiveness framework can also be conceptually and empirically tested. Last, there appears to be ample opportunity for careful exploration, creation and testing of nudge interventions in homeland security contexts. Any experimentation should preferably have its process meticulously documented and implemented with a randomized controlled trial; the evidence should then be gathered and shared with the broader homeland security community. Hopefully, this thesis can serve as a foundation for such experimentation.

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF REFERENCES

Action Design Network. "Behavioral Teams Directory." Accessed September 10, 2022. https://www.action-design.org/behavioral-teams-directory.

Anderson, Joel. "Review of Thaler & Sunstein 'Nudge: Improving Decisions about Health, Wealth, and Happiness.'" *Economics and Philosophy* 26, no. 3 (November 2010): 369–376. https://doi.org/10.1017/S0266267110000301.

Antinyan, Armenak, and Zareh Asatryan. *Nudging for Tax Compliance: A Meta-Analysis*. Discussion Paper No. 19–055. Mannheim, Germany: ZEW, Centre for European Economic Research, 2019. http://dx.doi.org/10.2139/ssrn.3500744.

Baldwin, Robert. "From Regulation to Behaviour Change: Giving Nudge the Third Degree." *Modern Law Review* 77, no. 6 (November 2014): 831–857. https://doi.org/10.1111/1468-2230.12094.

Barton, Adrien, and Till Grüne-Yanoff. "From Libertarian Paternalism to Nudging—and Beyond." *Review of Philosophy and Psychology* 6, no. 3 (September 2015): 341–59. https://doi.org/10.1007/s13164-015-0268-x.

Beauchamp, Tom L., and Childress, James F. *Principles of Biomedical Ethics*. 5th ed. New York: Oxford University Press, 2001.

Behavioural Insights Team. "Strengthening the Metropolitan Police against Cyber Attacks." Accessed April 20, 2021. https://www.bi.team/case-studies/strengthening-the-metropolitan-police-against-cyber-attacks/.

———. "Who We Are." Accessed September 22, 2022. https://www.bi.team/about-us-2/who-we-are/.

Bellavita, Christopher. "Changing Homeland Security: What Is Homeland Security?" *Homeland Security Affairs* 4, no. 1 (June 2008): 1–30. https://www.hsaj.org/articles/118.

Benartzi, Shlomo, John Beshears, Katherine L. Milkman, Cass R. Sunstein, Richard H. Thaler, Maya Shankar, Will Tucker-Ray, William J. Congdon, and Steven Galing. "Should Governments Invest More in Nudging?" *Psychological Science* 28, no. 8 (June 2017): 1041–55. https://doi.org/10.1177%2F0956797617702501.

Berlin, Isiah. *Four Essays on Liberty*. London: Oxford University Press, 1969.

BETA Project Team. *Small Changes, Real Impact: Applying Behavioral Economics in Asset-Building Programs*. BETA Project Team, 2013. http://www.ideas42.org/wp-content/uploads/2015/05/CFED-ideas42-Small-Changes-Real-Impact.pdf.

Blumenthal-Barby, J. S., and Hadley Burroughs. "Seeking Better Health Care Outcomes: The Ethics of Using the 'Nudge.'" *American Journal of Bioethics* 12, no. 2 (2012): 1–10, https://doi.org/10.1080/15265161.2011.634481.

Brocke, Jan, Alexander Simons, Bjoern Niehaves, Bjorn Niehaves, Kai Reimer, Ralf Plattfaut, and Anne Cleven. "Reconstructing the Giant: On the Importance of Rigour in Documenting the Literature Search Process." In *ECIS 2009 Proceedings*, January 1, 2009. https://aisel.aisnet.org/ecis2009/161.

Cadario, Romain, and Pierre Chandon. "Which Healthy Eating Nudges Work Best? A Meta-Analysis of Field Experiments." *Marketing Science* 30, no. 3 (May–June 2020): 465–86. https://doi.org/10.1287/mksc.2018.1128.

Camerer, Colin, Samuel Issacharoff, George Loewenstein, Ted O'Donoghue, and Matthew Rabin. "Regulation for Conservatives: Behavioral Economics and the Case for 'Asymmetric Paternalism.'" *University of Pennsylvania Law Review* 151, no. 3 (January 2003): 1211–54. http://www.jstor.org/stable/3312889?origin=JSTOR-pdf.

Cohen, Shlomo. "Nudging and Informed Consent." *American Journal of Bioethics* 13, no. 6 (May 2013): 3–11. https://doi.org/10.1080/15265161.2013.781704.

Colquhoun, Heather L., Danielle Levac, Kelly K. O'Brien, Sharon Straus, Andrea C. Tricco, Laure Perrier, Monika Kastner, and David Moher. "Scoping Reviews: Time for Clarity in Definition, Methods, and Reporting." *Journal of Clinical Epidemiology* 67, no. 12 (December 2014): 1291–94. https://doi.org/10.1016/j.jclinepi.2014.03.013.

Conly, Sarah. *Against Autonomy: Justifying Coercive Paternalism*. New York: Cambridge University Press, 2013.

Cooke, Brice, Binta Zahra Diop, Alissa Fishbane, Jonathan Hayes, Aurelie Ouss, and Anuj Shah. *Using Behavioral Science to Improve Criminal Justice Outcomes*. Chicago: UChicago Crime Lab and Ideas42, 2018. https://www.ideas42.org/wp-content/uploads/2018/03/Using-Behavioral-Science-to-Improve-Criminal-Justice-Outcomes.pdf.

Cornell, Nicolas. "A Third Theory of Paternalism." *Michigan Law Review* 113, no. 8 (June 2015): 1295–1336. https://repository.law.umich.edu/mlr/vol113/iss8/1.

Dewies Malte, Semiha Denktas, Lisenne Giel, Gera Noordzij, and Inge Merkelbach. "Applying Behavioural Insights to Public Policy: An Example from Rotterdam." *Global Implementation Research and Applications* 2, no. 1 (March 2022): 53–66. https://doi.org/10.1007/s43477-022-00036-5.

110

Dolan, P., M. Hallsworth, D. Halpern, D. King, R. Metcalfe, and I. Vlaev. "Influencing Behaviour: The Mindspace Way." *Journal of Economic Psychology* 33, no. 1 (February 2012): 264–77. https://doi.org/10.1016/j.joep.2011.10.009.

Dolan, Paul, Michael Hallsworth, David Halpern, Dominic King, and Ivo Vlaev. *MINDSPACE: Influencing Behaviour through Public Policy*. London: Institute for Government, 2010. https://www.bi.team/wp-content/uploads/2015/07/MINDSPACE.pdf.

Dworkin, Gerald. *The Theory and Practice of Autonomy*. Cambridge: Cambridge University Press, 1988.

Epstein, Richard. *Skepticism and Freedom: A Modern Case for Classical Liberalism*. Chicago: University of Chicago Press, 2003.

Falkow, Michael. "Does Homeland Security Constitute an Emerging Academic Discipline?" Master's thesis, Naval Postgraduate School, 2013. https://calhoun.nps.edu/handle/10945/32817.

Federal Emergency Management Agency. "Food and Water in an Emergency." August 2004. https://www.fema.gov/pdf/library/f&web.pdf.

Feinberg, Joel. *Harm to Self: The Moral Limits of the Criminal Law*. Vol. 3. New York: Oxford University Press, 1986.

Forberger, Sarah, Lucia Reisch, Teresa Kampfmann, and Hajo Zeeb. "Nudging to Move: A Scoping Review of the Use of Choice Architecture Interventions to Promote Physical Activity in the General Population." *International Journal of Behavioral Nutrition and Physical Activity* 16, no. 77 (September 2019): 1–14. https://doi.org/10.1186/s12966-019-0844-z.

Garren, David J. "Paternalism, Part I." *Philosophical Books* 47, no. 4 (October 2006): 334–41. https://doi.org/10.1111/j.1399-5448.2006.00189.x-i1.

Gladwell, Malcolm. *Blink*. New York: Back Bay Books, 2005.

Grüne-Yanoff, Till. "Why Behavioural Policy Needs Mechanistic Evidence." *Economics and Philosophy* 32, no. 3 (November 2015): 463–83. http://dx.doi.org/10.1017/S0266267115000425.

Gurevitch, Jessica, Julia Koricheva, Shinichi Nakagawa, and Gavin Stewart. "Meta-Analysis and the Science of Research Synthesis." *Nature* 555, no. 7695 (March 2018): 175–82. https://doi.org/10.1038/nature25753.

Hainmueller, Jens, Duncan, Lawrence, Justin Gest, and David D. Laitin. "A Randomized Controlled Design Reveals Barriers to Citizenship for Low-Income Immigrants." *PNAS* 115, no. 5 (January 2018): 939–944. https://doi.org/10.1073/pnas.1714254115.

Halpern, David. *Inside the Nudge Unit: How Small Changes Can Make a Big Difference*. London: Penguin Random House, 2015.

Hausman, Daniel M., and Brynn Welch. "Debate: To Nudge or Not to Nudge. *Journal of Political Philosophy* 18, no. 1 (March 2010): 123–136. https://doi.org/10.1111/j.1467-9760.2009.00351.x.

Hertwig, Ralph, and Till Grüne-Yanoff. "Nudging and Boosting: Steering or Empowering Good Decisions." *Perspectives on Psychological Science* 12, no. 6 (2017): 973–86. https://doi.org/10.1177/1745691617702496.

Hollands, Gareth J., Ian Shemilt, Theresa M. Marteau, Susan A. Jebb, Michael P. Kelly, Ryota Nakamura, Marc Suhrcke, and David Ogilvie. "Altering Micro-Environments to Change Population Health Behaviour: Towards an Evidence Base for Choice Architecture Interventions." *BMC Public Health* 13, no. 1218 (December 2013): 1–6. https://doi.org/10.1186/1471-2458-13-1218.

Hotard, Michael, Duncan Lawrence, David Laitin, and Jens Hainmueller. "A Low-Cost Information Nudge Increases Citizenship Application Rates among Low-Income Immigrants." *Nature Human Behaviour* 3 (April 2019): 678–83. https://doi.org/10.1038/s41562-019-0572-z.

House of Lords, Science and Technology Select Committee. *Behaviour Change*. London: Stationery Office Limited, 2011. https://publications.parliament.uk/pa/ld201012/ldselect/ldsctech/179/179.pdf.

Hummel, Dennis, and Alexander Maedche. "How Effective is Nudging? A Quantitative Review on the Effect Sizes and Limits of Empirical Nudging Studies." *Journal of Behavioral and Experimental Economics* 80 (June 2019): 47–58. https://doi.org/10.1016/j.socec.2019.03.005.

Ikonen, Lina, Francesca Sotgiu, Aylin Aydinli, and Peeter W. J. Verlegh. "Consumer Effects of Front-of-Package Nutrition Labeling: An Interdisciplinary Meta-Analysis." *Journal of the Academy of Marketing Science* 48, no. 3 (2020): 360–83. https://doi.org/10.1007/s11747-019-00663-9.

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

John, Peter, Toby Blume, and Kieran Saggar. "Citizenship Ceremonies as an Opportunity for Behaviour Change: A Quasi-Experiment With London Councils." *Representation* 56, no. 2 (April 2020): 253–72. https://doi.org/10.1080/00344893.2020.1748701.

Kahneman, Daniel. "Maps of Bounded Rationality: Psychology for Behavioral Economics." *American Economic Review* 93, no. 5 (December 2003): 1449–75. https://doi.org/10.1257/000282803322655392.

———. *Thinking, Fast and Slow*. New York: Straus and Giroux, 2011.

Langford, Bradley J., Elizabeth Leung, Reem Haj, Mark McIntyre, Linda R. Taggart, Kevin A. Brown, Mark Downing, and Larissa M. Matukas. "Nudging in MicroBiology Laboratory Evaluation (NIMBLE): A Scoping Review." *Infection Control and Hospital Epidemiology* 40, no. 12 (December 2019): 1400–1406. https://doi.org/10.1017/ice.2019.293.

Legal Information Institute. "Criminal Justice." July 2022. https://www.law.cornell.edu/wex/criminal_justice#:~:text=Criminal%20justice%20is%20a%20generic,the%20commission%20of%20a%20crime.

Le Grand, Julian, and Bill New. *Government Paternalism: Nanny State or Helpful Friend?* Princeton: Princeton University Press, 2015.

Le Roux, Sara. "Climate Change Catastrophes and Insuring Decisions: A Study in the Presence of Ambiguity." *Journal of Economic Behavior & Organization* 180 (December 2020): 992–1002. https://doi.org/10.1016/j.jebo.2018.07.021.

Lin, Yiling, Magda Osman, and Richard Ashcroft. "Nudge: Concept, Effectiveness, and Ethics." *Basic and Applied Social Psychology* 39, no. 6 (November 2017): 1–14. https://doi.org/10.1080/01973533.2017.1356304.

Micah, Peters, Christina M. Godfrey, Hanan Khalil, Patricia McInerney, Doborah Parker, and Cassia Baldini Soares. "Guidance for Conducting Systematic Scoping Reviews." *International Journal of Evidence-Based Healthcare* 13, no. 3 (September 2015): 141–46. https://doi.org/10.1097/XEB.0000000000000050.

Mill, John Stuart. *On Liberty*. Indianapolis: Hackett Publishing Company, 1978.

Mols, Frank, S. Alexander Haslam, Jolanda Jetten, and Niklas K. Steffens. "Why a Nudge Is Not Enough: A Social Identity Critique of Governance by Stealth." *European Journal of Political Research* 54, no. 1 (February 2015): 81–98. https://doi.org/10.1111/1475-6765.12073.

Münscher, Robert, Max Vetter, and Thomas Scheuerle. "A Review and Taxonomy of Choice Architecture Techniques." *Journal of Behavioral Decision Making* 29, no. 5 (December 2016): 511–24. https://doi.org/10.1002/bdm.1897.
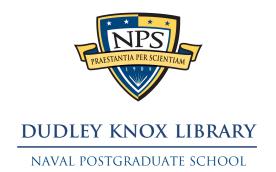
Nagatsu, Michiru. "Social Nudges: Their Mechanisms and Justification." *Review of Philosophy and Psychology* 6, no. 3 (September 2015): 481–94. https://doi.org/10.1007/s13164-015-0245-4

Nagtegaal, Rosanna, Lars Tummers, Mirko Noordegraaf, and Victor Bekkers. "Nudging Healthcare Professionals towards Evidence Based Medicine: A Systematic Scoping Review." *Journal of Behavioral Public Administration* 2, no. 2 (October 2019): 1–20. https://doi.org/10.30636/jbpa.22.71.

Nisa, Claudia F., Jocelyn J. Bélanger, Birga M. Schumpe, and Daiane G. Faller. "Meta-Analysis of Randomised Controlled Trials Testing Behavioural Interventions to Promote Household Action on Climate Change." *Nature Communications* 10, no. 4545 (October 2019): 1–13. https://doi.org/10.1038/s41467-019-12457-2.

Organisation for Economic Co-operation and Development. *Tools and Ethics for Applied Behavioural Insights: The BASIC Toolkit*. Paris: OECD Publishing, 2019. https://doi.org/10.1787/9ea76a8f-en.

Pope, Thaddeus M. "Counting the Dragon's Teeth and Claws: The Definition of Hard Paternalism." *Georgia State University Law Review* 20, no. 3 (Spring 2004): 659–722. https://gsulawreview.org/article/14705-counting-the-dragon-s-teeth-and-claws-the-definition-of-hard-paternalism.

Rawls, John. *A Theory of Justice*. Cambridge, MA: Harvard University Press, 1971.

Raz, Joseph. *The Morality of Freedom*. New York: Oxford University Press, 1986.

Rebonato, Riccardo. *Taking Liberties: A Critical Examination of Libertarian Paternalism*. New York: Palgrave Macmillan, 2012.

Riley, Evan. "The Beneficent Nudge Program and Epistemic Injustice." *Ethical Theory and Moral Practice* 20, no. 3 (June 2017): 597–616. https://doi.org/10.1007/s10677-017-9805-2.

Saetra, Henrik Skaug. "When Nudge Comes to Shove: Liberty and Nudging in the Era of Big Data." *Technology in Society* 59, no. 101130 (November 2019): 1–10. https://doi.org/10.1016/j.techsoc.2019.04.006.

Saghai, Yashar. "Salvaging the Concept of Nudge." *Journal of Medical Ethics* 39, no. 8 (August 2013): 487–93. https://doi.org/10.1136/medethics-2012-100727.

Samson, Alain, ed. *The Behavioral Economics Guide 2014*. London: Behavioral Economics Group, 2019. https://www.behavioraleconomics.com/be-guide/the-behavioral-economics-guide-2014/.

Schmidt, Andreas T. "The Power to Nudge." *American Political Science Review* 111, no. 2 (May 2017): 404–17. https://doi.org/10.1017/S0003055417000028.

Schmidt, Andreas T., and Bart Engelen. "The Ethics of Nudging: An Overview." *Philosophy Compass* 15, no. 4 (April 2020): 1–13. https://doi.org/10.1111/phc3.12658.

Sen, Amartya. "Freedom of Choice: Concept and Content." *European Economic Review* 32, no. 2–3 (March 1988): 269–94. https://doi.org/10.1016/0014-2921(88)90173-0.

Service, Owain, Michael Hallsworth, David Halpern, Felicity Algate, Rory Gallagher, Sam Nguyen, Simon Ruda et al. *EAST: Four Simple Ways to Apply Behavioural Insights*. London: Behavioural Insights Team, 2014. https://www.bi.team/wp-content/uploads/2015/07/BIT-Publication-EAST_FA_WEB.pdf.

Simon, H. A. *Models of Bounded Rationality*. Cambridge, MA: MIT Press.

Sugden, Robert. "Do People Really Want to Be Nudged Towards Healthy Lifestyles?" *International Review of Economics* 64, no. 2 (June 2017): 113–223. https://doi.org/10.1007/s12232-016-0264-1.

———. "Why Incoherent Preferences Do Not Justify Paternalism." *Constitutional Political Economy* 19, no. 3 (September 2008): 226–48. http://dx.doi.org/10.1007/s10602-008-9043-7.

Sunstein, Cass R. "Behaviorally Informed Policy: A Brisk Progress Report." SSRN Scholarly Paper. Rochester, NY: Social Science Research Network, September 29, 2019. https://papers.ssrn.com/abstract=3461781.

———. *The Ethics of Influence: Government in the Age of Behavioral Science*. New York: Cambridge University Press, 2016.

———. "Nudges That Fail." *Behavioural Public Policy* 1, no. 1 (May 2017): 4–25. https://doi.org/10.1017/bpp.2016.3.

———. "Nudging: A Very Short Guide." *Journal of Consumer Policy* 37, no. 4 (December 2014): 583–88. https://doi.org/10.1007/s10603-014-9273-1.

Sunstein, Cass R., and Richard H. Thaler. "Libertarian Paternalism is Not an Oxymoron." *University of Chicago Law Review* 70, no. 4 (2003): 1159–1202. https://doi.org/10.2307/1600573.

Szaszi, Barnabas, Anna Palinkas, Bence Palfi, Aba Szollosi, and Balazs Aczel. "A Systematic Scoping Review of the Choice Architecture Movement: Toward Understanding When and Why Nudges Work." *Behavioral Decision Making* 31, no. 3 (July 2018): 355–66. https://doi.org/10.1002/bdm.2035.

Thaler, Richard. *Misbehaving: The Making of Behavioral Economics*. New York: Penguin Books, 2009.

Thaler, Richard H., and Cass R. Sunstein. *Nudge: Improving Decisions About Health, Wealth, and Happiness*. New York: Penguin Books, 2009.

Tversky, Amos, and Daniel Kahneman. "The Framing of Decisions and the Psychology of Choice." *Science* 211, no. 4481 (January 1981): 453–58. https://doi.org/10.1126/science.7455683.

Van Deun, Hannah, Wouter van Acker, Ellen Fobé, and Marleen Brans. "Nudging in Public Policy and Public Management: A Scoping Review of the Literature." Paper presented at the PSA 68th Annual International Conference, Cardiff University, United Kingdom, March 26–28, 2018.

Viscusi, Kip, and Ted Gayer. "Behavioral Public Choice: The Behavioral Paradox of Government Policy." Mercatus Working Paper, George Mason University, 2018. http://dx.doi.org/10.2139/ssrn.3191387.

Vlaev, Ivo, and Paul Dolan. "From Changing Cognitions to Changing the Context: A Dual-Route Model of Behaviour Change." Discussion Paper, Imperial College, 2009. https://spiral.imperial.ac.uk/bitstream/10044/1/4197/1/Dolan%202009-04.pdf.

Wendel, Stephen. "Behavioral Teams around the World." In *Designing for Behavior Change*. 2nd ed. O'Reilly Media, 2020. https://www.behavioralteams.com/wp-content/uploads/2020/10/Behavioral-Teams-Around-the-World_4Oct2020.pdf.

Whitman, Glen, and Mario Rizzo. "An Introduction to Behavioral Economics." In *The Behavioral Economics Guide 2014*, edited by Alain Simpson. London: Behavioral Economics Group, 2019. https://www.behavioraleconomics.com/the-be-guide/.

Wilkinson, T. M. "Nudging and Manipulation." *Political Studies* 61, no. 2 (June 2013): 341–55. https://doi.org/10.1111/j.1467-9248.2012.00974.x.

INITIAL DISTRIBUTION LIST

1.   Defense Technical Information Center
        Ft. Belvoir, Virginia

2.   Dudley Knox Library
        Naval Postgraduate School
        Monterey, California